SAE 2015 World Congress & Exhibition

Technical Session Schedule

As of 07/14/2015 08:58 am

Tuesday, April 21

Partially Premixed Compression Ignition, PPCI (Part 1 of 2)

Session Code: ***PFL250***

Room 140 C ***Session Time:*** ***9:30 a.m.***

Mixed mode with auto ignition but inhomogeneous charge. Injection-controlled but with EOI before SOC. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and PPC injection strategies are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are encouraged to be submitted into PFL110 or PFL120 modeling sessions.

Organizers - *Adam B. Dempsey, Oak Ridge National Laboratory; Bengt Johansson, Lund University; Derek Splitter, Oak Ridge National Laboratory*

Time	Paper No.	Title
9:30 a.m.	***2015-01-0835***	***Effects of Aftertreatment on Semi-Volatile Particulate Matter Emissions from Low Temperature Combustion in a Light-Duty Diesel Engine*** *Glenn A. Lucachick, David Kittelson, William Northrop, Univ of Minnesota*
10:00 a.m.	***2015-01-0831***	***Use of Multiple Injection Strategies to Reduce Emission and Noise in Low Temperature Diesel Combustion*** *Wonah Park, Youngchul Ra, Univ. of Wisconsin; Eric Kurtz, Ford Motor Co; Werner Willems, Ford Forschungszentrum Aachen GmbH; Rolf D. Reitz, Univ. of Wisconsin*
10:30 a.m.	***2015-01-0836***	***Effect of Injection Strategy on Low Temperature - Conventional Diesel Combustion Mode Transition*** *Behzad Rohani, Stephen Sungsan Park, Choongsik Bae, Korea Advanced Inst of Science & Tech*
11:00 a.m.	***2015-01-0833***	***Investigations into Multiple Premixed Compression Ignition Mode Fuelled with Different Mixtures of Gasoline and Diesel*** *Buyu Wang, Zhi Wang, Shi-Jin Shuai, Jian-Xin Wang, Tsinghua Univ*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00009, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Partially Premixed Compression Ignition, PPCI (Part 2 of 2)

Session Code: ***PFL250***

Room 140 C ***Session Time:*** ***1:00 p.m.***

Mixed mode with auto ignition but inhomogeneous charge. Injection-controlled but with EOI before SOC. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and PPC injection strategies are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are encouraged to be submitted into PFL110 or PFL120 modeling sessions.

Organizers - *Adam B. Dempsey, Oak Ridge National Laboratory; Bengt Johansson, Lund University; Derek Splitter, Oak Ridge National Laboratory*

Time	Paper No.	Title

1:00 p.m.	***2015-01-0830***	***Investigation on Multiple Injection Strategies for Gasoline PPC Operation in a Newly Designed 2-Stroke HSDI Compression Ignition Engine***
		Jesus Benajes, Ricardo Novella, Daniela De Lima, Universitat Politècnica de València; Pascal Tribotte, Renault
1:30 p.m.	***ORAL ONLY***	***The effects of injection pressure and umbrella angle on gasoline compression ignition at low-load and idling conditions***
		Janardhan Kodavasal, Christopher Kolodziej, Stephen Ciatti, Sibendu Som, Argonne National Laboratory
2:00 p.m.	***2015-01-0832***	***Achieving Stable Engine Operation of Gasoline Compression Ignition Using 87 AKI Gasoline Down to Idle***
		Christopher Kolodziej, Janardhan Kodavasal, Stephen Ciatti, Sibendu Som, Neeraj Shidore, Jeremy Delhom, Argonne National Laboratory
2:30 p.m.	***2015-01-0834***	***GDCI Multi-Cylinder Engine for High Fuel Efficiency and Low Emissions***
		Mark Sellnau, Wayne Moore, James Sinnamon, Kevin Hoyer, Matthew Foster, Harry Husted, Delphi Powertrain

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00009, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

SI Direct Injection Technology

Session Code: ***PFL212***

Room 140 D ***Session Time:*** ***9:30 a.m.***

Focuses on SI combustion technologies that employ direct, in-cylinder fuel injection. Topics of particular interest include in-cylinder fuel injection and spray studies, flow/spray interaction and in-cylinder mixture formation studies, and combustion chamber shape optimization. Focus includes "stratified" operation or other modes enabled by DI hardware, DI-specific emissions issues such as particulates and smoke, and technologies enabled by DISI (such as downsizing).

Organizers - *Jianwen Yi, Ford Motor Co.; James W G Turner, Jaguar Land Rover; Sudhakar Das, SwRI; Richard S. Davis, General Motors Co.*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0745***	***High-Speed Photography of Stratified Combustion in an Optical GDI Engine for Different Triple Injection Strategies***
		Petter Dahlander, Stina Hemdal, Chalmers Univ. of Technology
10:00 a.m.	***2015-01-0746***	***Fuel Pressure and Charge Motion Effects on GDi Engine Particulate Emissions***
		Walter F. Piock, Bizhan Befrui, Axel Berndorfer, Guy Hoffmann, Delphi Automotive
10:30 a.m.	***2015-01-0747***	***Effects of Injector Spray Layout and Injection Strategy on Gas Mixture Quality of Gasoline Direct Injection Engine***
		Aimin Du, Zhongpan Zhu, Chuanchuan Chu, Mengmeng Li, Tongji University
11:00 a.m.	***2015-01-0748***	***Split Injection in a DISI Engine Fuelled with Butanol and Gasoline Analyzed through Integrated Methodologies***
		Simona Silvia Merola, Adrian Irimescu, Cinzia Tornatore, Luca Marchitto, Gerardo Valentino, Istituto Motori CNR

	2015-01-0749	***Study on Effect of Engine Operating Parameters on Flame Characteristics (Written Only -- No Oral Presentation)***
		J. Sureshkumar, UCAL Fuel Systems, Ltd.; Ganesan Venkitachalam, J M Mallikarjuna, Indian Institute of Technology; R Elayaraja, UCAL Fuel Systems, Ltd.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Advanced Hybrid and Electric Vehicle Powertrains (Part 1 of 2)

Session Code: ***PFL710***

Room 140 D ***Session Time:*** ***1:00 p.m.***

This session covers new production and near-production hybrid powertrains, hybrid architecture, and testing.

Organizers - *Michael Duoba, Argonne National Laboratory; Matthew Fleming, Ford Motor Co.; Andrej Ivanco, Clemson-ICAR; Wiley R. McCoy, McLaren Performance Technologies; Constantine N. Raptis, GM Advanced Vehicle Engrg*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1152***	***The Next Generation ¿Voltec¿ Extended Range EV Propulsion System***
		Brendan M. Conlon, Trevor Blohm, Michael Harpster, Alan Holmes, Margaret Palardy, Steven Tarnowsky, Leon Zhou, General Motors
1:30 p.m.	***2015-01-1164***	***Chevrolet Volt Electric Utilization***
		Aimee N. Duhon, Kris S. Sevel, Steven A. Tarnowsky, Peter J. Savagian, General Motors Co.
2:00 p.m.	***2015-01-1160***	***Fuel Consumption and Cost Potential of Different Plug-In Hybrid Vehicle Architectures***
		Namdoo Kim, Ayman Moawad, Neeraj Shidore, Aymeric Rousseau, Argonne National Laboratory
2:30 p.m.	***2015-01-1158***	***High-Performance Plug-In Hybrid Electric Vehicle Design Studies and Considerations***
		Justin Wilbanks, Georgia Institute of Technology; Fabrizio Favaretto, Franco Cimatti, Ferrari S.p.A.; Michael Leamy, Georgia Institute of Technology
3:00 p.m.	***2015-01-1157***	***Control Analysis and Thermal Model Development for Plug-In Hybrid Electric Vehicles***
		Namwook Kim, Argonne National Laboratory; Jongryeol Jeong, Seoul National University; Aymeric Rousseau, Henning Lohse-Busch, Argonne National Laboratory
	2015-01-1149	***A Systematic Study of Kinematics and Kinetics for New Compound Power-split Hybrid Transmission (Written Only -- No Oral Presentation)***
		Donghao Liu, Haisheng Yu, Jiangwu Zhang, Shanghai Jiao Tong Univ

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00484 and SUB-GTL-00001, and also individually. To purchase visit collections.sae.org

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Diagnostic Development

Session Code: ***PFL150***

Room 140 E ***Session Time:*** ***9:30 a.m.***

This session focuses on engine combustion and flow diagnostic development and demonstration. Examples of diagnostics of interest include, but are not limited to: LIF, PLIF, absorption/emission spectroscopy, ion probes, pressure sensors, and extractive and exhaust gas composition sensors.

Organizers - *Oivind Andersson, Lund University; Matthew J. Hall, Univ. of Texas-Austin; Benjamin Petersen, Ford Motor Co.*

Time	Paper No.	Title
9:30 a.m.	***2015-01-1645***	***Calibration of a TFG Sensor for Heat Flux Measurements in a S.I. Engine*** *Thomas De Cuyper, Gery Fossaert, Olivier Collet, Stijn Broekaert, Ghent University; Kam Chana, Univ of Oxford; Michel De Paepe, Sebastian Verhelst, Ghent University*
10:00 a.m.	***2015-01-1646***	***Using 2d Infrared Imaging for the Analysis of Non-Conventional Fuels Combustion in a Diesel Engine*** *Ezio Mancaruso, Bianca Maria Vaglieco, Luigi Sequino, Istituto Motori CNR*
10:30 a.m.	***2015-01-1648***	***2D Residual Gas Visualization in an Optical Direct Injection Spark Ignition Engine with IR Laser Absorption*** *Hendrik Golzke, Heiko Holler, Wolfgang Friedrich, Philippe Leick, Robert Bosch GmbH; Ulrich Schoenauer, HS Karlsruhe; Andreas Dreizler, TU Darmstadt*
11:00 a.m.	***2015-01-1647***	***Optical Characterization of the Quality of the Diesel Injection in the Exhaust Line for DPF Active Regeneration*** *Matthieu Lecompte, Stephane Raux, Jerome Cherel, Vivien Delpech, IFPEN*

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Models for SI Combustion and Emissions

Session Code: ***PFL112***

Room 140 E ***Session Time:*** ***1:00 p.m.***

This sub-session covers zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine SI combustion, knock and emissions.

Organizers - *Michael Bybee, Gamma Technologies Inc.; Federico Millo, Politecnico di Torino; Angelo Onorati, Politecnico di Milano; Christof Schernus, FEV GmbH*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1242***	***Modeling of Trace Knock in a Modern SI Engine Fuelled by Ethanol/Gasoline Blends*** *Hao Yuan, Tien Mun Foong, Zhongyuan Chen, Yi Yang, Michael Brear, University of Melbourne; Thomas Leone, James E. Anderson, Ford Motor Co.*

1:30 p.m.	***2015-01-1244***	***Fuel Economy Improvement and Knock Tendency Reduction of a Downsized Turbocharged Engine at Full Load Operations through a Low-Pressure EGR System*** *Luigi Teodosio, Vincenzo De Bellis, Univ Naples Federico II; Fabio Bozza, Univ Naples Federico II-Ist. Motori CNR*
2:00 p.m.	***2015-01-1245***	***A Model for Prediction of Knock in the Cycle Simulation by Detail Characterization of Fuel and Temperature Stratification*** *Darko Kozarac, Rudolf Tomic, Ivan Taritas, Univ of Zagreb; Jyh-Yuan Chen, Robert W. Dibble, Univ of California*
2:30 p.m.	***2015-01-1243***	***0D/3D Simulations of Combustion in Gasoline Engines Operated with Multiple Spark Plug Technology*** *Michal Pasternak, Loge GmbH; Fabian Mauss, BTU Cottbus; Fabio Xavier, Michael Rieß, Marc Sens, Andreas Benz, IAV GmbH*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

LCA, Sustainability and End-of-Life

Session Code: ***SDP113***

Room 140 F ***Session Time:*** ***9:30 a.m.***

This session reviews life cycle assessments on materials, technologies, and processes, as well as reviews vehicle end-of-life issues including, parts reuse, parts remanufacturing, parts/materials recycling, and the technologies and processes associated with these activities. Other topics included in this session are updates on the development of life cycle analysis databases for use by the national and international community.

Organizers - *Susan Sawyer-Beaulieu, Katie Soulliere, Univ. of Windsor*

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***Technical Keynote: The Role of a Professional Auto Recycler and What Really Happens to End-of-Life Vehicles in North America*** *Andrew MacDonald, Automotive Recyclers Association Inc.*
10:30 a.m.	***2015-01-1306***	***A Second Life for Electric Vehicle Batteries: Answering Questions on Battery Degradation and Value*** *Jeremy S. Neubauer, Eric Wood, Ahmad Pesaran, National Renewable Energy Laboratory*
11:00 a.m.	***ORAL ONLY***	***Well-to-Wheel Analysis of Direct and Indirect Use of Natural Gas in Passenger Vehicles*** *Scott Curran, Oak Ridge National Laboratory*

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Tuesday, April 21

Sustainable and Energy Efficient Manufacturing

Session Code: ***SDP109***

Room 140 F ***Session Time:*** ***1:00 p.m.***

The goal of this session is to address developments in energy efficient manufacturing relevant to the automotive industry. Specifically, it will focus on examining emerging energy efficient manufacturing technologies, as well as, best practices for established manufacturing methods. Additionally, the session examines innovative design and modeling techniques relevant to energy systems employed in automotive manufacturing.

Organizers - *Bhaskaran Gopalakrishnan, West Virginia Univ.; Deepak Gupta, Wichita State University*

Chairpersons - *Deepak Gupta, Wichita State University; Bhaskaran Gopalakrishnan, West Virginia Univ*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Automotive Paint Removal Shift: Sustainable In-House Stripping Alternatives***
		Christopher Ringholz, Atotech
2:30 p.m.	***2015-01-1299***	***Sustainable Manufacturing: Beyond Turning the Lights Off***
		Rod Emery, RedViking Engineering
	2015-01-1297	***Process Optimization of Biodiesel Production from Sal Seed Oil using Response Surface Methodology [RSM] and Diesel (Written Only -- No Oral Presentation)***
		Harveer Singh Pali, Naveen Kumar, Yahaya Alhassan, Amar Deep, Delhi Technological Univ.
	2015-01-1298	***Biodiesel (Mangifera Oil Methyl Ester) Derived from Triglycerides of Mangifera Kernel Seed & Leaves Oil by using Homogeneous Alkali Catalyst (Written Only -- No Oral Presentation)***
		Sangram Jadhav, Technological University India

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Tuesday, April 21

Sustainable Materials and Components

Session Code: ***SDP111***

Room 140 F ***Session Time:*** ***3:00 p.m.***

This session delves into various areas surrounding topics that relate to a material or component¿s ability to be considered sustainable. These topics include but are not limited to advance material recycling technologies, remanufacturing and serviceability, materials or components reuse, as well as reduction and/or elimination of substances of concern and volatile organic compound.

Organizers - *Bhaskaran Gopalakrishnan, West Virginia Univ.; Deepak Gupta, Wichita State University; Susan Sawyer-Beaulieu, Univ. of Windsor*

Chairpersons - *Deepak Gupta, Wichita State University; Bhaskaran Gopalakrishnan, West Virginia Univ; Susan Sawyer-Beaulieu, Univ of Windsor*

Time	Paper No.	Title
3:00 p.m.	***ORAL ONLY***	***Sustainable Products & Materials***
		Peter Zmolek, Continental Tire North America Inc.; Andreas Topp PhD, Burkhard Wies PhD, Continental AG
3:30 p.m.	***ORAL ONLY***	***Use of Composition Leather for Automotive Seat Applications***
		Chris Kardassilaris, Honda R & D Americas Inc.
	2015-01-1303	***A Test Technology of a Vehicle Driveline Test Bench with Electric Drive Dynamometer for Dynamic Emulation (Written Only -- No Oral Presentation)***
		Wenli Li, Xiao-Hui Shi, Dong Guo, Chongqing University of Technology; Peng Yi, Chongqing Academy of Science and Technology

	2015-01-1304	***Eco-Friendly Recycled PET (Polyethylene Terephthalate) Material for Automotive Canopy Strip Application (Written Only -- No Oral Presentation)***
		G Karthik, K V Balaji, Rao Venkateshwara, Bagul Rahul, Mahindra & Mahindra Ltd

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Tuesday, April 21

Autonomous Systems (Part 1 of 2)

Session Code: ***AE506***

Room 140 G ***Session Time:*** ***9:30 a.m.***

With a mandate in Europe for Autonomous emergency braking systems, there is a development happening with radar and camera based systems to do collision mitigation. The challenges include robust object tracking, stationary object detection, reactions for false positives etc. The developments and challenges in the collision mitigation technology will be discussed in this session.

Organizers - *Sue Bai, Honda R & D Americas Inc.; Nathan Crosty, Magna Electronics; John Day, John Day's Automotive Electronics; David McNamara, MTS*

Chairpersons - *Sue Bai, Honda R & D Americas Inc.*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0309***	***Vehicle Perimeter Monitoring using Minimum Number of Sensors during Parking Maneuver***
		Mayurika Chatterjee, Atchyuta Rao, Chaitanya Rajguru, KPIT Technologies Ltd.
10:00 a.m.	***2015-01-0310***	***A Compressed Sensing and Sparsity Based Approach for Estimating an Equivalent NIR Image from a RGB Image***
		R Danymol, Krishnan Kutty, KPIT Technologies Ltd.
10:30 a.m.	***2015-01-0312***	***Low Light Image Enhancement Using Color Transfer***
		Jiji Gangadharan, Automotive Appliance; Shanmugaraj Mani; Krishnan Kutty, CREST, KPIT Technologies Ltd.
11:00 a.m.	***2015-01-0314***	***Automated Driving Control in Safe Driving Envelope based on Probabilistic Prediction of Surrounding Vehicle Behaviors***
		Junyung Lee, Beomjun Kim, Jongsang Seo, Kyongsu Yi, Seoul National Univ; Jihyun Yoon, Bongchul Ko, Hyundai Motors

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00487, and also individually. To purchase visit collections.sae.org

Tuesday, April 21

Autonomous Systems (Part 2 of 2)

Session Code: ***AE506***

Room 140 G ***Session Time:*** ***1:00 p.m.***

With a mandate in Europe for Autonomous emergency braking systems, there is a development happening with radar and camera based systems to do collision mitigation. The challenges include robust object tracking, stationary object detection, reactions for false positives etc. The developments and challenges in the collision mitigation technology will be discussed in this session.

Organizers - *Sue Bai, Honda R & D Americas Inc.; Nathan Crosty, Magna Electronics; John Day, John Day's Automotive Electronics; David McNamara, MTS*

Chairpersons - *Sue Bai, Honda R & D Americas Inc.*

Time	Paper No.	Title
1:00 p.m.	2015-01-0316	**Speed Control of Parking Assist System for Electrified Vehicle** *Kazuto Yokoyama, Masahiro Iezawa, Yohei Akashi, Toshihide Satake, Yukiyasu Akemi, Satoru Inoue, Ryotaro Suzuki, Mitsubishi Electric Corporation*
1:30 p.m.	2015-01-0317	**Robust Mode Predictive Control for Lane Change of Automated Driving Vehicles** *Jongsang Seo, Kyongsu Yi, Seoul National Univ*
2:30 p.m.	2015-01-0219	**Driverless Vehicles and LIDAR: Evaluation of Possible Security Threats on the Open Road** *Rodrigo Felix, John Economou, Kevin Knowles, Cranfield Defence & Security*
3:00 p.m.	ORAL ONLY	**Technical Keynote: Historical Look at Autonomous Vehicles** *Robert L Neff, Sales and Marketing Insight*
	2015-01-0307	**Detection and Tracking Algorithm of Front Vehicle Based on Laser Radar (Written Only -- No Oral Presentation)** *Hongfeng Wang, Lei He, Qianfei Liu, Changfu Zong, ASCL, Jilin University*
	2015-01-0311	**A Review on Day-Time Pedestrian Detection (Written Only -- No Oral Presentation)** *Reecha Yadav, K.K.W.I.E.E.R; Vinuchackravarthy Senthamilarasu, Krishnan Kutty, Vinay Vaidya, CREST, KPIT Technologies Ltd.; Sunita Ugale, K.K.W.I.E.E.R*
	2015-01-0313	**NLMPC for Real Time Path Following and Collision Avoidance (Written Only -- No Oral Presentation)** *Ugo Rosolia, Francesco Braghin, Politecnico di Milano; Andrew Alleyne, Univ of Illinois; Edoardo Sabbioni, Politecnico di Milano*
	2015-01-0315	**LTV MPC Vehicle Model for Autonomous Driving in Limit Conditions (Written Only -- No Oral Presentation)** *Francesco Braghin, Andrea Fuso, Edoardo Sabbioni, Nicola De Val, Politecnico di Milano*
	2015-01-0318	**Local Scene Depth Estimation Using Rotating Monocular Camera (Written Only -- No Oral Presentation)** *Sonu Thomas, Krishnan Kutty, KPIT Technologies Ltd.; Vinuchackravarthy Senthamilarasu, KPIT Cummins Infosystems Ltd.*
	2015-01-0319	**A Novel Method for Day Time Pedestrian Detection (Written Only -- No Oral Presentation)** *Reena Kumari Behera, Jiji Gangadharan, Krishnan Kutty, Smita Nair, Vinay Vaidya, KPIT Technologies Ltd.*
	2015-01-0320	**Optimization Based Trajectory Planning of Parallel Parking with Multiple Constraints (Written Only -- No Oral Presentation)** *Dezhao Zhang, Shengbo Li, Tsinghua Univ.; Qiang Yang, Sichuan Univ.; Li Liu, Chengdu iTech Automotive Co., Ltd.*
	2015-01-0321	**Combined Longitudinal and Lateral Control for Automated Lane Guidance of Full Drive-by-Wire Vehicles (Written Only -- No Oral Presentation)** *Pan Song, Changfu Zong, Jilin Univ.; Masayoshi Tomizuka, Univ of California*

	2015-01-0322	***A Robust Lane-Keeping `Co-Pilot¿ System Using LBMPC Method (Written Only -- No Oral Presentation)***
		Jieyun Ding, Keqiang Li, Tsinghua Univ.; Karl Hedrick, University of California

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Tuesday, April 21

Valvetrain, including VVA

Session Code: ***PFL570***

Room 142 A ***Session Time:*** ***9:30 a.m.***

The design, development, and testing of Valve Train and Variable Valve Actuation mechanisms, devices, and systems; and the impact and control of such systems on thermodynamics, combustion, fuel economy, emissions, noise and vibration, and performance.

Organizers - *Thomas Howell, Jacobs Vehicle Systems Inc.; Timothy Kunz, Delphi Automotive Systems; James Westbrook III, FCA US LLC*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0323***	***A Fully Variable Hydraulic Valve Train Concept with Continuous Measuring of the Valve Lift Movement***
		Jörn Getzlaff, Tobias Dost, Thomas Lambert, Erik Lenk, West Saxon University of Applied Science
10:00 a.m.	***2015-01-0324***	***Camless Variable Valve Actuator with Two Discrete Lifts***
		Zheng David Lou, Shao Wen, Jianhua Qian, Huaiping Xu, Jiangsu Gongda Power Technologies Ltd.; Guoming Zhu, Michigan State University; Ming Sun, Jiangnan University
10:30 a.m.	***Panel***	***Technical Expert Panel: Future Valvetrain Technology and Trends***
		There are many different types of VVA automotive architecture which have been invented with a wide range of capabilities such as cam switching, continuously variable systems and fully variable camless systems. Which of these architectures has the most potential in the future? What are the advantages and disadvantages of the different types? How will VVA architecture change with future regulatory and customer requirements? This exciting technical session will provide the opportunity for industry technical panelists from OEM¿s, suppliers, and technical supply partners to directly answer several key questions that engineers and designers are challenged with as they develop valvetrains for our future powertrains.
		Moderators - *Thomas Howell, Jacobs Vehicle Systems Inc.;*
		Panelists - *Timothy Kunz, Delphi Automotive Systems; James Westbrook III, FCA US LLC*
		Rob De Bruijn, Program Manger, Gasoline Engine Development, FEV; Alan Falkowski, Chief Engineer - Global Medium Engine, FCA US LLC; David Kehr, Manager Valvetrain Systems, Schaeffler Group USA Inc.; Prabjot Nanua, Director, Advanced and Racing Engines, General Motors Co.; Paul Whitaker, Director of Product Technologies, AVL Powertrain Engineering Inc.;

	2015-01-0325	***Compressed Natural Gas and Hydrogen Fuelling of a Naturally Aspirated Four Stroke Engine with One Intake and One Exhaust Horizontal Rotary Valve per Cylinder and Central Direct Injection and Spark or Jet Ignition (Written Only -- No Oral Presentation)***
		Alberto Boretti

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Automotive Engineering Testing and Test Methods

Session Code: ***M203***

Room 142 A ***Session Time:*** ***1:00 p.m.***

The focus of this session are the tests and test methods employed in the evaluation of the performance and durability of powertrain (engines, transmissions), driveline (4WD systems, driveshafts, axles), chassis (frame, suspensions, brakes, etc.) and body components, subsystems, and full vehicle systems.

Organizers - *Paul Spiteri, Oshkosh Defense; Darryl Taylor; Michael Temkin, FCA US LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0592***	***Defect Classification of Adhesively Bonded Joints Using Pulse-Echo Ultrasonic Testing in Automotive Industries***
		Mehdi Hajian, University of Windsor
1:30 p.m.	***2015-01-0591***	***Performance Measurement of Vehicle Antilock Braking Systems (ABS)***
		Karan R. Khanse, Eric Pierce, Virginia Tech; Michael Ng, University of Massachusetts; Saied Taheri, Virginia Tech
2:00 p.m.	***2015-01-0589***	***Vehicle Component Benchmarking Using a Chassis Dynamometer***
		Andrew Moskalik, Paul Dekraker, John Kargul, Daniel Barba, US Environmental Protection Agency
2:30 p.m.	***2015-01-0588***	***Low Cost Obtainment of Vehicle Performance Curves and Values Experimentally by Means of the OBD2 Port***
		Julian Mauricio Echeverry, Virgilio Vasquez, Jorge Aguirre, Diego Contreras, ITESM Campus Estado de Mexico
3:00 p.m.	***2015-01-0586***	***A Flexible Hardware-in-the-Loop Testing System for Hybrid Powertrain***
		Shugang Jiang, Dharshan Medonza, James Kitchen, A&D Technology Inc.
3:30 p.m.	***2015-01-0590***	***Durability Test Mode for LED Adaptive Front Lighting System by Failure Mode Effect Analysis***
		Dae-Un Sung, Young Hyun Ryu, Soon Cheol Park, Hyundai-Kia Motors

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Technical Expert Panel: Future Valvetrain Technology and Trends

Session Code: ***PFL599***

Room 142 A Technical Expert Panel Discus ***Session Time:*** ***10:00 a.m.***

There are many different types of VVA automotive architecture which have been invented with a wide range of capabilities such as cam switching, continuously variable systems and fully variable camless systems. Which of these architectures has the most potential in the future? What are the advantages and disadvantages of the different types? How will VVA architecture change with future regulatory and customer requirements? This exciting technical session will provide the opportunity for industry technical panelists from OEM¿s, suppliers, and technical supply partners to directly answer several key questions that engineers and designers are challenged with as they develop valvetrains for our future powertrains.

Moderators - *Thomas Howell, Jacobs Vehicle Systems Inc.; Timothy Kunz, Delphi Automotive Systems; James Westbrook III, FCA US LLC*

Panelists - *Rob De Bruijn, Program Manager, Gasoline Engine Development, FEV; Alan Falkowski, Chief Engineer - Global Medium Engine, FCA US LLC; David Kehr, Manager, Valvetrain Systems, Schaeffler Group USA Inc.; Prabjot Nanua, Director, Advanced and Racing Engines, General Motors Co.; Paul Whitaker, Director of Product Technologies, AVL Powertrain Engineering Inc.;*

Tuesday, April 21

New CI & SI Engines and Components

Session Code: ***PFL510***

Room 142 B ***Session Time:*** ***1:00 p.m.***

This session covers topics regarding new CI and SI engines and components. This includes analytical, experimental, and computational studies covering hardware development as well as design and analysis techniques.

Organizers - *Daniel K. Mather, Digital-Engines LLC; Jeffrey Naber, Michigan Technological Univ.; Bryon Wasacz, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1270***	***Synchronous Channel Fuel Pump*** *Philip Anderson; Mohammed Aslam, Delphi Corp; Partab Jeswani, Jeswani Builders, Inc.*
1:30 p.m.	***2015-01-1267***	***A Model Based Design Analysis for a Gasoline Direct Injection Pump*** *Jae-Cheon Lee, Hao Liu, Yoo-Jeong Noh, Hyun Myung Shin, Keimyung Univ.; Yong Nam Shin, Myung Kweon Kang, Motonic Inc.*
2:00 p.m.	***2015-01-1273***	***Volumetric Efficiency Improvement of High-Pressure Fuel Pump for Gasoline Direct Injection Engine*** *Shunsuke Aritomi, Hiroyasu Kuniyoshi, Hitachi, Ltd.; Kenichirou Tokuo, Satoshi Usui, Atsuji Saito, Yuta Saso, Hitachi Automotive Systems Co., Ltd.*
2:30 p.m.	***2015-01-1268***	***The New Toyota 1.2-Liter ESTEC Turbocharged Direct Injection Gasoline Engine*** *Tomohiro Shinagawa, Masahito Kudo, Wataru Matsubara, Takashi Kawai, Toyota Motor Corp.*
3:00 p.m.	***2015-01-1272***	***Development of the Combustion System for General Motors' High-Efficiency Range Extender Ecotec Small Gas Engine*** *Jeffrey Jocsak, David White, Cedric Armand, Richard S. Davis, General Motors Company*
3:30 p.m.	***2015-01-1275***	***Demands on Future Timing drives - Chain and Belt in Competition*** *Wolfgang Johann Schoeffmann, Caroline Truffinet, Michael Howlett, Norbert Ausserhofer, Andreas Zurk, AVL LIST GmbH*
4:00 p.m.	***2015-01-1269***	***Piston Design Impact on the Scavenging and Combustion in an Opposed-Piston, Opposed-Cylinder (OPOC) Two-Stroke Engine*** *Ming Huo, Yuexin Huang, Peter Hofbauer, EcoMotors, Inc.*

4:30 p.m.	***2015-01-1271***	***Spark Ignition Circuit Energy Characterization based on a Simplified Model and Measurement Analysis***
		Qingyuan Tan, Shui Yu, Xiang Chen, Ming Zheng, Univ of Windsor
	2015-01-1276	***Scheme Design and Performance Simulation of Opposed-Piston Two-Stroke Gasoline Direct Injection Engine (Written Only -- No Oral Presentation)***
		Fukang Ma, Changlu Zhao, Shuanlu Zhang, Hao Wang, Beijing Institute of Technology
	2015-01-1277	***Design and Simulation of Opposed-Piston Four-Stroke Free-Piston Linear Generator (Written Only -- No Oral Presentation)***
		Hao Yan, Dengqiang Wang, Zhaoping Xu, Nanjing Univ. of Sci. and Tech.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00514 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

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Tuesday, April 21

Cybersecurity for Cyber-Physical Vehicle Systems (Part 1 of 2)

Session Code: ***AE202***

Room 142 C ***Session Time:*** ***9:30 a.m.***

This session focuses on cybersecurity for cyber-physical vehicle systems. Topics include: design, development and implementation of security-critical cyber-physical vehicle systems, cybersecurity design, development, and implementation strategies, analysis methodologies, process and life-cycle management, comparisons of system safety and cybersecurity, etc. Application areas include: security-critical automotive systems as well as other security-critical ground vehicle and aviation systems.

Organizers - *Amit Choudhury, ADVICS North America Inc.; Barbara J. Czerny, FCA US LLC; David McNamara, MTS; David Ward, MIRA, Ltd.*

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***Overview and Status of the Department of Homeland Security Science and Technology Directorate Cyber Security Division (DHS S&T CSD)/DOT-Volpe Center Project on Pre-Competitive Automotive Cybersecurity Research***
		Daniel Massey, Dept Of Homeland Security (DHS) S&T CSD; Kevin Harnett, DOT/Volpe Center
10:00 a.m.	***ORAL ONLY***	***Overview of SAE J3061 Recommended Practice: Cybersecurity Guidebook for Cyber-Physical Vehicle Systems***
		Barbara J. Czerny, FCA US LLC; David Ward, MIRA Ltd; Lisa Boran, Ford Motor Co
10:30 a.m.	***ORAL ONLY***	***Design Methodology for Safety and Security in Automotive***
		Marc Born, Mario Winkler, KPIT medini Technologies AG
11:00 a.m.	***ORAL ONLY***	***Fault Tree Analysis and Attack Tree Analysis: Parallels and Differences***
		Barbara J. Czerny, FCA US LLC; David Ward, MIRA Ltd

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Tuesday, April 21

Cybersecurity for Cyber-Physical Vehicle Systems (Part 2 of 2)

Session Code: ***AE202***

Room 142 C ***Session Time:*** ***1:00 p.m.***

This session focuses on cybersecurity for cyber-physical vehicle systems. Topics include: design, development and implementation of security-critical cyber-physical vehicle systems, cybersecurity design, development, and implementation strategies, analysis methodologies, process and life-cycle management, comparisons of system safety and cybersecurity, etc. Application areas include: security-critical automotive systems as well as other security-critical ground vehicle and aviation systems.

Organizers - *Amit Choudhury, ADVICS North America Inc.; Barbara J. Czerny, FCA US LLC; David McNamara, MTS; David Ward, MIRA, Ltd.*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Smart-Phone and Vehicle Cyber-Security***
		Hirofumi Onishi, Alpine Electronics of America Inc.
1:30 p.m.	***2015-01-0202***	***Recognizing Manipulated Electronic Control Units***
		Armin Wasicek, University of California; Andre Weimerskirch, University of Michigan
2:00 p.m.	***ORAL ONLY***	***Assuring Performance, Quality, Reliability and Security of In-Vehicle Ethernet Networks***
		Thomas Schulze, SPIRENT Communications GmbH
2:30 p.m.	***2015-01-0203***	***Software Defined Radio and Security in the Automotive Domain***
		Brian Anderson, Mark Brooks, Ryan Wilson, Purser K. Sturgeon II, Southwest Research Institute
3:00 p.m.	***2015-01-0204***	***Vehicle Health Monitoring System using Secure Wireless Sensor Network***
		Biswajit Panja, Lars Wolleschensky, Escrypt Inc.

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Tuesday, April 21

Technical Expert Panel Discussion: With connectivity, comes risks - cybersecurity and safety

Session Code: ***AE299***

Room 142 C Technical Expert Panel Discus ***Session Time:*** ***3:30 p.m.***

Our world is becoming even more connected. And, with that connectivity, comes risks to our transportation infrastructure - automobiles, trucks, rail and airplanes - in moving people and freight. Do we know who we are playing chess against in this vibrant CyberSecurity world? This panel addresses the critical issues around CyberSecurity in our transportation on land, and in the air. Other topics include recent advances, standards, best practices and potential solutions.

Organizers - *Gloria Danna D'Anna, Tri-Kar Advanced Technology Group; Billy C. Jones, Untied Network Corporation; Mark N. Pope, General Motors Co.; Arnold Taube, John Deere World Headquarters*

Moderators - *Gloria Danna D'Anna, Tri-Kar Advanced Technology Group*

Panelists - *Paul Bierdeman, Caterpillar Inc.; Thomas Farmer, American Association of Rail; James Huffaker, Boeing Commercial Airplanes; Timothy J. Kilworth, Deere & Company; David M. Martin, Federal Bureau of Investigation; Andre Weimerskirch, University of Michigan;*

Tuesday, April 21

Fatigue Modeling / Testing & CAE Durability Analysis (Part 1 of 4)

Session Code: ***M200***

Room 250 A ***Session Time:*** ***9:30 a.m.***

This series of sessions focuses on state-of-the-art fatigue theory and advanced development in fatigue testing, material behavior under cyclic loading, and fatigue analysis methodology & research in the ground vehicle industry. Studies and discussions on innovative and improved fatigue theory/methods in will be discussed along with and engineering applications of CAE durability analysis.

Organizers - *Abolhassan Khosrovaneh, GM; John J. Bonnen, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Carlos Carvalho Engler-Pinto, Ford Motor Co.; Mingchao Guo, FCA US LLC; Zhigang Wei, Tenneco Inc.*

Time	Paper No.	Title
9:30 a.m.	***ORAL ONLY***	***Technical Keynote: Recent Advances in Structural Fatigue Life Simulation Method for Seam and Spot Welds***
		Pingsha Dong, University of Michigan
10:00 a.m.	***2015-01-0554***	***Estimation of Elastic-Plastic Behavior at Notches under Uniaxial Cyclic Loading***
		Rafaa Esmaael, Vernon Fernandez, Lawrence Technological University
10:30 a.m.	***2015-01-0537***	***A Fatigue Life Prediction Method of Laser Assisted Self-Piercing Rivet Joint for Magnesium Alloys***
		Hong Tae Kang, University of Michigan; Abolhassan Khosrovaneh, GM; Xuming Su, Ford Motor Co.; Yung-Li Lee, Mingchao Guo, FCA US LLC; Chonghua Jiang, AET Integration Inc.; Zhen Li, University of Michigan
11:00 a.m.	***2015-01-0545***	***Fatigue Evaluation Procedure Development for Aluminum Alloy Spot Welds Using the Battelle Structural Stress Method***
		Jeong Kyun Hong, Battelle
11:30 a.m.	***2015-01-0551***	***An Investigation on the Fatigue Behavior of Balanced and Unbalanced Epoxy-Aluminum Single Lap Joints***
		Qiuren Chen, Haiding Guo, Nanjing Univ. of Aero. & Astro.; John V. Lasecki, Ford Research and Innovation Center; John Hill, Xuming Su, John J. Bonnen, Ford Motor Co.

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Tuesday, April 21

Fatigue Modeling / Testing & CAE Durability Analysis (Part 2 of 4)

Session Code: ***M200***

Room 250 A ***Session Time:*** ***1:00 p.m.***

This series of sessions focuses on state-of-the-art fatigue theory and advanced development in fatigue testing, material behavior under cyclic loading, and fatigue analysis methodology & research in the ground vehicle industry. Studies and discussions on innovative and improved fatigue theory/methods in will be discussed along with and engineering applications of CAE durability analysis.

Organizers - *Abolhassan Khosrovaneh, GM; John J. Bonnen, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Carlos Carvalho Engler-Pinto, Ford Motor Co.; Mingchao Guo, FCA US LLC; Zhigang Wei, Tenneco Inc.*

Time	Paper No.	Title

1:00 p.m.	***2015-01-0533***	***Comparative Assessment of Elastio-Viscoplastic Models for Thermal Stress Analysis of Automotive Powertrain Component***
		Jianghui Mao, Carlos Engler-Pinto, Xuming Su, Ford Motor Co
1:30 p.m.	***2015-01-0557***	***Effect of Temperature Cycle on Thermomechanical Fatigue Life of a High Silicon Molybdenum Ductile Cast Iron***
		Katherine Avery, Jwo Pan, Univ. of Michigan; Carlos Engler-Pinto, Ford Motor Co
2:00 p.m.	***ORAL ONLY***	***The Effect of Primary Carbide Morphology on the Thermo-mechanical Fatigue Behavior of Cast Alloys for Exhaust Manifolds***
		Hailong Zhao, USTB & Ford Motor Company; Carlos Engler-Pinto, Jacob Zindel, Larry Godlewski, Ford Motor Company; Yinhui Zhang, Qiang Feng, USTB; Mei Li, Ford Motor Company
2:30 p.m.	***ORAL ONLY***	***Development of a Thermal Fatigue Test Bench for Cylinder Head Materials***
		Wei-Jen Lai, Carlos Engler-Pinto, Ford Motor Co
3:00 p.m.	***~~2015-01-0555~~ ORAL ONLY***	***CAE Based Probabilistic Thermal-Fatigue Life Assessment and Materials Comparison***
		Zhigang Wei, Tenneco Inc.; Yunfei Qu, Dongying Jiang, Kay Ellinghaus, Markus pieszkalla, Figen Lacin, Yanping Zhang, Fulun Yang, Tenneco Inc
3:30 p.m.	***2015-01-0552***	***Simulation of Thermomechanical Fatigue of Ductile Cast Iron and Lifetime Calculation***
		Xiaoyang Liu, Guangchun Quan, Wescast Industries Inc.; Xijia Wu, Zhong Zhang, National Research Council; Clayton Sloss, Wescast Industries Inc.

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

The Multi Material Lightweight Vehicle (MMLV) Project (Part 1 of 3)

Session Code: ***M101***

Room 250 B ***Session Time:*** ***10:00 a.m.***

The MMLV track includes a DOE Vehicle Technologies Office keynote presentation, papers specific to the MMLV subsystems, and full vehicle test results including safety, corrosion, durability and NVH. The Life Cycle Analysis results associated with a 23.5% (363kg) full vehicle mass reduction, engine downsizing and lightweight materials, indicates a 21% reduction in fuel usage (6 mpg), 16% reduction in Global Warming Potential (CO2) and 16% reduction in Total Primary Energy vs 2013 Ford Fusion.

Organizers - *Jeff L. Conklin, Magna Cosma International; Timothy W. Skszek, Magna International; David Wagner, Ford Motor Co.*

Time	***Paper No.***	***Title***
10:00 a.m.	***2015-01-0405***	***DOE Focuses on Developing Materials to Improve Vehicle Efficiency***
		Carol Schutte, Department of Energy Vehicles Technology
10:30 a.m.	***2015-01-0407***	***MMLV: Project Overview***
		Timothy W. Skszek, Magna International; Matthew Zaluzec, Ford Motor Company; Jeff Conklin, Magna International; David Wagner, Ford Motor Company

11:00 a.m.	***2015-01-0408***	***BIW Design and CAE***
		Jeff Conklin, Randy Beals, Zach Brown, Magna International
11:30 a.m.	***2015-01-0409***	***MMLV: Door Design and Component Testing***
		Larry Plourde, Magna International; Michael Azzouz, Jeff Wallace, Ford Motor Co.; Mari Chellman, Magna International

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00520, and also individually. To purchase visit collections.sae.org

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 21

The Multi Material Lightweight Vehicle (MMLV) Project (Part 2 of 3)

Session Code: ***M101***

Room 250 B ***Session Time:*** ***1:00 p.m.***

The MMLV track is comprised of a keynote presentation by the DOE Vehicle Technologies Office, highlighting the significance of lightweight materials and multimaterial passenger vehicle construction, enabling engine downsizing to achieve fuel reduction and future CAFE regulations. The track includes papers specific to the MMLV subsystems, as well as full vehicle test results including crash, corrosion. NVH and Life Cycle Analysis. A 23.5% full vehicle mass reduction of 363 kg was achieved.

Organizers - *Jeff L. Conklin, Magna Cosma International; Timothy W. Skszek, Magna International; David Wagner, Ford Motor Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1236***	***MMLV: Lightweight Interior Systems Design***
		John Jaranson, Ford Motor Company; Meraj Ahmed, Eicher Engineering Solutions
1:30 p.m.	***2015-01-1237***	***MMLV: Chassis Design and Component Testing***
		Xiaoming Chen, Ford Motor Company; Jeff L. Conklin, Robert M. Carpenter, Magna International; Jeff Wallace, Cynthia Flanigan, David A. Wagner, Vijitha Kiridena, Ford Motor Company; Stephane Betrancourt, Sogefi Group; Jason Logsdon, NHK Spring Group
2:00 p.m.	***2015-01-1238***	***MMLV: Aluminum Cylinder Block with Bulkhead Inserts and Aluminum Alloy Connecting Rod***
		Cliff Maki, Kevin Byrd, Bryan McKeough, Ford Motor Co.; Robert G. Rentschler, Ford Casting Operations; Brian J. Nellenbach, Rick L. Williams, James M. Boileau, Ford Motor Co.
2:30 p.m.	***2015-01-1239***	***MMLV: Carbon Fiber Composite Engine Parts***
		Neal J. Corey, Mark Madin, Rick L. Williams, Ford Motor Co.
3:00 p.m.	***2015-01-1240***	***MMLV: Automatic Transmission Lightweighting***
		James Kearns, Soon Park, Ford Motor Co.; John Sabo, Dusan Milacic, Magna International

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Tuesday, April 21

Fuel Injection and Sprays (Part 1 of 6)

Session Code: ***PFL320*** ***9:30 a.m.***

Room 250 C ***Session Time:***

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Gerald Micklow, Florida Institute of Technology; Jacqueline O'Connor, Pennsylvania State University*

Chairpersons - *Essam El-Hannouny, Argonne National Laboratory; Wei Zeng, Sandia National Laboratories*

Time	Paper No.	Title
9:30 a.m.	***2015-01-0917***	***GDI Spray-Wall Interaction with Numerical Characterization: Wall Temperature Influence***
		Alessandro Montanaro, Michela Costa, Ugo Sorge, Luigi Allocca, Istituto Motori CNR
10:00 a.m.	***2015-01-0924***	***The Effect of Non-Ideal Vapour-Liquid Equilibrium and Non-Ideal Liquid Diffusion on Multi-Component Droplet Evaporation for Gasoline Direct Injection Engines***
		Joseph Camm, Richard Stone, Martin Davy, University of Oxford; David Richardson, Jaguar Land Rover
10:30 a.m.	***2015-01-0935***	***Prevention of Fuel Film Formation by Ultrasonic Activation of the Fuel Impingement Surface***
		Leonid Tartakovsky, Ran Amiel, Vladimir Baibikov, Mark Veinblat, Technion Israel Inst. of Technology
11:00 a.m.	***2015-01-0913***	***Impingement Behavior of Fuel Droplets on Oil Film***
		Ryo Uchida, Daisuke Tanaka, Toru Noda, Nissan Motor Co., Ltd.; Shinya Okamoto, Keiji Ozawa, Tsuneaki Ishima, Gumma University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00479, and also individually. To purchase visit collections.sae.org

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Fuel Injection and Sprays (Part 2 of 6)

Session Code: ***PFL320***

Room 250 C ***Session Time:*** ***1:00 p.m.***

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Gerald Micklow, Florida Institute of Technology; Jacqueline O'Connor, Pennsylvania State University*

Chairpersons - *Tarek M. Abdel-Salam, East Carolina University; Meghan J. Borz, Pennsylvania State Univ.*

Time	Paper No.	Title

1:00 p.m.	***2015-01-0938***	***Air Entrainment in Gaseous Fuel Jets Using Particle Image Velocimetry and High Speed Schlieren Photography in a Constant Volume Chamber*** *Prashanth Karra, Thomas Rogers, Petros Lappas, RMIT University*
1:30 p.m.	***2015-01-0936***	***Quantification of Shot-to-Shot Variation in Single Hole Diesel Injectors*** *Andrew Swantek, Alan Kastengren, Daniel Duke, Zak Tilocco, Nicolas Sovis, Christopher F. Powell, Argonne National Laboratory*
2:00 p.m.	***2015-01-0948***	***High-Speed Spray-to-Spray Collision Study on Two-Hole Impinging Jet Nozzles*** *Le (Emma) Zhao, Ahmed Abdul Moiz, Jeffrey Naber, Seong-Young Lee, Michigan Technological Univ; Sam Barros, William Atkinson, Nostrum Energy LLC*
2:30 p.m.	***2015-01-0934***	***Fuel Spray Tip Penetration Model for Double Injection Strategy*** *Pascal Tetrault, Etienne Plamondon, Matthieu Breuze, École de Technologie Supérieure; Camille Hespel, Christine Mounaïm-Rousselle, Université d'Orléans; Patrice Seers, École de Technologie Supérieure*
3:00 p.m.	***2015-01-0946***	***Measurement of Liquid and Vapor Penetration of Diesel Sprays with a Variation in Spreading Angle*** *Yongjin Jung, Korea Advanced Inst. of Science & Tech.; Julien Manin, Scott Skeen, Lyle M Pickett, Sandia National Laboratories*
3:30 p.m.	***ORAL ONLY***	***Study on spray and atomization characteristics of di-n-butyl ether/biodiesel blends in a common rail fuel injection system*** *Li Guan, Zuohua Huang, Xi'an Jiaotong Univ*

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Powertrain NVH (Part 1 of 2)

Session Code: ***PFL550***

Room 251 A ***Session Time:*** ***9:30 a.m.***

This session sets out to reflect the recent advances on the research, development and practices of Powertrain NVH treatment. The technical papers are of interest to powertrain system designers, testing specialists, NVH experts, and other individuals who evaluate and develop technologies to control powertrain NVH. The coverage includes: engine, engine subsystem and components noise and vibration; powertrain systems noise measurement and instrumentation; powertrain systems noise analysis.

Organizers - *Mikhail A. Ejakov, Ford Motor Co.; Gang Sheng Chen Sheng, Marshall University*

Time	***Paper No.***	***Title***
10:00 a.m.	***2015-01-1671***	***Fault Diagnosis of Rolling Bearing Based on Time Waveform Analysis*** *Mohamed El Morsy, Czech Technical University & Helwan University; Gabriela Achtenova, Czech Technical University*
10:30 a.m.	***2015-01-1670***	***Frequency-Dependent Hydraulic Engine Mount with Five-Parameters Fractional Derivative Model in Vehicle model*** *Can Tao; Hengjia Zhu; Peijun Xu, Ebco Inc; Yunqing Zhang, Huazhong University of Science and Tech.*

11:00 a.m.	***2015-01-1667***	***Diesel Combustion Noise Reduction by Controlling Piston Vibration***
		Yasunori Kanda, Tsunehiro Mori, Mazda Motor Corp.
11:30 a.m.	***2015-01-1668***	***Noise, Vibrations and Combustion Investigations of Preheated Jatropha Oil in a Single Cylinder Genset Engine***
		Chetankumar Patel, Nachiketa Tiwari, Avinash Kumar Agarwal, Indian Institute of Technology
	2015-01-1669	***Noise Reduction in Novel Transmission with 3D Point Contact Gear System (Written Only -- No Oral Presentation)***
		Alexei P. Popov, Department Mechanics and Machine Design; George Nerubenko, Nermar Ltd

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Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Powertrain NVH (Part 2 of 2)

Session Code: ***PFL550***

Room 251 A ***Session Time:*** ***1:00 p.m.***

This session sets out to reflect the recent advances on the research, development and practices of Powertrain NVH treatment. The technical papers are of interest to powertrain system designers, testing specialists, NVH experts, and other individuals who evaluate and develop technologies to control powertrain NVH. The coverage includes: engine, engine subsystem and components noise and vibration; powertrain systems noise measurement and instrumentation; powertrain systems noise analysis.

Organizers - *Mikhail A. Ejakov, Ford Motor Co.; Gang Sheng Chen Sheng, Marshall University*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1672***	***Turbocharger Test Bench Extension for Acoustic Measurements at Cold Environment Conditions***
		Clemens Biet, Roland Baar, TU Berlin (Technical University)
1:30 p.m.	***2015-01-1666***	***Application of Near-field Acoustic Holography to Low Temperature Engine Start-up Noise Issue Resolution***
		Lingzhi Li, Yimin Yang, Fengjun Zhao, Zhi Zhang, Hailong Cheng, Hangsheng Hou, China FAW Co., Ltd. R & D Center
2:00 p.m.	***2015-01-1673***	***Study on the Correlation between the Heat Release Rate and Vibrations from a Diesel Engine Block***
		Seunghyun Lee, Yoonwoo Lee, Sungmoon Lee, Han Ho Song, Kyoungdoug Min, Seoul National Univ; Hoimyung Choi, Advanced Institutes of Convergence Tech
2:30 p.m.	***2015-01-1664***	***A Unified CAE Framework for Assessing an IC Engine Design***
		Amardeep Singh, Anindya Deb, Amit Mohan Mensi, Ranga Srinivas Gunti, Indian Institute of Science
3:00 p.m.	***2015-01-1665***	***New Low Packaging Acoustic Solution for Air Intake Line***
		Nicolas Arnault, Adrien Baudet, Nicolas Becker, SOGEFI Group
3:30 p.m.	***2015-01-1674***	***Technique for Predicting Powertrain Self-Excited Vibration at Vehicle Start-Up***
		Takashi Hoshi, Honda R&D Co., Ltd.

	2015-01-1675	***Multi-objective Optimization of the PMS Based on Non-dominated Sorting Genetic Algorithm II (Written Only -- No Oral Presentation)***
		Yongfu Chen, Zhengfei Tang, Huazhong University of Science and Tech; Peijun Xu, Ebco Inc; Yunqing Zhang, Huazhong University of Science and Tech

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Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Basic SI Combustion Processes

Session Code: ***PFL211***

Room 251 B ***Session Time:*** ***1:00 p.m.***

This session focuses on basic SI combustion processes including studies of mixture formation, engine efficiency, flame propagation, and emissions formation. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - *Terrence Alger, Southwest Research Institute; Ronald James Herrin, General Motors - Retired; Richard S. Davis, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0741***	***Direct Measurement and Chemical Speciation of Top Ring Zone Liquid During Engine Operation***
		Derek Splitter, Oak Ridge National Laboratory; Barry Burrows, University of Alabama; Sam Lewis, Oak Ridge National Laboratory
2:00 p.m.	***2015-01-0743***	***Impact of Swirl Ratio on Combustion Performance of a Non-Pent Roof Combustion Chamber Engine***
		Michael Clifford Kocsis, Shinhyuk Joo, Thomas Briggs, Terrence Alger, Southwest Research Institute
2:30 p.m.	***2015-01-0744***	***The Impact of Cooled EGR on Peak Cylinder Pressure in a Turbocharged, Spark Ignited Engine***
		Terrence Alger, Raphael Gukelberger, Jess Gingrich, Barrett Mangold, Southwest Research Institute
3:00 p.m.	***ORAL ONLY***	***Extending the Dilution Limit of Spark-ignited Combustion Through Local Oxygen Enrichment of the Flame Kernel***
		Michael D. Kass, Oak Ridge National Laboratory; Artem Temerev, University of Tennessee; Brian C. Kaul, Charles Daw, Oak Ridge National Laboratory; Ke Nguyen, Univ of Tennessee
	2015-01-0742	***Experimental Investigation of Cyclic Variability on Combustion and Emissions of a High-Speed SI Engine (Written Only -- No Oral Presentation)***
		Apostolos Karvountzis-Kontakiotis, Leonidas Ntziachristos, Zissis Samaras, Athanasios Dimaratos, Aristotle University of Thessaloniki; Mark Peckham, Cambustion Ltd

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Load Simulation and Vehicle Performance: Tire and Terrain

Session Code: ***M208***

Room 251 C ***Session Time:*** ***9:30 a.m.***

Focusing on tire and terrain mechanics modeling for load simulations, tire model development, parameters identification, and sensitivity analyses, tire test development, road profile characterization, effective road profile development, and interactions between tire, suspension/steering/brake systems, and different terrains, spindle loads/travel variation characteristics from deterministic and rough roads, terramechanics, tire noise, rolling resistance and correlation studies.

Organizers - *Emmanuel O. Bolarinwa, Federal Highway Administration; Jianfeng Ma, Saint Louis University; Xiaobo Yang, Oshkosh Corporation*

Time	Paper No.	Title
9:30 a.m.	***2015-01-0628***	***In-Plane Flexible Ring Tire Model Development for Ride Comfort & Braking/Driving Performance Analysis under Straight-line Driving Condition*** *Bin Li, Texas Tech University; Xiaobo Yang, Oshkosh Corporation; Yunqing Zhang, Huazhong University of Science and Tech; James Yang, Texas Tech University*
10:00 a.m.	***2015-01-0627***	***FE-Based Tire Loading Estimation for Developing Strain-Based Intelligent Tire System*** *Xiaoguang Yang, Oluremi Olatunbosun, University of Birmingham; Daniel Garcia-Pozuelo, Universidad Carlos III de Madrid; Emmanuel Bolarinwa, Federal Highway Administration*
10:30 a.m.	***2015-01-0624***	***Rolling Resistance Effect of Tire Road Contact in Electric Vehicle Systems*** *Mustafa Arat, Virginia State University; Emmanuel O. Bolarinwa, Federal Highway Administration*
11:00 a.m.	***2015-01-0626***	***Development of a Wide Base Rigid Ring Tire Model for Rigid Surfaces*** *Adam C. Reid, Moustafa El-Gindy, UOIT; Fredrik Oijer, Volvo 3P; David Philipps, Volvo Group Trucks Technology*
11:30 a.m.	***2015-01-0625***	***From Road Excitation to Spindle Forces in Frequency Domain: Linearization of the Rolling Tire*** *Manfred Baecker; Axel Gallrein, Michael Roller, Fraunhofer ITWM*

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Exhaust Emission Control System Integration & Durability

Session Code: ***PFL421***

Room 251 C ***Session Time:*** ***1:00 p.m.***

This session will cover various aspects of system durability and system integration pertaining to Diesel Exhaust Emissions Control. It includes publications contributing to the understanding of durability of exhaust catalysts and particulate filters, mechanisms of their performance degradation and possible mitigation strategies, data from the field tests, analysis of the aged catalysts, laboratory and accelerated on-engine aging studies, along with relevant experimental tools and methodology.

Organizers - *Eric Corrigan, Corning Inc.; Cary Henry, Southwest Research Institute; Pradeep Prasad, Cummins Inc.*

Time	Paper No.	Title

1:00 p.m.	***2015-01-0994***	***Next Generation All in One Close-Coupled Urea-SCR System***
		Hiroyuki Kojima, Honda R&D Co Ltd; Michael Fischer, Honda R&D Europe GmbH; Hisao Haga, Naoki Ohya, Kensuke Nishi, Takuya Mito, Naoko Fukushi, Honda R&D Co Ltd
1:30 p.m.	***2015-01-0996***	***Advanced RF Particulate Filter Sensing and Controls for Efficient Aftertreatment Management and Reduced Fuel Consumption***
		Harsha Nanjundaswamy, Vinay Nagaraju, Yue Wu, Erik Koehler, FEV Inc; Alexander Sappok, Paul Ragaller, Leslie Bromberg, Filter Sensing Technologies, Inc.
2:00 p.m.	***2015-01-0997***	***Heavy Duty Emission Control System Analysis and Optimization for Future Demands***
		Jonas Jansson, Volvo Group Trucks Technology; Åsa Johansson, Hanna Sjovall, Mikael Larsson, Gudmund Smedler, Colin Newman, Jason Pless, Johnson Matthey ECT
2:30 p.m.	***2015-01-0998***	***Robust Emission Management Strategy to Meet Real-World Emission Requirements for HD Diesel Engines***
		Paul Mentink, Rob van den Nieuwenhof, Frank Kupper, Frank Willems, Dennis Kooijman, TNO Automotive

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Dual Fuel Combustion Processes

Session Code: ***PFL261***

Room 252 A ***Session Time:*** ***1:00 p.m.***

Performances of various dual fuel combinations will be discussed for both SI and CI engine types.

Organizers - *Scott Curran, Oak Ridge National Laboratory; Andrew Ickes, Argonne National Laboratory; Sage Kokjohn, Univ. of Wisconsin Madison; Benjamin Lawler, Stony Brook Univ.; William F. Northrop, Univ. of Minnesota-Twin Cities; Mansour Masoudi, Emissol LLC; Siddiq Khan, ACEEE; Behnam Bahrami, Cummins Inc.; Rachel L. Muncrief, The International Council on Clean Transportation; Krishna Kamasamudram, Cummins Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0857***	***Investigation of Dual Fuel PCCI (PFI of n-Butanol and DI-ULSD) Compared with DI of Binary Mixtures of the Same Fuels in an Omnivorous Diesel Engine***
		Valentin Soloiu, Martin Muinos, Spencer Harp, Georgia Southern University
2:00 p.m.	***2015-01-0845***	***Efficiency and Emission Trade-Off in Diesel-Ethanol Low Temperature Combustion Cycles***
		Prasad Divekar, Zhenyi Yang, David Ting, Xiang Chen, Ming Zheng, Jimi Tjong, Univ of Windsor
2:30 p.m.	***2015-01-0848***	***Experimental Characterization of an Ethanol DI - Gasoline PFI and Gasoline DI - Gasoline PFI Dual Fuel Small Displacement SI Engine***
		Silvana Di Iorio, Paolo Sementa, Bianca Maria Vaglieco, Istituto Motori CNR

3:00 p.m.	***2015-01-0847***	***An Experimental Study on the Effects of Split Injection in Stoichiometric Dual-Fuel Compression Ignition (SDCI) Combustion***
		Xiao Ma; Haoye Liu, Yanfei Li, Zhi Wang, Tsinghua University; Hongming Xu, Tsinghua University, Univ. Birmingham; Jian-Xin Wang, Tsinghua University
3:30 p.m.	***2015-01-1085***	***Emissions Characterization from Different Technology Heavy-Duty Engines Retrofitted for CNG/Diesel Dual-Fuel Operation***
		Marc C. Besch, Joshua Israel, Arvind Thiruvengadam, Hemanth Kappanna, Daniel Carder, West Virginia University
	2015-01-0853	***A Comparative Study on the Effect of Alcohol Induction and Addition on Performance Behavior of a CI Engine Fueled with ¿Madhuca Indica¿ as Fuel (Written Only -- No Oral Presentation)***
		Senthilkumar Masimalai, Arulselvan Subramanian, M.I.T., Anna University

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity; Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Combustion in Compression-Ignition Engines: Fuel/Additive Effects (Part 1 of 2)

Session Code: ***PFL223***

Room 252 B ***Session Time:*** ***9:30 a.m.***

Papers focusing on fuel and fuel additive effects on classical diesel engine combustion with relatively short ignition delay, including papers dealing with low CR and high EGR calibrations. Subject matter may include both experimental and simulation results focused on oxygenated or bio-derived fuels, alternative petroleum formulations, fuel blends, or any other fuel-related factors affecting engine performance and emissions.

Organizers - *Robert M. McDavid, Caterpillar Inc.; Raul Payri, Universidad Politecnica de Valencia; Dale R. Tree, Brigham Young Univ.; Ming Zheng, Univ. of Windsor; Song-Charng Kong; Yongli Qi, Caterpillar Inc.; Rishikesh Venugopal, Achates Power Inc.; John F. Wright, Cummins Inc.; Mark Musculus, Sandia National Laboratories*

Chairpersons - *Song-Charng Kong, Ryan Ogren, Iowa State University*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0803***	***Combustion and Exhaust Gas Speciation Analysis of Diesel and Butanol Post Injection***
		Marko Jefti¿, Jimi Tjong, Graham Reader, Meiping Wang, Ming Zheng, University of Windsor
10:00 a.m.	***2015-01-0808***	***Impact of Fuelling Techniques on Neat n-Butanol Combustion and Emissions in a Compression Ignition Engine***
		Tadanori Yanai, Shouvik Dev, Xiaoye Han, Ming Zheng, Jimi Tjong, University of Windsor
10:30 a.m.	***2015-01-0806***	***Performance of an IDI Engine Fueled with Fatty Acid Methyl Esters Formulated from Cotton Seeds Oils***
		Valentin Soloiu, Spencer Harp, Channing Watson, Martin Muinos, Sherwin Davoud, Gustavo Molina, Brian Koehler, Julia Heimberger, Georgia Southern University; Marcis Jansons, Wayne State University; Christopher Butts, USDA, ARS, National Peanut Research Lab.

11:00 a.m.	***2015-01-0809***	***Comprehensive Assessment of Soot Particles from Waste Cooking Oil Biodiesel and Diesel in a Compression Ignition Engine*** *Joonsik Hwang, Yongjin Jung, Choongsik Bae, Korea Advanced Inst of Science & Tech*

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Combustion in Compression-Ignition Engines: Fuel/Additive Effects (Part 2 of 2)

Session Code: ***PFL223***

Room 252 B ***Session Time:*** ***1:00 p.m.***

Papers focusing on fuel and fuel additive effects on classical diesel engine combustion with relatively short ignition delay, including papers dealing with low CR and high EGR calibrations. Subject matter may include both experimental and simulation results focused on oxygenated or bio-derived fuels, alternative petroleum formulations, fuel blends, or any other fuel-related factors affecting engine performance and emissions.

Organizers - *Robert M. McDavid, Caterpillar Inc.; Raul Payri, Universidad Politecnica de Valencia; Dale R. Tree, Brigham Young Univ.; Ming Zheng, Univ. of Windsor; Song-Charng Kong; Yongli Qi, Caterpillar Inc.; Rishikesh Venugopal, Achates Power Inc.; John F. Wright, Cummins Inc.; Mark Musculus, Sandia National Laboratories*

Chairpersons - *Caroline Genzale, Georgia Institute of Technology; Feng Tao, Cummins Inc*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0810***	***Performance, Combustion and Emission Characteristics of Polyoxymethylene Dimethyl Ethers (PODE₃₋₄)/ Wide Distillation Fuel (WDF) Blends in Premixed Low Temperature Combustion (LTC)*** *Hao-ye Liu, Zhi Wang, Jian-Xin Wang, Tsinghua Univ*
1:30 p.m.	***2015-01-0805***	***Ignition Quality Tester (IQT¿) Precision Improvements from Using the Totally Automated Laboratory Model (TALM) Technology: Technology Update, Part-2: Mini Inter-Laboratory Study Using the IQT¿-TALM*** *Omar Ramadan, Gary Webster, Luc Menard, Aaron Wilcox, Charlie Webster, Jim Larocque, Advanced Engine Technology, Ltd.*
2:00 p.m.	***2015-01-0802***	***Measuring and Comparing the Ignition Delay Times of Diesel, Ethanol Additive and Biodiesel Using a Shock Tube*** *Claudio Marcio Santana, Jose Eduardo Mautone Barros, Matheus Guilherme França Carvalho, Helder Alves de Almeida, Jr., UFMG*
2:30 p.m.	***2015-01-0807***	***Development of Chemical Kinetic Mechanism for Dimethyl Ether (DME) with Comprehensive Polycyclic Aromatic Hydrocarbon (PAH) and NO_x Chemistry*** *Khanh Cung, Jaclyn Johnson, Seong-Young Lee, Michigan Technological Univ.*
	2015-01-0804	***Performance of Naphtha in Different Compression Ignition Combustion Modes under Various EGR Rates (Written Only -- No Oral Presentation)*** *Jinli Wang, Fuyuan Yang, Minggao Ouyang, Tsinghua Univ*

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Fuel and Additive Effects on Engine Systems (Part 1 of 4)

Session Code: ***PFL310***

Room 258 ***Session Time:*** ***9:30 a.m.***

This session focuses on the important topic of deposit formation and control, with three presentations considering deposits in diesel fuel injection equipment.

Organizers - *Mebougna Drabo, Alabama A & M University; Barbara Goodrich, John Deere Product Engineering Center; Paul Richards; Corey Trobaugh, Cummins Inc.*

Chairpersons - *Paul Richards; Corey Trobaugh, Cummins Inc.*

Time	Paper No.	Title
9:30 a.m.	***2015-01-0892***	***Linking the Physical Manifestation and Performance Effects of Injector Nozzle Deposits in Modern Diesel Engines*** *Alastair Smith, Rod Williams, Shell Global Solutions*
10:00 a.m.	***2015-01-0896***	***A Low Ash and Highly Stable Formulated Fuel Borne Catalyst with Injection System Deposit Prevention Properties*** *Antoine Lacarriere, Thierry Seguelong, Virginie Harle, Solvay Rare Earth Systems; Clara Fabre, Lubrizol Limited*
10:30 a.m.	***ORAL ONLY***	***Engine Testing of Popular Corrosion Inhibitors at Common Treat Rates*** *Simon C. Mulqueen, Innospec, Ltd.; Richard Chapman, Innospec Fuel Specialties*

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Fuel and Additive Effects on Engine Systems (Part 2 of 4)

Session Code: ***PFL310***

Room 258 ***Session Time:*** ***1:00 p.m.***

This session focuses on the diesel fuels made from or suplemented by oxygenated compounds.

Organizers - *Mebougna Drabo, Alabama A & M University; Barbara Goodrich, John Deere Product Engineering Center; Paul Richards; Corey Trobaugh, Cummins Inc.*

Chairpersons - *Corey Trobaugh, Cummins Inc.; Mebougna Drabo, Alabama A & M University*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0901***	***Start-up and Steady-State Performance of a New Renewable Alcohol-To-Jet (ATJ) Fuel in Multiple Diesel Engines*** *Terrence Dickerson, Andrew McDaniel, Sherry Williams, US Navy; Dianne Luning-Prak, Len Hamilton, Eric Bermudez, Jim Cowart, US Naval Academy*
1:30 p.m.	***2015-01-0910***	***Performance and Emissions of Lignin and Cellulose Based Oxygenated Fuels in a Compression-Ignition Engine*** *Lei Zhou, Eindhoven University Of Technology; Benedikt Heuser, VKA, RWTH Aachen; Michael Boot, Eindhoven University Of Technology; Florian Kremer, Stefan Pischinger, VKA, RWTH Aachen*
2:00 p.m.	***2015-01-0899***	***Five Novel Bio Based Diesels Tested in a Light-Duty Road Going Engine*** *Jacob Benjamin Jeppesen, Danish Technological Institute; Jean-Francois Devaux, Jean-Luc Dubois, Arkema*

2:30 p.m.	***2015-01-0905***	***Emissions from a HGV Using Used Cooking Oil as a Fuel under Real World Driving Conditions***
		Seyed Hadavi, Buland Dizayi, Hu Li, Alison Tomlin, University of Leeds
3:00 p.m.	***2015-01-0889***	***Unregulated and Regulated Emissions from Biodiesel Fuelled CRDI SUV Engine***
		Jai Gopal Gupta, Avinash Kumar Agarwal, Indian Institute of Technology
3:30 p.m.	***2015-01-0903***	***Experimental Investigation of n-Butanol Diesel Fuel Blends on a Passenger Car***
		Neeraj Mittal, Pradeep Patanwal, M Sithananthan, M Subramanian, Ajay Kumar Sehgal, R Suresh, B P Das, Indian Oil Corporation Ltd.

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Sensors and Actuators

Session Code: ***AE302***

Room 259 ***Session Time:*** ***9:30 a.m.***

Modern automotive customers need safer vehicles with little or no impact to the environment. The purpose of this session is to present the latest research and development on novel sensors, actuators, and circuits that are critical to deliver the function of today's complex automotive systems.

Organizers - *Lyle Stanley Bryan, TE Connectivity; ChenFang Chang, General Motors Co.; Sanjeev M. Naik, GM; Sai S V Rajagopalan, General Motors Co.; Abraham Shocket, TE Connectivity*

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***Technical Keynote: Emissions Standards: A Key Driver for New Sensors Technologies in Industrial Applications***
		Jean Milpied, TE Connectivity
10:30 a.m.	***2015-01-0234***	***System Design and Verification for a Safety Related Integrated Sensor***
		Vincenzo Sacco, Mathieu Poezart, Gael F. Close, Melexis Technologies SA
11:00 a.m.	***2015-01-0233***	***Thin-Film Air Flow Sensors for Automotive using the MEMS Technologies***
		Takamoto Furuichi, Takashige Nagao, Hisanori Yokura, Ryuichirou Abe, Shigemitsu Fukatsu, DENSO Corp.
11:30 a.m.	***ORAL ONLY***	***Digital Sensor interfaces ¿ requirements and opportunities for application specific sensor nodes in the future***
		Marco Wolf, TE Connectivity
12:00 p.m.	***2015-01-0235***	***Performance Improvement of Automotive Acoustic Signal Devices using Electric PWM Control***
		Shiv Shankar Prasad, Hella India Automotive Pvt Ltd; Jahangir Mansoori, Infineon Technologies India Pvt Ltd; Jin Seo Park, Infineon Technologies Asia Pacific Pte

Planned by Electronics in Powertrain Committee / Automobile Electronics Activity

Tuesday, April 21

Combustion Control and Optimization (Part 1 of 3)

Session Code: ***PFL280***

Room 259 ***Session Time:*** ***1:00 p.m.***

This session covers engine combustion control and optimization techniques. Topics include engine combustion diagnostics as specialized for control, control methodologies and algorithms, optimization, related combustion sensing, etc.

Organizers - *Robert Gary Prucka, Clemson Univ.; Michael Prucka, John R. Bucknell, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0869***	***Determine Air-Fuel Ratio Imbalance Cylinder Identification with an Oxygen Sensor*** *Ningsheng Qiao, Chandrasekar Krishnamurthy, Nicholas Moore, Continental Automotive Systems US Inc*
1:30 p.m.	***2015-01-0874***	***In-Cylinder Oxygen Mass Fraction Estimation Method for Minimizing Cylinder-to-Cylinder Variations*** *Mateos Kassa, Carrie Hall, Illinois Institute of Technology; Andrew Ickes, Thomas Wallner, Argonne National Laboratory*
2:00 p.m.	***2015-01-0868***	***Model-Based Control-Oriented Combustion Phasing Feedback for Fast CA50 Estimation*** *Qilun Zhu, Clemson Univ.; Shu Wang, ICAR-Clemson Univ.; Robert Prucka, Clemson Univ.; Michael Prucka, Hussein Dourra, FCA US LLC*
2:30 p.m.	***2015-01-0881***	***Cycle Resolved Combustion and Pre-Ignition Diagnostic Employing Ion Current in a PFI Boosted SI Engine*** *Sunyu Tong, Haimiao Li, Zhaohui Yang, Jun Deng, Zongjie Hu, Liguang Li, Tongji Univ.*
3:00 p.m.	***2015-01-0873***	***Effects of Dual Loop EGR on Performance and Emissions of a Diesel Engine*** *Bin Mao, Mingfa Yao, Zunqing Zheng, Yongzhi Li, Haifeng Liu, Bowen Yan, Tianjin Univ*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00483 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Young Professionals Panel Discussion & Luncheon: Working Together: Three Generations, One Workplace

Session Code: ***YP100***

Room 260 Portside Ballroom ***Session Time:*** ***11:30 a.m.***

Generational gaps are part of every workforce. From Baby Boomers to Generation X to the Millennials, each brings a unique set of attributes and attitudes to the office. The effects of these divergent generations can polarize the workplace; but should it? This panel will examine the perceptions of each generation, with a focus on the Millennial generation, and what it takes to engage collaboration across these very distinct sets of employees.

Moderators - *Dustin Walsh, Crain's Detroit Business*

Panelists - *Marc Dinopoulos, Senior Manager, Talent Management Group, Honda R & D Americas*

Inc.; Justin Goike, Continental Automotive Systems US Inc.; Matthew Heverly, NASA JPL; Carla Bailo, Ohio State Univ; Priscilla R. Trujillo, Business Development Product Engineer, Delphi Automotive Electrical/Electronic Architecture Division;

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the panelists***

Dustin Walsh, Crain's Detroit Business; Marc Dinopoulos, Honda R & D Americas Inc.; Carla Bailo, Ohio State Univ.; Priscilla R. Trujillo, Delphi Connection Systems; Matthew Heverly, NASA JPL; J. Ofori Agboka, General Motors Co.; Justin Goike, Continental Automotive Systems US Inc.

Tuesday, April 21

SAE/MIT Innovation Competition Finals: Global Automotive Innovation Challenge

Session Code: ***IDM800***

Room 260 Portside Ballroom ***Session Time:*** ***1:15 p.m.***

Hear finalists compete for a chance to win more than $200,000 in business acceleration services at the 6th Annual Innovation Accelerator Competition. The collaborative event between SAE International, NextEnergy and MIT Enterprise Forum of the Great Lakes (MITEF) seeks to find innovative companies with promising ideas to solve problems within todays automotive industry. Judges will be senior executives from the automotive industry, with winners presenting on Thursday of SAE World Congress.

Organizers - *Dennis Nash, MIT Enterprise Forum Great Lakes Region; David Stout, David B Stout Associates LLC*

Tuesday, April 21

Chat with the Experts: ADAS Sensor Redundancy for Automated Driving

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

Various types of ADAS sensor technologies have been developed to enable automated driving scenarios. These driving scenarios can be classified within the SAE driving automation levels 0 through 5. The discussion will encompass the correlation of the sensor redundancy level with the ascending driving automation levels.

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more abou the expert***

Amine Taleb-Bendiab, Valeo North America Inc.

Tuesday, April 21

Chat with the Experts: Connected Vehicle

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

The ¿connected vehicle¿ is a new frontier both for the industry and for the customer. Anything from insurance data to vehicle health reports to internet connectivity, the challenges are many. The balance between connecting to and retrieving data from a vehicle, and the privacy of the customer is very delicate. The methodologies for retrieving that data and the expectations regarding the data are also currently

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the expert***

Robert Gruszczynski, Volkswagen of America

Tuesday, April 21

Chat with the Experts: Considerations for Effective Aluminum Extrusion Design

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

Product designers and engineers seeking to incorporate aluminum extrusions as part of their lightweighting initiatives should benefit from this discussion that will link the physics and chemistry of the extrusion process to the realities of successful volume part production. A better understanding of extrusion alloys and the behavior of the metal through the extrusion process will help with alloy selection, the development of extrusion geometry and optimization of tolerances.

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the expert***

Henry Bertolini, Pennex Aluminum Company LLC

Tuesday, April 21

Chat with the Experts: New Trends in Automotive Software Architectural Design for the Challenges of Innovative Mobility Technologies

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

The mobility innovative technologies in the automotive field are continuously being developed for more convenient driving assistance and achieving higher safety standards. Therefore, software architectural designs have to handle many new challenges and complexities introduced by innovative technologies like: Advanced Driver Assistance, Active Safety Systems, Autonomous Driving and even Connected Vehicles. Interactive distributed automotive real time systems are typically used to implement such complex systems, which have many real-time constraints distributed in several Electronic Control Units (ECUs) and communication bus(es). This chat will discuss the new trends in the software architectural design to overcome the stated challenges. The main focus will be on the real-time software architectural design, which is the most impacted part in the software architecture with the new technologies. The state of the art solutions in software real-time architectural design will be discussed like the AUTOSAR timing extension, Modeling, Prediction, Simulation and Verification of Real-time Architecture.

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the expert***

Mostafa Anwar Taie, ISAQB

Tuesday, April 21

Chat with the Experts - Diesel Aftertreatment

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

An overview of the diesel emission control technologies for the next generation of engines (5 ¿ 10 years from start of production) will be presented. The discussion will cover the direction of the industry and regulatory trends and the impact of these on the emission control technologies that will be required.

Organizers - *Praveen Chavannavar, NGK Automotive Ceramics USA Inc.*

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the experts***

Claus Dieter Vogt, NGK Europe GmbH; Thomas Harris, John Deere Product Engineering Center

Tuesday, April 21

Design Optimization - Methods and Applications (Part 1 of 4)

Session Code: ***SS103***

Room 312 A ***Session Time: 9:30 a.m.***

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on application of different optimization methods in component and vehicle design. Methods include deterministic and stochastic optimization techniques. Applications range from noise pressure optimization and vehicle dynamic response optimization to sub-system topology and shape and full vehicle gage and topology optimization.

Organizers - *Mallikarjuna Bennur, General Motors Co.; James De Clerck, Michigan Technological Univ.; Chandan Mozumder, General Motors; Vesna Savic, General Motors Co.*

Chairpersons - *Vesna Savic, Mallikarjuna Bennur, General Motors Co.; Chandan Mozumder, General Motors*

Time	Paper No.	Title
9:30 a.m.	***ORAL ONLY***	***Technical Keynote: Optimization in Nonlinear Dynamics with examples in Vehicle Design and Manufacturing*** *Nielen Stander, Anirban Basudhar, Livermore Software Technology Inc.*
10:30 a.m.	***2015-01-1355***	***Application of Hybrid Optimization Algorithm to Automotive Design Problems and Performance Comparison with Other Standard Optimizers*** *Adarsh Viji Elango, Apurva Gokhale, Sumeet Parashar, ESTECO North America*
11:00 a.m.	***2015-01-1358***	***Shape Optimization by an Adjoint Solver based on a near-wall Turbulence Model*** *Matthias Rainer, AVL LIST GmbH; Gundolf Haase, Karl-Franzens-University Graz; Branislav Basara, Guenter Offner, AVL LIST GmbH*

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Design Optimization - Methods and Applications (Part 2 of 4)

Session Code: ***SS103***

Room 312 A ***Session Time: 1:00 p.m.***

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on application of different optimization methods in component and vehicle design. Methods include deterministic and stochastic optimization techniques. Applications range from noise pressure optimization and vehicle dynamic response optimization to sub-system topology and shape and full vehicle gage and topology optimization.

Organizers - *Mallikarjuna Bennur, General Motors Co.; James De Clerck, Michigan Technological Univ.; Chandan Mozumder, General Motors; Vesna Savic, General Motors Co.*

Chairpersons - *Mallikarjuna Bennur, General Motors Co.; Chandan Mozumder, General Motors; Vesna Savic, General Motors Co.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1365***	***Development of Smart Design Process for Light Weight Body in White*** *Shohei Matsuyama, Hiroyuki Yamashita, Honda R&D Co., Ltd.*
1:30 p.m.	***2015-01-1352***	***Body in white mass reduction through Optimization*** *Ashish Kumar Sahu, Abhijit Londhe, Suhas Kangde, Vishal Shitole, Mahindra & Mahindra, Ltd.*

2:00 p.m.	***2015-01-1367***	***The Lightweight of Auto Body Based on Topology Optimization and Sensitivity Analysis***
		Guan Zhou, Guangyao Li, Aiguo Cheng, Guochun Wang, ADMVB, Hunan University; Hongmin Zhang, AISN Auto R&D Co., Ltd.; Yi Liao, SAIC GM Wuling Automobile Co., Ltd.
2:30 p.m.	***2015-01-1357***	***Creating a Two Sided Customer Loss Function***
		James A. Crowley, General Motors
3:00 p.m.	***2015-01-1359***	***Optimal Energy Management of Hybrid Fuel Cell Electric Vehicles***
		Sami H. Karaki, Rabih Jabr, Riad Chedid, American University of Beirut; Ferdinand Panik, University of Applied Sciences Esslingen

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Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Reliability and Robust Design in Automotive Engineering: Reliability-Based Design Optimization and Robustness (Part 1 of 2)

Session Code: ***IDM102***

Room 312 B ***Session Time:*** ***9:30 a.m.***

This session will address theoretical developments and automotive applications in RBDO and Robust Design. Topics include: computational algorithms for efficient estimation of reliability, Monte Carlo simulation, Bayesian reliability, Dempster-Shafer Evidence Theory, and Multi-Disciplinary Optimization, among others.

Organizers - *Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0420***	***Bootstrapping and Separable Monte Carlo Simulation Methods Tailored for Efficient Assessment of Probability of Failure of Structural Systems***
		Musarrat Jehan, Efstratios Nikolaidis, University of Toledo
10:00 a.m.	***2015-01-0418***	***Decision-Based Universal Design - Using Copulas to Model Disability***
		Vijitashwa Pandey, Megan Conrad, Oakland Univ.
10:30 a.m.	***2015-01-0424***	***Combined Approximation for Efficient Reliability Analysis of Linear Dynamic Systems***
		Mahdi Norouzi, Frostburg State University; Efstratios Nikolaidis, University of Toledo; Zachary Crawford, Frostburg State University
11:00 a.m.	***2015-01-0425***	***An Efficient Method to Calculate the Failure Rate of Dynamic Systems with Random Parameters Using the Total Probability Theorem***
		Monica Majcher, Zissimos P. Mourelatos, Vasileios Geroulas, Igor Baseski, Oakland University; Amandeep Singh, US Army TARDEC
	2015-01-0422	***A Modified Particle Swarm Optimization Algorithm with Design of Experiment Technique and a Perturbation Process (Written Only -- No Oral Presentation)***
		Zhao Liu, Ping Zhu, Shanghai Jiao Tong Univ.; Wei Chen, Northwestern Univ; Ren-Jye Yang, Ford Motor Co

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Tuesday, April 21

Reliability and Robust Design in Automotive Engineering: Reliability-Based Design Optimization and Robustness (Part 2 of 2)

Session Code: ***IDM102***

Room 312 B ***Session Time:*** ***1:00 p.m.***

This session will address theoretical developments and automotive applications in RBDO and Robust Design. Topics include: computational algorithms for efficient estimation of reliability, Monte Carlo simulation, Bayesian reliability, Dempster-Shafer Evidence Theory, and Multi-Disciplinary Optimization, among others.

Organizers - *Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo; Mohammad Hijawi, Alaa El-Sharkawy, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0423***	***An Enhanced Input Uncertainty Representation Method for Response Surface Models in Automotive Weight Reduction Applications*** *Bo Liu, Changan Auto & Vehicle Mfg Tech; Junqi Yang, Zhenfei Zhan, Ling Zheng, Chongqing University; Bo Lu, Ke Wang, Zhentao Zhu, Zhongcai Qiu, Changan Auto & Vehicle Mfg Tech*
1:30 p.m.	***ORAL ONLY***	***An Efficient First-Order Reliability Method for Time-Dependent Problems Using a Composite Limit State*** *Monica Majcher, Zissimos Mourelatos, Igor Baseski, Oakland University*
2:00 p.m.	~~***2015-01-0419***~~ ***ORAL ONLY***	***A Decision Theoretic Framework for Product Commonality and Flexibility*** *Vijitashwa Pandey, Oakland University*
2:30 p.m.	***2015-01-0421***	***Analysis of Field-Stressed Power Inverter Modules from Electrified Vehicles*** *Hye Seong Heo, Infineon Technologies Korea Co., Ltd.; Christoph Pannemann, Infineon Technologies AG; Yun Kyu Choi, Achim Strass, Infineon Technologies Korea Co., Ltd.*
3:00 p.m.	***ORAL ONLY***	***Improving Complex System Design Reliability and Robustness*** *Michael Jensen, Mentor Graphics Corp.*
3:30 p.m.	***2015-01-0456***	***Extending the Role of Interface Analysis within a Systems Engineering Approach to the Design of Robust and Reliable Automotive Product*** *Ed Henshall, IsyD Consulting; Brian Rutter, David Souch, Ford Motor Co of Europe Inc*
	2015-01-0458	***Common Design of Jet Pump for Gasoline and Diesel Based Vehicles (Written Only -- No Oral Presentation)*** *Subrata Sarkar, Eaton; Sudarshan Kumar, IIT Bombay; Atul Singhal, Eaton; Surbhi Kohli, Eaton Aerospace; Kailash Golecha, Engineering & Design; Jubin George, Eaton*

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Tuesday, April 21

Integrated Computational Materials Engineering (ICME)

Session Code: ***IDM109***

Room 313 A ***Session Time:*** ***1:00 p.m.***

ICME is an emerging discipline to address foundational engineering problems with the integration of predictive tools and methods that model and simulate materials & product design, manufacturing processes, local materials properties and component performance. This session will address new developments and practical applications of ICME for metallic, polymeric and composite material systems in automotive industry.

Organizers - *Mei Li, Ford Motor Co.; Alan Luo, Ohio State University; Qigui Wang, General Motors Co.; Z. Cedric Xia, Ford Motor Co.; Hongyi Xu*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Application of ICME in Virtual Casting Component Development*** *Dale A. Gerard, Qigui Wang, Peggy E. Jones, Yucong Wang, General Motors Company*
1:30 p.m.	***2015-01-0459***	***Integrated Computational Materials Engineering (ICME) for Third Generation Advanced High-Strength Steel Development*** *Vesna Savic, Louis Hector, Hesham Ezzat, Anil Sachdev, James Quinn, General Motors Co.; Ronald Krupitzer, Steel Market Development Institute; Xin Sun, Pacific Northwest National Labs*
3:00 p.m.	***ORAL ONLY***	***Predicting Ductility of Thin Walled High Pressure Die Casting Magnesium with an ICME Approach*** *Xin Sun, Kyoo Sil Choi, Erin Barker, Pacific Northwest National Labs; Mei Li, Joy Adair Forsmark, Ford Motor Co.; John E. Allison, Erin Deda, Univ. of Michigan*

Tuesday, April 21

Smart-grid Technologies (Part 1 of 2)

Session Code: ***AE505***

Room 313 B ***Session Time:*** ***9:30 a.m.***

This session will provide real world updates on consumer behavior who are part of the DOE awarded EV Project as well as other research using models and consumer data to analyze the affect on the grid during PEV charging. Also presented will be strategies for PEV charging and synergies for integrating PEV's into the grid by way of existing infrastructure.

Organizers - *Scott Craig, Infineon Technologies North America Corp.; Matthew Nielsen, General Electric Co.*

Time	Paper No.	Title
9:30 a.m.	***ORAL ONLY***	***Real-world Charging Behavior of Battery Electric Vehicle Drivers with Access to Workplace Charging*** *John Smart, Idaho National Laboratory; Shawn Salisbury, Idaho National Lab*

10:00 a.m.	***2015-01-0301***	***Experimental Demonstration of Smart Charging and Demand Response for Plug-in Electric Vehicles Based on SAE Standards***
		Takayuki Shimizu, Toyota InfoTechnology Center USA; Akihisa Yokoyama, Toyota Motor Corporation; Kazuma Sato, Toyota InfoTechnology Center USA; Kunihiko Kumita, Toyota Motor Corporation
10:30 a.m.	***2015-01-0302***	***Optimal Charging of Electric Vehicles using a Stochastic Dynamic Programming Model and Price Prediction***
		Sagar Mody, Thomas Steffen, Loughborough University
11:00 a.m.	***2015-01-0306***	***Deployment of Vehicle-to-Grid Technology and Related Issues***
		Satoru Shinzaki, Hakaru Sadano, Yutaka Maruyama, Honda R&D Co., Ltd.; Willett Kempton, University of Delaware

Planned by Electronics in Transportation / Automobile Electronics Activity

Tuesday, April 21

Smart-grid Technologies (Part 2 of 2)

Session Code: ***AE505***

Room 313 B ***Session Time:*** ***1:00 p.m.***

This session will provide real world updates on consumer behavior who are part of the DOE awarded EV Project as well as other research using models and consumer data to analyze the affect on the grid during PEV charging. Also presented will be strategies for PEV charging and synergies for integrating PEV's into the grid by way of existing infrastructure.

Organizers - *Scott Craig, Infineon Technologies North America Corp.; Matthew Nielsen, General Electric Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***ORAL ONLY***	***Harmonic Generation from Plug-In Electric Vehicles and Associated Impact to the Power Distribution System***
		Matthew Nielsen, General Electric Co.
1:30 p.m.	***2015-01-0300***	***A Comparative Analysis of PEV Charging Impacts -An International Perspective***
		Sven Bohn, Michael Agsten, Fraunhofer IOSB-AST; Anamika Dubey, Surya Santoso, University of Texas
2:00 p.m.	***2015-01-0304***	***Quantifying the Flexibility for Electric Vehicles to Offer Demand Response to Reduce Grid Impacts without Compromising Individual Driver Mobility Needs***
		Samveg Saxena, Jason MacDonald, Doug Black, Sila Kiliccote, Lawrence Berkeley National Laboratory
2:30 p.m.	***2015-01-0305***	***MC-based Risk Analysis on the Capacity of Distribution Grids to Charge PEVs on 3-ph 0.4-kV Distribution Grids Considering Time and Location Uncertainties***
		Sven Bohn, Robert Feustel, Michael Agsten, Fraunhofer IOSB-AST

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Planned by Electronics in Transportation / Automobile Electronics Activity

Tuesday, April 21

Trends in Development of Accelerated Reliability and Durability Testing Technology

Session Code: ***IDM300***

Room 313 B ***Session Time:*** ***3:30 p.m.***

This session presents the theory, practices and technology used in development of trends in reliability and durability testing (ART/ADT) technology and accurate physical simulation for successful performance predicting. The purpose is covering a new ideas and unique approaches to simulation interaction of full field inputs, safety, and human factors, improvement the ART/ADT steps-components, implementation that leads to development dependability, reduce recalls, life cycle cost, time, etc.

Organizers - *Bryan Dodson, SKF; Efstratios Nikolaidis, University Of Toledo; Lev Klyatis, Sohar Inc.*

Time	Paper No.	Title
3:30 p.m.	***2015-01-0487***	***Introduction to Successful Predicting of Product Performance (Reliability, Durability, Safety, Quality, Recalls, Profit, Life Cycle Cost, and Others)*** *Lev Klyatis, Sohar Inc.*

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Tuesday, April 21

Chat with the Experts: Successful Predicting of Product Performance Interacted Components (reliability, durability, safety, quality, recalls, profit, life cycle cost, and other)

Session Code: ***CHAT***

Room 313 B Chat with the Experts ***Session Time:*** ***4:00 p.m.***

Professionals need predicting in their professional activity. It relates to professionals who involve in research, design, manufacturing, marketing, finance, selling, management, and others, because they need to know how will be results of their current work in real world for a long time.
It is known that predicting is useful when it is successful. This is one of the basic problems on engineering and impact to the producer and user economic situation. Many industrial companies, including automotive, aerospace, commercial industries, experienced an increase in global recalls. For example, Toyota, Honda, and other automakers have each millions annual recalls during last years, and cannot stop this process.
The basic specific of this Chat approach that it based on consideration in one complex integration methodology and source for successful implementation of this methodology, as well as integration design and manufacturing.
Considering predicting consists of two basic components:
- Methodology of predicting, which reflects common principles of changing parameters of the product¿s performance components during the service life in the real world;
- Obtaining accurate initial information how to change the above parameters for specific models of the product during its service life (or warranty period)
This Chat covers new ideas and technologies for the above predicting. Especially important consideration the field conditions as interacted real world full input influences, safety problems, and human factors. If one ignores these interactions, then one cannot accurately represent the real world situation, and cannot prevent causes of recalls, lower profit, and other engineering and economic problems for both producers and consumers.
Most current publications concentrate on the theoretical aspects of reliability predicting methodology and data analysis, but not consider the product performance predicting, during integration design and manufacturing, as complex of interacted components of reliability, safety, durability, recalls, profit, service life, and others.
This Chat will discuss how one could eliminate the above problem.

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the experts*** *Lev Klyatis, Sohar Inc.; Bryan Dodson, SKF*

Tuesday, April 21

Vehicle Aerodynamics (Part 1 of 7): Experimental Technologies & Correlation (Part 1 of 2)

Session Code: ***SS800***

Room 321 ***Session Time:*** ***9:30 a.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Jeffrey Bordner, General Motors; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Navistar; Mark E. Gleason, retired, FCA US LLC; Kevin Golsch, Exa Corporation; Arturo Guzman, FCA US LLC; Taeyoung Han, Bahram Khalighi, General Motors Co.; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; James T. McKillen, Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; Mesbah Uddin, UNC Charlotte Motorsports Engineering; H. Robert (Bob) Welge, Robert's Engineering Development; Edward G. Duell, Jacobs Technology Inc.; Adrian P. Gaylard, Jaguar Land Rover; Kurt Zielinski, Honda R & D Americas Inc.*

Time	Paper No.	Title
9:30 a.m.	***2015-01-1530***	***Practical Implementation of the Two-Measurement Correction Method in Automotive Wind Tunnels***
		Todd Lounsberry, FCA US LLC; Joel Walter, Jacobs
10:00 a.m.	***2015-01-1557***	***New FKFS Technology at the Full-Scale Aeroacoustic Wind Tunnel of University of Stuttgart***
		Reinhard Blumrich, Nils Widdecke, Jochen Wiedemann, Armin Michelbach, Felix Wittmeier, Oliver Beland, FKFS
10:30 a.m.	***2015-01-1527***	***Aerodynamic Interaction Effects and Surface Pressure Distribution during On-Road Driving Events***
		Andreas Kremheller, Nissan Technical Centre Europe, Ltd.
11:00 a.m.	***2015-01-1562***	***Aerodynamics of Timber Trucks - a Wind Tunnel Investigation***
		Matts Karlsson, Roland Gårdhagen, Petter Ekman, Linkoping University; David Söderblom, Scania CV AB; Claes Löfroth, Skogforsk

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Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Vehicle Aerodynamics (Part 2 of 7): Experimental Technologies & Correlation (Part 2 of 2)

Session Code: ***SS800***

Room 321 ***Session Time:*** ***1:00 p.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Jeffrey Bordner, General Motors; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Navistar; Mark E. Gleason, retired, FCA US LLC; Kevin Golsch, Exa Corporation; Arturo Guzman, FCA US LLC; Taeyoung Han, Bahram Khalighi, General Motors Co.; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; James T. McKillen, Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; Mesbah Uddin, UNC Charlotte Motorsports Engineering; H. Robert (Bob) Welge, Robert's Engineering Development; Edward G. Duell, Jacobs Technology Inc.; Adrian P. Gaylard, Jaguar Land Rover; Kurt Zielinski, Honda R & D Americas Inc.*

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	**Experimental and Numerical investigation of a Le Mans Prototype (LMP2) racing car** *Neil Ashton PhD, Alistair Revell PhD, University of Manchester*
1:30 p.m.	2015-01-1526	**The Thermal and Aerodynamic Development of a Cooling and Heat Resistance Package for a New Hybrid Sports Car** *Yasuyuki Onishi, Honda R&D Co., Ltd.; Thomas Ramsay, Timothy Juan, James McKillen, Honda R & D Americas Inc*

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Vehicle Aerodynamics (Part 3 of 7): Aeroacoustics & Rotating Flows

Session Code: ***SS800***

Room 321 ***Session Time:*** ***2:00 p.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Jeffrey Bordner, General Motors; Edward G. Duell, Jacobs Technology Inc.; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Fiat Chrysler Automobiles; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, retired, FCA US LLC; Kevin Golsch, Exa Corporation; Arturo Guzman, FCA US LLC; Taeyoung Han, Bahram Khalighi, General Motors Co.; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; James T. McKillen, Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; Mesbah Uddin, UNC Charlotte Motorsports Engineering; H. Robert (Bob) Welge, Robert's Engineering Development; Kurt Zielinski, Kurt Zielinski, Honda R & D Americas Inc.*

Time	Paper No.	Title
2:00 p.m.	2015-01-1556	**Comparison of Computational Simulation of Automotive Spinning Wheel Flow Field with Full Width Moving Belt Wind Tunnel Results** *Mark E. Gleason, FCA US LLC; Bradley Duncan, Exa Corporation; Joel Walter, Jacobs; Arturo Guzman, FCA US LLC; Young-Chang Cho, Exa Corporation*
2:30 p.m.	2015-01-1554	**Further Investigations on the Flow Around a Rotating, Isolated Wheel with Detailed Tread Pattern** *Bastian Schnepf, Technische Universitaet Muenchen; Thomas Schütz, BMW Group; Thomas Indinger, Technische Universitaet Muenchen*
3:00 p.m.	2015-01-1555	**The Effects of Unsteady Flow Conditions on Vehicle in Cabin and External Noise Generation** *Charalampos Kounenis, David Sims-Williams, Robert Dominy, Arganthaël Berson, Durham University; Nicholas Oettle, Claire Freeman, Jaguar Land Rover*

3:30 p.m.	***2015-01-1532***	***A Computational Approach to Assess Buffeting and Broadband Noise Generated by a Vehicle Sunroof***
		Nicholas Oettle, Jaguar Land Rover; Mohammed Meskine, Sivapalan Senthooran, Andrew Bissell, Gana Balasubramanian, Robert Powell, Exa Corporation
	2015-01-1531	***Automobile Wind Noise Speed Scaling Characteristics (Written Only -- No Oral Presentation)***
		Hangsheng Hou, China FAW R&D Center

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Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Human Factors in Seating Comfort

Session Code: ***SS303***

Room 331 A/B/C ***Session Time:*** ***9:30 a.m.***

Designing vehicles with good ergonomics is one of the many factors needed to achieve high customer satisfaction. A basic source for comfort (or discomfort) lies in the vehicle¿s seats. To design for seat comfort requires knowledge of the size of the driver, the structure of the seat, the position of the seat in the vehicle and the trip duration. Papers offers in this session could include topics such as seat back angle, vehicle packaging and trip duration.

Organizers - *Jennifer M. Badgley, General Motors; Bonita J. Thomas, FCA US LLC; Marilyn Vala, Retired*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-1392***	***Driving Posture Measurement using 3D Scanning Measuring Technique***
		Se Jin Park, Seung Nam Min, Murali Subramaniyam, Heeran Lee, Yu Kyung Shin, Korea Res. Inst. of Standards & Science; Chang Hee Jang, Soon Hyun Hwang, Daewon Kang Up Co., Ltd.
10:30 a.m.	***~~2015-01-1393~~***	***A study of rear seat convenience system for large premium car***
	ORAL ONLY	*Misun Kwon, Sangdo Park, Chanho Jeong, Taehoon Lee, Sanghark LEE, Hoonbok Lee, Hyundai Motor Company; Jinho Seo, Hyundai Dymos INC.*
11:00 a.m.	***2015-01-1396***	***Effects of Sinusoidal Whole Body Vibration Frequency on Drivers' Muscle Responses***
		Xiangjie Meng, Xin Tao, Wenjun Wang, Chaofei Zhang, Bo Cheng, Bo Wang, Tsinghua University; Chengpeng Zhou, Wayne State University; Xiaoping Jin, China Agricultural University; Chao Zeng, Shihezi University; John Cavanaugh, Chaoyang Chen, Wayne State University
11:30 a.m.	***2015-01-1391***	***Heated Seat Simulation Study for Thermal Seat Comfort Improvement***
		Scott Allen Ziolek, Hyundai-Kia America Technical Center Inc.; Joshua Pryor, Tony Schwenn, ThermoAnalytics Inc; Adam Steinman, Gentherm
	2015-01-1394	***Comfort-Driven Design of Car Interiors: A Method to Trace Iso-Comfort Surfaces for P ositioning the Dashboard Commands (Written Only -- No Oral Presentation)***
		Alessandro Naddeo, Marco Apicella, Davide Galluzzi, Universita Degli Studi Di Salerno

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Technical Expert Panel Discussion: Beyond 2025 Engine Development Initiatives

Session Code: ***PFL9***

Room 331 A/B/C Technical Expert Panel Dis ***Session Time:*** ***3:30 p.m.***

The automotive industry is deeply involved in extensive research and development effort to define technologies to meet the challenges set forth in the 2025 fuel economy standards. While most believe the technological challenge is achievable but that the solution will require the integration of multiple discrete technologies. As the industry advances through the development of each of these discrete technologies, one simple question has begun to surface - can it take us beyond 2025?

Organizers - *Chris Middlemass, Whitney Liftig, IAV Automotive Engineering Inc.*

Moderators - *Lindsay Brooke, SAE International*

Panelists - *Christopher Atkinson, ARPA-E; Robert Bienenfeld, American Honda Motor Co. Inc.; Thomas Grissom, BorgWarner Automotive; Marc Sens, IAV GmbH; Matti Vint, VALEO;*

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the moderator and panelists***
		Lindsay Brooke, SAE International; Robert Bienenfeld, American Honda Motor Co. Inc.; Christopher Atkinson, ARPA-E; Marc Sens, IAV GmbH; Thomas Grissom, BorgWarner Automotive; Matti Vint, VALEO

Tuesday, April 21

Occupant Protection: Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, etc.) (Part 1 of 2)

Session Code: ***SS504***

Room 332 ***Session Time:*** ***9:30 a.m.***

The Occupant Restraints Session invites papers that document new research on the restraint topics of airbags, seat belts, inflatable bolsters/seat belts, knee bolsters, Child Restraint Systems (CRS) and other related areas. These papers could include several of the following: technology description, occupant performance considerations, field data studies, development/validation methodology / results, CAE/Finite Element methods/results, packaging, and implementation / performance challenges.

Organizers - *Aditya Belwadi, Children's Hospital of Philadelphia; Lisa Fallon, General Motors Co.; Michael Royce; Scott D. Thomas, General Motors; Chris A. Van Ee, Design Research Engineering*

Time	Paper No.	Title
9:30 a.m.	***2015-01-1456***	***Lightweight Knee Bolster Assembly for Belted and Unbelted Occupant Restraint in a Frontal Crash***
		Mani Ayyakannu, Latha Subbiah, Mohammed Syed, INDUS Concepts & Engineering, LLC
10:00 a.m.	***2015-01-1455***	***Simplification of the Variable Vent Structure of the Passenger Airbag by Applying a Slit-Type Vent***
		Kenshi Torikai, Hitoshi Higuchi, Kazuhiro Seki, Honda R&D Co., Ltd.
10:30 a.m.	***2015-01-0740***	***Improved Seat Belt Restraint Geometry for Frontal, Frontal Oblique and Rollover Incidents***
		John Patalak, Thomas Gideon, NASCAR; John W. Melvin, Tandelta; Mike Rains, TK Holdings Inc

11:00 a.m.	***2015-01-0739***	***Development and Implementation of a Quasi-Static Test for Seat Integrated Seat Belt Restraint System Anchorages***
		John Patalak, Thomas Gideon, NASCAR

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Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Occupant Protection: Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, etc.) (Part 2 of 2)

Session Code: ***SS504***

Room 332 ***Session Time:*** ***1:00 p.m.***

The Occupant Restraints Session invites papers that document new research on the restraint topics of airbags, seat belts, inflatable bolsters/seat belts, knee bolsters, Child Restraint Systems (CRS) and other related areas. These papers could include several of the following: technology description, occupant performance considerations, field data studies, development/validation methodology / results, CAE/Finite Element methods/results, packaging, and implementation / performance challenges.

Organizers - *Aditya Belwadi, Children's Hospital of Philadelphia; Lisa Fallon, General Motors Co.; Michael Royce; Scott D. Thomas, General Motors; Chris A. Van Ee, Design Research Engineering*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1451***	***Injury Sources for Second Row Occupants in Frontal Crashes Considering Age and Restraint Condition Influence***
		Anand Sai Gudlur, Theresa Atkinson, Kettering University
1:30 p.m.	***2015-01-1459***	***Vertical Occupant Loading in Car Crashes; Test Methods and Countermeasures***
		Lotta Jakobsson, Magnus Björklund, Anders Axelson, Volvo Cars
2:30 p.m.	***2015-01-1453***	***Effects of Crash Pulse, Impact Angle, Occupant Size, Front Seat Location, and Restraint System on Rear Seat Occupant Protection***
		Jingwen Hu, Univ. of Michigan; Kurt Fischer, Paul Lange, Angelo Adler, TRW Vehicle Safety Systems Inc.
3:00 p.m.	***2015-01-1452***	***Installed Positions of Child Restraint Systems in Vehicle Second Rows***
		Kathleen DeSantis Klinich, Kyle Boyle, Laura Malik, Miriam Manary, Jingwen Hu, University of Michigan
3:30 p.m.	***2015-01-1457***	***Development of a Small Rear Facing Child Restraint System Virtual Surrogate to Evaluate CRS-to-Vehicle Interaction and Fitment***
		Aditya Belwadi, Children's Hospital of Philadelphia; Richard Hanna, Drexel University; Audrey Eagle, FCA US LLC; Daniel Martinez, Drexel University; Julie Kleinert, General Motors Co.; Eric Dahle, Evenflo Co Inc.
	2015-01-1458	***The Application of Hybrid III 5th Percentile Dummy FE Model for Rear Row Occupant Simulation in Frontal Crash Test (Written Only -- No Oral Presentation)***
		Jia Hu, SAIC Motor Corporation Limited

	2015-01-1460	***Effects of Pretensioners and Load Limiters on 50th Male and 5th Female Seated in Rear Seat during a Frontal Collision (Written Only -- No Oral Presentation)***
		Massoud Tavakoli, Janet Brelin-Fornari, Kettering University Crash Safety Center

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Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Electronics Design Processes

Session Code: ***AE107***

Room 333 ***Session Time:*** ***9:30 a.m.***

Meeting Reliability, Design, quality and safety requirements for electrical/electronic systems becomes more challenging every year as E/E content, complexity, time-to-market and globalization pressures increase. This session focuses on intelligent practices for achieving high reliability. New approaches and techniques for integrating robust design and robustness validation into the mainstream global automotive electronics product development and manufacturing processes are discussed

Organizers - *Lyle Stanley Bryan, TE Connectivity; John Day, John Day's Automotive Electronics; Abraham Shocket, TE Connectivity*

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***Implementing ISO 26262 using a CMMI based quality management system***
		Tom Tasky, FEV Inc.
10:00 a.m.	***2015-01-0192***	***Virtual Development in Upstream Design Phases of Automotive Electronic Products***
		Yukihide Niimi, Toshinori Matsui, Naoya Tsuchiya, DENSO Corp
10:30 a.m.	***2015-01-0194***	***Vehicle-Level EMC Modeling for HEV/EV Applications***
		Hua Zeng, Isao Hoda, Hitachi America, Ltd.; William Ivan, Andrew Baker, Syed Kadry, General Motors; Hiroki Funato, Jia Li, Masayoshi Takahashi, Hitachi, Ltd.; Hideyuki Sakamoto, Ryuichi Saito, Hitachi Automotive Systems, Ltd.
	2015-01-0195	***Thermal Electric Analysis of Bond Wires Used in Automotive Electronic Modules (Written Only -- No Oral Presentation)***
		Satishchandra C. Wani, Delphi Automotive Systems

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Tuesday, April 21

Verification and Validation of Embedded Software

Session Code: ***AE104***

Room 333 ***Session Time:*** ***1:00 p.m.***

Developing embedded software for electronic controls is a complex undertaking. Hardware-in-the-Loop simulation and improvements in PC simulation technology show promise for early verification of embedded software using a virtual environment for ECUs and test infrastructure. This session highlights advances in processes, tools, and technologies to reduce design & validation time & cost, and to improve the quality of embedded software and effectiveness of electronic testing tools and procedures.

Organizers - *John Day, John Day's Automotive Electronics; Vivek Moudgal, dSPACE Inc.; Nitish Rao, ETAS Inc.; Peter Waeltermann, dSPACE GmbH*

Time	Paper No.	Title
1:00 p.m.	2015-01-0170	**Concept of Virtual Engine Control Module for High Quality and Time Efficient Verification and Testing of Powertrain Engine Control Module** *Nikhil Bhadani, Delphi Automotive*
1:30 p.m.	2015-01-0171	**Standards Compliant HIL Bench Development for Dynamic Skip Fire Feature Validation** *Paul Liu, Abhijit Bansal, James C. McKeever, Tula Technology*
2:00 p.m.	2015-01-0172	**Modeling Methodology for ECU Behavioral Verification in a Real Operation** *Won Kyung Ham, Sangchul Park, JiMyoung Park, Ajou University; Minsuk Ko, Min-Ho Yoo, Hyundai Kefico*
2:30 p.m.	2015-01-0173	**Addressing Engine ECU Testing Challenges with FPGA-Based Engine Simulation** *Stephen Barrett, National Instruments; Maximilien Bouchez, Valeo*
3:00 p.m.	2015-01-0174	**Verification of Group Variables for Detecting Inconsistencies in Software** *Advaita Datar, Amey Zare, Tata Consultancy Services Ltd.*

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Tuesday, April 21

CAD/CAM/CAE Technology (Part 1 of 3)

Session Code: ***SS101***

Room 336 ***Session Time:*** ***9:30 a.m.***

This session publishes papers and presentations advancing the knowledge in product design, manufacturing processes, and engineering analysis using the state-of-the-art computer technology. The scope includes such areas as CFD, manufacturing and assembly simulation, crash-worthiness, computational mechanics, mold flow, ride simulation, ergonomic design, NVH, reverse engineering, etc. Developments in numerical methods applicable to automotive engineering problems will also be considered.

Organizers - *Randy Gu, Oakland University; Jared Song, General Motors Co.; Yu J. Teng; Qichao Zheng, General Motors Co.*

Time	Paper No.	Title
9:30 a.m.	2015-01-1320	**Vehicle Mid-Frequency Response Using the Superelement Component Dynamic Synthesis Technique** *Mallikarjuna Bennur, General Motors Co.*
10:00 a.m.	2015-01-1321	**Elementary Body Structure Analysis** *Shigetaka Kameyama, Shigeo Fujita, Shinichi Kaji, Honda*
10:30 a.m.	2015-01-1329	**The Predictive Simulation of Exhaust Pipe Narrow-band Noise** *Katsutomo Kanai, Honda R&D Co., Ltd.; Hideki Katsuyama, Honda R & D Americas Inc.*
11:00 a.m.	2015-01-1330	**Development of Prediction Method for Dynamic Strain on Windshield during Passenger Airbag Deployment** *Yoshiyuki Tosa, Hiroyuki Mae, Honda R&D Co Ltd*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00470, and also individually. To purchase visit collections.sae.org

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity; Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

CAD/CAM/CAE Technology (Part 2 of 3)

Session Code: ***SS101***

Room 336 ***Session Time:*** ***1:00 p.m.***

This session publishes papers and presentations advancing the knowledge in product design, manufacturing processes, and engineering analysis using the state-of-the-art computer technology. The scope includes such areas as CFD, manufacturing and assembly simulation, crash-worthiness, computational mechanics, mold flow, ride simulation, ergonomic design, NVH, reverse engineering, etc. Developments in numerical methods applicable to automotive engineering problems will also be considered.

Organizers - *Randy Gu, Oakland University; Jared Song, General Motors Co.; Yu J. Teng; Qichao Zheng, General Motors Co.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1333***	***Automatic CAD Data Preparation for CAE*** *Martin Schifko, Engineering Center Steyr GmbH & Co. KG; Bernhard Kornberger, Geom e.U. Graz; Daniela Fellhofer, Engineering Center Steyr GmbH & Co. KG; Hans Steiner, Caelynx*
1:30 p.m.	***2015-01-1334***	***KEY ATTRIBUTES FOR VIRTUALLY SIMULATING 2ND ROW SEAT HARD STOP MECHANISM AS PER SEAT STANDARD*** *Shreyas Shingavi, Pankaj Bhirud, Abhishek Ranjan, Tata Technologies, Ltd.*
2:00 p.m.	***2015-01-1335***	***A Study into Compression Ring Dynamics using Response Surface Methodology*** *Matthew W. Dickinson, Nathalie Renevier, John Calderbank, Univ. of Central Lancashire*
2:30 p.m.	***2015-01-1336***	***Optimizing the Geometry of Fan-Shroud Assembly Using CFD*** *Meisam Mehravaran, Yi Zhang, Ford Motor Co.*
3:00 p.m.	***2015-01-1340***	***Evaluation Technique for Thermal Distortion of Automotive Outer Panels Using the Simulation of Curvature*** *Yoichi Toyooka, Kiyoshi Hasegawa, Honda R & D*
3:30 p.m.	***2015-01-1341***	***Development of Plastic Fracture Simulation Technology for Passenger Airbag Tear Line*** *Hisaki Sugaya, Yoshiyuki Tosa, Kazuo Imura, Hiroyuki Mae, Honda R&D Co., Ltd.*
4:00 p.m.	***2015-01-1342***	***Modeling and Numerical Calculation of Snow Particles Entering the Air Intake of an Automobile*** *Christoph Huber, Bernhard Weigand, University of Stuttgart; Heinrich Reister, Thomas Binner, Daimler AG*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00470, and also individually. To purchase visit collections.sae.org

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity; Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Human Factors in Driving and Automotive Telematics (Part 1 of 2)

Session Code: ***SS302*** ***9:30 a.m.***

Room 353 ***Session Time:***

As information and entertainment to and from the vehicle (Telematics) become more prolific it is critical to increase our understanding of how the driver understands and uses Telematics functions. Equally critical is how those functions impact the driver. This session will address those issues.

Organizers - *James Foley, Toyota Technical Center USA Inc.; Kristin Kolodge, JD Power And Associates; Daniel J. Selke, Mercedes-Benz USA LLC*

Time	Paper No.	Title
9:30 a.m.	***ORAL ONLY***	***Technical Keynote: Driver Distraction: Methods, Metrics, and Road Safety*** *Louis Tijerina, Ford Motor Co.*
10:30 a.m.	***2015-01-1384***	***Safe Interaction for Drivers: A Review of Driver Distraction Guidelines and Design Implications*** *Richard Young, Wayne State University; Jing Zhang, AutoSimpler*
11:00 a.m.	***2015-01-1389***	***Bench-Marking Drivers' Visual and Cognitive Demands: A Feasibility Study*** *Yu Zhang, DENSO International America, Inc.; Linda Angell, Touchstone Evaluations, Inc.; Silviu Pala, DENSO International America, Inc.; Ifushi Shimonomoto, DENSO Corporation*

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Human Factors in Driving and Automotive Telematics (Part 2 of 2)

Session Code: ***SS302***

Room 353 ***Session Time:*** ***1:00 p.m.***

As information and entertainment to and from the vehicle (Telematics) become more prolific it is critical to increase our understanding of how the driver understands and uses Telematics functions. Equally critical is how those functions impact the driver. This session will address those issues.

Organizers - *James Foley, Toyota Technical Center USA Inc.; Kristin Kolodge, JD Power And Associates; Daniel J. Selke, Mercedes-Benz USA LLC*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1385***	***A Surrogate Test for Cognitive Demand: Tactile Detection Response Task (TDRT)*** *Li Hsieh, Sean Seaman, Richard Young, Wayne State University*
1:30 p.m.	***2015-01-1388***	***Study of Reproducibility of Pedal Tracking and Detection Response Task to Assess Driver Distraction*** *Tatsuya Iwasa, Toshihiro Hashimoto, Honda R&D Co., Ltd.*
2:00 p.m.	***2015-01-1387***	***Revised Odds Ratio Estimates of Secondary Tasks: A Re-Analysis of the 100-Car Naturalistic Driving Study Data*** *Richard Young, Driving Safety Consulting, LLC*
2:30 p.m.	***2015-01-1386***	***Open Source Computer Vision Solution for Head and Gaze Tracking in a Driving Simulator Environment*** *Devin SJ Caplow-Munro, University of Pennsylvania; Helen Loeb, Venk Kandadai, Flaura Winston, Children's Hospital of Philadelphia*

3:00 p.m.	***2015-01-1390***	***LiveMetrics: Providing individualized feedback on driving performance*** *Venk Kandadai, Children's Hospital of Philadelphia; Helen Loeb; Guyrandy Jean-Gilles, Children's Hospital of Philadelphia; Catherine McDonald, Univ of Pennsylvania; Andrew Winston, Children's Hospital of Philadelphia; Thomas Seacrist; Flaura Winston, Children's Hospital of Philadelphia and Univ of Pennsylvania*

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Materials and Residual Stress Test Development

Session Code: ***M205***

Room 354 ***Session Time:*** ***9:30 a.m.***

Key words: residual stress, retained austenite, x-ray diffraction, neutron diffraction, induction hardening, carburizing, shot peening, quench and template, residual stress simulation, residual stress test

Organizers - *Gerald A. Shulke, Xichen Sun, FCA US LLC; Xin Zhang, F.Tech R&D North America Inc.*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0603***	***Creep and Stress Relaxation Evaluation of Virgin and Thermally Aged Glass-Filled Poly(butylene terephthalate) used in Automotive Electrical Connector Applications for Electrically-Powered Vehicles by Dynamic Mechanical Analysis*** *Robert A. Smith, Mikel Petty, Delphi Corp.*
10:00 a.m.	***2015-01-0602***	***Effects of Non-Associated Flow on Residual Stress Distributions in Crankshaft Sections Modeled as Pressure-Sensitive Materials under Fillet Rolling*** *Shin-Jang Sung, Jwo Pan, University of Michigan; Mohammed Yusuf Ali, Jagadish Sorab, Cagri Sever, Ford Motor Company*
10:30 a.m.	***2015-01-0601***	***Ferritic Nitrocarburizing of SAE 1010 Plain Carbon Steel Parts*** *Madhavan Manivannan, Vesselin Stoilov, Derek O. Northwood, University of Windsor*
11:00 a.m.	***ORAL ONLY***	***Finite Element Analyses of Stress-Strain Relations of Cast Iron under Uniaxial Compression and Tension*** *Mohammed Yusuf Ali, Ford Motor Company; Nikhil Kotasthane, Jwo Pan, University of Michigan-Ann Arbor; Jagadish Sorab, Cagri Sever, Ford Motor Company*
11:30 a.m.	***2015-01-0604***	***Application of Local Mechanical Tensioning and Laser Processing to Modify the Residual Stress State and Microstructural Features of Multi-Pass HSLA Steel*** *Jibrin Sule, Supriyo Ganguly, Cranfield University*

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Occupant Protection: Accident Reconstruction (Part 1 of 3)

Session Code: ***SS500***

Room 354 ***Session Time: 1:00 p.m.***

This session focuses on the latest research related to methods and techniques for reconstructing vehicular crashes involving wheeled and tracked vehicles, pedestrians, and roadside features. Emphasis is placed on experimental data and theoretical methods that will enable reconstructionists to identify, interpret and analyze physical evidence from vehicular crashes.

Organizers - *Alan F. Asay, Asay Engineering; L. Daniel Metz, Metz Engineering & Racing; Christopher D. Armstrong, KEVA Engineering; Nathan A. Rose, Kineticorp LLC; Geoff Germane, Germane Engineering; Richard Frank Lambourn, Transport Research Laboratory, Ltd.; David Plant, D P Plant & Associates; Heath Spivey, Delta V Forensic Engrg; John T. Sprague, General Motors Co.; John C. Steiner, Mecanica Scientific Services Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1422***	***Validation of Equations for Motorcycle and Rider Lean on a Curve***
		Neal Carter, Nathan A. Rose, David Pentecost, Kineticorp LLC
1:30 p.m.	***2015-01-1415***	***Features of Fatal Cyclist Injuries in Vehicle-Versus-Cyclist Accidents in Japan***
		Yasuhiro Matsui, Shoko Oikawa, NTSEL
2:00 p.m.	***2015-01-1417***	***Influence of Age, Secondary Tasks and Other Factors on Drivers' Swerving Responses before Crash or Near-Crash Events***
		Jeffrey Muttart, Crash Safety Research Center, LLC
2:30 p.m.	***2015-01-1429***	***Quantifying Retroreflective DOT-C2 Tape Performance using a Retroreflectometer***
		Jeffrey Aaron Suway, Judson Welcher, Biomechanical Research & Testing, LLC
3:00 p.m.	***2015-01-1432***	***Retroreflective DOT-C2 Tape Performance in Relation to Observation and Entrance Angle - A Real World Study***
		Jeffrey Aaron Suway, Judson Welcher, Biomechanical Research & Testing, LLC
3:30 p.m.	***2015-01-1431***	***Snowmobile Cornering and Acceleration Data from On-Snow Testing***
		Mark H. Warner, Jon E. Bready, Collision Safety Engineering LC; Wyatt Y. Warner, Brigham Young University; Alan F. Asay, Asay Engineering

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Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Load Simulation and Vehicle Performance: Ride Comfort (Part 1 of 2)

Session Code: ***M207***

Room 356 ***Session Time: 9:30 a.m.***

Focusing on studies of driver behavior modeling, driving simulator techniques, vehicle ride comfort evaluation and enhancement, test/simulation correlation analysis, vehicle elastomeric component modeling, passive, semi-active and active suspension systems, suspension seat analysis and modeling techniques, the effect and control of beaming, shaking, impact harshness, brake judder and any other phenomena affecting ride comfort of driver, passengers, goods, etc

Organizers - *Mike Ma, Nanjing Automobile Research Institute; Peijun Xu, Ebco Inc.; James Yang, Texas Tech. Univ.*

Time	Paper No.	Title

9:30 a.m.	***2015-01-0616***	***A Comparison of the Performance and Power Requirements for Various Active Suspensions with Gain Scheduling Strategies***
		Aref M.A. Soliman, South Valley University
10:00 a.m.	***2015-01-0621***	***Triple-Control-Mode for Semi-Active Suspension System***
		Mina M.S. Kaldas, Kemal Çal¿¿kan, Roman Henze, Ferit Küçükay, IAE, TU Braunschweig
10:30 a.m.	***2015-01-0619***	***Active Brake Judder Compensation Using an Electro-Hydraulic Brake System***
		Chih Feng Lee, Linköping Univ; Dzmitry Savitski, Ilmenau Technical Univ; Chris Manzie, Univ of Melbourne; Valentin Ivanov, Ilmenau Technical Univ
11:00 a.m.	***2015-01-0623***	***Modeling, Analysis and Optimization of the Twist Beam Suspension System***
		Jiaquan Chen, Min Qin, Yongfeng Jiang, Lingge Jin, FAW R&D Center; Yin-Ping Chang, Oakland University

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Load Simulation and Vehicle Performance: Ride Comfort (Part 2 of 2)

Session Code: ***M207***

Room 356 ***Session Time:*** ***1:00 p.m.***

Focusing on studies of driver behavior modeling, driving simulator techniques, vehicle ride comfort evaluation and enhancement, test/simulation correlation analysis, vehicle elastomeric component modeling, passive, semi-active and active suspension systems, suspension seat analysis and modeling techniques, the effect and control of beaming, shaking, impact harshness, brake judder and any other phenomena affecting ride comfort of driver, passengers, goods, etc

Organizers - *Mike Ma, Nanjing Automobile Research Institute; Peijun Xu, Ebco Inc.; James Yang, Texas Tech. Univ.*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-0612***	***An Improved Human Biodynamic Model Considering the Interaction between Feet and Ground***
		Weiguo Zhang, Zeyu Ma, Ankang Jin, Huazhong University of Science and Tech; James Yang, Texas Tech Univ; Yunqing Zhang, Huazhong University of Science and Tech
2:00 p.m.	***2015-01-0611***	***Ride Comfort Performance Investigation for Compressed Natural Gas Fuelled Car***
		Aref M. A. Soliman, South Valley University; Mina M.S. Kaldas, IAE, TU Braunschweig
2:30 p.m.	***2015-01-0620***	***A Comparative Study of Lumped Parameter Models for Assessing the Performance of Vehicle Suspension Systems***
		Manoj Mahala, Anindya Deb, Indian Institute of Science; Clifford Chou, Wayne State Univ
3:00 p.m.	***2015-01-0622***	***Vibration Control of MR-Damped Vehicle Suspension System Using PID Controller Tuned by Particle Swarm Optimization***
		H. Metered, A. Elsawaf, Czech Tech. Univ Prague and Helwan Univ.; T. Vampola, Z. Sika, Czech Technical University

3:30 p.m.	***2015-01-0614***	***Study on the Ride Performance of a Semi-Active Air Suspension Vehicle under Complex Models Based on Co-Simulation***
		Ye Zhao, Liangmo Wang, Nanjing Univ of Science & Technology; Xiangli Yang, Liukai Yuan, Zunzhi Zhang, NAVECO Automobile Co., Ltd.
	2015-01-0613	***Experimental Vibration Simulation for Heavy Duty Vehicle Seat Suspension with a Multiple-DOF Motion Platform (Written Only -- No Oral Presentation)***
		Donghong Ning, James Coyte, Hai Huang, Haiping Du, Weihua Li, Univ of Wollongong
	2015-01-0615	***Comparative Analysis of Truck Ride Comfort of 4 Degree of Freedom Rigid-Elastic Model with 2 Degree of Freedom Rigid Model (Written Only -- No Oral Presentation)***
		Li Jie, Wang Wenzhu, Gao Xiong, Jilin University
	2015-01-0617	***Design and Dynamic Analysis of Bounce and Pitch Plane Hydraulically Interconnected Suspension for Mining Vehicle to Improve Ride Comfort and Pitching Stiffness (Written Only -- No Oral Presentation)***
		Jie Zhang, Xiao Chen, Bangji Zhang, Hunan University; Lifu Wang, University of Technology; Shengzhao Chen, Nong Zhang, Hunan University
	2015-01-0618	***Structure Optimization For Installation Position of Side Impact Sensor Using Frequency Response Analysis (Written Only -- No Oral Presentation)***
		Zhihong Dong, Ying Sun, Guitao Zhu, Shihu Wang, Jian Zeng, Yuliang Yang, C&C Trucks Co., Ltd.

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Electric Vehicle Drivetrain Dynamics

Session Code: ***SS901***

Room 357 ***Session Time:*** ***9:30 a.m.***

This session deals with the analytical and experimental studies of vehicle electric drive vehicles or any non-conventional vehicle concepts that stretch the vehicle dynamics/mobility performance using intelligent technologies such as in-wheel motors, torque-vectoring controls, multi-wheel steer-by-wire, etc.

Organizers - *Andrej Ivanco, Clemson-ICAR; Amandeep Singh, US Army TARDEC*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-1598***	***Handling Delays in Stability Control of Electric Vehicles Using MPC***
		Milad Jalaliyazdi, Amir Khajepour, University Of Waterloo; Shih-Ken Chen, Bakhtiar Litkouhi, General Motors Co
10:00 a.m.	***2015-01-1599***	***Differential Drive Assisted Steering Control for an In-wheel Motor Electric Vehicle***
		Bo Leng, Lu Xiong, Chi Jin, Jun Liu, Zhuoping Yu, Tongji University
10:30 a.m.	***2015-01-1600***	***A Control Allocation Strategy for Electric Vehicles with In-wheel Motors and Hydraulic Brake System***
		Tong Zou, Lu Xiong, Pengfei Yang, Chi Jin, Tongji University

11:00 a.m.	***2015-01-1601***	***Estimation of Road-Tire Friction with Unscented Kalman Filter and MSE-Weighted Fusion based on a Modified Dugoff Tire Model*** *Long Chen, Mingyuan Bian, Yugong Luo, Keqiang Li, Tsinghua University*

The papers in this session are available in SAE Technical Paper Collection, SUB-GTL-00001, and also individually. To purchase visit collections.sae.org

Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Vehicle Dynamics, Stability and Control (Part 1 of 3)

Session Code: ***SS900***

Room 357 ***Session Time:*** ***1:00 p.m.***

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - *W. Riley Garrott, National Hwy Traffic Safety Admin; Paul Grygier; Mark Heitz; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern Univ.; Sughosh J. Rao, M. Kamel Salaani, Transportation Research Center Inc.*

Chairpersons - *Paul Grygier*

Assistant Chairpersons - *Sughosh J. Rao, Transportation Research Center Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1579***	***Rubber Bushing Model for Vehicle Dynamics Performance Development that Considers Amplitude and Frequency Dependency*** *Jun Nakahara, Honda R&D Co., Ltd.; Koji Yamazaki, Honda R&D Americas Inc.; Yusuke Otaki, Honda R&D Co., Ltd.*
1:30 p.m.	***2015-01-1583***	***CAE-Based Driving Comfort Optimization of Passenger Cars*** *Timothy Drotar, Ford Motor Co. Research and Advanced Eng; Jacopo Palandri, Friedrich Wolf-Monheim, Paul Zandbergen, Ford Research Laboratory Aachen GmbH; Bjoern Reff, Ford Werke GmbH*
2:00 p.m.	***2015-01-1572***	***Vehicle Dynamics Simulation Associated with Pothole Encounters Using the HVE SIMON Program and Radial Spring Tire Model*** *L. Daniel Metz, Metz Engineering & Racing, LLC; J. Sneddon, Baker Sneddon Consulting*
2:30 p.m.	***ORAL ONLY***	***Lateral Force Characteristics Under Realistic Driving Conditions*** *Carsten Schroeder, Kai-Uwe Koehne, Burkhard Wies, Continental Reifen Deutschland GmbH*
3:00 p.m.	***2015-01-1578***	***A Statistical Tire Model Concept - Applications to Vehicle Development*** *Kaoru Kusaka, Nobuyuki Nagayama, Honda R&D Co., Ltd.*
3:30 p.m.	***2015-01-1594***	***Friction Estimation at Tire-Ground Contact*** *Johannes Edelmann, Technische Universität Wien; Massimiliano Gobbi, Giampiero Mastinu, Politecnico di Milano; Manfred Ploechl, Technische Universität Wien; Giorgio Previati, Politecnico di Milano*

4:00 p.m.	***2015-01-1586***	***Parameter Identification of Tire Model Based on Improved Particle Swarm Optimization Algorithm***
		Guirong Zhuo, Jin Wang, Fengbo Zhang, Tongji Univ

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Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 21

Exhaust Emissions Control - New Developments (Part 1 of 2)

Session Code: ***PFL410***

Room 360 ***Session Time:*** ***9:30 a.m.***

Papers are invited on technology developments and the integration of these technologies into new emission control systems. Topics include the integration of various diesel particulate matter (PM) and diesel Nitrogen Oxide (NOx) reduction technologies plus analogous technologies for the growing population of direct injection gasoline engines. Novel developments in sensors and control systems will also be considered.

Organizers - *Homayoun Ahari, FCA US LLC; Kenneth S. Price, Umicore Autocat USA Inc.; Ron Silver, Caterpillar Inc.; Roger A. Van Sickle, FEV North America, Inc.*

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***Technical Keynote: Review of Vehicular Emissions Trends (SAE Paper 2015-01-0993)***
		Timothy V. Johnson, Corning Inc.
10:30 a.m.	***2015-01-0992***	***Development of Emission Control Systems to Enable High NO_x Conversion on Heavy Duty Diesel Engines***
		Mojghan Naseri, Ceren Aydin, Shadab Mulla, Raymond Conway, Sougato Chatterjee, Johnson Matthey Inc.
11:00 a.m.	***2015-01-0984***	***Enhanced Low-Temperature NOx Conversion by High-Frequency Hydrocarbon Pulsing on a Dual Layer LNT-SCR Catalyst***
		Yang Zheng, Mengmeng Li, Michael Harold, Dan Luss, Univ. of Houston
	2015-01-0993	***Review of Vehicular Emissions Trends (Written Only -- No Oral Presentation)***
		Timothy V. Johnson, Corning Inc.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Exhaust Emissions Control - New Developments (Part 2 of 2)

Session Code: ***PFL410***

Room 360 ***Session Time:*** ***1:00 p.m.***

Papers are invited on technology developments and the integration of these technologies into new emission control systems. Topics include the integration of various diesel particulate matter (PM) and diesel Nitrogen Oxide (NOx) reduction technologies plus analogous technologies for the growing population of direct injection gasoline engines. Novel developments in sensors and control systems will also be considered.

Organizers - *Homayoun Ahari, FCA US LLC; Kenneth S. Price, Umicore Autocat USA Inc.; Ron Silver, Caterpillar Inc.; Roger A. Van Sickle, FEV North America, Inc.*

Time	***Paper No.***	***Title***

1:00 p.m.	***2015-01-0986***	***Ammonia Loading Detection of Zeolite SCR Catalysts using a Radio Frequency based Method*** *Dieter Rauch, Univ. of Bayreuth; David Kubinski, Giovanni Cavataio, Devesh Upadhyay, Ford Research and Innovation Center; Ralf Moos, Univ. of Bayreuth*
1:30 p.m.	***2015-01-0991***	***Desulfation of Pd-based Oxidation Catalysts for Lean-burn Natural Gas and Dual-fuel Applications*** *Nathan Ottinger, Rebecca Veele, Yuanzhou Xi, Z. Gerald Liu, Cummins Emission Solutions*
2:00 p.m.	***2015-01-0988***	***Innovative Hybrid Rare Earth and Barium Materials with Enhanced Properties for NOx Storage Applications*** *Fabien Ocampo, Virginie Harle, Naotaka Ohtake, Renaud Rohe, Barry W.L. Southward, Solvay - Rare Earth Systems*
2:30 p.m.	***2015-01-0989***	***Wire Mesh Mixer Optimization for DEF Deposit Prevention*** *Steve Schiller, Mark Brandl, Bruce Hoppenstedt, Donaldson Company Inc; Korneel De Rudder, Donaldson Europe*
3:00 p.m.	***2015-01-0990***	***Non-Thermal Active Particulate Filter Regeneration for Global Particulate Matter Reduction while Enabling High Sulfur Tolerant Low Temperature Urban Effective SCR Solutions*** *Brett M. Bailey, Illinois Valley Holding Company, IVHCO*
3:30 p.m.	***2015-01-0985***	***Application of Pre-DPF Water Injection Technique for Pressure Drop Limitation*** *José Ramón Serrano, Vicente Bermudez, Pedro Piqueras, Emanuele Angiolini, Universitat Politècnica de València, CMT*

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Multi-Dimensional Engine Modeling (Part 1 of 5)

Session Code: ***PFL120***

Room 410 A ***Session Time:*** ***9:30 a.m.***

The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling: advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers - *Hardo Barths, General Motors; Sarah Diakhaby, Computational Dynamics, Ltd.; Stefano Fontanesi, Universita degli Studi di Modena; Allen David Gosman, CD-adapco*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0374***	***Experimental and Numerical Studies on Combustion Model Selection for Split Injection Spray Combustion*** *Ahmed Abdul Moiz, Michigan Technological Univ.; Sibendu Som, Argonne National Laboratory; Luis Bravo, Army Research Laboratory; Seong-Young Lee, Michigan Technological Univ.*

10:00 a.m.	***2015-01-0375***	***Combustion Modeling in Heavy Duty Diesel Engines Using Detailed Chemistry and Turbulence-Chemistry Interaction***
		Gianluca D'Errico, Tommaso Lucchini, Politecnico di Milano; Gilles Hardy, FPT Motorenforschung AG; Ferry Tap, Giel Ramaekers, Dacolt International BV
11:00 a.m.	***2015-01-0404***	***Numerical Simulation of an Opposed-Piston Two-Stroke Diesel Engine***
		Zhaoyi Xie, ZhenFeng Zhao, Zhenyu Zhang, Beijing Institute of Technology
	2015-01-0378	***Experimental and Numerical Investigation of Flow and Combustion in a DI Diesel Engine with Different Piston Geometries (Written Only -- No Oral Presentation)***
		Prasanna Yadav, C G Saravanan, James Gunasekaran Edward, Ramesh Perumal, Annamalai University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00466 and SUB-TP-00009, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Multi-Dimensional Engine Modeling (Part 2 of 5)

Session Code: ***PFL120***

Room 410 A ***Session Time:*** ***1:00 p.m.***

The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling: advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers - *Hardo Barths, General Motors; Sarah Diakhaby, Computational Dynamics, Ltd.; Stefano Fontanesi, Universita degli Studi di Modena; Allen David Gosman, CD-adapco*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0385***	***A Novel CFD Approach for an Improved Prediction of Particulate Emissions in GDI Engines by Considering the Spray-Cooling on the Piston***
		Fabian Köpple, Paul Jochmann, Alexander Hettinger, Andreas Kufferath, Robert Bosch GmbH; Michael Bargende, IVK, University of Stuttgart
1:30 p.m.	***2015-01-0394***	***Effects of Fuel-Induced Piston-Cooling and Fuel Formulation on the Formation of Fuel Deposits and Mixture Stratification in a GDI Engine***
		Nicola Giovannoni, Alessandro d'Adamo, Universita Degli Studi di Modena; Giuseppe Cicalese, R&D CFD SRL; Giuseppe Cantore, Universita Degli Studi di Modena
2:00 p.m.	***2015-01-0397***	***Experimental and Numerical Investigation in a Turbocharged GDI Engine Under Knock Condition by Means of Conventional and Non-Conventional Methods***
		Francesco Catapano, Michela Costa, Guido Marseglia, Paolo Sementa, Ugo Sorge, Bianca Maria Vaglieco, Istituto Motori CNR

3:00 p.m.	***2015-01-0393***	***A Numerical Investigation on the Potentials of Water Injection as a Fuel Efficiency Enhancer in Highly Downsized GDI Engines***
		Alessandro d'Adamo, Fabio Berni, Sebastiano Breda, Mattia Lugli, Stefano Fontanesi, Giuseppe Cantore, Universita Degli Studi Di Modena
	2015-01-0383	***Achievement of Diesel Low Temperature Combustion through Higher Boost and EGR Control Coupled with Miller Cycle (Written Only -- No Oral Presentation)***
		Changpu Zhao, Gang Yu, Tianjin University; Junwei Yang, Chery Automobile Co., Ltd.; Man Bai, Fang Shang, Tianjin University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00466 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Mobility History: The Past is Prelude to the Future (Part 1 of 2)

Session Code: ***CONG201***

Room 410 B ***Session Time:*** ***9:30 a.m.***

The SAE Mobility History Committee will present a series of talks on April 21st relating to several areas of current technological activity. The series will include talks on the history of lightweighting as it relates to improved fuel economy and the history of the transition of guided vehicles from guided highways to fully autonomous vehicles. The talks will also include a presentation on the history of the Indianapolis 500; a history of the British rochdale automobile; a history of the activities of Porsche during WWII; and a biography of Zora arkus-Dontov, the legend behind the modern day corvette.

Organizers - *Jeremy Goddard, IDIADA Automotive Technology; Jonathan Martin Rowell; Donald L. Wood*

Chairpersons - *Donald L. Wood*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0416***	***Rochdale: Sportscar Pioneers - The Cars of Rochdale Motor Panels and Engineering, 1950 to 1973***
		Howard Evans, Rochdale Owners Club
10:30 a.m.	***ORAL ONLY***	***Professor Porsche's Wars***
		Karl Ludvigsen, MSAE CIMechE

Tuesday, April 21

Mobility History: The Past is Prelude to the Future (Part 2 of 2)

Session Code: ***CONG201***

Room 410 B ***Session Time:*** ***1:00 p.m.***

The SAE Mobility History Committee will present a series of talks on April 21st relating to several areas of current technological activity. The series will include talks on the history of lightweighting as it relates to improved fuel economy and the history of the transition of guided vehicles from guided highways to fully autonomous vehicles. The talks will also include a presentation on the history of the Indianapolis 500; a history of the British rochdale automobile; a history of the activities of Porsche during WW2; and a biography of Zora arkus-Dontov, the legend behind the modern day corvette.

Organizers - *Jeremy Goddard, IDIADA Automotive Technology; Jonathan Martin Rowell; Donald L. Wood*

Chairpersons - *Donald L. Wood*

Time	***Paper No.***	***Title***

1:00 p.m.	***ORAL ONLY***	***Historical Look at Autonomous Vehicles***
		Robert L Neff, Sales and Marketing Insight
2:00 p.m.	***ORAL ONLY***	***Zora Arkus-Duntov - The Legend behind Corvette***
		Jerry Burton
3:00 p.m.	***ORAL ONLY***	***Rise of the Machine: the Development and Use of Finite-Element-Based Structural Optimization Tools in Automotive Lightweight Design***
		Donald Baskin, Ogin Inc.
4:00 p.m.	***ORAL ONLY***	***Technical Progress during the Golden Age of the ¿Indy¿ Cars: a look at the cars, components, systems, and the people and decision process that built them***
		Alfred D. Bosley

Tuesday, April 21

Climate Control (Part 1 of 3)

Session Code: ***HX104***

Room 411 A ***Session Time:*** ***9:30 a.m.***

Climate control is a defining vehicle attribute and is associated with brand image. Thermal performance and quality of climate control are both critical to customer satisfaction. The system has strong design interaction with other vehicle systems, while its primary objective is to deliver thermal comfort and occupant safety with low energy consumption. Localized Comfort, Secondary Fluids, Air Quality, Controls, System Sizing and HVAC consumer interface are just a few of the recent advances.

Organizers - *Bashar AbdulNour, General Dynamics Land Systems; Jeffrey Bozeman, General Motors Co.; Tao Zhan, California Air Resources Board*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0361***	***Effect of Pressure Drop in the Header on Refrigerant Distribution in an Outdoor Reversible Microchannel Heat Exchanger***
		Yang Zou, Creative Thermal Solutions; Pega Hrnjak, Univ of Illinois
10:00 a.m.	***2015-01-0362***	***Numerical Investigation of the Effect of Microchannel Evaporator Design on the Performance of Two-Phase Ejector Automotive Air Conditioning Cycles***
		Neal Lawrence, Stefan Elbel, University of Illinois
10:30 a.m.	***2015-01-0357***	***An Infrared Thermography Based Method for Quantification of Liquid Refrigerant Distribution in Parallel Flow Microchannel Heat Exchanger***
		Huize Li, Predrag Hrnjak, Univ of Illinois
11:00 a.m.	***2015-01-0364***	***A Discussion on Vehicle AC System TXV Optimization***
		Yinhua Zheng, Halla Visteon Climate Control Corp.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00481, and also individually. To purchase visit collections.sae.org

Planned by Thermal Management Activity / EMB Land and Sea Group

Tuesday, April 21

Climate Control (Part 2 of 3)

Session Code: ***HX104***

Room 411 A ***Session Time:*** ***1:00 p.m.***

Climate control is a defining vehicle attribute and is associated with brand image. Thermal performance and quality of climate control are both critical to customer satisfaction. The system has strong design interaction with other vehicle systems, while its primary objective is to deliver thermal comfort and occupant safety with low energy consumption. Localized Comfort, Secondary Fluids, Air Quality, Controls, System Sizing and HVAC consumer interface are just a few of the recent advances.

Organizers - *Bashar AbdulNour, General Dynamics Land Systems; Jeffrey Bozeman, General Motors Co.; Tao Zhan, California Air Resources Board*

Time	Paper No.	Title
1:30 p.m.	***2015-01-0352***	***Energy Efficiency Impact of Localized Cooling/Heating for Electric Vehicle***
		Kuo-Huey Chen, General Motors Global R&D; Jeffrey Bozeman, General Motors Co.; Mingyu Wang, Debashis Ghosh, Edward Wolfe, Sourav Chowdhury, Delphi Automotive Systems
2:00 p.m.	***2015-01-0355***	***Climate Control Load Reduction Strategies for Electric Drive Vehicles in Warm Weather***
		Matthew A. Jeffers, Larry Chaney, John P. Rugh, National Renewable Energy Laboratory
2:30 p.m.	***2015-01-0351***	***Sleeper Cab Climate Control Load Reduction for Long-Haul Truck Rest Period Idling***
		Jason A. Lustbader, Cory Kreutzer, National Renewable Energy Laboratory; Steven Adelman, Skip Yeakel, Volvo Group Trucks Technology; John Zehme, Aearo Technologies
	2015-01-0353	***Low Temperature Thermal Energy Storage (TES) System for Improving Automotive HVAC Effectiveness (Written Only -- No Oral Presentation)***
		Kaushal Kumar Jha, Ravi Badathala, Mahindra & Mahindra Ltd.
	2015-01-0356	***One-Dimensional Solar Heat Load Simulation Model for a Parked Car (Written Only -- No Oral Presentation)***
		Aniket Patil, Manoj Radle, Biswadip Shome, Tata Technologies Ltd; Sankar Ramachandran, BITS Pilani
	2015-01-0367	***Solar Powered Vehicle Parking Ventilation System Pre-Cooling Analysis (Written Only -- No Oral Presentation)***
		Zhiqiang Hu, Gangfeng Tan, Zhilei Li, Wuhan University of Technology; Haobo Xu, Heli Specal Auto Manufacture Co.,Ltd; Wenhui Huang, Yifan Ye, Wuhan University of Technology

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Planned by Thermal Management Activity / EMB Land and Sea Group

Tuesday, April 21

Thermal Systems Modeling and Simulation (Part 1 of 3): Airflow Analysis

Session Code: ***HX102***

Room 411 B ***Session Time:*** ***9:30 a.m.***

The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

Organizers - *Ales Alajbegovic, Exa Corporation; Alaa El-Sharkawy, FCA US LLC; Wilko Jansen, Jaguar & Land Rover; Jason Aaron Lustbader, National Renewable Energy Laboratory; Gursaran D. Mathur, CalsonicKansei North America Inc.; Kumar Srinivasan, FCA US LLC; Sudhi Uppuluri, Computational Sciences Experts*

Group

Time	Paper No.	Title
9:30 a.m.	***2015-01-0335***	***Analytical Study of Thermal Management: A Case Study of Underhood Configurations***
		Sandeep Makam, Christopher Dubbs, Yeliana Roosien, Feng Lin, William Resh, FCA US LLC
10:00 a.m.	***2015-01-0330***	***Numerical Simulation of Airflow Distribution on the Automobile Windshield in Defrost Mode***
		Iman Goldasteh, Shi-Ing Chang, Salamah Maaita, Gursaran Mathur, CalsonicKansei North America, Inc.
10:30 a.m.	***2015-01-0337***	***A 1D Method for Transient Simulations of Cooling Systems with Non-Uniform Temperature and Flow Boundaries Extracted from a 3D CFD Solution***
		Blago B. Minovski, Lennart Lofdahl, Chalmers University of Technology; Peter Gullberg, Volvo Group Trucks Technology
11:00 a.m.	***2015-01-0328***	***Automotive Cabin Infotainment System Thermal Management***
		Wilko Jansen, Jaguar & Land Rover; Joe Amodeo, Exa Corporation; Sam Wakelam, Exa UK Ltd; Kamalesh Bhambare, Exa Corporation

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00474, and also individually. To purchase visit collections.sae.org

Planned by Thermal Management Activity / EMB Land and Sea Group

Tuesday, April 21

Thermal Systems Modeling and Simulation (Part 2 of 3): Waster Heat Recovery and Thermoelectric Generators / Simulation and Modeling: Emerging Technologies - Climate Control & Cabin Comfort

Session Code: ***HX102***

Room 411 B ***Session Time:*** ***1:00 p.m.***

The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

Organizers - *Ales Alajbegovic, Exa Corporation; Alaa El-Sharkawy, FCA US LLC; Wilko Jansen, Jaguar & Land Rover; Jason Aaron Lustbader, National Renewable Energy Laboratory; Gursaran D. Mathur, CalsonicKansei North America Inc.; Kumar Srinivasan, FCA US LLC; Sudhi Uppuluri, Computational Sciences Experts Group*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0326***	***Fundamental Study of Waste Heat Recovery in the High Boosted 6-cylinder Heavy Duty Diesel Engine***
		Takuya Yamaguchi, Kurume Institute of Technology; Yuzo Aoyagi, Noboru Uchida, Akira Fukunaga, Masayuki Kobayashi, Takayuki Adachi, Munemasa Hashimoto, New Ace Inst Co Ltd

1:30 p.m.	***2015-01-0339***	***Simulation of Organic Rankine Cycle Power Generation with Exhaust Heat Recovery from a 15 liter Diesel Engine***
		Aimon Allouache, Smith Leggett, Matthew J. Hall, University of Texas; Ming Tu, Wuhan University of Technology; Chad Baker, Ford Motor Co.; Haiyan Fateh, Cummins Inc.
2:00 p.m.	***2015-01-0329***	***Simulating Physiological Response with a Passive Sensor Manikin and an Adaptive Thermal Manikin to Predict Thermal Sensation and Comfort***
		Mark Hepokoski, Allen Curran, ThermoAnalytics Inc.; Richard Burke, Measurement Technology NW; John Rugh, Larry Chaney, National Renewable Energy Laboratory; Clay Maranville, Ford Motor Company
2:30 p.m.	***2015-01-0331***	***Modelling the Electric Air Conditioning System in a Commercially Available Vehicle for Energy Management Optimisation***
		Sina Shojaei, WMG Centre Catapult, Warwick University; Simon Robinson, Chris Chatham, Jaguar Landrover; Andrew McGordon, James Marco, WMG Centre Catapult, Warwick University

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Planned by Thermal Management Activity / EMB Land and Sea Group

Tuesday, April 21

Cold Start and Transients

Session Code: ***PFL290***

Room 411 C ***Session Time:*** ***9:30 a.m.***

This session focuses on both SI and CI combustion and mixture preparation during cold start and transient engine operation. Example topics include engine performance, emissions, control strategies and calibrations for cold start and transient operation impact on NOx, PM, HC, CO, and CO2 emissions; also including the impact of variable valve timing, spark, and turbocharger controls.

Organizers - *Eric W. Curtis, Ford Motor Co.; Ouafaé El Ganaoui-Mourlan, IFPEN; Peter Moilanen, Ford Motor Co.; Hamid Servati, Servotech Engineering Inc.*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0886***	***Effects of Secondary Air on the Exhaust Oxidation of Particulate Matters***
		Joseph Pritchard, GM Powertrain; Wai K. Cheng, MIT
10:00 a.m.	***2015-01-0887***	***Effect of Operation Strategy on First Cycle CO, HC, and PM/PN Emissions in a GDI Engine***
		J. Felipe Rodriguez, Wai K. Cheng, Massachusetts Institute of Technology
10:30 a.m.	***2015-01-0885***	***Development of a Third Generation Dynamic Intake Air Simulator for Single-Cylinder Test Engines***
		Mark B. Murphy, Sargent & Lundy; John J. Moskwa, Univ of Wisconsin

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Physical Plant Models for Controls

Session Code: ***PFL114*** ***1:00 p.m.***

Room 411 C ***Session Time:***

This sub-session covers zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines as a plant in engine controls

Organizers - *Norbert Meyer, dSPACE GmbH; Federico Millo, Politecnico di Torino; Thorsten Pueschl, dSPACE GmbH; Christof Schernus, FEV GmbH; Per Tunestal, Lund University*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1247***	***Plant Modeling for Closed Loop Combustion Control - A Thermodynamic Consistent and Real-Time Capable Approach***
		Johann C. Wurzenberger, Christoph Poetsch, AVL LIST GmbH
1:30 p.m.	***2015-01-1248***	***Model Reduction of Diesel Mean Value Engine Models***
		Timothy Broomhead, Chris Manzie, Michael Brear, The University of Melbourne; Peter Hield, DSTO
	2015-01-1249	***Cylinder by cylinder indicated torque and combustion feature estimation based on engine instantaneous speed and one cylinder pressure through error similarity analysis (Written Only -- No Oral Presentation)***
		Jinli Wang, Fuyuan Yang, Minggao Ouyang, Tsinghua Univ

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Multi-domain Models for Mechanical, Fluid, and Thermal Engine Systems

Session Code: ***PFL115***

Room 411 C ***Session Time:*** ***2:00 p.m.***

This session focuses on modelling the performance of complex engine systems through consideration of mechanical, fluid, and thermal effects.

Organizers - *Diana Dascalescu, Ricardo Inc.; Bradford L. Lynch, Gamma Technologies Inc.; Federico Millo, Politecnico di Torino; Christof Schernus, FEV GmbH*

Time	Paper No.	Title
2:00 p.m.	***2015-01-1300***	***Simulation Study of Hydraulic Differential Drive Free-piston Engine***
		Shuanlu Zhang, Changlu Zhao, ZhenFeng Zhao, Dong Yafei, Fukang Ma, Beijing Institute of Technology
2:30 p.m.	***2015-01-1301***	***Method for Determining Thermal Resistances in Coupled Simulator: For Electric Valve Timing Control System***
		Naoki Yoneya, Masaru Yamasaki, Hitachi, Ltd.; Atsushi Yamanaka, Kentaro Mikawa, Hitachi Automotive Systems, Ltd.; Hidefumi Iwaki, Hitachi Car Engineering Co., Ltd.; Isao Doi, Hitachi Automotive Systems, Ltd.
	2015-01-1302	***Numerical Simulation of the Gas Flow through the Piston Ring Pack of an Internal Combustion Engine (Written Only -- No Oral Presentation)***
		Alexander Oliva, Stefan Held, Anatoli Herdt, Georg Wachtmeister, TU Muenchen

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

All Wheel Drive

Session Code: ***PFL620***

Room 412 A ***Session Time:*** ***9:30 a.m.***

This Session includes papers on a high efficiency rear drive unit, an on demand dry sump rear drive module with PTU disconnect and power distribution models for a multi-wheeled vehicle.

Organizers - *John C. Collins, John A. Frait, FCA US LLC*

Time	Paper No.	Title
9:30 a.m.	***2015-01-1098***	***Development of High Efficiency Next-Generation SH-AWD Rear Drive Unit*** *Nor Hairuddin Mohd Zainal Abidin, Satoshi Imamori, Honda R&D Co., Ltd.; Aaron Alexander, Honda R & D Americas Inc*
10:00 a.m.	***2015-01-1099***	***Beyond Driveline Disconnect - The Ultimate On-Demand Dry Sump RDM System with PTU Disconnect*** *Thad Kopp, Larry A. Pritchard, BorgWarner TorqTransfer Systems*
	2015-01-1097	***Comparative Analysis of Methods of Power Distribution in Mechanical Transmissions and Evaluation of their Effectiveness (Written Only -- No Oral Presentation)*** *Andrei Keller, Igor Murog, Sergei Aliukov, South Ural State University*

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Driveline Controls

Session Code: ***PFL640***

Room 412 A ***Session Time:*** ***1:00 p.m.***

This session covers transmission and driveline controls. Session will cover topics related to controls hardware, controls software, and controls integration.

Organizers - *Gang Chen, Hussein Dourra, FCA US LLC; Craig Renneker, Ford Motor Co.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1118***	***A New Clutch Actuation System for Dry DCT*** *Fengyu Liu, Li Chen, Jian Yao, Jianlong Zhang, Chengliang Yin, Shanghai Jiao Tong University; Dongxu Li, Chunhao Lee, Ying Huang, General Motors LLC*
1:30 p.m.	***2015-01-1111***	***Launch Performance Optimization of GTDI-DCT Powertrain*** *David Cho, Rohit Gupta, University of Michigan; Edward Dai, James McCallum, Gregory Pietron, Matthew Shelton, Ford Motor Company; Ilya V. Kolmanovsky, University of Michigan*
2:00 p.m.	***2015-01-1113***	***The Active Damping Control to Reduce Driveline Oscillations for Electric Vehicles Using Wheel Speeds*** *Jae Sung Bang, Aeromec; Young-Kwan Ko; Tae-Hee Jung*
2:30 p.m.	***2015-01-1109***	***Optimization of DCT Power-On Upshift Control Strategy Based on PSO Algorithm*** *Yulong Lei, Ke Liu, Yao Fu, Jilin University ASCL; Ge Lin, China FAW Group Corporation R&D Center; Bin Song, Hangzhou Advance Gearbox Group Co., Ltd.*

3:00 p.m.	***2015-01-1108***	***Application of Slope Sensor in Hill-Start to AMT (Automated Manual Transmission) Vehicles***
		Hongqing Chu, Jilin University; Yong Chen, Lishu Guo, Geely Automobile Research Institute; Bingzhao Gao, Hong Chen, Jilin University
3:30 p.m.	***2015-01-1117***	***Optimal Regenerative Braking Control for 4WD Electric Vehicles with Decoupled Electro-Hydraulic Brake System***
		Yang Liu, Zechang Sun, Tongji University
4:00 p.m.	***2015-01-1114***	***The Study on Co-Simulation Based Tracked Vehicle Path Tracking Control***
		Can Wang, Bo Yang, Gangfeng Tan, YiRui Wang, Li Zhou, Wuhan Univ of Technology
	2015-01-1106	***An Acceleration Slip Regulation Strategy for Four-Wheel Independent Drive EV Based on Road Identification (Written Only -- No Oral Presentation)***
		Guoying Chen, Xingjian Gu, Lei He, ASCL, Jilin University
	2015-01-1107	***Combined State Estimation and Active Fault Detection of Individual-Wheel-Drive Vehicles: An Adaptive Observer-Based Approach (Written Only -- No Oral Presentation)***
		Pan Song, Changfu Zong, Jilin Univ; Masayoshi Tomizuka, Univ of California

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Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Engine & Transmission Control

Session Code: ***AE301***

Room 412 B ***Session Time:*** ***9:30 a.m.***

Powertrain Electronics play a key role in meeting today's complex emissions and performance requirements, on-board diagnostics, legislated regulations, and product flexibility. This session will explore the challenges and future prospects for powertrain controls. Papers are sought in the areas of on-board diagnostics, integration with transmissions, flash programming, service, software design and development, unit and system test, and electronics architecture today and in the future.

Organizers - *Riccardo Groppo, Ideas & Motion; Brian A. Trimboli, IAV Automotive Inc.*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0227***	***Sliding Mode Observers to Detect and Isolate Faults in a Turbocharged Gasoline Engine***
		Rasoul Salehi, Aria Alasty, Gholam-Reza Vossoughi, Sharif University of Technology
10:00 a.m.	***2015-01-0229***	***The Development of an Advanced Vehicle Control Platform for Pure Electric Vehicles***
		Zhongwen Zhu, Xu Wang, Wei Huang, Jinfeng Gong, CATARC
	2015-01-0228	***A Low Cost System for Active Gear Shift and Clutch Control (Written Only -- No Oral Presentation)***
		Francesco Braghin, Francesco Salis, Politecnico di Milano

	2015-01-0230	***Design and Optimization of Clutch Hydraulic Shift Control System in Automatic Transmissions with Failure Protection Function (Written Only -- No Oral Presentation)***
		Shuhan Tang, Yanfang Liu, Xiao Han, Beihang University
	2015-01-0231	***Integrated Control Strategy in the Power-On Upshift Process of Automatic Transmission Based on Transmission Output Torque (Written Only -- No Oral Presentation)***
		Qingkai Wei, Yulong Lei, State Key Lab. of ASC, Jilin University; Xingzhong Li, Hangzhou Advance Gearbox Group Co., Ltd.; Boqin Hu, Zhengwei Liu, State Key Lab. of ASC, Jilin University; Bin Song, Hangzhou Advance Gearbox Group Co., Ltd.
	2015-01-0232	***Diesel Engine Torque Estimation Based on ENN (Written Only -- No Oral Presentation)***
		Yanwu Ge; Gang Li; Xiang Di

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Planned by Electronics in Powertrain Committee / Automobile Electronics Activity

Tuesday, April 21

Design Optimization Techniques in Electronics

Session Code: ***AE102***

Room 412 B ***Session Time:*** ***1:00 p.m.***

This session aims at addressing optimization driven design by presenting the most novel approaches in this area aimed at ensuring a high degree of automation and integration of the different models, methods, tools, and design data used for an optimization driven design process in the presence of current and future uncertainties

Organizers - *Amit Choudhury, ADVICS North America Inc.; Paolo Giusto, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0153***	***How to Save $20 per Car by Optimization of the E/E System?***
		Reinhold Blank, Zuken GmbH
1:30 p.m.	***2015-01-0155***	***Fuel Cell Hybrid Electric Vehicle Sizing using Ordinal Optimization***
		Sami H. Karaki, Rafika Dinnawi, Rabih Jabr, Riad Chedid, American Univ. of Beirut; Ferdinand Panik, University of Applied Sciences Esslingen
2:00 p.m.	***2015-01-0156***	***Automated Decomposition and Allocation of Automotive Safety Integrity Levels Using Exact Solvers***
		Alexandr Murashkin, Univ. of Waterloo; Luis Silva Azevedo, Univ. of Hull; Jianmei Guo, Edward Zulkoski, Jia Hui Liang, Krzysztof Czarnecki, Univ. of Waterloo; David Parker, Univ. of Hull
2:30 p.m.	***2015-01-0152***	***Design and Optimization of Hardware-Efficient Filters for Active Safety Algorithms***
		Rafal Tomasz Dlugosz, Micha¿ Szulc, Delphi Poland; Marta Kolasa, University Technology and Life Sciences; Pawel Skruch, Krzysztof Kogut, Pawe¿ Markiewicz, Mateusz Orlowski, Maciej Ró¿ewicz, Anna Ryszka, Dominik Sasin, Delphi Poland; Tomasz Talaska, University Technology and Life Sciences

3:00 p.m.	***2015-01-0154***	***Efficient Design Space Exploration and Optimization for Electrical Architectures***
		Lei Rao, General Motors Research and Development
3:30 p.m.	***ORAL ONLY***	***Automotive E/E Modeling, Design Exploration and Optimization: Power Window Case Study***
		Alexandr Murashkin, Zubair Akhtar, Krzysztof Czarnecki, Univ of Waterloo; Thomas Fuhrman, S Ramesh, General Motors Co

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Tuesday, April 21

Painting and Coatings (Part 1 of 2)

Session Code: ***M400***

Room 413 A ***Session Time:*** ***9:30 a.m.***

This series of sessions is looking for abstracts that specifically address application and research on coatings for exterior body and plastics (including polycarbonate) as well as vehicle interiors and underbody/underhood. Focus will be on the 3-10 year timeframe.

Organizers - *Todd Fitz, Honda R & D Americas Inc.; Jim Keller, United Paint; Daniel G. Wright, BASF Corp.; Jian Tao, FCA US LLC*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0732***	***Use of Electrochemical Analysis Method in EG Steel Nubbing Investigation***
		Matthew Dula, Heather Eich, Nicole VanBelle, Prasanth Mohankumar, Bryan D. Arnold, Toyota Motor Engineering & Mfg NA Inc.
10:00 a.m.	***2015-01-0734***	***Monitoring Technology for Automobile Corrosive Environments***
		Yasuhiko Saijo, Mitsuhiko Ueki, Hirokazu Watanabe, Yoichiro Tejima, Honda R&D Co., Ltd. Automobile R&D Cente
10:30 a.m.	***2015-01-0738***	***Comparative Corrosion Assessment of Coated Alloys for Multi-Material Lightweight Vehicle Architectures***
		Joseph R. Kish, Zach Cano, Alexandra Kobylecky, Joseph McDermid, McMaster University; Timothy Skszek, Magna International
11:00 a.m.	***2015-01-0730***	***Development of Fuel Filler Tube with Enhanced Adhesion Coating System on Ferrite Stainless Steel for LEV III***
		Tsutomu Miyadera, Honda R&D Co.Ltd
11:30 a.m.	***2015-01-0731***	***Transient Dip Paint Simulation of Entire Car Bodies within One Day***
		Martin Schifko, Engineering Center Steyr GmbH & Co. KG; Hans Steiner, Caelynx; Daniela Fellhofer, Xinghua Song, Kevin Verma, Engineering Center Steyr GmbH & Co. KG; Christoph Bauinger, Technical University Graz

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 21

Painting and Coatings (Part 2 of 2)

Session Code: ***M400***

Room 413 A ***Session Time:*** ***1:00 p.m.***

This series of sessions is looking for abstracts that specifically address application and research on coatings for exterior body and plastics (including polycarbonate) as well as vehicle interiors and underbody/underhood. Focus will be on the 3-10 year timeframe.

Organizers - *Todd Fitz, Honda R & D Americas Inc.; Jim Keller, United Paint; Daniel G. Wright, BASF Corp.; Jian Tao, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Cr-VI-free pre-treatment for the decorative plating on ABS-polymers***
		Carl Christian Fels, Atotech Deutschland GmbH
1:30 p.m.	***ORAL ONLY***	***Surface Activation of Thermoplastic polyolefins (TPO) for Automotive Applications using Reactive Gas Technology(TM)***
		Prakash Iyer, Inhance Technologies LLC
2:00 p.m.	***2015-01-0733***	***Improved Scratch Resistant Clear Coat for High Gloss Interior***
		Nichole Verwys, Honda; Jesse Fritcher, Thomas DeMass, NBCoatings
2:30 p.m.	***2015-01-0735***	***Physical Properties of Leather-Feeling Coatings for Automotive Interior***
		Woo Jeong Oh, Hyundai Mobis; Se yoon Pang, Samwha Paint
3:00 p.m.	***ORAL ONLY***	***Challenges in Achieving Class A Finish on Carbon Fiber Composites***
		Donald H. Campbell, BASF Corp.
3:30 p.m.	***2015-01-0737***	***Numerical Simulation of a Coating Sprayer Capable of Producing Controllable Paint Droplets***
		Sadegh Poozesh, Nelson Akafuah, Kozo Saito, University of Kentucky

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 21

Load Simulation and Vehicle Performance: Nonlinear Components/Systems

Session Code: ***M206***

Room 413 B ***Session Time:*** ***9:30 a.m.***

Focusing on new theory, formulation and modeling of amplitude-, frequency- and temperature-dependent nonlinear components/systems such as mounts or bushings, shock absorbers, and joint friction/damping; dynamic characterization through lab and field testing; Linearization methodology; Model validation, application, and sensitivity analysis in vehicle system/subsystem simulations; Nonlinear system identification, modeling, and application in testing accuracy improvement, etc.

Organizers - *Guangqiang Wu, Tongji Univ.; Peijun Xu, Ebco Inc.; Fulun Yang, Tenneco Inc.*

Time	Paper No.	Title
9:30 a.m.	***2015-01-0606***	***Application of QFD and KANO Model in Vehicle Technical Characteristics Setup***
		Jiaquan Chen, Min Qin, Lingge Jin, Liu Tao, Yongfeng Jiang, Wei Wang, FAW R&D Center; Yin-Ping Chang, Oakland University
10:00 a.m.	***2015-01-0608***	***Studies of Air Spring Mathematical Model and its Performance in Cab Suspension System of Commercial Vehicle***
		Gang Tang, Hefei University of Technology; Hengjia Zhu, Yunqing Zhang, Huazhong University of Science and Tech.; Ying Sun, C&C Trucks Co., Ltd

10:30 a.m.	***2015-01-0609***	***Powertrain Mounting System with Uncertainty Using Chebyshev Interval Method***
		Yan Xie; Weiguo Zhang, Huazhong University of Science and Tech.; Xingxing Feng; Yunqing Zhang, Huazhong University of Science and Tech.
11:00 a.m.	***2015-01-0610***	***The Impact of Gear Meshing Nonlinearities on the Vehicle Launch Shudder***
		Guangqiang Wu, Wenbo Luan, Tongji University
	2015-01-0605	***Fatigue Life and Non-Linear Strength Predictions for Heavy Stamping Steel Parts (Written Only -- No Oral Presentation)***
		Guoyu Yang, Scott Kish, Tenneco Inc.
	2015-01-0607	***Heat Generation Mechanism and Failure Analysis of Shock Absorber (Written Only -- No Oral Presentation)***
		Xincheng Liang, Jingshan Zhao, Tsinghua University

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Systems Prognostics

Session Code: ***AE204***

Room 413 B ***Session Time:*** ***1:00 p.m.***

Prognostics deals with the development, delivery and execution of health determination processes and procedures for vehicle systems. This session will explore new technologies, processes and trends in the area of vehicle health management. This also includes Vehicle Health Maintenance, Condition-based Maintenance, and Predictive Maintenance.

Organizers - *Tim A. Cavanaugh, Cavanaugh Consulting*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0212***	***Gear Fault Diagnosis Based on Optimal Morlet Wavelet Filter and Autocorrelation Enhancement***
		Mohamed El Morsy, Czech Technical University & Helwan University; Gabriela Achtenova, Czech Technical University
1:30 p.m.	***Panel***	***Technical Expert Panel Discussion: Prognostics***
		Organizers - *Tim A. Cavanaugh, Delphi Corp.* ***Moderators -*** *Tim A. Cavanaugh, Delphi Corp.* ***Panelists -*** *Steven W. Holland, General Motors Company; Bernie Porter, MAHLE Powertrain LLC; Hjalmar G. Staaf, 8to8 Solutions AB; Christopher Thompson, Raytheon;*

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Tuesday, April 21

Technical Expert Panel Discussion: Prognostics

Session Code: ***AE204***

Room 413 B Technical Expert Panel Discusi ***Session Time:*** ***1:30 p.m.***

Organizers - *Tim A. Cavanaugh, Cavanaugh Consulting*

Moderators - *Tim A. Cavanaugh, Delphi Corp.*

Panelists - *Steven W. Holland, General Motors Company; Bernie Porter, MAHLE Powertrain LLC; Hjalmar G. Staaf, 8to8 Solutions AB; Christopher Thompson, Raytheon;*

Tuesday, April 21

Technical Expert Panel Discussion: Current Understanding of Particulate Matter from Low Temperature Combustion Modes

Session Code: ***PFL499***

Room 413 B Technical Expert Panel Discusi ***Session Time:*** ***3:30 p.m.***

Discussion of Low Temperature Combustion Particulate Matter

Organizers - *Scott Curran, Oak Ridge National Laboratory; William F. Northrop, Univ. of Minnesota-Twin Cities; John M. Storey, Oak Ridge National Laboratory*

Moderators - *William F. Northrop, Univ. of Minnesota-Twin Cities*

Panelists - *André Boehman, University of Michigan; Matti Maricq, Ford Motor Company; John M. Storey, Oak Ridge National Laboratory;*

Tuesday, April 21

Automotive Engine and Driveline Lubricants

Session Code: ***PFL340***

Room 414 A ***Session Time:*** ***9:30 a.m.***

The industry continues to work on understanding the interaction of lubricating fluids with engine hardware in order to improve vehicle efficiency, durability, and performance. The Engine Lubricants Session presents a variety of papers dealing with advances in engine oils and their relationship to improved hardware performance.

Organizers - *Ewa Alice Bardasz, ZUAL Associates in Lubrication; Jason Bares, BorgWarner Automotive; Timothy P. Newcomb, Lubrizol Corp.; Choong Fong Tang, BorgWarner Inc.; Simon C. Tung, Vanderbilt Chemicals, LLC*

Time	Paper No.	Title
9:30 a.m.	***2015-01-0966***	***Evaluation of Long Drain Gas Engine Oil on Heavy Duty Engine Using Hydrogen Blended CNG***
		Sauhard Singh, Anil Bhardwaj, Reji Mathai, A K Sehgal, R Suresh, B P Das, Indian Oil Corporation Limited; Nishant Tyagi, Jaywant Mohite, N B Chougule, Tata Motors Limited
10:00 a.m.	***2015-01-0967***	***Impact of Fuel Injection on Dilution of Engine Crankcase Oil for Turbocharged Gasoline Direct-Injection Engines***
		Tingjun Hu, Ho Teng, Xuwei Luo, Bin Chen, Jiangling Motors Co., Ltd.
10:30 a.m.	***ORAL ONLY***	***Improving Diesel Engine Fuel Economy and Wear through the Lubricant Additive Design***
		Jun Cui, Sonia Oberoi, Isabella Goldmints, Stuart Briggs, Infineum USA LP
11:00 a.m.	***ORAL ONLY***	***Prediction Models for Performance of Various Tribological Systems by Means of Molecular Modeling and Data Mining Techniques.***
		Joanna Procelewska, Schaeffler Technology

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

On Board Measurement and Control

Session Code: ***PFL425***

Room 414 A ***Session Time:*** ***1:00 p.m.***

This technical session will focus on internal combustion engine emissions on board measurement and control. Papers and presentations will cover topics that discuss varying methods of emissions data collection and control during operation of vehicles and engines. Topics will also include various advanced analysis techniques to determine emissions levels and reduce emissions under in-use operations.

Organizers - *Shouxian Ren, General Motors Co.; Hui Xu, Cummins Inc.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1040***	***OBD Diagnostic Strategies for LEVIII Exhaust Gas Aftertreatment Concepts*** *Harsha K. Nanjundaswamy, Joel Deussen, Roger Van Sickle, Dean Tomazic, Tamas Szailer, Michael Franke, FEV Inc.; Matthias Kotter, FEV GmbH; Thomas Koerfer, FEV Group Holding GmbH*
1:30 p.m.	***2015-01-1042***	***Microwave-Based Catalyst State Diagnosis - State of the Art and Future Perspectives*** *Ralf Moos, Univ. of Bayreuth*
2:00 p.m.	***2015-01-1043***	***Fuel-Dithering Optimization of Efficiency of TWC on Natural Gas IC Engine*** *Xian Shi, Reinhard Seiser, Jyh-Yuan Chen, Robert Dibble, Robert Cattolica, University of California*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Powertrain Actuators and Sensors

Session Code: ***PFL560***

Room 414 A ***Session Time:*** ***2:30 p.m.***

Topics cover actuator and sensor mechanisms, devices, and systems; and the impact and control of such actuation and sensing systems on Powertrain thermodynamics, combustion, fuel economy, emissions, and performance.

Organizers - *Steve Thomson, Delphi Corp.*

Time	Paper No.	Title
2:30 p.m.	***ORAL ONLY***	***Knock sensor using internal glue adhesive technology*** *Jeroen Van Est, Continental Automotive France; Neil Carpenter, Continental Automotive Systems Co Ltd*
3:00 p.m.	~~***2015-01-1293***~~ ***ORAL ONLY***	***Towards an industrial Automotive Onboard Fuel Quality Sensor*** *Eric Hermitte, Alain Lunati, SP3H*

Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Systems Engineering (Part 1 of 3)

Session Code: ***AE101*** ***9:30 a.m.***

Room 414 B ***Session Time:***

This session covers intelligent and efficient approaches to high level system design, analysis and integration as well as considerations for vehicle-level optimization of cost and energy. System definition includes components, sub-assemblies and complete integrated vehicle systems, including electronic systems and human machine interfaces.

Organizers - *Subramaniam Ganesan, Kanaparty Rao, Oakland University*

Time	Paper No.	Title
9:30 a.m.	***ORAL ONLY***	***Innovative electrical architectures for EV and HEV with lithium batteries*** *Matthieu Desbois-Renaudin, CEA*
10:30 a.m.	***2015-01-0130***	***A Dynamic Driving Course for Military Personnel -Curriculum and Assessment Results*** *Julio Rodriguez, Clemson Univ.; Ken Rogich, Richard Petty Driving Experience Inc; Philip Pidgeon, Kim Alexander, John R. Wagner, Clemson Univ.*
11:00 a.m.	***2015-01-0131***	***Systems Engineering in an Automotive E/E Design World*** *Nick Smith, Mentor Graphics Corp.*

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Tuesday, April 21

Systems Engineering (Part 2 of 3)

Session Code: ***AE101***

Room 414 B ***Session Time:*** ***1:00 p.m.***

This session covers intelligent and efficient approaches to high level system design, analysis and integration as well as considerations for vehicle-level optimization of cost and energy. System definition includes components, sub-assemblies and complete integrated vehicle systems, including electronic systems and human machine interfaces.

Organizers - *Subramaniam Ganesan, Kanaparty Rao, Oakland University*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0132***	***Design and Control of Vehicle Trailer with Onboard Power Supply*** *Sibi Visht Sankara Narayanan, Diane Peters, Kettering University*
1:30 p.m.	***2015-01-0133***	***Electronic Design of Compact BLDC Motor Control*** *Clark Kinnaird, Texas Instruments*
2:00 p.m.	***2015-01-0135***	***Bridging Automotive Design Domains with the Latest in Functional Design Technology*** *Thomas Heurung, Mentor Graphics Corp.*
2:30 p.m.	~~***2015-01-0138***~~ ***ORAL ONLY***	***Artificial Intelligence approach for High Performance Image Classification*** *Ravi Anand, Isoftwareworks*
3:00 p.m.	***2015-01-0141***	***Three Zone Permanent Magnetic Structures and Their Applications*** *Viktor Sheshukov, South Ural State University; Sergey P. Gladyshev, Michigan-Dearborn University; Ruzaliia Naraeva, South Ural State University*

3:30 p.m.	***2015-01-0142***	***Implementation of Design Thinking, to Improvise the Engine Stop/Start System for Enhanced Benefits in Real Time Driving Conditions in India***
		Gopal Athani, Tata Technologies Limited; Srinivasa Raju Gavarraju, Shashi Kulkarni, Ramakrishna Koduru, Kapil Dongare, Prasad Rao Yerraguntla, Tata Motors Limited

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00482, and also individually. To purchase visit collections.sae.org

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Tuesday, April 21

Modeling and Simulation Technology for Composite Materials (Part 1 of 2)

Session Code: ***M215***

Room 415 A ***Session Time:*** ***9:30 a.m.***

This session focuses on advances and challenges in composite materials¿ characterizations using advanced modeling and computational technologies including but not limited to: the notion of material models and their validation (especially for crash), paradigm shifts in modeling techniques (thinking out of the metallic box), composite materials¿ design, virtual testing and parameter extraction, and the drive towards Integrated Computational Materials Engineering (ICME) concepts.

Organizers - *Khaled Shahwan, FCA US LLC*

Time	***Paper No.***	***Title***
9:30 a.m.	***2015-01-0694***	***Strength Analysis of CFRP Composite Material Considering Inter-Laminar Fractures***
		Tadashi Naito, Yuta Urushiyama, Honda R&D Co., Ltd.
10:00 a.m.	***ORAL ONLY***	***Fiber Reinforced Plastic Durability: From Material Microstructure to Structural Part Life Predictions***
		Benoit Bidaine, e-Xstream Engineering; Laurent Adam; Kurt Danielson, e-Xstream Engineering; Gilles Robert, Solvay Engineering Plastics; Olivier Moulinjeune, SOLVAY Engineering Plastics; Roger Assaker, MSC Software Corp
10:30 a.m.	***ORAL ONLY***	***Development and Characterization of a Rate-Dependent Three-Dimensional Macroscopic Plasticity Model Suitable for Use in Composite Impact Problems***
		Robert Goldberg, NASA Glenn Research Center; Kelly Carney, NASA Glenn Reserch Center; Paul DuBois, George Mason University; Canio Hoffarth, Joseph Harrington, Subramaniam Rajan, Arizona State University; Gunther Blankenhorn, Livermore Software Technology Corp.
11:00 a.m.	***2015-01-0695***	***Quantification of Interface Thermal Resistance and Prediction of Thermal Conductivity by Observation of Stereoscopic Filler Dispersion in Polymer Composites***
		Osamu Arao, DENSO Corp.

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Modeling and Simulation Technology for Composite Materials (Part 2 of 2)

Session Code: ***M215***

Room 415 A ***Session Time:*** ***1:00 p.m.***

This session focuses on advances and challenges in composite materials¿ characterizations using advanced modeling and computational technologies including but not limited to: the notion of material models and their validation (especially for crash), paradigm shifts in modeling techniques (thinking out of the metallic box), composite materials¿ design, virtual testing and parameter extraction, and the drive towards Integrated Computational Materials Engineering (ICME) concepts.

Organizers - *Khaled Shahwan, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***~~2015-01-0696~~ ORAL ONLY***	***Collaborative approaches in automotive and aerospace to develop a formal structure for the management and analysis of composite modelling and characterization data*** *Dan Williams, Granta Design, Ltd.*
1:30 p.m.	***2015-01-0693***	***Strength Analysis of CFRP Composite Material Considering Multiple Fracture Modes*** *Tadashi Naito, Yuta Urushiyama, Honda R&D Co., Ltd.; Michael Bruyneel, Samtech s.a., A Siemens Company*
2:00 p.m.	***2015-01-0697***	***Predictive Simulations of Damage Propagation in Laminated Composite Materials and Structures with LMS Samtech Samcef*** *Michael Bruyneel, Samtech s.a., A Siemens Company; Tadashi Naito, Yuta Urushiyama, Honda R&D Co Ltd; Scott McDougall, Siemens PLM Software Inc.*
2:30 p.m.	***ORAL ONLY***	***Effects of packing and RUC size on ICME of carbon FRPCs*** *Royan J. D'Mello, Marianna Maiaru, University of Michigan; Folusho Oyerokun, GE Aviation; Matthew Hockemeyer, Li Zheng, GE Global Research; Anthony M. Waas, University of Michigan*
3:00 p.m.	***2015-01-0698***	***Modeling of Long Fiber Reinforced Plastics*** *Danielle Zeng, Li Lu, Jin Zhou, Yang Li, Z. Xia, Paul Hoke, Ford Motor Co; Kurt Danielson, Dustin Souza, e-Xstream Engineering*
3:30 p.m.	***2015-01-0692***	***The Post-Failure Behavior's Prediction of CFRP Parts under Dynamic Loads*** *Sylvain Calmels, Benoit Bidaine, Kurt Danielson, e-Xstream Engineering*
4:00 p.m.	***ORAL ONLY***	***Automotive Composites `Crash Box¿ for Mass Production*** *Damien Guillon, Matthieu Kneveler, CETIM; Alain Leroy, Jean Philippe Sauvaget, Roman Hillermeier, Momentive Specialty Chemicals Inc.*

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Load Simulation and Vehicle Performance: Multi-body Dynamics (Part 1 of 2)

Session Code: ***M209***

Room 415 B ***Session Time:*** ***9:30 a.m.***

Multibody system modeling and simulation, rigid and flexible body modeling, loads predictions for vehicle body, frame/sub-frame, exhaust system, driveline, and powertrain, modeling of vehicle dynamics simulation and durability loads simulation, process considering vehicle dynamics and durability loads, data processing and analysis, loads sensitivity analyses for model parameters, design load minimization, prediction of loads effects, robust design methods, driver modeling, and system modeling.

Organizers - *Paramsothy Jayakumar; Jesper Slattengren, Pratt & Miller Engineering; Peijun Xu, Ebco Inc.; Yunqing Zhang, Huazhong University of Science and Tech.*

Time	Paper No.	Title

9:30 a.m.	***ORAL ONLY***	***Discrete Element Methods for Off-Road Vehicle Mobility Studies with the Chrono Multibody Dynamics Library***
		Radu Serban, Daniel Melanz, Justin Madsen, Jonathan A. Fleischmann, University of Wisconsin - Madison; Paramsothy Jayakumar, US Army TARDEC; Dan Negrut, University of Wisconsin - Madison
10:00 a.m.	***ORAL ONLY***	***Influence of Structural Flexibility on the Dynamic Precision of a HMMWV-Vehicle-Mounted Laser Weapon System***
		Paramsothy Jayakumar, Dave Mechergui, US Army TARDEC; Mike Lent, Eric Wheater, US Navy Surface Warfare Center
11:00 a.m.	***2015-01-0633***	***Simulation and Analysis on a Self-Energizing Synchronizer of Transmission***
		Fan Luo, Jinning Li, Huazhong University of Science and Tech.; Xingxing Feng; Yunqing Zhang, Huazhong University of Science and Tech.
	2015-01-0630	***Tyre Load Analysis of Hydro-Pneumatic Interconnected Suspension with Zero Warp Suspension Stiffness (Written Only -- No Oral Presentation)***
		Guangzhong Xu, Nong Zhang, Holger Roser, Jiageng Ruan, Univ of Technology Sydney
	2015-01-0631	***Design of Experiment of Dynamic Vibration Absorber for Drive Shaft (Written Only -- No Oral Presentation)***
		Cuiping Feng, Zhihong Dong, Yuliang Yang, Chaoxing Xie, Kai Wang, C&C Trucks Co., Ltd.
	2015-01-0636	***Vehicle Parameter Estimation Based on Full-Car Dynamic Testing (Written Only -- No Oral Presentation)***
		Yu Zhang, Hunan University; Lifu Wang, University of Technology; Bangji Zhang, Nong Zhang, Hunan University
	2015-01-0640	***Analysis of Design Method for Protection Load Bearing Body (Written Only -- No Oral Presentation)***
		Song Huang, Jianpeng Shi, Chaoliang Shi, Dongfeng Motor Corporation

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

Load Simulation and Vehicle Performance: Multi-body Dynamics (Part 2 of 2)

Session Code: ***M209***

Room 415 B ***Session Time:*** ***1:00 p.m.***

Multibody system modeling and simulation, rigid and flexible body modeling, loads predictions for vehicle body, frame/sub-frame, exhaust system, driveline, and powertrain, modeling of vehicle dynamics simulation and durability loads simulation, process considering vehicle dynamics and durability loads, data processing and analysis, loads sensitivity analyses for model parameters, design load minimization, prediction of loads effects, robust design methods, driver modeling, and system modeling.

Organizers - *Paramsothy Jayakumar; Jesper Slattengren, Pratt & Miller Engineering; Yunqing Zhang, Huazhong University of Science and Tech.*

Time	***Paper No.***	***Title***

1:00 p.m.	***2015-01-0632***	***Comparative Analysis on a Rectilinear Independent Suspension with Traditional Ones***
		Xiang Liu; Jie Zhang; Jingshan Zhao
1:30 p.m.	***2015-01-0634***	***Characterisation of the Effects of Vehicle Parameter Variations on Vehicle Road Load Data***
		Adebola Ogunoiki, Oluremi Olatunbosun, University of Birmingham
2:00 p.m.	***2015-01-0639***	***Artificial Road Load Generation Using Artificial Neural Networks***
		Adebola Ogunoiki, Oluremi Olatunbosun, University of Birmingham
2:30 p.m.	***2015-01-0637***	***Simulation of Vehicle Pothole Test and Techniques Used***
		Mohammed K Billal, Chrysler India Automotive Pvt, Ltd.; Guilherme Carneiro, FCA Fiat Chrysler Automóveis Brasil Ltda; Renan Ozelo, Pneus Pirelli Ltda; Makarand Kulkarni, Chrysler India Automotive Pvt, Ltd.
3:00 p.m.	***ORAL ONLY***	***On the Modeling of Tires in Multibody Ground Vehicle Simulation***
		Hiroki Yamashita, Univ of Iowa; Paramsothy Jayakumar, US Army RDECOM TARDEC; Hiroyuki Sugiyama, Univ. of Iowa
3:30 p.m.	***2015-01-0642***	***Modeling and Feasibility Study of Nonlinear Suspension Components in Multibody Systems using Absolute Nodal Coordinate Formulation Based Beam Elements -Application to Stabilizer Bar***
		Per Hyldahl, Sebastian Andersen, Sebastian Mikkelsen, Ole Balling, Aarhus University
4:00 p.m.	***ORAL ONLY***	***Integration and Interaction of Powertrain and Chassis Dynamics in a Co-Simulation Environment***
		Paramsothy Jayakumar, US Army TARDEC; Jonathan Zeman, Gamma Technologies Inc; Dave Mechergui, Denise Rizzo, US Army TARDEC
	2015-01-0635	***Research on Roll Vibration Characteristics of a Truck's Front Suspension (Written Only -- No Oral Presentation)***
		Changxin Wang, Wenku Shi, Jilin University; Zhijun Guo, Henan University of Science and Tech; Meilan Liu, Shangshui County Secondary Vocational
	2015-01-0638	***Structure Optimization Method for Heavy Truck Propeller Shaft Bracket (Written Only -- No Oral Presentation)***
		Bo Tan, Yu Yang, Jun Huang, Wenhui Liu, Dongqing Zhang, C&C Trucks Co., Ltd.
	2015-01-0641	***A Parametric Multi Body Approach to Find the Key Elements Influencing the Steering Torque Applied by Rider on a Motorcycle (Written Only -- No Oral Presentation)***
		R. Pradeepak, Mihir Bhambri, Automotive CAE; Shafeeq Rahman, Mahindra Two Wheelers Limited

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 21

High Efficiency IC Engines Concepts (Part 1 of 3)

Session Code: ***PFL170***

Room 420 A ***Session Time:*** ***1:00 p.m.***

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency, fully variable valvetrains, and other new and developing technologies. Papers focused on waste heat recovery technologies should be submitted to HX102/103.

Organizers - *Vasudha Patri, Argonne National Laboratory; David B. Roth, BorgWarner Inc.; James P. Szybist, Oak Ridge National Laboratory; Alok Warey, General Motors Global R & D*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1263***	***Thermal Efficiency Enhancement of a Gasoline Engine*** *Kenichiro Ikeya, Masanobu Takazawa, Taketo Yamada, Shinrak Park, Ryutaro Tagishi, Honda R&D Co Ltd*
1:30 p.m.	***2015-01-1253***	***Assessment of Cooled Low Pressure EGR in a Turbocharged Direct Injection Gasoline Engine*** *Konstantinos Siokos, Rohit Koli, Robert Prucka, Clemson University; Jason Schwanke, Julia Miersch, Robert Bosch LLC*
2:00 p.m.	***2015-01-1254***	***Combustion Development to Achieve Engine Thermal Efficiency of 40% for Hybrid Vehicles*** *Daishi Takahashi, Koichi Nakata, Yasushi Yoshihara, Yukinori Ohta, Hiroyuki Nishiura, Toyota Motor Corp.*
2:30 p.m.	***2015-01-1257***	***Condensing LPL EGR Mixer with Mid-Pressure Loop*** *David B. Roth, Iago Gonzalez Tabares, Anxo Sotelo Álvarez, BorgWarner Inc.*
3:00 p.m.	***2015-01-1261***	***Evaluation of the Potential Benefits of an Automotive, Gasoline, 2-Stroke Engine*** *J. Javier Lopez, Ricardo Novella, Jorge Valero-Marco, CMT Motores Termicos UPV; Gilles Coma, Frederic Justet, RENAULT SAS*

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Holistic Session on Fuel Consumption and Fuel Economy (Part 1 of 2)

Session Code: ***PFL370***

Room 420 B ***Session Time:*** ***9:30 a.m.***

The focus of this session is the performance of integrated vehicle systems and the influence of driving styles and drive cycles on fuel consumption/economy. This will include how integration of vehicle components such as the powertrain, parasitics, accessories, mass elements, aerodynamics, tires, brakes, and hubs affect the overall vehicle energy and energy conversion efficiency.

Organizers - *Gregory Pannone, ControlTec; Shean Huff, Oak Ridge National Laboratory; Heidi Schroeder, CONTROLTEC; John Thomas, Brian West, Oak Ridge National Laboratory*

Time	Paper No.	Title
9:30 a.m.	***ORAL ONLY***	***Drive Cycle Powertrain Efficiencies and Trends Derived from EPA Vehicle Dynamometer Results*** *John Thomas, Oak Ridge National Laboratory*
10:00 a.m.	***2015-01-0973***	***FASTSim: A Model to Estimate Vehicle Efficiency, Cost and Performance*** *Aaron Brooker, Jeffrey Gonder, Lijuan Wang, Eric Wood, Sean Lopp, Laurie Ramroth, National Renewable Energy Laboratory*

10:30 a.m.	***2015-01-0974***	***ADOPT: A Historically Validated Light Duty Vehicle Consumer Choice Model***
		Aaron Brooker, Jeffrey Gonder, Sean Lopp, National Renewable Energy Laboratory; Jacob Ward, Department of Energy
11:00 a.m.	***2015-01-0981***	***Analytic Engine and Transmission Models for Vehicle Fuel Consumption Estimation***
		Patrick Phlips, Ford Motor Company

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00516, and also individually. To purchase visit collections.sae.org

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Holistic Session on Fuel Consumption and Fuel Economy (Part 2 of 2)

Session Code: ***PFL370***

Room 420 B ***Session Time:*** ***1:00 p.m.***

The focus of this session is the performance of integrated vehicle systems and the influence of driving styles and drive cycles on fuel consumption/economy. This will include how integration of vehicle components such as the powertrain, parasitics, accessories, mass elements, aerodynamics, tires, brakes, and hubs affect the overall vehicle energy and energy conversion efficiency.

Organizers - *Gregory Pannone, ControlTec; Shean Huff, Oak Ridge National Laboratory; Heidi Schroeder, CONTROLTEC; John Thomas, Brian West, Oak Ridge National Laboratory; Mansour Masoudi, Emissol LLC; Siddiq Khan, ACEEE; Behnam Bahrami, Cummins Inc.; Rachel L. Muncrief, The International Council on Clean Transportation; Krishna Kamasamudram, Cummins Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0972***	***SI Engine Trends: A Historical Analysis with Future Projections***
		Alexander Pawlowski, Univ. of Tennessee; Derek Splitter, Oak Ridge National Laboratory
1:30 p.m.	***2015-01-0978***	***Impact of Advanced Engine and Powertrain Technologies on Engine Operation and Fuel Consumption for Future Vehicles***
		Lori Lemazurier, Ecole des Mines de Nantes; Neeraj Shidore, Namdoo Kim, Ayman Moawad, Aymeric Rousseau, Argonne National Laboratory; Phillip Bonkoski, IAV Automotive Engineering Inc; Jeremy Delhom, Université de Technologie de Compiègne
2:00 p.m.	***2015-01-0983***	***Engine Operational Benefits with Cylinder Deactivation in Malaysian Urban Driving Conditions***
		Mohd Abas; Ricardo Martinez-Botas, Imperial College London
2:30 p.m.	***2015-01-0982***	***Vehicle Level Parameter Sensitivity Studies for a 1.5L Diesel Engine Powered Passenger Car with Various Boosting Systems***
		Brandon D. Biller, Philip Wetzel, Pavan Chandras, Sean Keidel, Eaton
3:00 p.m.	***2015-01-0980***	***Conceptual Simulation for Plug-In HEV at Early Stage of Development***
		Katsuya Minami, Yasuhiro Yoshimi, Honda R&D Co., Ltd.
3:30 p.m.	***2015-01-0979***	***Classification of Road Type and Driving Style using OBD Data***
		Chih Feng Lee, Per Öberg, Linköping Univ

4:00 p.m.	***2015-01-1083***	***Emissions, Fuel Economy, and Performance of a Class 8 Conventional and Hybrid Truck***
		Robert L. Russell, Kent Johnson, Thomas Durbin, Univ. of California; Patrick P. Chen; Jasna Tomic, Richard Parish, Calstart

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00516 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity; Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 21

Grand Opening Ceremony and Keynote: The Acceleration of Technology in the 21st Century: the Impact on Business, the Economy, and Society - Ray Kurzweil, World-Renowned Inventor and Futurist

Session Code: ***KEY101***

Room AVL Technology Leadership Center/C ***Session Time:*** ***8:30 a.m.***

The democratization of innovation is a turbulent process with rapid creation, violent destruction, many winners and many losers. Despite the apparent chaos, we can discern predictable patterns. The pace of innovation itself is doubling every decade. The overall price-performance and capacity of every form of information technology grows exponentially, generally doubling in a year or less. As information technology achieves each new level of price-performance and capacity, new applications become feasible and existing business models lose their viability. Another implication is that the tools of disruptive change have been democratized. </p>

A couple of students created Google on their thousand dollar laptops. A few years later, a couple of undergraduates created Facebook with tools that everyone has. The rate of change is now so rapid that even three to five year business plans need to consider that every level of an industry will undergo major changes during that period. It¿s not just the devices we carry around that are influenced by these exponential changes. Even energy will be transformed as we apply nanotechnology to the design of solar panels and energy storage devices. The means to change the world are in everyone¿s hands.

Time	***Paper No.***	***Title***
8:30 a.m.	***ORAL ONLY***	***Welcome, Introductions and Opening Remarks***
		Rick Snyder, State of Michigan Office of the Governor
	ORAL ONLY	***Learn More about the Opening Keynote Speaker***
		Ray Kurzweil, World-Renowned Inventor and Futurist

Tuesday, April 21

The Autonomous Vehicle Race

Session Code: ***ANN101***

Room AVL Technology Leadership Center/C ***Session Time:*** ***9:45 a.m.***

Active safety technologies and partially-automated driving technologies are coming to market quickly. Automakers have plans set and target dates in mind for partially and fully-autonomous vehicles - some say by 2018 or 2020. At the same time, the industry is being pressured by Google as it gathers media attention and continues to influence the industry with their creative AV programs. Clearly the race to Autonomous Vehicles is on, but are we as an industry clear about where we are heading to, what the end point is, or why we are going there? Several key questions need to be answered before we get too far down the AV path.</p>
What effect will AVs have on car ownership? What does the customer really want from an AV and where are the limits of customer comfort with this technology? What measures of vehicle performance will be valued when the owner or user doesn¿t really drive the car? This panel will explore these and other important questions.

Moderators - *Richard Wallace, Director, Center For Automotive Research*

Panelists - *Patrick F. Bassett, VP of Reseach and Development, DENSO International America Inc.; Steffen Linkenbach, Director Systems & Technology, NAFTA, Continental Automotive Systems US Inc.; Bryant Walker Smith, Assistant Professor, University of South Carolina; Toshio Yokoyama, Senior Chief Engineer, Honda R&D;*

Time	Paper No.	Title
	ORAL ONLY	Learn more about the Panelists
		Patrick F. Bassett, DENSO International America Inc.; Steffen Linkenbach, Continental Automotive Systems US Inc.; Bryant Walker Smith, University of South Carolina; Toshio Yokoyama, Honda

Tuesday, April 21

In-Car Experience - What does the Consumer Really Want?

Session Code: ***ANN102***

Room AVL Technology Leadership Center/C ***Session Time:*** ***1:30 p.m.***

Instant access to information, anywhere and anytime, has permanently shifted user expectations in many areas. This is especially true when it comes to in-car devices, the HMI expectations, and the overall user experience. Many customers now want, and even expect, full access to as much information as possible while in the vehicle. They want information to be provided in an easy to understand, clean, and seamless manner in line with their out-of-car lifestyle. On the other hand, OEMs need to balance these expectations with the realities of providing a secure system that is safe and easy to use while operating a vehicle.</p>
Is there an ideal balance point to meet both needs? Will the NHTSA distraction guidelines have an effect on this balance or alter the in-car device design? Or, will the accessibility needs trump them and drive users to skip the in-car solutions and go straight to their hand-held devices? Are there examples of systems which strike a good balance on the market today? This panel will consider the topics from a customer¿s viewpoint, which in-car solutions best meet their needs and which way does the industry need to move toward in the future.

Moderators - *Frank Markus, Technical Director, Motor Trend Brands*

Panelists - *Andrew Hart, SBD North America; Charan Lota, General Manager, Electronics Systems 1, Toyota Technical Center USA Inc.; David Lyon, Pocketsquare Design; David Taylor, Panasonic Automotive System of America;*

Time	Paper No.	Title
	ORAL ONLY	Learn more about the Panelists
		Charan Singh Lota, Toyota Technical Center USA Inc.; David Lyon, Pocketsquare Design; Andrew Richard Hart, SBD, Ltd.; Frank Markus, Motor Trend Magazine; David Taylor, Panasonic Automotive System of America

Tuesday, April 21

Is Having More Knobs to Turn a Good Dilemma?

Session Code: ***ANN201***

Room FEV Innovation Forum/Grand Rivervi ***Session Time:*** ***10:00 a.m.***

The advancement and interconnections between the engine and transmission have created a development environment in which engineers have to make practical decisions about which side of the fence to approach a problem from. For example, as the number of transmission speeds and ratio spread increases, the net vehicle fuel economy benefit of engine technologies that broaden the size of the engine map high efficiency islands decreases. This session will examine the decision trees engineers face to quickly develop future powertrains and support aggressive fuel economy targets. Speakers will discuss the combinations or compromises that yield the best result for the end consumer.

Moderators - *Andrew Brown, Delphi Automotive Systems*

Panelists - *Brady D. Ericson, BorgWarner Emission Systems; Jeff Hemphill, Schaeffler Group USA Inc.; Jeffrey P. Lux, FCA US LLC; Oliver Miersch-Wiemers, Director of Engineering, Gasoline Systems North America, Bosch Corp.; Andreas Rolf Schamel, Ford Motor Co.;*

Time	Paper No.	Title

ORAL ONLY ***Learn more about the Panelists***

Oliver Miersch-Wiemers, Robert Bosch LLC; Andreas Rolf Schamel, Ford Motor Co.; Andrew Brown, Delphi Automotive Systems; Jeff Hemphill, Schaeffler Group USA Inc.; Jeffrey P. Lux, FCA US LLC; Brady D. Ericson, BorgWarner Inc.

Tuesday, April 21

The Glide Path Toward Autonomous Vehicles

Session Code: ***ANN202***

Room FEV Innovation Forum/Grand Rivervi ***Session Time:*** ***1:30 p.m.***

What are the technical drivers that are causing this? As personal mobility and smart connectivity are combined, driver assistance systems might eventually morph into fully autonomous vehicles that feature V2V and V2X connectivity. This session will examine the enabling technologies that will ultimately make such intelligent transport systems possible and assess the cost/benefit case for customer safety, simplicity, satisfaction and robustness, ahead of production.

Moderators - *Stephan Tarnutzer, DGE Inc.*

Panelists - *J. Richard Bishop, Bishop Consulting; Myra Blanco, Director/Research Scientist, Virginia Tech. Transportation Institute; Derek Caveney, Toyota Technical Center USA Inc.; Gary Smyth, General Motors Global R & D;*

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the Panelists***

Myra Blanco, Virginia Tech. Transportation Institute; Derek Caveney, Toyota Technical Center USA Inc.; Gary Smyth, General Motors Global R & D; J. Richard Bishop, Bishop Consulting; Stephan Tarnutzer, DGE Inc.

Tuesday, April 21

Tech Hub

Session Code: ***TH100***

Room Tech Hub/Exhibit Hall ***Session Time:*** ***ALL DAY***

Time ***Paper No.*** ***Title***

10:30 a.m. ***ORAL ONLY*** ***The Business Case: Considerations for Initial Structural Application of Resin Transfer Molding on Boeing Commercial Aircraft***

A design change was required to add a bulb seal and retainer to the 737NG rudder lower closure rib. Criteria for employing composites were technology readiness, affordability, weight efficiency, and repeatable quality. Resin transfer molding (RTM), reinforced thermoplastic laminate (RTL), and solid laminate prepreg were evaluated. Selection of RTM was based on a business case showing rapid return on investment and favorable data from structural assessments. Part inspections confirmed the RTM rib met engineering specifications/requirements for resin and fiber content, dimensional tolerances, and quality. This RTM rib production established composite structural applications as a viable solution for aircraft manufacture.

Jeffery L. Marcoe, Boeing Co.

10:50 a.m.	***ORAL ONLY***	***Motorsports: Balancing the Lightweight Ledger***
		David T. Currier, Vice President, Toyota Racing Development USA
11:30 a.m.	***ORAL ONLY***	***Lightweighting: Vehicle Teardown and Analysis of BMW¿s I3***
		Sandy Munro, Munro & Associates
11:50 a.m.	***ORAL ONLY***	***Lightweighting: Vehicle Teardown and Analysis of Nissan Murano***
		David J. Coakley, Nissan North America Inc.
12:10 p.m.	***ORAL ONLY***	***Lightweighting: Vehicle Teardown and Analysis of Colorado/Canyon and CT6***
		Paul Krajewski, General Motors Co.
12:30 p.m.	***ORAL ONLY***	***Lightweighting: Vehicle Teardown and Analysis of Ford F150***
		Vincent A. Chimento, Bruce Ghastin, Darrin N. Wagner, Colleen M. Hoffman, Ford Motor Company
1:30 p.m.	***ORAL ONLY***	***Chasing Reality - Engineering's Digital World Made Real***
		Since the 1990¿s a quiet revolution has been underway, that without notice has overthrown many of the compromises that determined the fundamental design of the automobile for the past 100 years. Born during the space race, continuing breakthroughs in mechanics and computer modeling of complex structures have allowed us to overcome many of the engineering compromises we have accepted for decades. Today as we stand on the brink of the most exciting time in automotive engineering since Bertha Benz¿s first drive, these techniques are more needed than ever. The confluence of electrical propulsion, lightweight materials, and information technology offer the opportunity to create an entirely new kind of automobile.</p> However, to achieve the promise this confluence of technology offers, the next generation of engineering techniques must reach a level where the predictions of how our designs perform approach reality itself.</p> Mathematical simulations of vehicle performance are the tools that will allow us to create the next generation of vehicles that are lighter, stronger, safer, and more sustainable than ever before.
		Charles M. Thomas, Honda R & D Americas Inc.
2:45 p.m.	***ORAL ONLY***	***When a Car and a Plane Combine¿ Certain Restrictions Apply***
		Terrafugia is developing the Transition, a Light Sport Aircraft that can be driven from the airport to your final destination. It will address the general aviation pilot¿s biggest usage problems ¿ weather sensitivity, cost and convenience of ownership, and door-to-door travel time ¿ but designing a product for both runways and roads poses a host of challenges. Factors like weight, cost, crash safety, and flight characteristics, not to mention the regulations of two federal agencies, must be balanced and addressed with engineering solutions. In some cases the answers are available in a catalog, but in other cases, we have to take inspiration from both the aviation and automotive worlds and do it our own way.
		Kevin Colburn, Terrafugia Inc.

3:30 p.m.	***Panel***	***The Best of TEDx Detroit (ORAL PRESENTATIONS)***

Panelists - *Charlie Wollborg, Curve, "The Virtue of Ticking People Off"; Christian Lastoskie, University of Michigan, "Solid State Batteries - the Future of Storage"; Jason Prater, Plex Systems Inc., "The Digital Plant Floor: What's Next"; Sam White, Shakespeare in D, "The Mechanics of Play Making"; Brian Mulloy, Apigee "Presentation TBA"; Greg Gage, BackyardBrains, "The Neuro-Revolution"; Debbie Mielewski, Ford Motor Company, "Building the Bio-Based Automobile"; Terry Bean, Motor City Connect, "Lead from Where You Are"; Michael Mode, Big Lightbulb Inc., "Think Like A Magician"; Jason Vazzano, Vectorform LLC, "Silicon Valley: Friend or Foe?"; Veronika Scott, Empowerment Plan "Empowerment through Employment"; Lex Kuhne, Quarton Pointe, "Left Brain v. Right Brain: The Struggle is Real"; Jason Hall, Detroit Bike City, "Building communities two wheels at a time"; Nate Aschenbach, David Arditti, GameStart, "The Gamified Classroom: Inspiring Consumers to Create"; Andy Didorosi, Detroit Bus Company "Presentation TBA";*

Wednesday, April 22

Virtual Design and Engineering (Part 1 of 2)

Session Code: ***IDM301***

Room 112 B ***Session Time:*** ***8:00 a.m.***

This technical session will showcase the creation and application of various tools that will allow for the design and manufacture of parts, equipment, facilities and tests that eliminate the need for physical part prototyping early in a program. The ability to model various aspects of design, test and manufacturing allows for more accurate, cost effective and faster development and product delivery to market.

Organizers - *David Palmer, Bombardier Recreational Product Inc.; G. Michael Smith, Magna Powertrain USA Inc.; Paul Zalucha, Ford Motor Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0488***	***Stochastic Real-World Drive Cycle Generation Based on a Two Stage Markov Chain Approach***
		Andreea Elena Balau, Dennis Kooijman, TNO Automotive; Ignacio Vazquez Rodarte, TUE; Norbert Ligterink, TNO Automotive
9:00 a.m.	***ORAL ONLY***	***Fast Uncertainty Quantification for Simulation and Beyond***
		Peter Qian, SmartUQ
10:00 a.m.	***2015-01-0498***	***Virtual Automotive Maintenance and Service Confirmation***
		Matt Gynn, Jamie Steele, Honda R & D Americas Inc.
10:30 a.m.	***2015-01-0490***	***Development of Real-Time Simulation Tool for Styling Appearance Evaluation***
		Ryosuke Saito, Daisuke Ide, Honda R&D Co., Ltd.

	2015-01-0493	***Camera Modeling for Vision-Based ADAS (Written Only -- No Oral Presentation)***
		Ying Wang, Ye Wang, State Key Lab. of ASCL Jilin University; You Qu, CCST, Jilin University; Sumin Zhang, Weiwen Deng, State Key Lab. of ASCL Jilin University
	2015-01-0500	***Influence of the Design Parameters of Electric Vehicles in the Optimization of Energy Efficiency in Urban Routes (Written Only -- No Oral Presentation)***
		Emilio Larrodé, Alberto Torne, Alberto Fraile, University of Zaragoza
	2015-01-0502	***Microwave-Steam Based Road Deicing Vehicle Focused on Thin Ice Layers (Written Only -- No Oral Presentation)***
		Zhicheng Xu, Gangfeng Tan, Xingzhi Sun, Yongqiang Ge, Min Hua, Wuhan University of Technology; Haobo Xu, Heli Special Auto Manufacture Co., Ltd.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00473, and also individually. To purchase visit collections.sae.org

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 22

Virtual Design and Engineering (Part 2 of 2)

Session Code: ***IDM301***

Room 112 B ***Session Time:*** ***1:00 p.m.***

This technical session will showcase the creation and application of various tools that will allow for the design and manufacture of parts, equipment, facilities and tests that eliminate the need for physical part prototyping early in a program. The ability to model various aspects of design, test and manufacturing allows for more accurate, cost effective and faster development and product delivery to market.

Organizers - *David Palmer, Bombardier Recreational Product Inc.; G. Michael Smith, Magna Powertrain USA Inc.; Paul Zalucha, Ford Motor Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0495***	***New Theoretical Approach for Weight Reduction on Cylinder Head***
		Shohei Mikami, Honda R&D Co., Ltd.; Georgi Chakmakov, Dassault Systemes
1:30 p.m.	***2015-01-0496***	***Use of Truncated Finite Element Modeling for Efficient Design Optimization of an Automotive Front End Structure***
		Anindya Deb, Ranga Srinivas Gunti, Indian Institute of Science; Clifford Chou, Wayne State University; Utpal Dutta, Univ of Detroit Mercy
2:30 p.m.	***2015-01-0489***	***Virtual Tool to Predict Trunk Spring Movement Including Tolerance Variation***
		Jason Rogers, Honda of Canada Manufacturing
3:00 p.m.	***2015-01-0497***	***Kinematic Analysis of a 6DOF Gantry Machine***
		Monika Filiposka, University of Windsor; Ana M. Djuric, WSU SSIM; Waguih ElMaraghy, University of Windsor
	2015-01-0492	***Investigation and Optimization of Front Suspension and Steering Geometrical Compatibility (Written Only -- No Oral Presentation)***
		Gaurav Paliwal, Naveen Sukumar, Umashanker Gupta, Ashutosh Dubey, Nitin Chopra, VE Commercial Vehicles, Ltd.

	2015-01-0494	***A Bearing Endurance Life Prediction Method Considering the Bearing Dynamic Characteristics (Written Only -- No Oral Presentation)***
		Sulki Seong, Wangoo Kim, VirtualMotion; Daesung Bae, Hanyang University; Seungpyo Lee, Younggeol Cho, Iljin Global; Kyeongdeok Yang, Haneol Solution
	2015-01-0499	***Compliant Mechanisms - Integration of Micro Gripping Device with Positioner Using Topological Optimization (Written Only -- No Oral Presentation)***
		Nagarjun Jawahar, Sangamitra Manoharan, Harish Chandran, National Institute of Technology, Trichy
	2015-01-0501	***Optimization Matching of Powertrain System for Self-Dumping Truck Based on Grey Relational Analysis (Written Only -- No Oral Presentation)***
		Dengfeng Wang, Rongchao Jiang, Jilin University
	2015-01-0503	***Sweeping Vehicle Vacuum Dust Control System Research (Written Only -- No Oral Presentation)***
		Hefeng Zhan, Gangfeng Tan, Wuhan Univ. of Tech.; Haobo Xu, Heli Specal Auto Manufacture Co., Ltd.; Xin Li, Zhaohua Wang, Can Wang, Wuhan Univ. of Tech.

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 22

NVH CAE Analysis & Testing Correlations (Part 1 of 2)

Session Code: ***M211***

Room 112 D ***Session Time:*** ***8:00 a.m.***

This session covers the development and application of numerical methods along with test correlation and optimization for NVH issues of full vehicle and vehicle subsystems. All structural components, subsystems and complete systems found in automotive vehicles will be considered. Topics include structure NVH, vibro-acoustics, wind noise and aeroacoustics, intake/exhaust and vehicle interior noise, sound quality etc.¿

Organizers - *Weiguo Zhang, Kuang-Jen Liu, FCA US LLC; Guangtian Gavin Song, AM General LLC; Nammalwar Purushothaman, BAE Systems; Luohui Long, Ford Motor Co.*

Chairpersons - *Weiguo Zhang, Kuang-Jen Liu, FCA US LLC; Guangtian Song, AM General LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Technical Keynote: Experimental Requirements for CAE NVH Improvement***
		Robert Powell, Exa Corporation
9:00 a.m.	***2015-01-0666***	***Multiphase Flow Simulations of Poppet Valve Noise and Vibration***
		Chenguang Li, Fue-Sang Lien, Univ. of Waterloo; Eugene Yee, Defence R&D Canada; Mike Dong, Ford Motor Co.
9:30 a.m.	***2015-01-0664***	***Establishment of Performance Design Process for Vehicle Sound-Roof Packages Based on SEA Method***
		Hiroko Tada, Honda R&D Co., Ltd.

10:00 a.m.	***2015-01-0662***	***A Practical Simulation Procedure using CFD to Predict Flow Induced Sound of a Turbocharger Compressor***
		Weiguo Zhang, Mac Lynch, FCA US LLC; Robert Reynolds, CD-adapco
10:30 a.m.	***2015-01-0668***	***On the Coupling Stiffness in Closed-Loop Coupling Disc Brake Model through Optimization***
		Yongchang Du, Tsinghua University; Pu Gao, Yanshan University; Yujian Wang, Tsinghua University; Yingping Lv, Yanshan University
11:00 a.m.	***2015-01-0667***	***Research on Mechanism of Change in Suspension Transfer Force in Relation to Low-Frequency Road Noise***
		Kei Ichikawa, Honda R&D Co., Ltd.

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

NVH CAE Analysis & Testing Correlations (Part 2 of 2)

Session Code: ***M211***

Room 112 D ***Session Time:*** ***1:00 p.m.***

This session covers the development and application of numerical methods along with test correlation and optimization for NVH issues of full vehicle and vehicle subsystems. All structural components, subsystems and complete systems found in automotive vehicles will be considered. Topics include structure NVH, vibro-acoustics, wind noise and aeroacoustics, intake/exhaust and vehicle interior noise, sound quality etc.¿

Organizers - *Weiguo Zhang, Kuang-Jen Liu, FCA US LLC; Guangtian Gavin Song, AM General LLC; Nammalwar Purushothaman, BAE Systems; Luohui Long, Ford Motor Co.*

Chairpersons - *Weiguo Zhang, Kuang-Jen Liu, FCA US LLC; Guangtian Song, AM General LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0663***	***The Design Optimization of Vehicle Interior Noise through Structural Modification and Constrained Layer Damping Treatment***
		Ling Zheng, Zhanpeng Fang, Zhongcai Tang, Zhenfei Zhan, Chongqing University; Jiang-hua Fu, Chongqing Changan Automobile Co., Ltd.
1:30 p.m.	***2015-01-0661***	***Optimal Design of Vehicle Dash and Floor Sound Package Based on Statistical Energy Analysis***
		Jianwang Shao, Xian Wu, Na Wei, Ding Wang, Guoming Deng, Ming Xu, Tongji University
2:00 p.m.	***2015-01-0660***	***Development of Feedback-Based Active Road Noise Control Technology for Noise in Multiple Narrow-Frequency Bands and Integration with Booming Noise Active Noise Control System***
		Kosuke Sakamoto, Toshio Inoue, Honda R&D Co., Ltd.
2:30 p.m.	***2015-01-0665***	***Modal Based Rotating Disc Model for Disc Brake Squeal***
		Yongchang Du, Yujian Wang, Tsinghua University; Pu Gao; Yingping Lv

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

Multidisciplinary Design Optimization (MDO) (Part 1 of 2)

Session Code: ***IDM111*** ***8:00 a.m.***

Room 115 B ***Session Time:***

Multidisciplinary design optimization (MDO) focuses on optimizing the performances of complex systems that involve multiple interacting disciplines. It may encompasses design synthesis, sensitivity analysis, approximation concepts, optimization methods and strategies, artificial intelligence, and rule-based design - all in the context of integrated design dealing with multiple disciplines and interacting subsystems or systems of systems.

Organizers - *Ching-Hung Chuang, Ford Motor Co.; Efstratios Nikolaidis, University Of Toledo; Simon Xu, General Motors Co.; Ren-Jye Yang, Ford Motor Co.*

Chairpersons - *Ching-Hung Chuang, Ford Motor Co.; Sumeet Parashar, ESTECO North America*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0470***	***An Iterative Application of Multi-Disciplinary Optimization for Vehicle Body Weight Reduction Based on 2015 Mustang Product Development***
		Joanna Rakowska, Amir Chator, Bruno Barthelemy, Michael Lee, Shawn Morgans, Jeffrey Laya, Gregory Zinn, Ching-Hung Chuang, Sreekanth Reddy Gondipalle, Ford Motor Co.
8:30 a.m.	***ORAL ONLY***	***Enterprise Multidisciplinary Design Optimization System Development and Application***
		Yan Fu, Ching-Hung Chuang, Jian Fang, Ren-Jye Yang, Ford Motor Co
9:00 a.m.	***2015-01-0474***	***Development of Synthesis Level Design Model in Automobile Application Suitable for MDO using CO Approach***
		Henric Pettersson; Maria Rodiouchkina; Gerald Micklow, Hamid Hefazi, Florida Institute of Technology
9:30 a.m.	***2015-01-0476***	***A Study on New Approach of Optimization for the Automotive Plastic Interior Parts***
		Hyunkwon Jo, Youngseung Kim, Hyunchul Lee, Hyunmin Park, Suckin Song, Hanil E-Hwa Co., Ltd.
10:00 a.m.	***ORAL ONLY***	***Weight Optimization Process for Automotive Wheel Bearing***
		Seungpyo Lee, Jungho An, Inha Lee, Minwoo Song, Iljin Global
10:30 a.m.	***2015-01-0472***	***Optimization for Driveline Parameters of Self-Dumping Truck Based on Particle Swarm Algorithm (Written Only -- No Oral Presentation)***
		Rongchao Jiang, Dengfeng Wang, Jilin University
	2015-01-0475	***The Benefit of Co-Developing Vehicle Electrical & Electronic Architecture between OEM and Supplier (Written Only -- No Oral Presentation)***
		Truong Nguyen, John Bell, Yazaki North America Inc.
	2015-01-0477	***Analysis of Vehicle Dimension Definition and Proportion of Coordination in Chinese Market (Written Only -- No Oral Presentation)***
		Sun Qi, Zhang Wen, Wan Liangyu, Wang Xiaochuan, Dongfeng Motor Corp.

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Wednesday, April 22

Multidisciplinary Design Optimization (MDO) (Part 2 of 2)

Session Code: ***IDM111***

Room 115 B ***Session Time: 1:00 p.m.***

Multidisciplinary design optimization (MDO) focuses on optimizing the performances of complex systems that involve multiple interacting disciplines. It may encompasses design synthesis, sensitivity analysis, approximation concepts, optimization methods and strategies, artificial intelligence, and rule-based design - all in the context of integrated design dealing with multiple disciplines and interacting subsystems or systems of systems.

Organizers - *Ching-Hung Chuang, Ford Motor Co.; Efstratios Nikolaidis, University Of Toledo; Simon Xu, General Motors Co.; Ren-Jye Yang, Ford Motor Co.*

Chairpersons - *Hongyi Xu, Ford Motor Co.; Simon Xu, General Motors Co.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0478***	***A New Variable Screening Method for Design Optimization of Large-Scale Problems*** *Kai Zheng, Shanghai Jiao Tong Univ.; Ren-Jye Yang, Ford Motor Co; Jie Hu, Shanghai Jiao Tong Univ.*
1:30 p.m.	***2015-01-0480***	***An Algorithm for Identification of Locally Optimal Basins in Large Dimensions on a Multi-Model Response Surface*** *Santosh Tiwari, Don Jones, Simon Xu, General Motors Co.*
2:00 p.m.	***2015-01-0479***	***A Data Mining-Based Strategy for Direct Multidisciplinary Optimization*** *Hongyi Xu, Ching-Hung Chuang, Ren-Jye Yang, Ford Motor Co*
2:30 p.m.	***2015-01-0471***	***Comparing Robust Design Optimization and Reliability Based Optimization Formulations for Practical Aspects of Industry Problems*** *Apurva Gokhale, Sumeet Parashar, ESTECO North America; Saket Kansara, ESTECO Software India*
3:00 p.m.	***2015-01-0473***	***The Finite Element Analysis and Optimization on a Special Vehicle*** *YiRui Wang, Gangfeng Tan, Bo Yang, Can Wang, Wuhan University of Technology*

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Wednesday, April 22

Powertrain Thermal Management (Part 1 of 2) Combustion Chamber

Session Code: ***PFL160***

Room 116 B ***Session Time: 8:00 a.m.***

This session considers modeling (zero-D, 1D, 2D, 3D CFD) and experimental papers on: combustion chamber, systems (lubrication, cooling, fuel, EGR); components (oil pumps, coolant pump, fuel injectors, compressors, turbines, turbochargers, torque converters, gear box, fans, bearings, valves, ports, manifolds, turbine housing); heat exchangers (radiators, oil coolers); aftertreatment (SCR, DOC, DOF, exhaust gas cooling); battery cooling (HEV, EV, motor/generator) and controls (passive and active).

Organizers - *Raj Ranganathan, Simerics Inc.; Tarek M. Abdel-Salam, East Carolina University*

Chairpersons - *Bala K. Murthy, General Motors Co.; Raj Ranganathan, Simerics Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1651***	***Experimental and Theoretical Analysis of the Energy Balance in a DI Diesel Engine*** *Francisco Payri, Jaime Martin, Antonio Garcia, Ricardo Carreño, Universitat Politècnica de València*

8:30 a.m.	***2015-01-1658***	***Simultaneous In-Cylinder Surface Temperature Measurements with Thermocouple, Laser-induced Phosphorescence, and Dual Wavelength Infrared Diagnostic Techniques in an Optical Engine*** *Xi Luo, Xin Yu, Marcis Jansons, Wayne State Univ.*
9:00 a.m.	***2015-01-1659***	***An Integrated Model of Energy Transport in a Reciprocating, Lean Burn, Spark Ignition Engine*** *Peter A. Dennis, Michael J. Brear, Harry C. Watson, Pedro J. Orbaiz, Payman Abbasi Atibeh, University of Melbourne*
9:30 a.m.	***2015-01-1660***	***Analysis of Engine Walls Thermal Insulation: Performance and Emissions*** *Jose Ramon Serrano, Francisco Jose Arnau, Jaime Martin, Manuel Hernandez, Universitat Politecnica de Valencia, CMT; Benoit Lombard, Volvo Powertrain France*
10:00 a.m.	***ORAL ONLY***	***Working Toward an Area-Average Correlation of Oil-Jet Impingement Heat Transfer of IC Engine Pistons*** *Yen-Chung Liu, Laila Guessous, Brian Sangeorzan, Alexandros Alkidas, Oakland University*
10:30 a.m.	***2015-01-1653***	***Study on the Cooling Method of Car Engine Pistons - Part 1, Basic Test for Achieving High Heat Transfer Coefficient*** *Kenji Matsumoto, Hironori Harada, Hiroyoshi Taniguchi, Naoki Ito, Honda R&D Co., Ltd.*
11:00 a.m.	***2015-01-1649***	***Study on the Cooling Method of Car Engine Pistons - Part 2, Cooling Using Heat Pipes*** *Kenji Matsumoto, Atsushi Takahashi, Tsutomu Inoue, Honda R&D Co., Ltd.*
11:30 a.m.	***2015-01-1654***	***Modeling Approach to Estimate EGR Cooler Thermal Fatigue Life*** *Billy G. Holland, Thomas L. McKinley, Bill R. Storkman, Cummins Inc.*

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Wednesday, April 22

Powertrain Thermal Management (Part 2 of 2) Engine and Transmission Cooling

Session Code: ***PFL160***

Room 116 B ***Session Time:*** ***1:00 p.m.***

This session considers modeling (zero-D, 1D, 2D, 3D CFD) and experimental papers on: combustion chamber, systems (lubrication, cooling, fuel, EGR); components (oil pumps, coolant pump, fuel injectors, compressors, turbines, turbochargers, torque converters, gear box, fans, bearings, valves, ports, manifolds, turbine housing); heat exchangers (radiators, oil coolers); aftertreatment (SCR, DOC, DOF, exhaust gas cooling); battery cooling (HEV, EV, motor/generator) and controls (passive and active).

Organizers - *Raj Ranganathan, Simerics Inc.; Tarek M. Abdel-Salam, East Carolina University*

Chairpersons - *Tarek M. Abdel-Salam, East Carolina University*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1652***	***Thermal Flow Analysis of Hybrid Transaxle Surface Using Newly-Developed Heat Flux Measurement Method*** *Yukikatsu Ozaki, Nippon Soken Inc.; Keisuke Sekiya, Toyota Motor Corp.*

2:00 p.m.	***2015-01-1657***	***Computational Aero-Acoustics Simulation of Automotive Radiator Fan Noise***
		Ahsanul Karim, Meisam Mehravaran, Brian Lizotte, Keith Miazgowicz, Yi Zhang, Ford Motor Co.
2:30 p.m.	***2015-01-1655***	***Experimental Determination of Coolant Evaporation Rate from Atmospheric Recovery Volume and Projected Loss Rate by Duty Cycle***
		Rolf B. Karlsson, Tyler Pilgeram, Michael Dailey, General Motors Co.
3:00 p.m.	***2015-01-1656***	***CFD Simulations of one Period of a Louvered Fin where the Airflow is Inclined Relative to the Heat Exchanger***
		Lisa Henriksson, Chalmers Univ. of Technology; Peter Gullberg, Erik Dahl, Volvo Group Trucks Technology; Lennart Lofdahl, Chalmers Univ. of Technology
3:30 p.m.	***2015-01-1650***	***Testing and Development of an Enhanced and Cost Effective Engine Split Cooling Circuit***
		Azmi Osman, Mohd Asmu'i Hussin, Shaiful Fadzil Zainal Abidin, PROTON Malaysia
4:00 p.m.	***ORAL ONLY***	***Effect of Cylinder Tilt Angle on Cooling in Cylinders with Various Fin Pitches and Number of Fins in Air-Cooled Engines***
		Masao Yoshida, Aichi University of Technology; Kohei Nakashima, Masayuki Takahashi, Kai Ishiko, Meijo Univ.
	2015-01-1661	***Numerical Computation of the Air Flow and the Thermal Behavior of a Double Dry Clutch Automotive Transmission (Written Only -- No Oral Presentation)***
		Anthony Levillain, Pascale Brassart, Valeo Powertrain; Béatrice Patte-Rouland, Université de Rouen
	2015-01-1662	***Simulation of Conjugate Heat Transfer (CHT) Between Engine Head and Cooling Medium of Diesel Engine (Written Only -- No Oral Presentation)***
		Manjushri Mahadev Patil, Govt. College of Engineering, Karad.; Ashok Pise, Directorate of Technical Education, (MH); Nitin Gokhale, Kirloskar Oil Engines Ltd
	2015-01-1663	***Improving Heat Transfer in Single Cylinder DI Engine through Optimization of Coolant Flow Distribution (Written Only -- No Oral Presentation)***
		Prafulla P Ghare, Hemant Khalane, Udaysingh Wakhure, Tushar Khobragade, Sandip Chaudhari, Atul Jahirabadkar, Greaves Cotton, Ltd.

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Controls for Hybrids and Electric Powertrains (Part 1 of 2)

Session Code: ***PFL750***

Room 140 C ***Session Time:*** ***8:00 a.m.***

This session covers powertrain control processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands of hybrid and electric powertrains. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management.

Organizers - *Dohoy Jung, Univ. of Michigan-Dearborn; Jason McConnell, IAV Automotive*

Engineering Inc.; Bin Wu, Mercedes Benz R&D North America

Time	Paper No.	Title
8:00 a.m.	***2015-01-1218***	***The Investigation of Control Strategies of Switched Reluctance Motor to Reduce the Torque Ripple in Vehicle***
		Ling Zheng, Yue Ren, Qiran Huang, Yinong Li, Zhenfei Zhan, Chongqing University
8:30 a.m.	***2015-01-1225***	***Synthesis of a Hybrid-Observer-Based Active Controller for Compensating Powetrain Backlash Nonlinearity of an Electric Vehicle during Regenerative Braking***
		Chen Lv, Junzhi Zhang, Yutong Li, Ye Yuan, State Key Lab of ASE, Tsinghua Univ.
9:00 a.m.	***2015-01-1221***	***Optimal Control Inputs for Fuel Economy and Emissions of a Series Hybrid Electric Vehicle***
		Jamie Knapp, Loughborough University; Adam Chapman, Lotus Engineering; Sagar Mody, Thomas Steffen, Loughborough University
9:30 a.m.	***2015-01-1223***	***An Innovative Engine/Generator Control Algorithm for Minimizing Battery in a Hybrid Electric Vehicle with Series Architecture of Power Train***
		Masood Shahverdi, Michael S. Mazzola, Mississippi State Univ.
10:00 a.m.	***2015-01-1227***	***Optimal Engine Starts of an Input-Split Hybrid Electric Vehicle***
		Weichao Zhuang, Nanjing Univ of Science & Technology; Dongsuk Kum, Korea Advanced Inst of Science & Technology; Huei Peng, Univ of Michigan; LIangmo Wang, Nanjing Univ of Science & Technology; Daofei Li, Zhejiang Univ
11:00 a.m.	***2015-01-1217***	***PMP-based Fuel Cell Hybrid Vehicle Power Management Considering Battery Current Constraint and Battery Health Analysis***
		Changhong Liu, Lin Liu, University of Kansas
11:30 a.m.	***2015-01-1215***	***Unified Backwards Facing and Forwards Facing Simulation of a Hybrid Electric Vehicle using MATLAB Simscape***
		George Dixon, Richard Stobart, Thomas Steffen, Loughborough Univ.
	2015-01-1214	***Control Optimization of a Compound Power-Split Hybrid Transmission for Electric Drive (Written Only -- No Oral Presentation)***
		Zhiguo Zhao, Tongji Univ.; Chen Wang, Tongji Univ.; Corun Hybrid Co., Ltd.; Tong Zhang, Corun Hybrid Co., Ltd.; Xianjun Dai, Xiyue Yuan, Tongji Univ.

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Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Controls for Hybrids and Electric Powertrains (Part 2 of 2)

Session Code: ***PFL750***

Room 140 C ***Session Time:*** ***1:00 p.m.***

This session covers powertrain control processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands of hybrid and electric powertrains. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management.

Organizers - *Dohoy Jung, Univ. of Michigan-Dearborn; Jason McConnell, IAV Automotive Engineering Inc.; Bin Wu, Mercedes Benz R&D North America*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1224***	***Predictive On-Board Diagnosis for Hybrid Electric Vehicles with In-Vehicle Navigation Unit***
		Ipek Sarac, Andreas Wagner, Uta Fischer, Rainer Schnurr, Robert Bosch GmbH
1:30 p.m.	***2015-01-1226***	***GPS Based Energy Management Control for Plug-in Hybrid Vehicles***
		Michael Bassett, Mahle Powertrain, Ltd.; Bruno Brods, Loughborough University; Jonathan Hall, Stephen Borman, Matthew Grove, Simon Reader, Mahle Powertrain, Ltd.
2:00 p.m.	***2015-01-1213***	***Quantification of Drive Cycle's Rapid Speed Fluctuations Using Fourier Analysis***
		Zifan Liu, Andrej Ivanco, Zoran Filipi, Clemson-ICAR
2:30 p.m.	***2015-01-1222***	***A New Approach to an Adaptive and Predictive Operation Strategy for PHEVs***
		Harald Kraus, Martin Ackerl, Paul Karoshi, Jürgen Fabian, Martin Hofstetter, Graz University of Technology
3:00 p.m.	***2015-01-1219***	***Control of PHEV and HEV Parallel Powertrains Using a Sequential Linearization Algorithm***
		Jerome Meisel, Georgia Institute of Technology; Wassif Shabbir, Simos A Evangelou, Imperial College
3:30 p.m.	***2015-01-1220***	***Optimal Control based Calibration of Rule-Based Energy Management for Parallel Hybrid Electric Vehicles***
		Daniel Goerke, Michael Bargende, University of Stuttgart, IVK; Uwe Keller, Norbert Ruzicka, Stefan Schmiedler, Daimler AG
4:00 p.m.	***2015-01-1212***	***Discrete Grid Optimization of a Rule-Based Energy Management Strategy for a Formula Hybrid Electric Vehicle***
		M. Sh. Asfoor, Egyptian Armed Forces; Steven W. Beyerlein, Rory Lilley, Michael Santora, University of Idaho
	2015-01-1216	***Control Strategy of Hybrid Electric Vehicle with Double Planetary Gear Sets (Written Only -- No Oral Presentation)***
		Dafeng Song, Chang Zhang, Nannan Yang, Jilin University; Mingli Shang, Yutong Bus Co., Ltd; Yujun Peng, Jilin University

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Wednesday, April 22

Advanced Hybrid and Electric Vehicle Powertrains (Part 2 of 2)

Session Code: ***PFL710***

Room 140 D ***Session Time:*** ***8:00 a.m.***

This session covers new production and near-production hybrid powertrains, hybrid architecture, and testing.

Organizers - *Michael Duoba, Argonne National Laboratory; Matthew Fleming, Ford Motor Co.; Andrej Ivanco, Clemson-ICAR; Wiley R. McCoy, McLaren Performance*

Technologies; Constantine N. Raptis, GM Advanced Vehicle Engrg

Time	Paper No.	Title
8:00 a.m.	***2015-01-1155***	***Potentials of a 48 Volt Belt-Starter-Generator in the Powertrain of an Ultra-Light Vehicle***
		Robert Steffan, Peter Hofmann, Bernhard Geringer, Vienna University of Technology
8:30 a.m.	***2015-01-1153***	***Development and Validation of A High Fidelity Distributed Loss Powersplit Transaxle Model***
		Kingsly Samuel, David Brigham, Mark Jennings, Ford Motor Company
9:00 a.m.	***2015-01-1161***	***Predictive Control of a Power-Split HEV with Fuel Consumption and SOC Estimation***
		Lei Feng, Ming Cheng, Bo Chen, Michigan Technological Univ.
9:30 a.m.	***2015-01-1151***	***A Simulation Based Analysis of 12V and 48V Microhybrid Systems Across Vehicle Segments and Drive Cycles***
		Anthony Rick, Brian Sisk, Johnson Controls Power Solutions
10:00 a.m.	***2015-01-1154***	***Using Finite-Element Analysis Results and Field-Programmable Gate Arrays to Accelerate Hybrid Powertrain Controller Validation***
		Benjamin Black, National Instruments; Tomohiro Morita, Fuji Heavy Industries Ltd.; Yusuke Minami, National Instruments Japan; David Farnia, JSOL Corporation
10:30 a.m.	***2015-01-1159***	***Evaluating the Performance Improvement of Different Pneumatic Hybrid Boost Systems and Their Ability to Reduce Turbo-Lag***
		Ran Bao, Richard Stobart, Loughborough Universtity
11:00 a.m.	***2015-01-1162***	***Fuel Consumption and Emissions Effects in Passenger Car Diesel Engines through the Use of a Belt Starter Generator***
		Frank Atzler, Michael Wegerer, Fabian Mehne, Stefan Rohrer, Continental Automotive; Christoph Rathgeber, Sebastian Fischer, Technische Universitaet Darmstadt
	2015-01-1163	***Performance of Ancillary Systems of 2014+ Le Mans LMP1-H Vehicles and Optimization (Written Only -- No Oral Presentation)***
		Gabriel Elias, Stephen Samuel, Oxford Brookes University; Alessandro Picarelli, Claytex Services Limited
	2015-01-1165	***Configuration Analysis and Performance Comparison of Drive Systems for Pure Electric Vehicle (Written Only -- No Oral Presentation)***
		Lipeng Zhang, Yanshan University; Liang Li, Tsinghua University; Bingnan Qi, Yanshan University; Jian Song, Tsinghua University
	2015-01-1166	***Experimental Test Campaign on a Battery Electric Vehicle: On-Road Test Results (Part 2) (Written Only -- No Oral Presentation)***
		Elena Paffumi, Michele De Gennaro, Giorgio Martini, Urbano Manfredi, EC Joint Research Centre; Stefano Vianelli, EURINS srl; Fernando Ortenzi, Antonino Genovese, ENEA
	2015-01-1167	***Experimental Test Campaign on a Battery Electric Vehicle: Laboratory Test Results (Part 1) (Written Only -- No Oral Presentation)***
		Michele De Gennaro, Elena Paffumi, Giorgio Martini, Urbano Manfredi, EC Joint Research Centre; Stefano Vianelli, EURINS srl; Fernando Ortenzi, Antonino Genovese, ENEA

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Wednesday, April 22

Electric Motor & Power Electronics (Part 1 of 2)

Session Code: ***PFL740***

Room 140 D ***Session Time:*** ***1:00 p.m.***

Power electronics and electric motors are essential for improving vehicle efficiency through drivetrain electrification. Technologies that support high efficiency, high power density, and low cost motors and power modules are required for the success of vehicle electrification.

Organizers - *John Czubay, General Motors Company; Sergey P. Gladyshev; Laura Marlino, Oak Ridge National Laboratory; Constantine N. Raptis, GM Advanced Vehicle Engrg; Serdar Yonak, Ford Motor Co.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-1206***	***Vibration Reduction in Motors for the SPORT HYBRID SH-AWD***
		Manabu Yazaki, Honda R&D Co., Ltd.
2:00 p.m.	***2015-01-1208***	***Next Generation Voltec Electric Machines; Design and Optimization for Performance and Rare-Earth Mitigation***
		Sinisa Jurkovic, Khwaja Rahman, Nitin Patel, Peter Savagian, General Motors Co
	2015-01-1203	***A Novel Constant Torque Eddy-Current Brake for Automotive Applications (Written Only -- No Oral Presentation)***
		Subhashree Rajagopal, Sebastien Desharnais, Balamurugan Rathinam, Upendra Naithani, Renault Nissan Tech & Bus Centre India
	2015-01-1207	***Design and Control of a Light-Weight Drive-Integrated 48 V BLDC Motor for Radiator Fan in Hybrid Vehicle (Written Only -- No Oral Presentation)***
		Makarand Kane, Swanand Kulkarni, Shinto Antony, Rohit Kharat, Naga Chaithanya, Tata Motors, Ltd.
	2015-01-1210	***Optimization Techniques to Improve the Efficiency of Regenerative (Magnetic) Braking Systems (Written Only -- No Oral Presentation)***
		Bharat Singh, Naveen Kumar, Amaya Kak, Satya Kaul, Delhi Technological University

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Wednesday, April 22

Emission Control Modeling (Part 1 of 3)

Session Code: ***PFL430***

Room 140 E ***Session Time:*** ***8:00 a.m.***

Papers cover exhaust aftertreatment system models, as well as their validation and application. Technologies encompassed include DOC, HC Trap, DPF, GPF, LNT, TWC, SCR, SCRF, ammonia oxidation catalysts, hybrid or combined catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3D models of individual components to system level simulation, optimization, variation, degradation, and control.

Organizers - *Christopher Depcik, Univ. of Kansas; Maruthi Devarakonda, General Electric Company; Thomas McKinley, Cummins Inc.; Vincenzo Mulone, Univ. Of Roma*

Tor Vergata; Achuth Munnannur, Cummins Inc.; Balaji Sukumar, Johnson Matthey ECT

Time	Paper No.	Title
8:00 a.m.	***2015-01-1053***	***The Effect of Pt:Pd Ratio on Light-Duty Diesel Oxidation Catalyst Performance: An Experimental and Modelling Study*** *Jonathan E. Etheridge, Timothy C. Watling, Johnson Matthey Technology Centre; Andrew J. Izzard, Michael A. J. Paterson, Johnson Matthey ECT*
8:30 a.m.	***2015-01-1052***	***The Effect of Pt:Pd Ratio on Heavy-Duty Diesel Oxidation Catalyst Performance: An Experimental and Modeling Study*** *Bijesh M. Shakya, Balaji Sukumar, Yaritza M. López-De Jesús, Penelope Markatou, Johnson Matthey ECT*
9:00 a.m.	***2015-01-1044***	***A Modeling Study of the Exhaust Flow Rate and Temperature Effects on the Particulate Matter Thermal Oxidation Occurring during the Active Regeneration of a Diesel Particulate Filter*** *Kiran C. Premchand, Krishnan Raghavan, John H. Johnson, Michigan Technological Univ*
9:30 a.m.	***2015-01-1047***	***Modeling Study of Metal Fiber Diesel Particulate Filter Performance*** *Yujun Wang, Rypos Inc; Carl Kamp, Massachusetts Institute of Technology; Amin Saeid, Chris Jackson, Jim Ernstmeyer, Bachir Kharraja, Rypos Inc; Alexander Sappok, Victor W. Wong, Massachusetts Institute of Technology*
10:00 a.m.	***2015-01-1049***	***Combining the Classical and Lumped Diesel Particulate Filter Models*** *Christopher Depcik, Univ. of Kansas*
10:30 a.m.	***ORAL ONLY***	***Soot Oxidation Kinetics of Ceria-Based Nanostructured Particles*** *Athanasios G. Konstandopoulos, CERTH/CPERI*
11:00 a.m.	***2015-01-1056***	***Analytic Solution for the Flow Distribution and Pressure Drop of Ceramic Partially-Plugged Wall Flow Diesel Particulate Filters*** *Sumit Basu, Neal Currier, Cummins Inc.*

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Emission Control Modeling (Part 2 of 3)

Session Code: ***PFL430***

Room 140 E ***Session Time:*** ***1:00 p.m.***

Papers cover exhaust aftertreatment system models, as well as their validation and application. Technologies encompassed include DOC, HC Trap, DPF, GPF, LNT, TWC, SCR, SCRF, ammonia oxidation catalysts, hybrid or combined catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3D models of individual components to system level simulation, optimization, variation, degradation, and control.

Organizers - *Christopher Depcik, Univ. of Kansas; Maruthi Devarakonda, General Electric Company; Thomas McKinley, Cummins Inc.; Vincenzo Mulone, Univ. Of Roma Tor Vergata; Achuth Munnannur, Cummins Inc.; Balaji Sukumar, Johnson Matthey ECT*

Time	Paper No.	Title

1:00 p.m.	***2015-01-1048***	***Modeling of the Soot Oxidation in Gasoline Particulate Filters*** *Per Nicolin, Dominik Rose, Florian Kunath, Thorsten Boger, Corning GmbH*
1:30 p.m.	***2015-01-1058***	***Numerical Modeling Study of Catalyst Surface Reactivity and Gas Diffusivity with Lean NO_x Catalyst*** *Osami Yamamoto, Tatsuya Okayama, Honda R&D Co., Ltd.; Zhiwei Zhang, John Tolsma, RES Group Inc.*
2:00 p.m.	***2015-01-1059***	***Extended Kalman Filter to Estimate NO, NO₂, Hydrocarbon and Temperatures in a DOC during Active Regeneration and Under Steady State Conditions*** *Harsha Shankar Surenahalli, Gordon Parker, John H. Johnson, Michigan Technological Univ*
2:30 p.m.	***2015-01-1045***	***Adaptive SCR Model for MPC Control Including Aging Effects*** *Stephan Stadlbauer, Harald Waschl, Luigi del Re, Johannes Kepler University Linz*
3:00 p.m.	***2015-01-1051***	***Sensitivity of SCR Control Strategies to Diesel Exhaust Fluid Quality: A Simulation Study*** *Jean Milpied, TE Connectivity Sensor Solutions; Arnaud Frobert, Olivier Lepreux, IFP Energies Nouvelles*

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Advanced Emission Components and Systems for Gasoline Vehicles (Part 1 of 2)

Session Code: ***PFL422***

Room 140 F ***Session Time:*** ***8:00 a.m.***

Papers are invited for this session covering the systems engineering experience required to achieve ultra-low emission levels on light-duty vehicles. Emission system component topics for this session include the development of advanced three-way catalysts, the development of NOX control strategies for gasoline lean burn engines, the application of high cell density substrates to advanced emission systems, and the integration of these components into full vehicle emission systems.

Organizers - *Joseph E. Kubsh, Manufacturers of Emission Controls Assoc.; Douglas Ball; Rasto Brezny, Manufacturers of Emission Controls Assoc.; Ronald Heck, RMH Consulting*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1000***	***Thermal and Chemical Deactivation of Three-Way Catalysts: Comparison of Road-, Fuel-Cut and SAI- Aged Catalysts*** *Anna Fathali, Volvo Cars; Fredrik Wallin, Annika Kristoffersson, Mats Laurell, Volvo Car Corporation*
8:30 a.m.	***2015-01-1005***	***Development of Advanced Three-Way Catalyst with Improved NOx Conversion*** *Masahide Miura, Yuki Aoki, Nobusuke Kabashima, Takahiko Fujiwara, Toyota Motor Corp.; Toshitaka Tanabe, Akira Morikawa, Toyota Central R&D Labs., Inc.; Hirotaka Ori, Hiroki Nihashi, Suguru Matsui, Cataler Corp.*
9:00 a.m.	***2015-01-1007***	***Novel Mixed Metal Oxide Structure for Next Generation Three-Way Catalysts*** *Steve Golden, Zahra Nazarpoor, Maxime Launois, CDTi*

9:30 a.m.	***2015-01-0999***	***Advanced TWC Technology to Cover Future Emission Legislations***
		Jan Schoenhaber, Joerg Michael Richter, Joel Despres, Marcus Schmidt, Stephanie Spiess, Martin Roesch, Umicore AG & Co. KG
10:00 a.m.	***2015-01-1003***	***Development of Pd-Only Catalyst for LEV III and SULEV30***
		Tomohito Kakema, Yukio Suehiro, Yoshiaki Matsuzono, Takeshi Narishige, Masanori Hashimoto, Honda R&D Co., Ltd.
10:30 a.m.	***2015-01-1009***	***High Porosity Substrates for Fast-Light-Off Applications***
		Cameron W. Tanner, Kenneth Twiggs, Tinghong Tao, David Bronfenbrenner, Corning Inc.; Yoshiaki Matsuzono, Shinichiro Otsuka, Yukio Suehiro, Honda R&D Co., Ltd.; Hiroshi Koyama, Honda
11:00 a.m.	***2015-01-1001***	***Development of a Super-Light Substrate for LEV III/Tier3 Emission Regulation***
		Shinichiro Otsuka, Yukio Suehiro, Hiroshi Koyama, Yoshiaki Matsuzono, Honda R&D Co., Ltd.; Cameron Tanner, David Bronfenbrenner, Tinghong Tao, Kenneth Twiggs, Corning Inc.

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Advanced Emission Components and Systems for Gasoline Vehicles (Part 2 of 2)

Session Code: ***PFL422***

Room 140 F ***Session Time:*** ***1:00 p.m.***

Papers are invited for this session covering the systems engineering experience required to achieve ultra-low emission levels on light-duty vehicles. Emission system component topics for this session include the development of advanced three-way catalysts, the development of NOX control strategies for gasoline lean burn engines, the application of high cell density substrates to advanced emission systems, and the integration of these components into full vehicle emission systems.

Organizers - *Joseph E. Kubsh, Manufacturers of Emission Controls Assoc.; Douglas Ball; Rasto Brezny, Manufacturers of Emission Controls Assoc.; Ronald Heck, RMH Consulting*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1008***	***Selective Catalytic Reduction of Oxides of Nitrogen with Ethanol/Gasoline Blends over a Silver/Alumina Catalyst in Lean Gasoline Engine Exhaust***
		Vitaly Y. Prikhodko, Josh A. Pihl, Todd J. Toops, John F. Thomas, James E. Parks, Brian H. West, Oak Ridge National Laboratory
1:30 p.m.	***2015-01-1006***	***TWC+LNT/SCR Systems for Satisfying Tier 2, Bin 2 Emission Standards on Lean-Burn Gasoline Engines***
		Joseph R. Theis, Jeong Kim, Giovanni Cavataio, Ford Motor Company
2:00 p.m.	***2015-01-1004***	***Passive TWC+SCR Systems for Satisfying Tier 2, Bin 2 Emission Standards on Lean-Burn Gasoline Engines***
		Joseph R. Theis, Jeong Kim, Giovanni Cavataio, Ford Motor Company

2:30 p.m.	***2015-01-1002***	***NOx Trap Three-Way Catalyst (N-TWC) Concept: TWC with NOx Adsorption Properties at Low Temperatures for Cold-Start Emission Control*** *Yuichiro Murata, Tomoko Morita, Katsuji Wada, Hiroshi Ohno, Honda R&D Co., Ltd.*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00506 and SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Active Safety, Advanced Driver Assistance Systems, Integrated Safety Countermeasures and Their Safety Performance (Part 1 of 2)

Session Code: ***SS400***

Room 140 G ***Session Time:*** ***8:00 a.m.***

This session will focus on how Active Safety and Driver assistance systems are gaining importance and yielded significant safety benefits that are possible from the deployment of those systems in the fleet. It will address deployment strategies and technologies used by the industry and the government as well as consumer acceptance and market demand for these systems. Lastly, discussion on information gained from the various onboard sensors and vision systems in active safety systems will occur.

Organizers - *H. Clay Gabler, Virginia Tech.; John F. Lenkeit, Dynamic Research Inc.; Rini Sherony, Toyota Motor Engineering & Mfg NA Inc.; Joseph Kanianthra; Kristofer D. Kusano, Virginia Tech*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1411***	***Driver Reactions in a Vehicle with Collision Warning and Mitigation Technology*** *Caroline Crump, David Cades, Robert Rauschenberger, Emily Hildebrand, Jeremy Schwark, Brandon Barakat, Exponent Failure Analysis Associates; Douglas Young, Exponent Inc.*
8:30 a.m.	***2015-01-1414***	***Driver Perceived Threat and Behavior in Rear End Collision Avoidance Situations*** *Jitendra Shah, Mohamed Benmimoun, Ford Research Center Aachen GmbH*
9:00 a.m.	***2015-01-1413***	***Repeated Measures Testing of Driver Collision Warning*** *Louis Tijerina, Michael Blommer, Reates Curry, Radhakrishnan Swaminathan, Dev Kochhar, Walter Talamonti, Ford Motor Company*
9:30 a.m.	***2015-01-1403***	***Driver Lane Change Prediction Using Physiological Measures*** *Yi lu Murphey, University of Michigan; Dev S. Kochhar, Ford Motor Co.; Paul Watta, Xipeng Wang, Tianyu Wang, University of Michigan*
10:00 a.m.	***2015-01-1407***	***Driving Characteristics of Drivers in a State of Low Alertness when an Autonomous System Changes from Autonomous Driving to Manual Driving*** *Toshiya Hirose, Dai Kitabayashi, Shibaura Institute of Technology; Hidenobu Kubota, MLIT*
	2015-01-1405	***Study on Vehicle Collision Predicting using Vehicle Acceleration and Angular Velocity of Brake Pedal (Written Only -- No Oral Presentation)*** *Guanjun Zhang, Feng Yu, Zhigao OuYang, Hunan University; Huiqin Chen, Hangzhou Dianzi University, Hunan University; Zhonghao Bai, Libo Cao, Hunan University*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00494, and also individually. To purchase visit collections.sae.org

Planned by Automobile Body, Chassis, Safety, and Structures Activity / EMB Land and Sea Group

Wednesday, April 22

Active Safety, Advanced Driver Assistance Systems, Integrated Safety Countermeasures and Their Safety Performance (Part 2 of 2)

Session Code: ***SS400***

Room 140 G ***Session Time:*** ***1:00 p.m.***

This session will focus on how Active Safety and Driver assistance systems are gaining importance and yielded significant safety benefits that are possible from the deployment of those systems in the fleet. It will address deployment strategies and technologies used by the industry and the government as well as consumer acceptance and market demand for these systems. Lastly, discussion on information gained from the various onboard sensors and vision systems in active safety systems will occur.

Organizers - *H. Clay Gabler, Virginia Tech.; John F. Lenkeit, Dynamic Research Inc.; Rini Sherony, Toyota Motor Engineering & Mfg NA Inc.; Joseph Kanianthra; Kristofer D. Kusano, Virginia Tech*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1406***	***Collision Avoidance Systems - Advancements and Efficiency*** *Mikael Ljung Aust, Lotta Jakobsson, Magdalena Lindman, Erik Coelingh, Volvo Cars*
1:30 p.m.	***2015-01-1404***	***Test Scenarios, Equipment and Testing Process for LDW LDP Performance Evaluation*** *Arda Kurt, Güchan Özbilgin, Keith A. Redmill, Ohio State University; Rini Sherony, Toyota Motor Engineering & Mfg NA Inc.; Ümit Özgüner, Ohio State University*
2:00 p.m.	***2015-01-1408***	***Target Population for Intersection Advanced Driver Assistance Systems in the U.S.*** *Kristofer D. Kusano, Hampton C. Gabler, Virginia Tech*
2:30 p.m.	***2015-01-1410***	***Research on Variable-Speed Brake Control in Multiple-Collision Automatic Braking*** *Shotaro Odate, Kazuhiro Daido, Yosuke Mizutani, Honda R&D Co., Ltd.*
3:00 p.m.	***2015-01-1401***	***The Simulation Strategy and Its Realization in the Development Process of Active Safety and Advanced Driver Assistance Systems*** *Pawel Skruch, Rafal Dlugosz, Krzysztof Kogut, Pawel Markiewicz, Dominik Sasin, Maciej Ró¿ewicz, Delphi Poland*
3:30 p.m.	***2015-01-1412***	***A New Algorithm to Make Future Advanced Driver Assistance Systems Faster*** *Xuan Zhou, Walter Niewoehner, DEKRA Automobil GmbH*

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Planned by Automobile Body, Chassis, Safety, and Structures Activity / EMB Land and Sea Group

Wednesday, April 22

Advances in Instrument Panels, Seats, and Interiors

Session Code: ***M301***

Room 142 A ***Session Time: 8:00 a.m.***

This session will feature technical presentations that will discuss new technology and industry insights in automotive interiors. Focus areas include materials, perceived quality, environmental concerns, manufacturing, safety, and durability.

Organizers - *Robert Egbers, Comusa; Lisa Fallon, General Motors Co.; Sreenivas Kuchibhatla, Ford Motor Co.; Stephen M. Pitrof, Inteva LLC; Jian Tao, FCA US LLC; Ravi Thyagarajan, US Army TARDEC*

Time	Paper No.	Title
8:30 a.m.	***ORAL ONLY***	***Multi-Material, Lightweight Vehicle Interior Systems Design*** *John Jaranson, Ford Motor Company; Meraj ahmed, Eicher Engineering Solutions*
9:00 a.m.	***ORAL ONLY***	***Performance of Lightweight Materials for Vehicle Interior Trim subject to Low Velocity Impact Perforation*** *Anindya Deb, Indian Institute of Science; Gude S. Venkatesh, Acharya Institute of Technology; Ashok Mache, Indian Institute of Science*
9:30 a.m.	***ORAL ONLY***	***Lightweight Knee Bolster Assembly for Belted and Unbelted Occupant Restraint in a Frontal Crash*** *Mani Ayyakannu, Latha Subbiah, Mohammed Syed, INDUS Concepts & Engineering, LLC*
10:00 a.m.	***ORAL ONLY***	***Lightweight seat design and crash simulations*** *Roberto Arienti; Giorgio Previati, Politecnico di Milano; Carlo Maria Cantoni, Brembo Engineering Spa; Massimiliano Gobbi; Giampiero Mastinu, Politecnico di Milano*
10:30 a.m.	***Panel***	***Technical Expert Panel Discussion: Managing Complexity of Today¿s Automotive Interiors*** *The objective of this panel discussion is figure out how OEMs and suppliers work together in offering Interior Products that people desire for while working within the framework of this complexity. Complexity can arise due to (but not limited to) the following reasons: Customer Demand, Cost of Complexity, Dealership System, Design Complexity caused by the Proliferation of Interior Electronics and Packaging* ***Organizers -*** *Robert Egbers, Comusa; Lisa Fallon, General Motors Co.; Sreenivas Kuchibhatla, Ford Motor Co.; Stephen M. Pitrof, Inteva LLC; Ravi Thyagarajan, US Army TARDEC* ***Moderators -*** *Stephen M. Pitrof, Inteva LLC* ***Panelists -*** *Ann Bennett, IHS Automotive; Timothy Boundy, General Motors Co.; Ernest Minissale, FCA US LLC;*

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Wednesday, April 22

Combustion in Gaseous-Fueled Engines

Session Code: ***PFL270***

Room 142 A ***Session Time: 1:00 p.m.***

This session focuses on fuel injection, combustion, controls, performance and emissions of SI engines fueled with gaseous fuels such as methane, natural gas (NG), biogas, producer gas, coke oven gas, hydrogen, or hydrogen-NG blends. Papers on Diesel-NG or diesel-hydrogen dual-fuel engines will also be accepted in this session.

Organizers - *Thomas Wallner, Riccardo Scarcelli, Argonne National Laboratory; Brad A. Boyer, Ford Motor Co.; Chris Hagen, Oregon State Univ.; Victor Salazar, GE Company*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0867***	***Effect of Pre-Chamber Volume and Nozzle Diameter on Pre-Chamber Ignition in Heavy Duty Natural Gas Engines***
		Ashish Shah, Per Tunestal, Bengt Johansson, Lund University
1:30 p.m.	***2015-01-0863***	***Improvement of Combustion and Emissions in a Dual Fuel Compression Ignition Engine with Natural Gas as the Main Fuel***
		Hideyuki Ogawa, Peilong Zhao, Taiki Kato, Gen Shibata, Hokkaido Univ.
2:00 p.m.	***2015-01-0864***	***Intake and Exhaust Valve Timing Control on a Heavy-Duty, Direct-Injection Natural Gas Engine***
		Bronson Patychuk, Ning Wu, Gordon McTaggart-Cowan, Philip Hill, Sandeep Munshi, Westport Innovations Inc
2:30 p.m.	***2015-01-0865***	***Direct Injection of Natural Gas at up to 600 Bar in a Pilot-Ignited Heavy-Duty Engine***
		Gordon McTaggart-Cowan, Ken Mann, Jian Huang, Ashish Singh, Bronson Patychuk, Zheng Xiong Zheng, Sandeep Munshi, Westport Innovations Inc
3:00 p.m.	***2015-01-0861***	***Port Injection of Water into a DI Hydrogen Engine***
		Matthew Younkins, Margaret S. Wooldridge, University of Michigan; Brad A. Boyer, Ford Motor Co.
	2015-01-0866	***Investigation of a Methane Scavenged Prechamber for Increased Efficiency of a Lean-Burn Natural Gas Engine for Automotive Applications (Written Only -- No Oral Presentation)***
		Laura Sophie Baumgartner, Sebastian Wohlgemuth, Sebastian Zirngibl, Georg Wachtmeister, TU Muenchen

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Technical Expert Panel Discussion: Managing Complexity of Today¿s Automotive Interiors

Session Code: ***M301***

Room 142 A Technical Expert Panel Discus: ***Session Time:*** ***10:30 a.m.***

The objective of this panel discussion is figure out how OEMs and suppliers work together in offering Interior Products that people desire for while working within the framework of this complexity. Complexity can arise due to (but not limited to) the following reasons: Customer Demand, Cost of Complexity, Dealership System, Design Complexity caused by the Proliferation of Interior Electronics and Packaging

Organizers - *Robert Egbers, Comusa; Lisa Fallon, General Motors Co.; Sreenivas Kuchibhatla, Ford Motor Co.; Stephen M. Pitrof, Inteva LLC; Ravi Thyagarajan, US Army TARDEC*

Moderators - *Stephen M. Pitrof, Inteva LLC*

Panelists - *Ann Bennett, IHS Automotive; Timothy Boundy, General Motors Co.; Ernest Minissale, FCA US LLC;*

Wednesday, April 22

Technological Developments in China (Part 1 of 2)

Session Code: ***PFL180***

Room 142 B ***Session Time: 8:00 a.m.***

Technical review and presentation of the development activities focusing on China automotive market, including regulation review, product development and localization, technology evaluation etc, covering both conventional and alternative powertrain and other vehicular component and system aspects.

Organizers - *Feilong Liu, Delphi Corp.; Liangjun Hu, Ford Motor Co.; Charlee Liu, Shouxian Ren, General Motors Co.*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Welcome and Opening Remarks***
		Feilong Liu, Delphi Corp.; Anli Wei, China International Combusion Engine Industry Association
8:30 a.m.	***ORAL ONLY***	***Emissions Opportunities and Challenges in the Chinese Vehicle Market***
		Timothy V. Johnson, Corning Inc.
9:00 a.m.	***ORAL ONLY***	***Lessons from the Emissions Reduction Journey in the Nonroad Industry***
		Xinqun Gui, Deere & Company
9:30 a.m.	***ORAL ONLY***	***EPA/NHTSA Update on Phase II GHG and Fuel Efficiency Rules for Medium and Heavy Duty Vehicles***
		Houshun Zhang, EPA Office of Mobile Sources
10:00 a.m.	***ORAL ONLY***	***New legistlation requirements in China and the potential challenges to dieslel vehicles***
		Paolo Di Martino, IAV Automotive Engineering Inc.; Yinyan Huang, IAV Automotive Engineering Inc
10:30 a.m.	***ORAL ONLY***	***Transportation Fuels and Engine Technology Opportunities***
		David J. Cleary, Aramco Services Co.

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Technological Developments in China (Part 2 of 2)

Session Code: ***PFL180***

Room 142 B ***Session Time: 1:00 p.m.***

Technical review and presentation of the development activities focusing on China automotive market, including regulation review, product development and localization, technology evaluation etc, covering both conventional and alternative powertrain and other vehicular component and system aspects.

Organizers - *Feilong Liu, Delphi Corp.; Liangjun Hu, Ford Motor Co.; Charlee Liu, Shouxian Ren, General Motors Co.*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Updating Automotive Emission Regulations in China - for Light-duty, Heavy-duty, Off-road and Marine Applications***
		Reggie Zhan, Southwest Research Institute
1:30 p.m.	***ORAL ONLY***	***Advanced Turbocharger Developments for the Chinese Market***
		Steven Arnold, Kangyue Technology Co. Ltd & ESI.; Hang Wang, Kangyue Technology Co. & KLTSMI
2:00 p.m.	***ORAL ONLY***	***Challenges for New SI Engine Technology Introduction in China due to Low Speed Pre-Ignition***
		Thomas E. Briggs, Southwest Research Institute

2:30 p.m.	***ORAL ONLY***	***Advanced EGR Technology for Gasoline Engine ¿ A Study by Great Wall Motor***
		Dongxian Song, Great Wall Motor Company Limited
3:00 p.m.	***ORAL ONLY***	***BAIC Turbocharged Low Pressure Cooled EGR SI Engine ¿ A Pioneer Application in China Market***
		Jianjun Zhang, Yongkui Tan, Jiaxin Gu, Beijing Automobile Industry Holding Co. LLC
3:30 p.m.	***ORAL ONLY***	***Dedicated EGR (D-EGR) for PFI Engine - An Effective Technology for China Market***
		Terrence Alger, Southwest Research Institute

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Safety-Critical Systems (Part 1 of 4)

Session Code: ***AE403***

Room 142 C ***Session Time:*** ***8:00 a.m.***

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - *Barbara J. Czerny, FCA US LLC; Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech. Computertechnik AG*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0265***	***From Natural Language to Semi-Formal Notation Requirements for Automotive Safety***
		Martin Krammer, Virtual Vehicle Research Center; Philip Stirgwolt, Infineon Technologies AG; Helmut Martin, Virtual Vehicle Research Center
8:30 a.m.	***2015-01-0273***	***Model-based Engineering Workflow for Automotive Safety Concepts***
		Helmut Martin, Martin Krammer, Bernhard Winkler, Christian Schwarzl, Virtual Vehicle Research Center
9:00 a.m.	***ORAL ONLY***	***Technical Keynote: Case Study of Unintended Acceleration and Software Safety***
		Philip Koopman, Carnegie Mellon Univ.
10:00 a.m.	***2015-01-0272***	***Using Fault Injection to Verify an AUTOSAR Application According to the ISO 26262***
		Ludovic Pintard, Michel Leeman, Abdelillah Ymlahi-Ouazzani, VALEO; Jean-Charles Fabre, Karama Kanoun, Matthieu Roy, LAAS-CNRS
10:30 a.m.	***Panel***	***Technical Expert Panel Discussion: ISO 26262 Revision 2***
		Organizers - *Joseph G. D'Ambrosio, GM R&D Center* ***Moderators -*** *Joseph G. D'Ambrosio, GM R&D Center* ***Panelists -*** *Mark Costin, Google Inc.; Barbara J. Czerny, FCA US LLC; Rami Ismail Debouk, GM R&D Center; Karl Greb, Texas Instruments Inc.; Joseph D. Miller, TRW Automotive US LLC;*

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Planned by Electronics in Safety Committee / Automobile Electronics Activity

Wednesday, April 22

Safety-Critical Systems (Part 2 of 4)

Session Code: ***AE403***

Room 142 C ***Session Time:*** ***1:00 p.m.***

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - *Barbara J. Czerny, FCA US LLC; Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech. Computertechnik AG*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0278***	***Challenges in Managing ISO 26262 Software Development Projects*** *Ingo Stürmer, Heiko Doerr, Thomas End, Model Engineering Solutions GmbH*
1:30 p.m.	***2015-01-0271***	***Benefits of Functional Safety Re-Engineering*** *Fabian Joerg Uwe Koark, Christian Beul, INVENSITY*
2:00 p.m.	***~~2015-01-0276~~ ORAL ONLY***	***Functional Safety Software Analysis at the System Level ¿ A Practical Application*** *William Taylor, kVA; Jody Nelson, KVA; Doug Barnes, kVA*
2:30 p.m.	***2015-01-0274***	***An Integrated Approach to Requirements Development and Hazard Analysis*** *John Thomas, John Sgueglia, Dajiang Suo, Nancy Leveson, Massachusetts Institute of Technology; Mark Vernacchia, Padma Sundaram, General Motors Company*
3:00 p.m.	***2015-01-0277***	***Integration of Multiple Active Safety Systems using STPA*** *Seth Placke, John Thomas, Dajiang Suo, MIT*
3:30 p.m.	***~~2015-01-0270~~ ORAL ONLY***	***Proposal of a updated approach for 'Safety Concept' description according to ISO 26262 framework*** *Shuhei Yamashita, DNV GL; Yoji Iwai, GAIO Technology Co., Ltd.; Kenji Hiranabe, Change Vision Inc.*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00477, and also individually. To purchase visit collections.sae.org

Planned by Electronics in Safety Committee / Automobile Electronics Activity

Wednesday, April 22

Technical Expert Panel Discussion: ISO 26262 Revision 2

Session Code: ***AE403***

Room 142 C Technical Expert Panel Discus: ***Session Time:*** ***10:30 a.m.***

Organizers - *Joseph G. D'Ambrosio, GM R&D Center*

Moderators - *Joseph G. D'Ambrosio, GM R&D Center*

Panelists - *Mark Costin, Google Inc.; Barbara J. Czerny, FCA US LLC; Rami Ismail Debouk, GM R&D Center; Karl Greb, Texas Instruments Inc.; Joseph D. Miller, TRW Automotive US LLC;*

Wednesday, April 22

Fatigue Modeling / Testing & CAE Durability Analysis (Part 3 of 4)

Session Code: ***M200***

Room 250 A ***Session Time:*** ***8:00 a.m.***

This series of sessions focuses on state-of-the-art fatigue theory and advanced development in fatigue testing, material behavior under cyclic loading, and fatigue analysis methodology & research in the ground vehicle industry. Studies and discussions on innovative and improved fatigue theory/methods in will be discussed along with and engineering applications of CAE durability analysis.

Organizers - *Abolhassan Khosrovaneh, GM; John J. Bonnen, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Carlos Carvalho Engler-Pinto, Ford Motor Co.; Mingchao Guo, FCA US LLC; Zhigang Wei, Tenneco Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0556***	***Very High Cycle Fatigue of Cast Aluminum Alloys under Variable Humidity Levels***
		Wenkai Li, Haitao Cui, Weidong Wen, Nanjing Univ. of Aero. & Astro; Xuming Su, Carlos Engler-Pinto, Ford Motor Co
9:00 a.m.	***2015-01-0546***	***Effect of Water Absorption on Tensile and Fatigue Behaviors of Two Short Glass Fiber Reinforced Thermoplastics***
		Seyyedvahid Mortazavian, Ali Fatemi, University of Toledo; Abolhassan Khosrovaneh, GM
9:30 a.m.	***2015-01-0541***	***A Two-Parameter Model for Mixed-Mode Fatigue Crack Growth and Multiaxial Fatigue***
		Zhigang Wei, Tenneco Inc.; Pingsha Dong, University of Michigan
10:30 a.m.	***2015-01-0544***	***Fatigue Behavior of Cast Iron Including Mean Stress Effects***
		Nicholas Meyer, Ali Fatemi, University of Toledo; Steven McCutcheon, Eaton Spicer Clutch Div; Brian Havard, William Fairchilds, Eaton Corporation Aerospace Operations

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

Fatigue Modeling / Testing & CAE Durability Analysis (Part 4 of 4)

Session Code: ***M200***

Room 250 A ***Session Time:*** ***1:00 p.m.***

This series of sessions focuses on state-of-the-art fatigue theory and advanced development in fatigue testing, material behavior under cyclic loading, and fatigue analysis methodology & research in the ground vehicle industry. Studies and discussions on innovative and improved fatigue theory/methods in will be discussed along with and engineering applications of CAE durability analysis.

Organizers - *Abolhassan Khosrovaneh, GM; John J. Bonnen, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Carlos Carvalho Engler-Pinto, Ford Motor Co.; Mingchao Guo, FCA US LLC; Zhigang Wei, Tenneco Inc.*

Time	Paper No.	Title

1:30 p.m.	***2015-01-0532***	***A Technique for Cargo Box Tailgate CAE Fatigue Life Predictions Loaded with Inertial Forces and Moments***
		Mingchao Guo, Weidong Zhang, FCA US LLC; Dajun Zhang, FCA Canada Inc.; Ram Bhandarkar, FCA US LLC
2:00 p.m.	***2015-01-0548***	***Isothermal and Thermo-Mechanical Fatigue of Automotive Components***
		Andrew Halfpenny, Robin Anderson, Xiaobin Lin, HBM-nCode
2:30 p.m.	***2015-01-0535***	***Time vs Frequency Domain Analysis for Large Automotive Systems***
		Neil Bishop, Paresh Murthy, CAEfatigue, Ltd.; Karl A. Sweitzer, Booz Allen Hamilton Inc.; Stuart C. Kerr, CAEfatigue, Ltd.
	2015-01-0547	***Fatigue Life Estimation of Front Subframe of a Passenger Car Based on Modal Stress Recovery Method (Written Only -- No Oral Presentation)***
		Dengfeng Wang, Rongchao Jiang, Jilin University
	2015-01-0553	***Study the Relationship between CP Specimen Width and the Stress Intensity Factor Value around Nugget (Written Only -- No Oral Presentation)***
		Yu Zhang, Weiqin Tang, Dayong Li, Shanghai Jiao Tong Univ; Xuming Su, Ford Motor Co; Shiyao Huang, Ford Asia-Pacific Inc; Yandong Shi, Ford Motor Research & Eng (Nanjing) Co; Yinghong Peng, Shanghai Jiao Tong Univ
	2015-01-0558	***Thermal-Mechanical Fatigue Analysis of Diesel Engine Cylinder Head Based on Fluid-Structure Interaction (Written Only -- No Oral Presentation)***
		Xiaobei Cheng, Xin Wang, Yang Ming, Huazhong University of Science and Tech; Zhang Hongfei, Dong Feng Commercial Vehicle Company; Ran Gao, Ira A. Fulton Schools of Engineering

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

The Multi Material Lightweight Vehicle (MMLV) Project (Part 3 of 3)

Session Code: ***M101***

Room 250 B ***Session Time:*** ***8:00 a.m.***

The MMLV track is comprised of a keynote presentation by the DOE Vehicle Technologies Office, highlighting the significance of lightweight materials and multimaterial passenger vehicle construction, enabling engine downsizing to achieve fuel reduction and future CAFE regulations. The track includes papers specific to the MMLV subsystems, as well as full vehicle test results including crash, corrosion. NVH and Life Cycle Analysis. A 23.5% full vehicle mass reduction of 363 kg was achieved.

Organizers - *Jeff L. Conklin, Magna Cosma International; Timothy W. Skszek, Magna International; David Wagner, Ford Motor Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0410***	***MMLV: Corrosion Design and Testing***
		Kevin Smith, Ying Zhang, Magna International
8:30 a.m.	***2015-01-1613***	***MMLV: Vehicle Durability Design, Simulation and Testing***
		Nikhil Bolar, Thomas Buchler, Magna International; Allen Li, Jeff Wallace, Ford Motor Co.

9:00 a.m.	***2015-01-1614***	***MMLV: Crash Safety Performance***
		Yijung Chen, Derek Board, Omar Faruque, Cortney Stancato, James Cheng, Ford Motor Company; Nikhil Bolar, Sreevidhya Anandavally, Magna International
9:30 a.m.	***2015-01-1615***	***MMLV: NVH Sound Package Development and Full Vehicle Testing***
		Yuksel Gur, Ford Motor Company; Jian Pan, Autoneum North America Inc; John Huber, Jeff Wallace, Ford Motor Company
10:00 a.m.	***2015-01-1616***	***MMLV: Life Cycle Assessment***
		Lindita Bushi, Life Cycle Assessment Consulting; Timothy Skszek, Magna International; David Wagner, Ford Motor Company
10:30 a.m.	***Panel***	***Technical Expert Panel Discussion: Multi Material Lightweight Vehicle (MMLV) Projects***
		Organizers - *Timothy W. Skszek, Magna Intl. Inc.* ***Moderators -*** *Timothy W. Skszek, Magna Intl. Inc.* ***Panelists -*** *Jeff L. Conklin, Magna Cosma International; David Wagner, Ford Motor Co.; Matthew Zaluzec, Ford Motor Co.;*

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Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 22

Technical Expert Panel Discussion: Multi Material Lightweight Vehicle (MMLV) Projects

Session Code: ***M101***

Room 250 B Technical Expert Panel Discus: ***Session Time:*** ***10:30 a.m.***

The MMLV track includes a Technical Expert Panel Discussion at the end of the MMLV session. Key project participants from Magna International and Ford Motor Company will respond to questions from the audience and share lessons learned relative to the MMLV Program mass reduction, test results and environmental benefit.

Organizers - *Timothy W. Skszek, Magna Intl. Inc.*

Moderators - *Timothy W. Skszek, Magna Intl. Inc.*

Panelists - *Jeff L. Conklin, Magna Cosma International; David Wagner, Ford Motor Co.; Matthew Zaluzec, Ford Motor Co.;*

Wednesday, April 22

Fuel Injection and Sprays (Part 3 of 6)

Session Code: ***PFL320***

Room 250 C ***Session Time:*** ***8:00 a.m.***

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Gerald Micklow, Florida Institute of Technology; Jacqueline O'Connor, Pennsylvania State University*

Chairpersons - *Michele Battistoni, Universita degli Studi di Perugia; Essam El-Hannouny, Argonne National Laboratory*

Time	Paper No.	Title
8:00 a.m.	2015-01-0949	**A New Euler/Lagrange Approach for Multiphase Simulations of a Multi-Hole GDI Injector** *Mathis Bode, Tobias Falkenstein, RWTH Aachen University; Vincent Le Chenadec, University of Illinois; Seongwon Kang, Sogang University; Heinz Pitsch, RWTH Aachen University; Toshiyuki Arima, Hiroyoshi Taniguchi, Honda R&D Co Ltd*
8:30 a.m.	2015-01-0944	**Internal and Near-Nozzle Flow in a Multi-Hole Gasoline Injector Under Flashing and Non-Flashing Conditions** *Maryam Moulai, Univ. of Massachusetts; Ronald Grover, Scott Parrish, General Motors; David Schmidt, Univ. of Massachusetts*
9:00 a.m.	2015-01-0941	**A Novel Approach to Assess Diesel Spray Models using Joint Visible and X-Ray Liquid Extinction Measurements** *Gina M. Magnotti, Caroline L. Genzale, Georgia Institute of Technology*
9:30 a.m.	2015-01-0943	**Coupled LES Jet Primary Breakup - Lagrangian Spray Simulation of a GDi Multi-Hole Fuel Injector** *Bizhan Befrui, Mario D'Onofrio, Lee E. Markle, Peter Spiekermann, Delphi Automotive*
10:00 a.m.	2015-01-0931	**LES of Diesel and Gasoline Sprays with Validation against X-Ray Radiography Data** *Zihan Wang, Andrew Swantek, Riccardo Scarcelli, Daniel Duke, Alan Kastengren, Christopher F. Powell, Sibendu Som, Argonne National Laboratory; Ronald Reese, Kevin Freeman, York Zhu, FCA US LLC*
10:30 a.m.	2015-01-0942	**Study of Gasoline-Ethanol Jet Behaviour using the Lattice Boltzmann (Written Only -- No Oral Presentation)** *Vikram Singh; Anshul Koli*
	2015-01-0939	**Development of a Turbulence-induced Breakup Model for Gasoline Spray Simulation (Written Only -- No Oral Presentation)** *Daliang Jing, Tsinghua Univ.; Birmingham Univ.; Shi-Jin Shuai, Zhi Wang, Yanfei Li, Tsinghua Univ.; Hongming Xu, Tsinghua Univ.; Birmingham Univ.*

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Fuel Injection and Sprays (Part 4 of 6)

Session Code: ***PFL320***

Room 250 C ***Session Time:*** ***1:00 p.m.***

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Gerald Micklow, Florida Institute of Technology; Jacqueline O'Connor, Pennsylvania State University*

Chairpersons - *Gerald Micklow, Florida Institute of Technology; Michele Battistoni, Universita degli Studi di Perugia*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0918***	***Recent Developments in X-ray Diagnostics for Cavitation***
		Daniel Duke, Andrew Swantek, Alan Kastengren, Kamel Fezzaa, Christopher Powell, Argonne National Laboratory
1:30 p.m.	***2015-01-0921***	***Assessment on Internal Nozzle Flow Initialization in Diesel Spray Simulations***
		Raul Payri, Jaime Gimeno, Pedro Marti-Aldaravi, Marcos Carreres, Universitat Politècnica de València
2:00 p.m.	***2015-01-0922***	***Diesel Spray Modeling Under Off-Axis Needle Displacement***
		Giancarlo Chiatti, Ornella Chiavola, Matteo Palazzoni, Fulvio Palmieri, Universita degli Studi Roma TRE
2:30 p.m.	***2015-01-0923***	***Study of Transient Effects in the Internal Flow of a Diesel Fuel Injector***
		Mohamed Chouak, Alexandre Mousseau, Damien Reveillon, Louis Dufresne, Patrice Seers, École de Technologie Supérieure
3:00 p.m.	***ORAL ONLY***	***Image-Based Correlation of Engine Operating Parameters with Occurrence and Duration of Diesel Fuel Injector Dribble***
		W. Ethan Eagle, Mark Musculus, Sandia National Laboratories
3:30 p.m.	***2015-01-0927***	***Characterization of Alcohol Sprays from Multi-Hole Injector for DISI Engines through PIV Technique***
		Luca Marchitto, Istituto Motori CNR; Gerardo Valentino, National Research Council of Italy; Simona Merola, Cinzia Tornatore, Istituto Motori CNR

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Combustion in Compression-Ignition Engines: In-Cylinder Processes (Part 1 of 2)

Session Code: ***PFL222***

Room 251 A ***Session Time:*** ***8:00 a.m.***

Papers focusing on in-cylinder processes of classical diesel engine combustion with relatively short ignition delay, including papers dealing with low CR and high EGR calibrations. Subject matter may include both simulation results and experimental work, including applications of optical diagnostics, with emphasis on in-cylinder spray, evaporation, mixing, pollutant formation/destruction, or any other in-cylinder phenomena.

Organizers - *John F. Wright, Cummins Inc.; Jose M Garcia-Oliver, Universitat Politecnica de Catalunya; Song-Charng Kong; Robert M. McDavid, Caterpillar Inc.; Raul Payri, Universidad Politecnica de Valencia; Dale R. Tree, Brigham Young Univ.; Ming Zheng, Univ. of Windsor; Mark Musculus, Sandia National Laboratories*

Chairpersons - *W. Eagle, Kan Zha, Sandia National Laboratories*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0791***	***Injection Pressure Effects on the Flame Development in a Light-Duty Optical Diesel Engine***
		Minh Khoi Le, Sanghoon Kook, The University of New South Wales

8:30 a.m.	***2015-01-0793***	***Lift-Off Length in an Optical Heavy-Duty Diesel Engine*** *Guillaume Lequien, Zheming Li, Oivind Andersson, Mattias Richter, Lund Univ.*
9:00 a.m.	***2015-01-0792***	***Ignition Quality Effects on Lift-Off Stabilization of Synthetic Fuels*** *Guillaume Lequien, Lund Univ.; Scott Skeen, Julien Manin, Lyle M Pickett, Sandia National Laboratories; Oivind Andersson, Lund Univ.*
9:30 a.m.	***2015-01-0799***	***Visualization of Ignition Processes in High-Pressure Sprays with Multiple Injections of n-Dodecane*** *Scott Skeen, Julien Manin, Lyle M Pickett, Sandia National Laboratories*
10:00 a.m.	***2015-01-0796***	***Experimental and Numerical Investigations of Close-Coupled Pilot Injections to Reduce Combustion Noise in a Small-Bore Diesel Engine*** *Stephen Busch, Kan Zha, Paul C. Miles, Sandia National Laboratories; Alok Warey, Francesco Pesce, Richard Peterson, Alberto Vassallo, General Motors Company*
10:30 a.m.	***ORAL ONLY***	***Advanced CFD Diagnostics: Tracking Soot from Originating Fuel Sources through to EVO in a Cummins N14 Optical Engine Utilizing Post Injections*** *Randy Hessel, Univ. of Wisconsin Madison; Rolf Reitz; Zongyu Yue; Mark Musculus, Sandia National Laboratories; Jacqueline O'Connor, Pennsylvania State University*
11:00 a.m.	***2015-01-0794***	***CFD Study of Soot Reduction Mechanisms of Post-Injection in Spray Combustion*** *Zongyu Yue, Randy Hessel, Rolf D. Reitz, Univ of Wisconsin*

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Combustion in Compression-Ignition Engines: In-Cylinder Processes (Part 2 of 2)

Session Code: ***PFL222***

Room 251 A ***Session Time:*** ***1:00 p.m.***

Papers focusing on in-cylinder processes of classical diesel engine combustion with relatively short ignition delay, including papers dealing with low CR and high EGR calibrations. Subject matter may include both simulation results and experimental work, including applications of optical diagnostics, with emphasis on in-cylinder spray, evaporation, mixing, pollutant formation/destruction, or any other in-cylinder phenomena.

Organizers - *John F. Wright, Cummins Inc.; Jose M Garcia-Oliver, Universitat Politecnica de Catalunya; Song-Charng Kong; Robert M. McDavid, Caterpillar Inc.; Raul Payri, Universidad Politecnica de Valencia; Dale R. Tree, Brigham Young Univ.; Ming Zheng, Univ. of Windsor; Mark Musculus, Sandia National Laboratories*

Chairpersons - *Stephen Busch, Sandia National Laboratories; Alejandro Plazas, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0795***	***The Influence of Diesel End-of-Injection Rate Shape on Combustion Recession*** *Chad Koci, Glen Martin, Tim Bazyn, Wayne Morrison, Kenth Svensson, Christopher Gehrke, Caterpillar, Inc.*

1:30 p.m.	***2015-01-0797***	***Combustion Recession after End of Injection in Diesel Sprays***
		Benjamin W Knox, Caroline L Genzale, Georgia Institute of Technology; Lyle M Pickett, Sandia National Laboratories; Jose M Garcia-Oliver, Walter Vera-Tudela, Universitat Politecnica de Valencia
2:00 p.m.	***ORAL ONLY***	***Diesel flame imaging and quantitative analysis of in-flame soot oxidation***
		Takeyuki Kamimoto
2:30 p.m.	***2015-01-0800***	***A Study of In-Cylinder Soot Oxidation by Laser Extinction Measurements During an EGR-Sweep in an Optical Diesel Engine***
		Yann Gallo, Johan Simonsson, Ted Lind, Per-Erik Bengtsson, Henrik Bladh, Oivind Andersson, Lund University
3:00 p.m.	***2015-01-0801***	***The Visualization of Soot Late in the Diesel Combustion Process by Laser Induced Incandescence with a Vertical Laser Sheet***
		Gregory K. Lilik, Charles J. Mueller, Cosmin E. Dumitrescu, Sandia National Laboratories; Christopher R. Gehrke, Caterpillar Inc.
3:30 p.m.	***2015-01-0798***	***Cetane Number Determination by Advanced Fuel Ignition Delay Analysis in a New Constant Volume Combustion Chamber***
		Philipp Seidenspinner, ASG Analytik-Service Gesellschaft mbH; Martin Härtl, Technische Universität München; Thomas Wilharm, ASG Analytik-Service Gesellschaft mbH; Georg Wachtmeister, Technische Universität München

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Abnormal SI Combustion (Knock) (Part 1 of 2)

Session Code: ***PFL213***

Room 251 B ***Session Time:*** ***8:00 a.m.***

This session focuses on abnormal SI combustion processes including spark knock and preignition. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation. Part 1 of 2: Knock

Organizers - *Richard S. Davis, General Motors Co.; Terrence Alger, Southwest Research Institute; John O. Waldman, General Motors Co.; Lurun Zhong, FCA US LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0754***	***Flame Contour Analysis through UV-Visible Imaging during Regular and Abnormal Combustion in a DISI Engine***
		Simona Silvia Merola, Adrian Irimescu, Luca Marchitto, Cinzia Tornatore, Gerardo Valentino, Istituto Motori CNR
8:30 a.m.	***2015-01-0759***	***Development of Highly Durable Optical Probe for Combustion Measurement***
		Tetsuya Nagai, Ryoji Hiraoka, Nobuyuki Iwai, Shimadzu Corporation; Mitsuru Kowada, Isao Azumagakito, Honda R&D Co., Ltd.

9:00 a.m.	***2015-01-0762***	***Study of Knocking Damage Indexing Based on Optical Measurement*** *Mitsuru Kowada, Isao Azumagakito, Honda R&D Co., Ltd.; Tetsuya Nagai, Nobuyuki Iwai, Ryoji Hiraoka, Shimadzu Corporation*
9:30 a.m.	***2015-01-0760***	***Experimental Investigation on Early and Late Intake Valve Closures for Knock Mitigation through Miller Cycle in a Downsized Turbocharged Engine*** *Sabino Luisi, Vittorio Doria, Andrea Stroppiana, CRF Spca; Federico Millo, Mohsen Mirzaeian, Politecnico di Torino*
10:00 a.m.	***2015-01-0750***	***Validation of Turbulent Combustion and Knocking Simulation in Spark-Ignition Engines Using Reduced Chemical Kinetics*** *Shinrak Park, Tetsuji Furukawa, Honda R&D Co., Ltd.*
10:30 a.m.	***2015-01-0757***	***A Simple Method to Predict Knock Using Toluene, N-Heptane and Iso-Octane Blends (TPRF) as Gasoline Surrogates*** *Gautam Kalghatgi, Hassan Babiker, Jihad Badra, Saudi Aramco*
11:00 a.m.	***2015-01-0763***	***Heat of Vaporization Measurements for Ethanol Blends Up To 50 Volume Percent in Several Hydrocarbon Blendstocks and Implications for Knock in SI Engines*** *Gina M. Chupka, Earl Christensen, Lisa Fouts, Teresa L. Alleman, Matthew A. Ratcliff, Robert L. McCormick, National Renewable Energy Laboratory*
11:30 a.m.	***2015-01-0764***	***The Effect of Ethanol Injection Strategy on Knock Suppression of the Gasoline/Ethanol Dual Fuel Combustion in a Spark-Ignited Engine*** *Seokwon Cho, Namho Kim, Jongwon Chung, Kyoungdoug Min, Seoul National Univ.*

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Abnormal SI Combustion (Preignition) (Part 2 of 2)

Session Code: ***PFL213***

Room 251 B ***Session Time:*** ***1:00 p.m.***

This session focuses on abnormal SI combustion processes including spark knock and preignition. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation. Part 2 of 2: Low-Speed Preignition

Organizers - *Richard S. Davis, General Motors Co.; Terrence Alger, Southwest Research Institute; John O. Waldman, General Motors Co.; Lurun Zhong, FCA US LLC*

Chairpersons - *Richard Davis, General Motors Co*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-0752***	***Experimental Study on Pre-Ignition and Super-Knock in Gasoline Engine Combustion with Carbon Particle at Elevated Temperatures and Pressures*** *Zhi Wang, Yunliang Qi, Hui Liu, Yan Long, Jian-Xin Wang, Tsinghua Univ.*

2:00 p.m.	***2015-01-0753***	***Experimental Studies on the Occurrence of Low-Speed Pre-Ignition in Turbocharged GDI Engines*** *Max Magar, Ulrich Spicher, MOT GmbH; Stefan Palaveev, Caterpillar Energy Solutions GmbH; Marcus Gohl, Gunther Müller, Christian Lensch-Franzen, Jens Hadler, APL Automobil-Prüftechnik Landau GmbH*
2:30 p.m.	***2015-01-0755***	***Numerical Simulation to Understand the Cause and Sequence of LSPI Phenomena and Suggestion of CaO Mechanism in Highly Boosted SI Combustion in Low Speed Range*** *Yasuo Moriyoshi, Toshio Yamada, Daisuke Tsunoda, Mingzhao Xie, Tatsuya Kuboyama, Koji Morikawa, Chiba Univ.*
3:00 p.m.	***2015-01-0761***	***Visualization and Analysis of LSPI Mechanism Caused by Oil Droplet, Particle and Deposit in Highly Boosted SI Combustion in Low Speed Range*** *Tatsuya Kuboyama, Yasuo Moriyoshi, Koji Morikawa, Chiba Univ.*
3:30 p.m.	***2015-01-0756***	***Investigation and Improvement of LSPI Phenomena and Study of Combustion Strategy in Highly Boosted SI Combustion in Low Speed Range*** *Koji Morikawa, Yasuo Moriyoshi, Tatsuya Kuboyama, Yasuo Imai, Toshio Yamada, Chiba Univ.; Koichi Hatamura, Sustainable Engine Research Center*
4:00 p.m.	***2015-01-0758***	***An Experimental Investigation on Low Speed Pre-Ignition in a Highly Boosted Gasoline Direct Injection Engine*** *Xuwei Luo, Ho Teng, Tingjun Hu, Ruigang Miao, Liming Cao, JiangLing Motors Co., Ltd.*
	2015-01-0751	***Investigation of Low-Speed Pre-Ignition in Boosted Spark Ignition Engine (Written Only -- No Oral Presentation)*** *Liwei Han, Tao Zhu, Haibo Qiao, Desheng Zhang, Dingyuan Fu, Jing Zhang, Great Wall Motor Co., Ltd.*

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Particle Emissions from Combustion Sources (Part 1 of 2)

Session Code: ***PFL450***

Room 251 C ***Session Time:*** ***8:00 a.m.***

Papers are invited for this session on particle emissions from combustion engines, including measurement and testing methods, and the effects of changes in fuel composition. Papers are also invited on the topics of the environmental and health effects of elemental carbon and organic carbon that constitutes solid cored particles plus the environmental and health effects of secondary organic aerosol emissions. This includes particulate emissions from both gasoline and diesel engines.

Organizers - *Andrea Strzelec, Texas A&M University; Matti Maricq, Ford Motor Co.; Amanda Lea-Langton, Univ. of Leeds; Imad A. Khalek, Southwest Research Institute*

Chairpersons - *Matti Maricq, Ford Motor Company; Imad Khalek, Southwest Research Institute; Andrea Strzelec, Texas A&M University*

Time	***Paper No.***	***Title***

8:00 a.m.	***2015-01-1075***	***Modeling of In-Cylinder Soot Particle Size Evolution and Distribution in a Direct Injection Diesel Engine***
		Muhammad Ahmar Zuber, Wan Mohd Faizal Wan Mahmood, Zambri Harun, Zulkhairi Zainol Abidin, Universiti Kebangsaan Malaysia; Antonino La Rocca, Paul Shayler, University of Nottingham; Fabrizio Bonatesta, Oxford Brookes University
8:30 a.m.	***2015-01-1079***	***Experiences from Nanoparticle Research on Four Gasoline Cars***
		Jan Czerwinski, Pierre Comte, Univ. of Applied Sciences Biel-Bienne; Adrian Wichser, EMPA; Andreas Mayer, TTM; Jacques Lemaire, AEEDA
9:30 a.m.	***2015-01-1071***	***The Effect of Operating Parameters on Soot Emissions in GDI Engines***
		Qi Jiao, Rolf D. Reitz, Univ. of Wisconsin
10:00 a.m.	***2015-01-1081***	***Fuel-Independent Particulate Emissions in an SIDI Engine***
		Axel Maier, Robert Bosch GmbH; Ulrike Klaus; Andreas Dreizler, TU-Darmstadt, Center of Smart Interfaces; Hermann Rottengruber, Otto-Von-Guericke University Magdeburg
10:30 a.m.	***2015-01-1077***	***Solid Particle Emissions from Vehicle Exhaust during Engine Start-Up***
		Huzeifa Badshah, Imad A. Khalek, Southwest Research Institute
11:30 a.m.	***2015-01-1073***	***Next Generation of Ceramic Wall Flow Gasoline Particulate Filter with Integrated Three Way Catalyst***
		Yoshitaka Ito, Takehide Shimoda, Takashi Aoki, Kazuya Yuuki, Hirofumi Sakamoto, NGK Insulators Ltd; Kyohei Kato, Dominic Thier, Philipp Kattouah, Etsuji Ohara, Claus Vogt, NGK Europe GmbH
	2015-01-1070	***Numerical Investigation of the Effect of Spray Cone Angle on Mixture Formation and CO/Soot Emissions in an Early Injection HCCI Diesel Engine (Written Only -- No Oral Presentation)***
		Hanzhengnan Yu, State Key Lab. of Engines; Yong Guo, China Automobile Technology and Research; Donghai Li, Weichai Power Co., Ltd.; Shanghai R&D Center; Xingyu Liang, Ge-Qun Shu, Yuesen Wang, Xiangxiang Wang, Lihui Dong, State Key Lab. of Engines

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Particle Emissions from Combustion Sources (Part 2 of 2)

Session Code: ***PFL450***

Room 251 C ***Session Time:*** ***1:00 p.m.***

Papers are invited for this session on particle emissions from combustion engines, including measurement and testing methods, and the effects of changes in fuel composition. Papers are also invited on the topics of the environmental and health effects of elemental carbon and organic carbon that constitutes solid cored particles plus the environmental and health effects of secondary organic aerosol emissions. This includes particulate emissions from both gasoline and diesel engines.

Organizers - *Andrea Strzelec, Texas A&M University; Matti Maricq, Ford Motor Co.; Amanda Lea-Langton, Univ. of Leeds; Imad A. Khalek, Southwest Research Institute*

Chairpersons - *Imad Khalek, Southwest Research Institute; Matti Maricq, Ford Motor Company; Andrea Strzelec, Texas A&M University*

Time	Paper No.	Title
1:00 p.m.	2015-01-1078	**Experimental Study of B20 Combustion and Emission Characteristics under Several EGR Conditions** *Zhigang Chai, Fujun Zhang, Bolan Liu, Ying Huang, Xiaowei Ai, Beijing Institute of Technology*
1:30 p.m.	2015-01-1072	**Influence of Fuel PM Index and Ethanol Content on Particulate Emissions from Light-Duty Gasoline Vehicles** *Aron D. Butler, Rafal A. Sobotowski, US Environmental Protection Agency; George J. Hoffman, Unified Business Solutions; Paul Machiele, US Environmental Protection Agency*
2:00 p.m.	2015-01-1080	**Impact of Ester Structures on the Soot Characteristics and Soot Oxidative Reactivity of Biodiesel** *Eduardo J. Barrientos, Czech Technical Univ.; Matti M. Maricq, Ford Motor Co.; Andre L. Boehman, University of Michigan; James E. Anderson, Ford Motor Co.*
2:30 p.m.	ORAL ONLY	**Soot Oxidation Behaviors Influenced by Different Oxidizing Environments: O2 only and O2-NO2 mixtures** *Heeje Seong, Seungmok Choi, Argonne National Laboratory*
3:00 p.m.	2015-01-1074	**A Comparison of Black Carbon Measurements to Solid Particle Number Measurements Made over Steady State and Transient Cycles** *Michael A. Robinson, Chris Cremeens, Z. Gerald Liu, Cummins Emission Solutions*
	2015-01-1076	**The Impact of Isobutanol and Ethanol on Gasoline Fuel Properties and Black Carbon Emissions from Two Light-Duty Gasoline Vehicles (Written Only -- No Oral Presentation)** *Tak W. Chan, Environment Canada*

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

RCCI and Dual-Fuel Low Temperature Combustion (Part 1 of 3)

Session Code: ***PFL262***

Room 252 A ***Session Time:*** ***8:00 a.m.***

Computational modeling and analysis of Reactivity Controlled Compression Ignition (RCCI) combustion. Papers focus on analyzing and improving RCCI combustion using novel injection strategies, combustion chamber designs, and fueling combinations.

Organizers - *Scott Curran, Oak Ridge National Laboratory; Andrew Ickes, Argonne National Laboratory; Sage Kokjohn, Univ. of Wisconsin Madison; Benjamin Lawler, Stony Brook Univ.; William F. Northrop, Univ. of Minnesota-Twin Cities*

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	**Technical Keynote: Perspective on the Development of Reactivity Controlled Compression Ignition** *Rolf D. Reitz, University of Wisconsin*

9:00 a.m.	***2015-01-0841***	***Investigation of the Combustion Instability-NOx Tradeoff in a Dual Fuel Reactivity Controlled Compression Ignition (RCCI) Engine***
		David Klos, Daniel Janecek, Sage Kokjohn, University of Wisconsin
9:30 a.m.	***2015-01-0855***	***Characterization of Reactivity Controlled Compression Ignition (RCCI) Using Premixed Gasoline and Direct-Injected Gasoline with a Cetane Improver on a Multi-Cylinder Engine***
		Adam B. Dempsey, Scott Curran, Oak Ridge National Laboratory; Rolf D. Reitz, University of Wisconsin
10:00 a.m.	***2015-01-0837***	***Highway Fuel Economy Testing of an RCCI Series Hybrid Vehicle***
		Reed Hanson, Shawn Spannbauer, Christopher Gross, Rolf D. Reitz, University of Wisconsin; Scott Curran, John Storey, Shean Huff, Oak Ridge National Laboratory
10:30 a.m.	***2015-01-0856***	***Direct Dual Fuel Stratification, a Path to Combine the Benefits of RCCI and PPC***
		Martin Wissink, Rolf D. Reitz, University of Wisconsin
11:00 a.m.	***2015-01-0838***	***Experimental Investigation of Natural Gas-Diesel Dual-Fuel RCCI in a Heavy-Duty Engine***
		Zhiqin Jia, Ingemar Denbratt, Chalmers Univ of Technology

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

RCCI and Dual-Fuel Low Temperature Combustion (Part 2 of 3)

Session Code: ***PFL262***

Room 252 A ***Session Time:*** ***1:00 p.m.***

Computational modeling and analysis of Reactivity Controlled Compression Ignition (RCCI) combustion. Papers focus on analyzing and improving RCCI combustion using novel injection strategies, combustion chamber designs, and fueling combinations.

Organizers - *Scott Curran, Oak Ridge National Laboratory; Andrew Ickes, Argonne National Laboratory; Sage Kokjohn, Univ. of Wisconsin Madison; Benjamin Lawler, Stony Brook Univ.; William F. Northrop, Univ. of Minnesota-Twin Cities*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0851***	***Combustion Simulation of Dual Fuel CNG Engine Using Direct Injection of Natural Gas and Diesel***
		Philip Zoldak, Andrzej Sobiesiak, University of Windsor; David Wickman, Michael Bergin, Wisconsin Engine Research Consultants
1:30 p.m.	***2015-01-0840***	***Multi-Dimensional-Modeling-Based Development of a Novel 2-Zone Combustion Chamber Applied to Reactivity Controlled Compression Ignition Combustion***
		Michael Bergin, David Wickman, Christopher Rutland, Rolf D. Reitz, Wisconsin Engine Research Consultants, LLC
2:00 p.m.	***2015-01-0860***	***Load Limit Extension in Pre-Mixed Compression Ignition Using a 2-Zone Combustion System***
		Michael Bergin, Rolf D. Reitz, Christopher Rutland, Wisconsin Engine Research Consultants, LLC; Adam Dempsey, Scott Curran, Oak Ridge National Laboratory

2:30 p.m.	***2015-01-0849***	***Experimental and Computational Analysis of Diesel-Natural Gas RCCI Combustion in Heavy-Duty Engines***
		Mufaddel Dahodwala, Satyum Joshi, Erik Koehler, Michael Franke, Dean Tomazic, FEV NA, Inc.
3:00 p.m.	***2015-01-0850***	***Numerical Study of RCCI and HCCI Combustion Processes Using Gasoline, Diesel, <italic>iso</italic>-Butanol and DTBP Cetane Improver***
		Hu Wang, Univ. of Wisconsin, Tianjin Univ.; Dan DelVescovo, Univ. of Wisconsin; Mingfa Yao, Tianjin Univ.; Rolf D. Reitz, Univ. of Wisconsin

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Advanced Battery Technologies (Part 1 of 4)

Session Code: ***PFL730***

Room 252 B ***Session Time:*** ***8:00 a.m.***

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - *James Miller, Argonne National Laboratory; Wayne Cai, General Motors; Yi Ding; Alvaro Masias, Ford Motor Co.; Ramesh Rebba, General Motors Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1181***	***Estimating the Power Limit of a Lithium Battery Pack by Considering Cell Variability***
		Zhihong Jin, Zhenli Zhang, Timur Aliyev, Anthony Rick, Brian Sisk, Johnson Controls Power Solutions
8:30 a.m.	***2015-01-1195***	***Validation of Vibration Test for Lithium-ion Battery Pack in Electric Vehicles***
		Kiyotaka Maeda, Masashi Takahashi, Japan Automobile Research Institute
9:00 a.m.	***2015-01-1199***	***Model Development and Simulations of 12V Dual Batteries towards Design Optimization of Microhybrid Vehicles***
		Zhenli Zhang, Johnson Controls; Anthony Rick, Brian Sisk, Johnson Controls Power Solutions
9:30 a.m.	***2015-01-1186***	***Effect of Current and SOC on Round-Trip Energy Efficiency of a Lithium-Iron Phosphate (LiFePO4) Battery Pack***
		Michael Safoutin, Jeff Cherry, Joseph McDonald, SoDuk Lee, US Environmental Protection Agency
10:00 a.m.	***2015-01-1185***	***Integrating Thermal and Electrochemical Modeling of Lithium-ion Batteries to Optimize Requirements Compliance***
		Brian Sisk, Timur Aliyev, Zhenli Zhang, Zhihong Jin, Negin Salami, Kem Obasih, Anthony Rick, Johnson Controls Power Solutions

	2015-01-1191	***A Lithium-Ion Battery Optimized Equivalent Circuit Model based on Electrochemical Impedance Spectroscopy (Written Only -- No Oral Presentation)***
		Jiangong Zhu, Tongji University; Zechang Sun; Xuezhe Wei; Haifeng Dai

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00475 and SUB-TP-00011, and also individually. To purchase visit collections.sae.org

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Advanced Battery Technologies (Part 2 of 4)

Session Code: ***PFL730***

Room 252 B ***Session Time:*** ***1:00 p.m.***

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - *James Miller, Argonne National Laboratory; Wayne Cai, General Motors; Yi Ding; Alvaro Masias, Ford Motor Co.; Ramesh Rebba, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1196***	***Will Your Battery Survive a World With Fast Chargers?***
		Jeremy S. Neubauer, Eric Wood, National Renewable Energy Laboratory
1:30 p.m.	***2015-01-1190***	***Effects of Electric Vehicle Fast Charging on Battery Life and Vehicle Performance***
		Matthew Shirk, Idaho National Laboratory; Jeffrey Wishart, Intertek Testing Services NA, Inc
2:00 p.m.	***2015-01-1192***	***Research on Charging Strategy of Lithium-ion Battery***
		Xudong Xu, Xuezhe Wei, Tongji University; Hong Gao, FAW Volkswagen; Jiangong Zhu, Jing Yang, Yaofeng Liu, Tongji University
2:30 p.m.	***2015-01-1194***	***A Novel ZSB-PAM Power Regulation Method Applied in Wireless Charging System for Vehicular Power Batteries***
		Zhenshi Wang, Xuezhe Wei, Haifeng Dai, Tongji University
3:00 p.m.	***2015-01-1188***	***Design Optimization of Alternator and Battery Systems with a Recuperation Control Algorithm for a Mid-Sized Sedan***
		Seongjun Yun, SungJin Park, Hongik University; Daekwang Kim, Junyong Lee, Sejun Kim, Kwang-yeon Kim, Hyundai Motor Company
3:30 p.m.	***2015-01-1183***	***A Novel Method for Estimation of State of Charge of Lithium-ion Battery using Extended Kalman Filter***
		Padmanaban Dheenadhayalan, Anush Nair, Mithun Manalikandy, Anurag Reghu, Jacob John, V S Rani, Tata Elxsi, Ltd.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00475, SUB-GTL-00001 and SUB-TP-00011, and also individually. To purchase visit collections.sae.org

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Fuel and Additive Effects on Engine Systems (Part 3 of 4)

Session Code: ***PFL310***

Room 258 ***Session Time:*** ***8:00 a.m.***

This session includes papers on oxygenated gasoline blending compounds and on-board gasoline reforming, plus papers on fundamental studies relating to diesel fuel oxygenates and a final paper on diesel fuel surrogates.

Organizers - *Mebougna Drabo, Alabama A & M University; Barbara Goodrich, John Deere Product Engineering Center; Paul Richards; Corey Trobaugh, Cummins Inc.; Mansour Masoudi, Emissol LLC; Siddiq Khan, ACEEE; Behnam Bahrami, Cummins Inc.; Rachel L. Muncrief, The International Council on Clean Transportation; Krishna Kamasamudram, Cummins Inc.*

Chairpersons - *Mebougna Drabo, Alabama A & M University; Corey Trobaugh, Cummins Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0891***	***Comparative Study of High-Alcohol-Content Gasoline Blends in an SI Engine*** *Jiaxiang Zhang, Xi'an Jiaotong Univ; Karthik Nithyanandan, Univ of Illinois; Yuqiang Li, Central South Univ; Chia-Fon Lee, Univ of Illinois; Zuohua Huang, Xi'an Jiaotong Univ*
8:30 a.m.	***2015-01-0909***	***Investigating the Impact of Acetone on the Performance and Emissions of Acetone-Butanol-Ethanol (ABE) and Gasoline Blends in an SI Engine*** *Karthik Nithyanandan, Univ of Illinois; Jiaxiang Zhang, Xi'an Jiaotong University; Li Yuqiang, Central South University; Han Wu, Chang'an University; Chia-Fon Lee, Univ of Illinois*
9:00 a.m.	***2015-01-0908***	***Combustion and Emissions Performance of a Spark Ignition Engine Fueled with Water Containing Acetone-Butanol-Ethanol and Gasoline Blends*** *Yuqiang Li, Central South University; Karthik Nithyanandan, Univ of Illinois; Jiaxiang Zhang, Xi¿an Jiaotong University; Chia-Fon Lee, Univ of Illinois; Shengming Liao, Central South University*
9:30 a.m.	***2015-01-0902***	***Study of an On-board Fuel Reformer and Hydrogen-Added EGR Combustion in a Gasoline Engine*** *Koichi Ashida, Hirofumi Maeda, Takashi Araki, Maki Hoshino, Koji Hiraya, Takao Izumi, Masayuki Yasuoka, Nissan Motor Co., Ltd.*
10:00 a.m.	***2015-01-0897***	***Experimental and Kinetic Study on Ignition Delay Times of Diethyl Ether*** *Zihang Zhang, Erjiang Hu, Cheng Peng, Zuohua Huang, Xi'an Jiaotong Univ*
10:30 a.m.	***2015-01-0890***	***On the Potential of Oxygenated Fuels as an Additional Degree of Freedom in the Mixture Formation in Direct Injection Diesel Engines*** *Barbara Graziano, Florian Kremer, Stefan Pischinger, VKA RWTH Aachen University; Karl Alexander Heufer, PCFC RWTH Aachen University; Hans Rohs, FEV GmbH*
11:00 a.m.	***2015-01-0906***	***A Fuel Surrogate Validation Approach Using a JP-8 Fueled Optically Accessible Compression Ignition Engine*** *Xin Yu, Xi Luo, Marcis Jansons, Wayne State University; Doohyun Kim, Jason Martz, Angela Violi, Univ of Michigan*
11:30 a.m.	***2015-01-1082***	***Regulated, Carbonyl Emissions and Particulate Matter from a Dual-Fuel Passenger Car Burning Neat Methanol and Gasoline*** *Xin Wang, Yunshan Ge, Linlin Liu, Huiming Gong, Beijing Institute of Technology*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00471, SUB-TP-00009, SUB-TP-00010 and SUB-TP-00012, and also individually. To purchase visit collections.sae.org

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity; Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Fuel and Additive Effects on Engine Systems (Part 4 of 4)

Session Code: ***PFL310***

Room 258 ***Session Time:*** ***1:00 p.m.***

This session contains papers considering the compatibility of current and potential oxygenated fuels with existing infrastructure materials, the emissions performance of renewable fuels with engine modification or the addition of additives and a paper on the understanding the behaviour of diesel cold flow additives.

Organizers - *Mebougna Drabo, Alabama A & M University; Barbara Goodrich, John Deere Product Engineering Center; Paul Richards; Corey Trobaugh, Cummins Inc.*

Chairpersons - *Brian C. Kaul, Oak Ridge National Laboratory; Paul Richards; Mebougna Drabo, Alabama A & M University*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0907***	***The Impact of Fuel Solvency on Middle Distillate Cold Flow Performance***
		Dhanesh G. C. Goberdhan, Robin Hunt, Infineum UK, Ltd.
1:30 p.m.	***2015-01-0894***	***Compatibility Assessment of Plastic Infrastructure Materials with Test Fuels Representing E10 and iBu16***
		Michael D. Kass, Chris Janke, Timothy Theiss, Oak Ridge National Laboratory; James Baustian, Leslie Wolf, Butamax Advanced Biofuels LLC; Wolf Koch, Technology Resources International
2:00 p.m.	***2015-01-0893***	***Compatibility Assessment of Plastic Infrastructure Materials with Off-Highway Diesel and a Diesel Blend Containing 20 Percent Fast Pyrolysis Bio-Oil***
		Michael D. Kass, Chris Janke, Raynella Connatser, Sam Lewis, James Keiser, Timothy Theiss, Oak Ridge National Laboratory
2:30 p.m.	***2015-01-0888***	***Compatibility Assessment of Elastomeric Infrastructure Materials with Neat Diesel and a Diesel Blend Containing 20 Percent Fast Pyrolysis Bio-oil***
		Michael D. Kass, Chris Janke, Raynella Connatser, Sam Lewis, James Keiser, Timothy Theiss, Oak Ridge National Laboratory
3:00 p.m.	***2015-01-0898***	***Investigation of the Effect of Compression Ratio on the Combustion Behavior and Emission Performance of HVO Blended Diesel Fuels in a Single-Cylinder Light-Duty Diesel Engine***
		Leonardo Pellegrini, ENI SpA; Carlo Beatrice, Gabriele Di Blasio, Istituto Motori CNR
	2015-01-0895	***Assessment of Performance, Emission and Combustion Behaviour of a WCO Based Diesel Engine Using Oxygen Enrichment Technique (Written Only -- No Oral Presentation)***
		Senthilkumar Masimalai, M.I.T., Anna University; Venkatesan Kuppusamy, S.K.P. Engineering College; Jaikumar Mayakrishnan, M.I.T., Anna University

	2015-01-0904	***Preparation of Water-Biodiesel Emulsion Fuels with CNT & Alumina Nano-Additives and their Impact on the Diesel Engine Operation (Written Only -- No Oral Presentation)***
		J. Sadhik Basha, International Maritime College Oman

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Combustion Control and Optimization (Part 2 of 3)

Session Code: ***PFL280***

Room 259 ***Session Time:*** ***8:00 a.m.***

This session covers engine combustion control and optimization techniques. Topics include engine combustion diagnostics as specialized for control, control methodologies and algorithms, optimization, related combustion sensing, etc.

Organizers - *Robert Gary Prucka, Clemson Univ.; Michael Prucka, John R. Bucknell, FCA US LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0883***	***A Study of a Multistage Injection Mechanism for Improving the Combustion of Direct-Injection Gasoline Engines***
		Yoshihiro Imaoka, Kiyotaka Shouji, Takao Inoue, Toru Noda, Nissan Motor Co., Ltd.
8:30 a.m.	***2015-01-0871***	***Threshold Optimization and Performance Evaluation of a Classical Knock Controller***
		James C. Peyton Jones, Jesse Frey, Villanova University
9:00 a.m.	***2015-01-0870***	***A Model-Based Injection-Timing Strategy for Combustion-Timing Control***
		Gabriel Ingesson, Lianhao Yin, Rolf Johansson, Per Tunestal, Lund University
9:30 a.m.	***2015-01-0879***	***HRR and MFB50 Estimation in a Euro 6 Diesel Engine by Means of Control-Oriented Predictive Models***
		Roberto Finesso, Ezio Spessa, Yixin Yang, Politecnico di Torino; Vincenzo Alfieri, Giuseppe Conte, General Motors Powertrain Europe Srl
10:00 a.m.	***2015-01-0872***	***Virtual Cylinder Pressure Sensor for Transient Operation in Heavy-Duty Engines***
		Serkan Kulah, TNO Automotive; Tijs Donkers, Eindhoven University of Technology; Frank Willems, TNO Automotive
10:30 a.m.	***2015-01-0877***	***Input Adaptation for Control Oriented Physics-Based SI Engine Combustion Models Based on Cylinder Pressure Feedback***
		Shu Wang, ICAR-Clemson Univ.; Qilun Zhu, Clemson Univ.; Robert Prucka, ICAR-Clemson Univ.; Michael Prucka, Hussein Dourra, FCA US LLC
11:00 a.m.	***2015-01-0876***	***Feedforward Control Approach for Digital Combustion Rate Shaping Realizing Predefined Combustion Processes***
		Christian Jörg, VKA, RWTH University Aachen; Thorsten Schnorbus, FEV GmbH; Simon Jarvis, Ben Neaves, Kiran Bandila, Jaguar Land Rover; Daniel Neumann, VKA, RWTH University Aachen

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Combustion Control and Optimization (Part 3 of 3)

Session Code: ***PFL280***

Room 259 ***Session Time:*** ***1:00 p.m.***

This session covers engine combustion control and optimization techniques. Topics include engine combustion diagnostics as specialized for control, control methodologies and algorithms, optimization, related combustion sensing, etc.

Organizers - *Robert Gary Prucka, Clemson Univ.; Michael Prucka, John R. Bucknell, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0882***	***Computing Optimal Heat Release Rates in Combustion Engines***
		Lars Eriksson, Martin Sivertsson, Linkoping Univ.
1:30 p.m.	***2015-01-0884***	***Sensitivity Analysis of Partially Premixed Combustion (PPC) for Control Purposes***
		Lianhao Yin, Gabriel Ingesson, Sam Shamun, Per Tunestal, Rolf Johansson, Bengt Johansson, Lund University
2:00 p.m.	***2015-01-0878***	***Fuel Saving Potential of Different Turbo-Compounding Systems Under Steady and Driving Cycles***
		Guanzhang He, Hui Xie, Tianjin University
2:30 p.m.	***2015-01-0875***	***Investigations on In-Cylinder Pressure Cycle-to-Cycle Variations in a Diesel Engine by Recurrence Analysis***
		Shun-Liang Ding, Li-Ping Yang, En-Zhe Song, Xiu-Zhen Ma, Harbin Engineering University
3:00 p.m.	***2015-01-0880***	***Transient Control Technology of Spark Assisted HCCI***
		Masanobu Takazawa, Kiminori Komura, Toru Kitamura, Honda

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Chat with the Experts: Motorsports Aerodynamic Technology

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

This Chat will cover technology development of the vehicle aerodynamic performance in the racing environment. Topics discussed will be the aerodynamic design, testing and performance for different sanctioning body racing applications.

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the experts***
		Raymond Leto, TotalSim LLC; H. Robert (Bob) Welge, Robert's Engineering Development; Naethan Eagles, TotalSim LLC

Wednesday, April 22

Chat with the Experts: Motorsports Vehicle Technology

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

This Chat will cover technology development of the vehicle in the racing environment. Topics discussed will be design, testing and setup for the chassis and development and promotion of the product for the OEM.

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn more about the experts***
		David A. Finch, Raetech Corp.; David T. Currier, Toyota Racing Development USA

Wednesday, April 22

Chat with the Experts: Motorsports Powertrain Technology

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

This Chat will cover technology development of the engine and driveline in the racing environment. Topics discussed will be design, testing and performance of the engine for different sanctioning body racing applications.

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn more about the experts***
		Wiley R. McCoy, retired, McLaren Performance Technologies; Michael Royce, retired, Chrysler

Wednesday, April 22

Chat with the Experts: Reconstructing and Analyzing Rollover Collisions

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

Time	***Paper No.***	***Title***
	ORAL ONLY	***Reconstructing Rollover Crashses***
		Jarrod Carter, Origin Engineering

Wednesday, April 22

Automotive Polymeric, Plastic Components and Composites (Part 1 of 2)

Session Code: ***M300***

Room 310 B ***Session Time:*** ***8:00 a.m.***

These sessions are seeking abstracts that specifically address the development of polymeric and composite materials for automotive interiors and exteriors, powertrain components, as well as structural and non-structural applications. Focus is on design, processes, bonding and manufacturing technologies, as well as lightweighting strategies. Abstracts on the analysis of functional performance of these materials are encouraged.

Organizers - *Emile Homsi, DSM Engineering Plastics; Robert Randolph Maynard, Celanese Corp.; Srikanth Pilla, Clemson Univ.; Jian Tao, FCA US LLC*

Time	***Paper No.***	***Title***

9:00 a.m.	***2015-01-0713***	***The Use of Intumescent Coatings with Polymer Composites for High Temperature Automotive Applications***
		Helena Simmonds, Sophie Cox, WMG, University of Warwick; Steve Nicholls, Jaguar Land Rover; Geraint Williams, WMG, University of Warwick
9:30 a.m.	***ORAL ONLY***	***Development of non-flammable sound absorbing materials using meta-Aramid fiber***
		Keun Young Kim, Hyundai Motor Company
10:00 a.m.	***2015-01-0717***	***Performance of Lightweight Materials for Vehicle Interior Trim Subject to Monotonic Loading and Low Velocity Impact***
		Anindya Deb, Indian Institute of Science; G S Venkatesh, Visvesvaraya Technological University; Ashok Mache, Indian Institute of Science
10:30 a.m.	***ORAL ONLY***	***Study of Polylactic Acid-Areca Fiber Laminated Composites***
		Bopaiah Ittira Biddappa, CU-ICAR Clemson Univ Int'l Center For Au; Kelly Krumm
	2015-01-0709	***Experimental Studies on Viscoelasticity of Film Materials in Laminated Glass Sheets (Written Only -- No Oral Presentation)***
		Xiaoqing Xu, Bohan Liu, Yibing Li, Tsinghua University

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Wednesday, April 22

Automotive Polymeric, Plastic Components and Composites (Part 2 of 2)

Session Code: ***M300***

Room 310 B ***Session Time:*** ***1:00 p.m.***

These sessions are seeking abstracts that specifically address the development of polymeric and composite materials for automotive interiors and exteriors, powertrain components, as well as structural and non-structural applications. Focus is on design, processes, bonding and manufacturing technologies, as well as lightweighting strategies. Abstracts on the analysis of functional performance of these materials are encouraged.

Organizers - *Emile Homsi, DSM Engineering Plastics; Robert Randolph Maynard, Celanese Corp.; Srikanth Pilla, Clemson Univ.; Jian Tao, FCA US LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	~~***2015-01-0711***~~ ***ORAL ONLY***	***Expand Your Toolkit: New Silicone Adhesive Destroys the Boundaries of the Current Design Box***
		Kate Johnson, Dow Corning Corporation
1:30 p.m.	***2015-01-0710***	***Development of Net Shape Fiber Reinforced Plenum for Electronic Limited Slip Differential***
		Daniel Frazier, Kelly Williams, Javed Mapkar, Eaton Corporation
2:00 p.m.	~~***2015-01-0714***~~ ***ORAL ONLY***	***Advances In Low Density SMC for Automotive Class A Applications***
		Jeffrey L. Klipstein, AOC LLC
2:30 p.m.	***2015-01-0715***	***Cavity Fill Balancing Technique for Rubber Injection Molding***
		Terry Lynn Chapin, Delphi Automotive Systems; Van Thomas Walworth, Product Research & Design Specialties
	2015-01-0718	***Vinyl Ester Based SMC Material for Automotive Oil Sump Application (Written Only -- No Oral Presentation)***
		G Karthik, K V Balaji, Bathiry Sivaraman, Deshpande Samar, Mahindra & Mahindra Ltd

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Wednesday, April 22

Design Optimization - Methods and Applications (Part 3 of 4)

Session Code: ***SS103***

Room 312 A ***Session Time:*** ***8:00 a.m.***

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on application of different optimization methods in component and vehicle design. Methods include deterministic and stochastic optimization techniques. Applications range from noise pressure optimization and vehicle dynamic response optimization to sub-system topology and shape and full vehicle gage and topology optimization.

Organizers - *Mallikarjuna Bennur, General Motors Co.; James De Clerck, Michigan Technological Univ.; Chandan Mozumder, General Motors; Vesna Savic, General Motors Co.; Chandan Mozumder, General Motors*

Chairpersons - *Vesna Savic, Mallikarjuna Bennur, General Motors Co.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1361***	***Full Vehicle Tailored Parts Optimization - Light Weighting***
		Velayudham Ganesan, Javier Rodriguez, Harjinder Singh, Avinash Mudalagi, Parveen Panchal, EDAG Inc.
9:00 a.m.	***2015-01-1364***	***Multi-Criteria Optimization of Foam Reinforced Thin-walled Tube Shape under Crashworthiness Requirements***
		Tao Wang, LIangmo Wang, Yuanlong Wang, Nanjing Univ. of Science & Technology; Xiaojun Zou, Fuxiang Guo, NAVECO Ltd.
9:30 a.m.	***2015-01-1363***	***Park Pawl Dynamic System Engagement Speed Calculation Using Isight***
		Charles Yuan, Dassault Systemes Simulia Corp.; Niat Mahmud Rahman, General Motors Co.
10:00 a.m.	***2015-01-1362***	***Lightweight Optimal Design of a Rear Bumper System Based on Surrogate Models***
		Chao Li, Il Yong Kim, Queen's University
10:30 a.m.	***2015-01-1369***	***Thin-Walled Compliant Mechanism Component Design Assisted by Machine Learning and Multiple Surrogates***
		Kai Liu, Purdue University; Andres Tovar, Indiana Univ Purdue Univ; Emily Nutwell, Duane Detwiler, Honda R & D Americas Inc
	2015-01-1348	***Optimization of Vehicle Ride Comfort and Handling Stability Based on TOPSIS Method (Written Only -- No Oral Presentation)***
		Rongchao Jiang, Dengfeng Wang, Jilin University
	2015-01-1360	***Aerodynamic Drag and Noise Minimization of Rear End Parameters in a Simplified Car Model Utilizing Robust Parameter Design Method (Written Only -- No Oral Presentation)***
		Sajjad Beigmoradi, R & D Center of SAIPA (AIRIC)
	2015-01-1370	***A Novel Approach for Design and Optimization of Automotive Aluminum Cross-Car Beam Assemblies (Written Only -- No Oral Presentation)***
		Mehran Ebrahimi, Kamran Behdinan, University of Toronto

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Wednesday, April 22

Design Optimization - Methods and Applications (Part 4 of 4)

Session Code: ***SS103***

Room 312 A ***Session Time:*** ***1:00 p.m.***

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on application of different optimization methods in component and vehicle design. Methods include deterministic and stochastic optimization techniques. Applications range from noise pressure optimization and vehicle dynamic response optimization to sub-system topology and shape and full vehicle gage and topology optimization.

Organizers - *Mallikarjuna Bennur, General Motors Co.; James De Clerck, Michigan Technological Univ.; Chandan Mozumder, General Motors; Vesna Savic, General Motors Co.*

Chairpersons - *Vesna Savic, Mallikarjuna Bennur, General Motors Co.; Chandan Mozumder, General Motors*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1353***	***The Optimization of Intake Port using Genetic Algorithm and Artificial Neural Network for Gasoline Engines***
		Yanzhe Sun, Tianyou Wang, Zhen Lu, Lei Cui, Tianjin Univ.; Ming Jia, Dalian Univ. of Technology
1:30 p.m.	***2015-01-1350***	***Multi-Objective Optimization of High-Speed Solenoid Valve Based on Response Surface and Genetic Algorithm***
		Peng Liu, Liyun Fan, De Xu, Xiuzhen Ma, Enzhe Song, Harbin Engineering University
	2015-01-1349	***Optimization of Commercial Vehicle Cooling Package for Improvement of Vehicle Fuel Economy (Written Only -- No Oral Presentation)***
		Sandip Phapale, Praveen Kommareddy, Pavan Sindgikar, Narayan Jadhav, Tata Motors Ltd.
	2015-01-1354	***Optimization of Tip-In Response Character of Sports Utility Vehicle and Verification with Objective Methodology (Written Only -- No Oral Presentation)***
		Harinarayanan Jayaraman, Navaneetha Rao, Saravanan Muthiah, Sreeekanth Mohan, Mahindra & Mahindra, Ltd.
	2015-01-1356	***Design of an Aluminum Alloy Swingarm and its Weight minimization using Topology Optimization (Written Only -- No Oral Presentation)***
		Atishay Jain, Mahindra Two Wheelers, Ltd.
	2015-01-1366	***Design Optimization of Scooter Engine Hanger for Maximizing Stiffness to Weight Ratio (Written Only -- No Oral Presentation)***
		Anshul Koli, Ishan Chandel, Viswanathan Balasubramaniam, Mahindra 2 Wheelers Limited

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Wednesday, April 22

Optical Measurement and Nondestructive Testing Techniques in Automotive

Engineering (Part 1 of 2)

Session Code: ***M204***

Room 312 B ***Session Time:*** ***8:00 a.m.***

Key words: optical techniques; digital correlation; holography; shearography; nondestructive testing

Organizers - *Sheng Liu, General Motors Co.; Kah Wah Long, FCA US LLC; Lianxiang Yang, Oakland University*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Technical Keynote: DIC in Automotive Applications - Potential and Trends***
		Thorsten Siebert, Dantec Dynamics GmbH
9:00 a.m.	***2015-01-0594***	***Measurement of Aluminum Edge Stretching Limit Using 3D Digital Image Correlation***
		Xin Xie, Oakland University; Changqing Du, FCA US LLC; Xiaona Li, Yi-Hsin Chen, Guobiao Yang, Oakland University; Yongjun Zhou, Dajun Zhou, FCA US LLC; Yaqian Zheng, Bernard Sia, Christina Phillips, Lianxiang Yang, Oakland University
9:30 a.m.	***ORAL ONLY***	***A Comparison Between Different Digital Image Correlation Based Techniques for Determining the Forming Limits of Sheet Metals***
		Jun Hu, Fadi Abu-Farha, Clemson University (CU-ICAR)
10:00 a.m.	***2015-01-0593***	***The Research on Edge Tearing with Digital Image Correlation***
		Guobiao Yang, Oakland University, Tongji University; Changqing Du, Dajun Zhou, FCA US LLC; Xiaona Li, Oakland University; Yongjun Zhou, FCA US LLC; Biyu Ye, Xinfeng Shi, Yaqian Zheng, Junrui Li, Lianxiang Yang, Oakland University
10:30 a.m.	***2015-01-0600***	***Controlling In Line 100% of Large Series Manufactured Parts 3D Conformity with below µm Accuracy***
		Marc Rosenbaum, Mesure-Systems3D
11:00 a.m.	***2015-01-0598***	***Measure of Forming Limit Strain on the Aluminum Sheets Passed Through Draw-Bead by Digital Image Correlation***
		Xiaona Li, Oakland University; Changqing Du, Yongjun Zhou, FCA US LLC; Xin Xie, Xu Chen, Yaqian Zheng, Thomas Ankofski, Rodrigue Narainen, Oakland University; Cedric Xia, Ford Motor Co; Thomas Stoughton, General Motors Co; Lianxiang Yang, Oakland University
11:30 a.m.	***ORAL ONLY***	***On the Use of Digital Image Correlation for Studying Deformation and Failure of Lightweight Materials at Various Temperatures and Rates***
		Jun Hu, Fadi Abu-Farha, Nan Zhang, Clemson University (CU-ICAR)

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

Optical Measurement and Nondestructive Testing Techniques in Automotive Engineering (Part 2 of 2)

Session Code: ***M204***

Room 312 B ***Session Time:*** ***1:00 p.m.***

Key words: optical techniques; digital correlation; holography; shearography; nondestructive testing

Organizers - *Sheng Liu, General Motors Co.; Kah Wah Long, FCA US LLC; Lianxiang Yang,*

Oakland University

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***A Quantitative Comparison between Deformation Measurements with Different Digital Image Correlation Systems: Are we Reading the Same Strains?***
		Fadi Abu-Farha, Jun Hu, Matthew Krugh, Clemson University (CU-ICAR); Junying Min, John Carsley, Louis Hector, General Motors, R&D Center; Steven Mates, William Luecke, National Institute of Standards and Tech; Ling Zhang, Tongji Univ
1:30 p.m.	***2015-01-0596***	***Fully-Automatic Surface Inspection of O-Ring Seals***
		Oliver Scholz, Nikolas Doerfler, Lars Seifert, Fraunhofer IIS/EZRT; Uwe Zöller, Miho Inspektionssysteme
2:00 p.m.	***2015-01-0597***	***Nitric Oxide Measurements in the Core of Diesel Jets Using a Biofuel Blend***
		Christian Schulz, Tamara Ottenwaelder, Thomas Raffius, Thorsten Brands, Thomas Huelser, Gerd Grunefeld, Stefan Pischinger, RWTH Aachen Univ.
2:30 p.m.	***2015-01-0595***	***The Depth Limits of Eddy Current Testing for Defects: A Computational Investigation and Smooth-Shaped Defect Synthesis from Finite Element Optimization***
		T. Mathialakan, V. U. Karthik, Michigan State University; Paramsothy Jayakumar, Ravi Thyagarajan, US Army Tank Automotive; S. Ratnajeevan H. Hoole, Michigan State University
3:00 p.m.	***2015-01-0599***	***Tomographic Particle Image Velocimetry for Flow Analysis in a Single Cylinder Optical Engine***
		Akhilendra Pratap Singh, Aditya Gupta, Avinash Kumar Agarwal, Indian Institute of Technology

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

Technical Expert Panel Discussion: Measurement and Analysis of Forming Limit Diagrams using DIC - Update

Session Code: ***M199***

Room 312 B Technical Expert Panel Discus ***Session Time:*** ***3:30 p.m.***

Digital image correlation (DIC) techniques continue to improve efficiency and accuracy of strain measurement in support of more robust formability practices implemented by automotive OEM and supplier companies. In particular, DIC offers much improved measurement of sheet metal forming limit curves where various analyses have been proposed to identify the onset of local necking, the maximum allowable deformation limit for conventional stampings. While DIC results are commonly used by stamping researchers and engineers to support product and manufacturing feasibility, there remains a lack of generally accepted industry test specifications and methods. This panel discussion will continue the theme established in 2013 by the SAE Sheet Forming Tech Panel Organizer to update recent advances of DIC technology as well as to encourage dialogue toward revising industry standards based on these state-of-the-art measurement capabilities.

Organizers - *John Carsley, General Motors Co.; Changqing Du, FCA US LLC; Thomas Stoughton, General Motors Co.*

Panelists - *Fadi Abu-Farha, Clemson Univ.; Edmund W. Chu, Alcoa Inc.; Gang Huang, ArcelorMittal USA; Mark Iadicola, National Institute Standards & Tech.; Jidong Kang, CanmetMATERIALS Technology Laboratory; Stephen James Makosey, Alcoa LLC; Ming F. Shi, United States Steel Corp.; John Tyson, Trilion Quality Systems; Yuwei Wang, AK Steel Corporation; Lianxiang Yang, Oakland University; Danielle Zeng, Ford Research and Innovation Center;*

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 22

Technical Expert Panel Discussion: Forming AHSS and Light Weight Sheet Materials: Latest Developments

Session Code: ***M199***

Room 312 B Technical Expert Panel Discus: ***Session Time:*** ***4:30 p.m.***

With low mass vehicles Application of AHSS and aluminum alloy sheet materials is increasing. For their relatively lower formability and high demanding at the surface contact, stamping industry is facing many challenges, such as irregular hardening and yielding behavior, limited formability, high springback, fracture at trimmed edge etc. Experts will give latest development introduction and critical issues discussions with auto industry colleagues.

Organizers - *ZiQiang Sheng, General Motors Co.*

Moderators - *ZiQiang Sheng, General Motors Co.*

Panelists - *Edmund W. Chu, Alcoa Inc.; Changqing Du, FCA US LLC; Jody N. Hall, Steel Market Development Institute; Ching-Kuo Hsiung, General Motors Co.; Andrew Larimer, General Motors Co.; S. George Luckey, Ford Motor Co.;*

Wednesday, April 22

Occupant Protection: Pedestrian and Cyclist Safety (Part 1 of 2)

Session Code: ***SS505***

Room 313 B ***Session Time:*** ***8:00 a.m.***

The pedestrian and cyclist safety session focuses on research and development efforts aimed at protecting pedestrians and cyclists in the event of vehicle impact. Papers on injury biomechanics, vehicle design, dummy and impactor development, computational modeling, regulations and consumer assessment testing, active safety and collision avoidance are accepted for this session.

Organizers - *Carlos Arregui Dalmases; Jason R. Kerrigan, Univ. of Virginia*

Time	Paper No.	Title
8:30 a.m.	***ORAL ONLY***	***Vehicle to Pedestrian Safety Communication System***
		Radovan Miucic, Honda R & D Americas Inc.
9:00 a.m.	***2015-01-1466***	***Accident Characteristics and Influence Parameters of Severe Motorcycle Accidents in Germany***
		Dietmar Otte, Medical University Hannover Research; Thorsten Facius, Birgit Wiese, Medical University Hannover
9:30 a.m.	***2015-01-1461***	***Wrap Around Distance WAD of Pedestrian and Bicyclists and Relevance as Influence Parameter for Head Injuries***
		Dietmar Otte, Medical University Hannover Research
10:00 a.m.	***2015-01-1465***	***Cycling Characteristics of Bicycles at an Intersection***
		Sho Nikaido, Shota Wada, Shibaura Institute of Technology; Yasuhiro Matsui, Shoko Oikawa, NTSEL; Toshiya Hirose, Shibaura Institute of Technology
	2015-01-1464	***Typical Pedestrian Accident Scenarios in China and Crash Severity Mitigation by Autonomous Emergency Braking Systems (Written Only -- No Oral Presentation)***
		Qiang Chen, Miao Lin, Bing Dai, Jiguang Chen, CATARC

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00511, SUB-TP-00006 and SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Occupant Protection: Pedestrian and Cyclist Safety (Part 2 of 2)

Session Code: ***SS505***

Room 313 B ***Session Time:*** ***1:00 p.m.***

The pedestrian and cyclist safety session focuses on research and development efforts aimed at protecting pedestrians and cyclists in the event of vehicle impact. Papers on injury biomechanics, vehicle design, dummy and impactor development, computational modeling, regulations and consumer assessment testing, active safety and collision avoidance are accepted for this session.

Organizers - *Carlos Arregui Dalmases; Jason R. Kerrigan, Univ. of Virginia*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1467***	***Effect of vehicle's front end profile on pedestrian's lower extremity injury pattern in real world and verification by large male FE Human Model***
		Chinmoy Pal, Tomosaburo Okabe, Nissan; Kulothungan Vimalathithan, Jeyabharath Manoharan, RNTBCI; Munenori Shinada, Nissan
2:00 p.m.	***2015-01-1470***	***Influence of the Upper Body of Pedestrians on Lower Limb Injuries and Effectiveness of the Upper Body Compensation Method of the FlexPLI***
		Takahiro Isshiki, Atsuhiro Konosu, Japan Automobile Research Institute; Yukou Takahashi, Japan Automobile Manufacturers Association, Inc.
2:30 p.m.	***2015-01-1471***	***Improvement and Validation of the Lower Limb and the Pelvis for a Pedestrian Dummy***
		Hiroyuki Asanuma, Yukou Takahashi, Honda R&D Co., Ltd.
3:00 p.m.	***2015-01-1462***	***Economical Pedestrian Safety Equipment Countermeasures***
		Seung Jun Yang, Hyundai Motor Group
	2015-01-1469	***Neck Validation of Multibody Human Model under Frontal and Lateral Impacts using an Optimization Technique (Written Only -- No Oral Presentation)***
		Yan Wang, Tsinghua University; Taewung Kim, University of Virginia; Yibing Li, Tsinghua University; Jeff Crandall, University of Virginia

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00511 and SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Vehicle Aerodynamics (Part 4 of 7): Aerodynamics Development

Session Code: ***SS800***

Room 321 ***Session Time:*** ***8:00 a.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Edward G. Duell, Jacobs Technology Inc.; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Fiat Chrysler Automobiles; Mark E. Gleason, retired, FCA US LLC; Kevin Golsch, Exa Corporation; Taeyoung Han, Bahram Khalighi, General Motors Co.; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; James T. McKillen, Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; Mesbah Uddin, UNC Charlotte*

Motorsports Engineering; H. Robert (Bob) Welge, Robert's Engineering Development; Jeffrey Bordner, General Motors; Arturo Guzman, FCA US LLC; Adrian P. Gaylard, Jaguar Land Rover; Kurt Zielinski, Honda R & D Americas Inc.

Time	Paper No.	Title
8:00 a.m.	***2015-01-1541***	***A CFD Study of Drag Reduction Devices for a Full Size Production Pickup Truck***
		Kuo-Huey Chen, Bahram Khalighi, General Motors Global R&D
8:30 a.m.	***2015-01-1542***	***Development of the Aerodynamics of the New Nissan Murano***
		Masaaki Arai, Keitaro Tone, Keiichi Taniguchi, Mikako Murakami, Munehiko Oshima, Nissan Motor Co., Ltd.
9:00 a.m.	***2015-01-1528***	***Application of Prediction Formulas to Aerodynamic Drag Reduction of Door Mirrors***
		Kenichi Hirose, Rina Nakagawa, Yukitaka Ura, Hideyuki Kawamata, Hisashi Tanaka, Munehiko Oshima, Nissan Motor Co., Ltd.
10:00 a.m.	***2015-01-1543***	***Aerodynamic Drag Reduction - from Conceptual Design on a Simplified Generic Model to Full-Scale Road Tests***
		Petter Ekman, Roland Gårdhagen, Linkoping University; Torbjörn Virdung, ANSYS Sweden; Matts Karlsson, Linkoping University
10:30 a.m.	***2015-01-1534***	***Flow Field Analysis in the Development of the 2013 Model Year Accord Hybrid***
		Daisuke Nakamura, Yasuyuki Onishi, Yoshiyasu Takehara, Honda R&D Co., Ltd.
11:00 a.m.	***2015-01-1535***	***Aerodynamic Development of the New Honda FIT/JAZZ***
		Kentaro Machida, Munetsugu Kaneko, Atsushi Ogawa, Honda R&D Co., Ltd.
	2015-01-1533	***Design the City Vehicle XAM using CFD Analysis (Written Only -- No Oral Presentation)***
		Massimiliana Carello, Serra Andrea, Andrea Giancarlo Airale, Alessandro Ferraris, Politecnico di Torino

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00464 and SUB-TP-00004, and also individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Vehicle Aerodynamics (Part 5 of 7): Unsteady Aerodynamics

Session Code: ***SS800***

Room 321 ***Session Time:*** ***1:00 p.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Jeffrey Bordner, General Motors; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Fiat Chrysler Automobiles; Mark E. Gleason, retired, FCA US LLC; Kevin Golsch, Exa Corporation; Arturo Guzman, FCA US LLC; Taeyoung Han, Bahram Khalighi, General Motors Co.; Raymond Leto, TotalSim*

LLC; Todd Lounsberry, FCA US LLC; James T. McKillen, Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; H. Robert (Bob) Welge, Robert's Engineering Development; Mesbah Uddin, UNC Charlotte Motorsports Engineering; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Adrian P. Gaylard, Jaguar Land Rover; Kurt Zielinski, Honda R & D Americas Inc.

Time	Paper No.	Title
1:00 p.m.	***2015-01-1537***	***Improvement in Vehicle Motion Performance by Suppression of Aerodynamic Load Fluctuations***
		Mitsuyoshi Kawakami, Osamu Murata, Toyota Central R&D Labs., Inc.; Kazuhiro Maeda, Toyota Motor Corporation
1:30 p.m.	***2015-01-1544***	***Fluid Structure Interaction Simulations Applied to Automotive Aerodynamics***
		Sunil Patil, Robert Lietz, Sudesh Woodiga, Hojun Ahn, Levon Larson, Ronald Gin, Ford Motor Co; Michael Elmore, Alexander Simpson, CD-ADAPCO
2:00 p.m.	***2015-01-1545***	***Wake and Unsteady Surface-Pressure Measurements on an SUV with Rear-End Extensions***
		Lennert Sterken, Chalmers University of Technology; Simone Sebben, Volvo Car Corporation; Lennart Lofdahl, Chalmers University of Technology; Tim Walker, Volvo Car Corporation; Thies Wölken, Technical University of Berlin
2:30 p.m.	***2015-01-1540***	***Manipulation of the Aerodynamic Behavior of the DrivAer Model with Fluidic Oscillators***
		Dirk Wieser, Henning Lang, Christian Nayeri, Christian Paschereit, Technische Universität Berlin
3:00 p.m.	***2015-01-1551***	***Application of Real-World Wind Conditions for Assessing Aerodynamic Drag for On-Road Range Prediction***
		Andrew D'Hooge, Luke Rebbeck, Robert Palin, Quinn Murphy, Tesla Motors Inc.; Joaquin Gargoloff, Bradley Duncan, Exa Corporation
3:30 p.m.	***2015-01-1558***	***Prediction of Flow-Induced Vibration of Vehicle Side-View Mirrors by CFD Simulation***
		Amir Kharazi, Edward Duell, Jacobs; Austin Kimbrell, Ann Boh, Honda R & D Americas Inc

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00464 and SUB-TP-00004, and also individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Driver Vision and Lighting Technology

Session Code: ***SS300***

Room 331 A/B/C ***Session Time:*** ***8:00 a.m.***

These papers highlight the interaction of driver vision¿which is itself characterized by complexity, flexibility, and high levels of performance¿with ever more sophisticated vision technologies to support driver vision. In particular, LED technology continued to advance in the past year, leading to broader lighting applications. Topics covered include lighting design strategy, lighting thermal management, driver fields of view, and characteristics of camera/display systems.

Organizers - *Jianzhong Jiao; Michael J. Flannagan, Univ. of Michigan - Ann Arbor*

Time	Paper No.	Title
8:00 a.m.	2015-01-0417	**High-Design Exterior Light Lens Having Both Excellent Transparency and Homogenous Luminance** *Akira Yamada, Shunsuke Iwao, Honda R&D Co., Ltd*
8:30 a.m.	2015-01-1700	**Intelligent Warning Lights and Driving Safety** *John D. Bullough, Rensselaer Polytechnic Institute*
9:00 a.m.	2015-01-1701	**Comparison Amongst Emerging Markets in Regards to Headlamp Performance and the Challenges Ahead for Global Programs** *Luciano Lukacs, Ford Asia-Pacific Inc.*
9:30 a.m.	2015-01-1702	**Ultra Low Power LED Fog Lamp with Sharp cut-off optics for Electric Vehicle** *Alex Wang, Jung Hsien Yen, TQ Technology*
10:00 a.m.	2015-01-1703	**Understanding the Safety Effects of Vehicle Lighting Through Naturalistic Driving Data** *John D. Bullough, Rensselaer Polytechnic Institute*
10:30 a.m.	2015-01-1705	**An Optimal Camera Monitor System (OCMS) for Automotive** *Miguel Hurtado, Amine Taleb-Bendiab, Valeo North America, Inc.; Julien Moizard, VALEO Driving Assistance Research; Patrice M. Reilhac, Valeo Schalter und Sensoren GmbH; Heinz Mattern, VALEO North America, Inc.*
	2015-01-1704	**Clarity of View: An AHP Multi-Factor Evaluation Framework for Driver Awareness Systems in Heavy Vehicles (Written Only -- No Oral Presentation)** *Dee Kivett, John Smith, Clemson University*
	2015-01-1706	**An Investigation into the Disruption of Circadian Rhythms using Blue Light for Automotive Applications (Written Only -- No Oral Presentation)** *Sreegururaj Jayachander, Krishna Raj Nair M K, Mahindra & Mahindra, Ltd.*
	2015-01-1707	**Methods of Glare Reduction from Oncoming Traffic during Driving (Written Only -- No Oral Presentation)** *Ravi Ranjan, Shivaswaroop Parameswaraiah, KPIT Technologies Ltd.*

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Technical Expert Panel Discussion: Model-based Development - Controls and Calibration

Session Code: ***PFL9***

Room 331 A/B/C Technical Expert Panel Dis ***Session Time:*** ***3:30 p.m.***

This technical expert panel will explore the challenges of developing the plant and control strategies for future technologies as well as the complexities of integrating these advanced development approaches into the legacy control systems. Topics will also include the demands for system reliability and robustness to all real world use cases and the need for standardized approaches to minimize development cost and timing.

Organizers - *Chris Middlemass, Whitney Liftig, IAV Automotive Engineering Inc.*

Moderators - *Jason McConnell, IAV Automotive Engineering Inc.*

Panelists - *Paul Chambon, Oak Ridge National Laboratory; Steven Haines, Optecon Consultants LLC; Guenther Raab, Continental Automotive Systems US Inc.; Ronald J. Toth, Toyota; Tara Vatcher, Director - Controls and SW, FCA US LLC;*

Time	Paper No.	Title
	ORAL ONLY	**Learn more about the moderator and panelists** *Jason McConnell, IAV Automotive Engineering Inc.; Paul Chambon, Oak Ridge National Laboratory; Steven Haines, Optecon Consultants LLC; Guenther Raab, Continental Automotive Systems US Inc.; Ronald J. Toth, Toyota; Tara Vatcher, FCA US LLC*

Wednesday, April 22

Advances in Lightweight Materials (Part 1 of 2)

Session Code: ***M102***

Room 332 ***Session Time:*** ***8:00 a.m.***

This session presents the latest developments in automotive applications of aluminum castings and wrought products. The papers cover a wide range of the technical aspects including alloy development, lightweight design, process development and simulation as well as performance optimization.

Organizers - *Fadi Abu-Farha, Clemson Univ.; Alan Luo, Ohio State University; Douglas Richman; Jidong Kang, CanmetMATERIALS Technology Laboratory*

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	**Technical Keynote: Rise of the Machine: the Development and Use of Finite-Element-Based Structural Optimization Tools in Automotive Lightweight Design** *Donald Baskin, Ogin Inc.*
9:00 a.m.	2015-01-0510	**An Investigation of the Effects of Cast Skin on the Mechanical Properties of an AM60 Die-Cast Magnesium Alloy** *Joy Hines Forsmark, Zachary Dowling, Kelsey Gibson, Caroline Mueller, Larry Godlewski, Jacob Zindel, James Boileau, Ford Motor Co.*
9:30 a.m.	2015-01-0512	**Cast Body Nodes for 2016 Acura NSX** *Anthony D. Prescenzi, Honda R & D Americas Inc.*
10:00 a.m.	2015-01-0514	**Effect of Strain Level on the Behavior of Intermetallics and Texture of Al-Si-Cu-Mg Alloy Modified with Transition Metals** *Sugrib K. Shaha, Ryerson University; Frank Czerwinski, Wojciech Kasprzak, CanmetMATERIALS, Natural Resources Canada; Jacob Friedman, Daolun Chen, Ryerson University*
10:30 a.m.	2015-01-0515	**Development of Al-Mn-Cu-Mg Brazing Sheet Core Alloys for Automotive Heat Exchanger Units for Service at High Temperatures** *Haiou Jin, Yimin Zeng, Jie Liang, M.S. Kozdras, CanmetMATERIALS Technology Laboratory*

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 22

Advances in Lightweight Materials (Part 2 of 2)

Session Code: ***M102***

Room 332 ***Session Time:*** ***1:00 p.m.***

This session presents the latest developments in automotive applications of aluminum castings and wrought products. The papers cover a wide range of the technical aspects including alloy development, lightweight design, process development and simulation as well as performance optimization.

Organizers - *Fadi Abu-Farha, Clemson Univ.; Alan Luo, Ohio State University; Douglas Richman; Jidong Kang, CanmetMATERIALS Technology Laboratory*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Strategies for Achieving Material Properties in High-volume Light Metal Production: The Case of Aluminum Warm Forming*** *Felix Roeckle, Tobias Meint, Axel Weiand, Eisenmann Anlagenbau*
1:30 p.m.	***ORAL ONLY***	***Non-Isothermal Material Deformation during Hot Blank ¿ Cold Die (HB-CD) Stamping of Magnesium and Aluminium Alloy Sheets*** *Nan Zhang, Abdelrahim Khal, Fadi Abu-Farha, Clemson University (CU-ICAR)*
2:00 p.m.	***ORAL ONLY***	***Formability and Strength of AA7075 Aluminum: Effect of Strain-rate and Temper*** *Aashish Rohatgi, Richard Davies, Piyush Upadhyay, Elizabeth Stephens, David Catalini, Pacific Northwest National Laboratory; Nan Zhang, Fadi Abu-Farha, Clemson University*
2:30 p.m.	***ORAL ONLY***	***Forming High Strength 7075 Aluminium Alloy Sheets by Integrated Press Quenching / Bake Aging Approach*** *Nan Zhang, Zeren xu, Fadi Abu-Farha, Clemson University (CU-ICAR)*
3:00 p.m.	***2015-01-0511***	***Breaking Load Method Evaluation of Sheet AA7075*** *Bradford Johnson, John Henshaw, University of Tulsa; Nia R. Harrison, S. George Luckey, Ford Motor Company*
3:30 p.m.	***2015-01-0516***	***Experimental Study of Stretchability of Sheared Edge of Aluminum Sheet 6111-T4*** *Nan Wang, Sergey Golovashchenko, Oakland Univ.; Quochung Le, Exvoa. Materials Testing, Calibrating and Advising Co.*

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 22

Wiring and Harnesses

Session Code: ***AE303***

Room 333 ***Session Time:*** ***8:00 a.m.***

This session deals with the electrical distribution system (EDS), increasing content/complexity, and the optimization of the systems in vehicles. The EDS is the nerve system of the vehicle and is far reaching into all areas of the architecture. This session will review the associated components for the wiring systems: wiring/cables, connectors, harnesses, fuse & relay boxes, etc., and will discuss new technologies that are emerging to address mega trends.

Organizers - *Lyle Stanley Bryan, TE Connectivity; J. Howard Evans, Bentley Motors, Ltd.; Kirk Rasmussen, Leoni Wiring Systems Inc.; Abraham Shocket, TE Connectivity*

Chairpersons - *Kirk Rasmussen, Leoni Wiring Systems Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0243***	***A Statistical Analysis of Electrical Power Requirements in Vehicles*** *Ludwig Brabetz, Tobias Kerner, Mohamed Ayeb, Universitaet Kassel*
8:30 a.m.	***2015-01-0244***	***Magnetic Pulse Crimping and High Power Solutions*** *Adrien Laurino, Leoni Wiring Systems France*

9:00 a.m.	***2015-01-0238***	***Enhancing Automotive Wire Harness Manufacturing Through Digital Continuity***
		Nick Smith, Mentor Graphics Corp.
9:30 a.m.	***2015-01-0236***	***Requirements and Protection within a 48V Automotive Wiring System***
		Matthias Lenhart-Rydzek, Markus Rau, Matthias Ebert, LEONI Wiring Systems GmbH
10:00 a.m.	***2015-01-0239***	***Future E/E-Architecture Stimulated by Using Bionic Approaches***
		Markus Ernst, Markus Heuermann, LEONI Wiring Systems GmbH
10:30 a.m.	***2015-01-0245***	***Aluminum Technology - The Wiring Harness of the Future Next Generation Terminals for Aluminum Wire Application***
		Markus Gaertner, Delphi Deutschland GmbH
11:00 a.m.	***2015-01-0242***	***Every Engineer can be a Quality Engineer***
		Nick Smith, Mentor Graphics Corp.
11:30 a.m.	***2015-01-0237***	***Mixed Voltages and Aluminum Conductors: Assessing New Electrical Technologies***
		Nick Smith, Mentor Graphics Corp.
	2015-01-0241	***Wireless Sensor Network in Vehicles (Written Only -- No Oral Presentation)***
		Milind Potdar, Suyog Wani, CREST, KPIT Technologies Ltd.

Planned by Electronics in Powertrain Committee / Automobile Electronics Activity

Wednesday, April 22

Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 1 of 3)

Session Code: ***M202***

Room 333 ***Session Time:*** ***1:00 p.m.***

Papers with an emphasis on, but not limited to, innovative ideas to enhance automotive safety with improved material constitutive modeling, analysis method developments, simulation and pre/post processing tools, optimization techniques, crash code developments, finite element model updating, model validation and verification techniques, dummies and occupants, restraint systems, passive safety as well as lightweight material applications and designs are highly encouraged.

Organizers - *Jwo Pan, University of Michigan, Ann Arbor; Tau Tyan, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Wei Li, General Motors Co.; William J. Altenhof, Univ. of Windsor; Sheng-Dong Liu, Generalety LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***ORAL ONLY***	***Simulations of Compressive Behavior of Representative Volume Element Specimens of Lithium-Ion Battery Modules***
		Catherine M. Amodeo, Johnson Controls; Mohammed Yusuf Ali, Jwo Pan, University of Michigan-Ann Arbor
1:30 p.m.	***ORAL ONLY***	***Development of Possible Failure Criteria for Battery Cells under Compression***
		Shin-Jang Sung, Jwo Pan, Univ. of Michigan-Ann Arbor; Saeed Barbat, Ford Motor Co

2:00 p.m.	***2015-01-0573***	***Simulation and Optimization of an Aluminum-Intensive Body-on-Frame Vehicle for Improved Fuel Economy and Enhanced Crashworthiness - Front Impacts*** *Tau Tyan, Yu-Kan Hu, Dana Sun, Ford Motor Co.; Leonard Shaner, Ford Product Development; Matt Niesluchowski, Nand Kochhar, Ford Motor Co.; Guofei Chen, Ming Shi, United States Steel Corporation*
2:30 p.m.	***2015-01-0567***	***Fracture Prediction for Automotive Bodies Using a Ductile Fracture Criterion and a Strain-Dependent Anisotropy Model*** *Kenji Takada, Honda R&D Co., Ltd.; Kentaro Sato, JFE Steel Corp; Ninshu Ma, JSOL Corp*
3:00 p.m.	***2015-01-0584***	***An Experimental Study of the Yielding Locus of a TRIP780 Steel Sheet Using a Biaxial Tensile Test*** *HaiYan Yu, JiaYi Shen, Tongji University; Gang He, Hohai University*
3:30 p.m.	***2015-01-0565***	***Zinc Coated Press-Hardening Steel - Challenges and Solutions*** *Thomas Kurz, Gerald Luckeneder, Thomas Manzenreiter, Harald Schwinghammer, voestalpine Stahl GmbH; Andreas Sommer, voestalpine Polynorm GmbH & Co. KG*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00468, and also individually. To purchase visit collections.sae.org

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

Reliability and Robust Design in Automotive Engineering: Decision Under Uncertainty/Uncertainty Modeling

Session Code: ***IDM104***

Room 336 ***Session Time:*** ***8:00 a.m.***

Methods for modeling uncertainty and decision making under uncertainty are presented in this session. Both theoretical developments and practical applications from the automotive industry are covered.

Organizers - *Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0437***	***Comparing Uncertainty Quantification with Polynomial Chaos and Metamodel-Based Strategies for Computationally Expensive CAE Simulations and Optimization Applications*** *Zhendan Xue, ESTECO North America; Mariapia Marchi, ESTECO Spa; Sumeet Parashar, ESTECO North America; Guosong Li, Ford Motor Co*
8:30 a.m.	***2015-01-0436***	***A Parallel Approach for Computing the Expected Value of Gathering Information*** *Edgar Galvan, Chuck Hsiao, Sean Vermillion, Richard Malak, Texas A&M University*
9:00 a.m.	***2015-01-0434***	***Multi-Level Decoupled Optimization of Wind Turbine Structures*** *Jin Woo Lee, Efstratios Nikolaidis, Vijay Devabhaktuni, University of Toledo*

9:30 a.m.	***2015-01-0433***	***Recursive Estimation of Vehicle Inertial Parameters Using Polynomial Chaos Theory via Vehicle Handling Model***
		Zeyu Ma, Huazhong University of Science and Tech; James Yang, Texas Tech Univ; Ming Jiang, Dongfeng Commercial Vehicle Co, Ltd; Yunqing Zhang, Huazhong University of Science and Tech
10:30 a.m.	***2015-01-0432***	***Suspension Kinematic/Compliance Uncertain Optimization Using a Chebyshev Polynomial Approach***
		Xingxing Feng, Jinglai Wu, Yunqing Zhang, Huazhong University of Science and Tech; Ming Jiang, Dongfeng Commercial Vehicle Tech Ctr
	2015-01-0435	***Error Reduction in Spatial Robots Based on the Statistical Uncertainty Analysis (Written Only -- No Oral Presentation)***
		S. Khodaygan, Sharif University of Technology; M. Hafezipour, K.N. Toosi University of Technology

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 22

Reliability and Robust Design in Automotive Engineering: Reliability and Robust Design in Automotive Aero-Thermal and Fluid Systems

Session Code: ***IDM105***

Room 336 ***Session Time:*** ***1:00 p.m.***

The purpose of this session is to bring awareness among the automotive aerodynamics, thermal and hydraulic systems development community to address the need of reliability analysis and robust design to improve the overall product quality. This session also introduces CAE based optimization of aero-thermal and fluid systems to improve automotive fuel economy. This session presents papers covering both testing and simulation.

Organizers - *Alaa El-Sharkawy, FCA US LLC; David A. Lamb, US Army TARDEC; Sadek S. Rahman, Richard L. Sun, FCA US LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0439***	***Advantages of Simulation Based Reliability Growth Planning***
		Daniel B. Kosinski, US Army TARDEC
1:30 p.m.	***2015-01-0438***	***Application of the Fourier Amplitude Sensitivity Test (FAST) to Analyze Thermal Performance of Vehicle Underbody Components***
		Ashley Lehman, Vesselin Stoilov, Andrzej Sobiesiak, Univ of Windsor
2:00 p.m.	***2015-01-0440***	***Fatigue Life Calculation under Thermal Multiaxial Stresses in EGR Coolers***
		Julio Carrera, BorgWarner Emissions Systems; Alfredo Navarro, University of Seville; Concepcion Paz, University of Vigo; Alvaro Sanchez, BorgWarner Emissions Systems; Jacobo Porteiro, University of Vigo
2:30 p.m.	***2015-01-0442***	***Sensitivity Analysis of Key Engine and Vehicle Parameters in Engine Coolant Temperature Predictions***
		Sudhi Uppuluri, Ajay Naiknaware, Computational Sciences Experts Group
3:00 p.m.	***2015-01-0441***	***Full Vehicle Thermal Prediction by Identification Approach from Test Results***
		Takashi Takiguchi, Yusuke Yano, Yasuhiro Takii, Nobuyuki Ohta, Honda R&D Co., Ltd.

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 22

Model-Based Controls and Software Development (Part 1 of 2)

Session Code: ***AE103***

Room 353 ***Session Time:*** ***8:00 a.m.***

Model-Based Design has become a well-accepted development style for embedded control and software. This session is designed to cover new processes, methods, and applications of new processes / methods to reduce development time and improve software quality. A particular emphasis will be placed on methods such as executable specification, design through simulation, early verification, automatic code generation, and model-in-the-loop testing.

Organizers - *Vivek Jaikamal, ETAS Inc.; Wensi Jin, MathWorks Inc.; Mahendra Muli, dSPACE Inc.; Joseph Romeo, ETAS*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0162***	***Control-Oriented Modeling Methodology for Turbocharged Engine Control Design and System Calibration***
		Kunihiko Suzuki, Guang Yu, Hitachi Research & Development; Satoru Watanabe, Hitachi Automotive Systems Ltd.
8:30 a.m.	***2015-01-0165***	***An Innovative Vehicle Behaviour Modeling Methodology for Model-Based Development***
		Marina Roche, Marco Mammetti, Applus + Idiada Spain
9:00 a.m.	***2015-01-0168***	***Resource-Aware Control - Model-Based Co-Engineering of Control Algorithms and Real-Time Systems***
		Steffen Lampke, Simon Schliecker, Symtavision GmbH; Dirk Ziegenbein, Arne Hamann, Robert Bosch GmbH
9:30 a.m.	***2015-01-0167***	***Feature Addition or Enhancement by using Model Based Design***
		Amrut A. Patki, Navistar Inc.
10:00 a.m.	***2015-01-0160***	***10 Steps to ISO26262-compliant Model-based Software Components***
		Ingo Stürmer, Elke Salecker, Model Engineering Solutions
11:00 a.m.	***2015-01-0163***	***Automated Verification and Validation Methods for Transmission Control Software***
		Madhura Medikeri, Thomas Tasky, FEV North America, Inc.; Johannes Richenhagen, FEV GmbH
	2015-01-0164	***Automatic C to Simulink Model Converter (C2M) Tool (Written Only -- No Oral Presentation)***
		Smitha Kizhakkae Palakkal, Priti Ranadive, Naveen Boggarapu, CREST, KPIT Technologies, Ltd.; Rakesh Rao, KPIT Technologies, Ltd.; Pallavi Kalyanasundaram, K.K.W.I.E.E.R, Nasik

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Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Wednesday, April 22

Model-Based Controls and Software Development (Part 2 of 2)

Session Code: ***AE103***

Room 353 ***Session Time: 1:00 p.m.***

Model-Based Design has become a well-accepted development style for embedded control and software. This session is designed to cover new processes, methods, and applications of new processes / methods to reduce development time and improve software quality. A particular emphasis will be placed on methods such as executable specification, design through simulation, early verification, automatic code generation, and model-in-the-loop testing.

Organizers - *Vivek Jaikamal, ETAS Inc.; Wensi Jin, MathWorks Inc.; Mahendra Muli, dSPACE Inc.; Joseph Romeo, ETAS*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0166***	***Reducing the Verification Effort for Interfaces of Automotive Infotainment Software***
		Christian Drabek, Annette Paulic, Gereon Weiss, Fraunhofer ESK
1:30 p.m.	***ORAL ONLY***	***Emerging Standards as Enablers for Virtual Validation in Model-based Development***
		Joseph M. Fairchild, dSPACE, Inc.
2:00 p.m.	***2015-01-0161***	***Model-Based Optimization for an AMT Clutch Control during the Vehicle Starting***
		Hua Huang, Di Di, Yuqiang Chu, Clemens Guehmann, Technische Universität Berlin
2:30 p.m.	***2015-01-0158***	***Eco-Driving System for Energy Efficient Driving of an Electric Bus***
		Jackeline Rios-Torres, Pablo Sauras-Perez, Ruben Alfaro, Joachim Taiber, Pierluigi Pisu, CU-ICAR Clemson University
3:00 p.m.	***2015-01-0169***	***Artist-Centric HMI Software Development Tool for Reconfigurable Instrument Clusters: Integration with Model-Based Development Tool***
		Kazuyuki Nakata, Maya Seki, Ryoichi Nishikawa, DENSO Corporation; Soju Matsumoto, 3D Incorporated; Shinichiro Murakami, Yukio Yoshino, CATS Co., Ltd.
3:30 p.m.	***2015-01-0157***	***Development and Analysis of Adaptive Neural Network Control for a Cybernetic Intelligent `iGDI¿ Engine***
		M Abu Anas Shuvom, M Zahurul Haq, Bangladesh Univ of Engrg & Tech
	2015-01-0159	***Research and Simulation of Electro-Hydraulic Braking System Based on Integrated Master Cylinder (Written Only -- No Oral Presentation)***
		Zhihui Tan, Zhenfu Chen, Xiaofei Pei, Wuhan University of Technology; Jie Zhang, Wanxiang Group Technical Center; Xuexun Guo, Zhejiang Wanxiang Systems Co., Ltd.

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Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Wednesday, April 22

Occupant Protection: Accident Reconstruction (Part 2 of 3)

Session Code: ***SS500***

Room 354 ***Session Time: 8:00 a.m.***

This session focuses on the latest research related to methods and techniques for reconstructing vehicular crashes involving wheeled and tracked vehicles, pedestrians, and roadside features. Emphasis is placed on experimental data and theoretical methods that will enable reconstructionists to identify, interpret and analyze physical evidence from vehicular crashes.

Organizers - *Alan F. Asay, Asay Engineering; L. Daniel Metz, Metz Engineering & Racing; Christopher D. Armstrong, KEVA Engineering; Nathan A. Rose, Kineticorp LLC; Geoff Germane, Germane Engineering; Richard Frank Lambourn, Transport*

Research Laboratory, Ltd.; David Plant, D P Plant & Associates; Heath Spivey, Delta V Forensic Engrg; John T. Sprague, General Motors Co.; John C. Steiner, Mecanica Scientific Services Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Time	Paper No.	Title
8:00 a.m.	***2015-01-1434***	***A Comparison of Bayesian Speed Estimates from Rollover and Critical Speed Methods***
		Gary A. Davis, Univ. of Minnesota
8:30 a.m.	***2015-01-1419***	***Reconstruction of Vehicle-Pedestrian Collisions Including an Unknown Point of Impact***
		Raymond M. Brach, ESI, University of Notre Dame
9:00 a.m.	***2015-01-1418***	***Pedestrian Throw Distance Impact Speed Contour Plots Using PC-Crash***
		Shane Richardson, Nikola Josevski, Andreas Sandvik, Tandy Pok, Tia Lange Orton, Blake Winter, Delta-V Experts; Xu Wang, RMIT University
10:00 a.m.	***2015-01-1421***	***On the Directionality of Rollover Damage and Abrasions***
		Dennis Turriff, David J. King, James Bertoch, MEA Forensic Engineers & Scientists
10:30 a.m.	***2015-01-1426***	***Accuracy of SUAS Photogrammetry for Use in Accident Scene Diagramming***
		Drew A. Jurkofsky, Unmanned Experts
11:00 a.m.	***2015-01-1435***	***Assessment of the Accuracy of Google Earth Imagery for use as a Tool in Accident Reconstruction***
		Jeffrey Wirth, Enrique Bonugli, Mark Freund, Biodynamic Research Corp.
	2015-01-1427	***Glass Debris Field Longevity for Rollover Accident Reconstruction (Written Only -- No Oral Presentation)***
		Jay Przybyla, Focus Forensics; Jason Jupe, Rimkus; Thomas Rush, Rachel Keller, Focus Forensics

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00476, SUB-TP-00006 and SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Occupant Protection: Accident Reconstruction (Part 3 of 3)

Session Code: ***SS500***

Room 354 ***Session Time:*** ***1:00 p.m.***

This session focuses on the latest research related to methods and techniques for reconstructing vehicular crashes involving wheeled and tracked vehicles, pedestrians, and roadside features. Emphasis is placed on experimental data and theoretical methods that will enable reconstructionists to identify, interpret and analyze physical evidence from vehicular crashes.

Organizers - *Alan F. Asay, Asay Engineering; L. Daniel Metz, Metz Engineering & Racing; Christopher D. Armstrong, KEVA Engineering; Nathan A. Rose, Kineticorp LLC; Geoff Germane, Germane Engineering; Richard Frank Lambourn, Transport Research Laboratory, Ltd.; David Plant, D P Plant & Associates; Heath Spivey, Delta V Forensic Engrg; John T. Sprague, General Motors Co.; John C. Steiner, Mecanica Scientific Services Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists*

Time	Paper No.	Title

1:00 p.m.	***2015-01-1428***	***Simulation of Vehicle Lateral Side Impacts with Poles to Estimate Crush and Impact Speed Characteristics***
		Shane Richardson, Delta-V Experts; Andreas Moser, DSD-Dr Steffan Datentechnik; Tia Lange Orton, Roger Zou, Delta-V Experts
1:30 p.m.	***2015-01-1420***	***Medium Duty North American Delivery Van Frontal Barrier Crash Test Data for Crash Reconstruction***
		John C. Steiner, Mecanica Scientific Services Corporation; John Olsen, United Parcel Service, Inc.; Tom Walli, GEOTAB; Tyler Kress, BEST Engineering; Christopher Armstrong, Mecanica Scientific Services Corporation; Ralph Gallagher, United Parcel Service, Inc.; Stein Husher, KEVA Engineering; John Kyes, GEOTAB
2:00 p.m.	***2015-01-1424***	***Bollard Energy Dissipation in Moving Barrier and Passenger Vehicle Impacts***
		Jeffrey Croteau, Charles L. Crosby, Micky Marine, Exponent Inc; Andrew Kwasniak, Lee Engineering
2:30 p.m.	***2015-01-1433***	***Nonlinear Optimization in Vehicular Crash Reconstruction***
		R. Matthew Brach, Engineering Systems Inc.; Raymond M. Brach, University of Notre Dame; Richard A. Mink, Engineering Systems Inc.
3:00 p.m.	***ORAL ONLY***	***Technical Keynote: Connected Vehicles***
		Radovan Miucic, Honda R & D Americas Inc.
	2015-01-1416	***Applying Camera Matching Methods to Laser Scanned Three Dimensional Scene Data with Comparisons to Other Methods (Written Only -- No Oral Presentation)***
		Clay Coleman, Donald Tandy, Jason Colborn, Nicholas Ault, Tandy Engineering & Associates Inc
	2015-01-1430	***The Development of a Non-Linear Pressure Model of the FMVSS 214D Moving Deformable Barrier for Use in HVE (Written Only -- No Oral Presentation)***
		Brian Gilbert, Joseph McCarthy, Ron Jadischke, McCarthy Engineering Inc.

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Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Applications of Advanced High-Strength Steels and Press Hardening for Automotive Structures (Part 1 of 2)

Session Code: ***M104***

Room 356 ***Session Time:*** ***8:00 a.m.***

This symposium provides a forum for researchers and application engineers to disseminate the knowledge and information gained in the area of advanced high-strength and press-hardening steel development and applications in automotive structures, enabling light-weight and durable vehicles with improved safety.

Organizers - *Constantin Chiriac, Ford Motor Co.; ZiQiang Sheng, General Motors; Jason Coryell, Jatinder Singh, General Motors Co; Thomas Oetjens, Magna Intl Inc; Xiaoming Chen*

Time	***Paper No.***	***Title***

8:00 a.m.	***ORAL ONLY***	***Technical Keynote: Next-Generation Steel Developments for Automotive Lightweighting***
		John G. Speer, David K. Matlock, Emmanuel De Moor, Kip Findley, Colorado School of Mines
9:00 a.m.	***ORAL ONLY***	***Developing Forming Limit Curves for Advanced High Strength Steel***
		Jun Hu, Fadi Abu-Farha, Clemson University (CU-ICAR); John Carsley, Louis Hector, General Motors, R&D Center
9:30 a.m.	***ORAL ONLY***	***Deconstructing the Shear Affected Zone and its Influence on the Failure of an Ultra High Strength Steel During Sheared Edge Stretching***
		Cliff Butcher, Luke ten Kortenaar, Michael Worswick, University Of Waterloo
10:00 a.m.	***2015-01-0529***	***Case Studies of Edge Fracture of Dual Phase Steel Stampings***
		Jody N. Hall, Steel Market Development Institute; Jason Coryell, Bill Wendt, Donald Adamski, General Motors Co
10:30 a.m.	***2015-01-0525***	***Experimental Study of Edge Stretching Limits of DP980IBF Steel in Multistage Forming Process***
		Constantin Chiriac, Ford Motor Co.; Ming F. Shi, United States Steel Corp.
11:00 a.m.	***2015-01-0531***	***Technology to Enhance Deep-Drawability by Strain Dispersion Using Stress Relaxation Phenomenon***
		Hiroyuki Yamashita, Hiroaki Ueno, Hiroyuki Nakai, Takahiro Higaki, Honda R&D Co., Ltd.

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 22

Applications of Advanced High-Strength Steels and Press Hardening for Automotive Structures (Part 2 of 2)

Session Code: ***M104***

Room 356 ***Session Time:*** ***1:00 p.m.***

This symposium provides a forum for researchers and application engineers to disseminate the knowledge and information gained in the area of advanced high-strength and press-hardening steel development and applications in automotive structures, enabling light-weight and durable vehicles with improved safety.

Organizers - *Constantin Chiriac, Ford Motor Co.; ZiQiang Sheng, General Motors; Jason Coryell, Jatinder Singh, General Motors Co; Thomas Oetjens, Magna Intl Inc; Xiaoming Chen*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0527***	***Fatigue Properties of a New Martensitic Stainless Steel for Hot Stamped Chassis Parts***
		Pierre-Olivier Santacreu, Guillaume Badinier, Jean-Benoit Moreau, Jean-Marc Herbelin, APERAM R&D
1:30 p.m.	***2015-01-1347***	***Corrosion Aspects Regarding the Use of Martensitic Stainless Steels in Automotive Chassis Parts***
		Fiona Ruel, APERAM R&D; Pierre-Olivier Santacreu, Saghi Saedlou, Aperam - Arcelormittal; Guillaume Badinier, APERAM R&D; Jean Herbelin, APERAM

2:00 p.m.	***2015-01-0530***	***Carbon and Manganese Effects on Quenching and Partitioning Response of CMnSi-Steels***
		Mikko Joonas Kähkönen, Emmanuel De Moor, John Speer, Colorado School of Mines; Grant Thomas, AK Steel Corp
2:30 p.m.	***2015-01-0528***	***Fracture Characterization of Automotive Alloys in Shear Loading***
		Armin Abedini, Cliff Butcher, David Anderson, Michael Worswick, University Of Waterloo; Timothy Skszek, Magna International
3:00 p.m.	***ORAL ONLY***	***Adiabatic Heating and its Effects on the Tensile Deformation of QP980***
		Jun Hu, Fadi Abu-Farha, Clemson University (CU-ICAR); Louis Hector, General Motors, R&D; Jody Hall, Steel Market Development Institute
3:30 p.m.	***ORAL ONLY***	***Next Generation of AHSS Sheet for Automotive Application***
		D.J. Branagan, Andrew Frerichs, Brian Meacham, S. Cheng, A.V Sergueeva, The NanoSteel Co.
4:00 p.m.	***2015-01-0526***	***InCar®plus - Innovative Steel Solutions for Automotive Body Structures***
		Timo Faath, Lay Knoerr, ThyssenKrupp Steel North America Inc.

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 22

Vehicle Dynamics, Stability and Control (Part 2 of 3)

Session Code: ***SS900***

Room 357 ***Session Time:*** ***8:00 a.m.***

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - *W. Riley Garrott, National Hwy Traffic Safety Admin; Paul Grygier; Mark Heitz; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern Univ.; Sughosh J. Rao, M. Kamel Salaani, Transportation Research Center Inc.*

Chairpersons - *Sughosh J. Rao, Transportation Research Center Inc.*

Assistant Chairpersons - *M. Kamel Salaani, Transportation Research Center Inc.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1584***	***Improved Lane-keeping with Rear Axle Steer***
		Daniel E. Williams, TRW Commercial Steering Systems
8:30 a.m.	***2015-01-1567***	***Development of an Electric-based Power Steering System***
		Scott Bradley Zagorski, Honda R & D Americas Inc.; Tomoya Ushimura, Honda; James Post, Honda R & D Americas Inc.
9:00 a.m.	***2015-01-1575***	***Development of Handling Performance Control for SPORT HYBRID SH-AWD***
		Tomokazu Honda, Honda R&D
9:30 a.m.	***2015-01-1597***	***Development of Three-Motor Electric Vehicle ¿EMIRAI 2 xEV¿***
		Kazuto Yokoyama, Masahiro Iezawa, Hideyuki Tanaka, Keiichi Enoki, Mitsubishi Electric Corporation

10:00 a.m.	***2015-01-1564***	***A Method of Frequency Content Based Analysis of Driving Braking Behavior***
		Joshua L. Every, Dennis A. Guenther, Gary J. Heydinger, Ohio State University
10:30 a.m.	***2015-01-1573***	***Antilock Brake Control System for Four-Wheel-Drive Electric Vehicle with Electro-hydraulic Braking based on Precise Control of Hydraulic Braking Force***
		Guirong Zhuo, Hui Shen, Tongji Univ; Shenchen Wu, Yilin Ren, Shanghai Volkswagen Powertrain Co., Ltd.
	2015-01-1582	***Hardware-in-the-loop Simulation for an Integrated Braking System (Written Only -- No Oral Presentation)***
		Jiawang Yong, Feng Gao, Nenggen Ding, Wei Wang, Beihang University; Xianrong Hu, GAC Automotive Engineering Institute
	2015-01-1588	***Optimization of the Customer Experience for Routine Handling Performance (Written Only -- No Oral Presentation)***
		Ibrahim A. Badiru, Michael W. Neal, General Motors Co.
	2015-01-1589	***Tuning Dampers for Ride and Handling of Production Vehicles (Written Only -- No Oral Presentation)***
		Michael W. Neal, Walter Cwycyshyn, Ibrahim Badiru, General Motors Co.

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Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Vehicle Dynamics, Stability and Control (Part 3 of 3)

Session Code: ***SS900***

Room 357 ***Session Time:*** ***1:00 p.m.***

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - *W. Riley Garrott, National Hwy Traffic Safety Admin; Paul Grygier; Mark Heitz; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern Univ.; Sughosh J. Rao, M. Kamel Salaani, Transportation Research Center Inc.*

Chairpersons - *David R. Mikesell, Ohio Northern Univ.*

Assistant Chairpersons - *Paul Grygier*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1570***	***Virtual Tire Data Influence on Vehicle Level Handling Performance***
		Daniel Vilela, Rubens Pinati, Scott Larsen, General Motors; Erick Rodrigues, Renato Serrati, Pirelli Tyres
1:30 p.m.	***2015-01-1574***	***Phase-Plane Analysis for Evaluating the Lateral Stability of Articulated Vehicles***
		Tao Sun, Yuping He, Univ. of Ontario Institute of Technology

2:00 p.m.	***2015-01-1568***	***Integrated Chassis Control for Enhancement of High Speed Cornering Performance***
		Hyundong Heo, Eunhyek Joa, Kyongsu Yi, Seoul National Univ; Kilsoo Kim, Hyundai Motor Comapny
2:30 p.m.	***2015-01-1566***	***A Tire Slip-Angle based Speed Control Driver Model for Analysis of Vehicle-Driver Systems at Limit Handling***
		Youngil Koh, Kyongsu Yi, Seoul National Univ; Kilsoo Kim, Hyundai Motor Company
3:00 p.m.	***2015-01-1755***	***Study on Wheel Stiffness Considering Balance between Driving Stability and Weight***
		Atsushi Hirano, Honda R&D Co., Ltd.
3:30 p.m.	***2015-01-1595***	***Analyzing Rollover Indices for Critical Truck Maneuvers***
		Kristoffer Lundahl, Chih Feng Lee, Erik Frisk, Lars Nielsen, Linkoping Univ.
	2015-01-1565	***Study on Stability Control of Electrical Vehicle Based on Regenerative Braking System (Written Only -- No Oral Presentation)***
		Qingzhang Chen, Changshu Institute of Technology
	2015-01-1580	***Study on Vehicle Stability Control by Using Model Predictive Controller and Tire-road Force Robust Optimal Allocation (Written Only -- No Oral Presentation)***
		He Dengbo, Lu Hui, Yu Fan, Shanghai Jiao Tong University
	2015-01-1585	***Perceptible Roll (Written Only -- No Oral Presentation)***
		Zubin Trivedi, Vivek Lakhera, Tata Motors Ltd.
	2015-01-1592	***The True Definition and Measurement of Oversteer and Understeer (Written Only -- No Oral Presentation)***
		Donald F. Tandy, Jason Colborn, Jung C. Bae, Clay Coleman, Tandy Engineering & Associates Inc.; Robert Pascarella, Ford Motor Company

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Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Advances in Nox Reduction Technology (Part 1 of 3)

Session Code: ***PFL424***

Room 360 ***Session Time:*** ***8:00 a.m.***

These sessions will focus on `Advances in NOx Reduction Technology¿. The topics covered will include: new materials for lean NOx traps (LNT) and Selective Catalytic Reduction (SCR); system integration and durability; advances in NOx catalyst substrates, novel reductants and mixing designs.

Organizers - *Brad Adelman, Navistar Inc.; Danan Dou, John Deere Product Engineering Center; Magdi K. Khair, Magdiesel Technologies; Rahul Mital, General Motors Co.; Shyam Santhanam, Navistar Inc.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1022***	***Impact of Accelerated Hydrothermal Aging on Structure and Performance of Cu-SSZ-13 SCR Catalysts***
		Jinyong Luo, Hongmei An, Krishna Kamasamudram, Neal Currier, Aleksey Yezerets, Cummins Inc; Thomas Watkins, Larry Allard, Oak Ridge National Laboratory

8:30 a.m.	***2015-01-1030***	***SCR Architectures for Low N₂O Emissions***
		Ashok Kumar, Krishna Kamasamudram, Neal Currier, Aleksey Yezerets, Cummins Inc
9:00 a.m.	***2015-01-1034***	***Impact of SCR Integration on N₂O Emissions in Diesel Application***
		Homayoun Ahari, Michael Smith, Michael Zammit, FCA US LLC; Kenneth Price, Jason Jacques, Thomas Pauly, Lin Wang, Umicore Autocat USA Inc
9:30 a.m.	***2015-01-1033***	***Demonstration of SCR on a Diesel Particulate Filter System on a Heavy Duty Application***
		Raymond Conway, Sougato Chatterjee, Mojghan Naseri, Ceren Aydin, Johnson Matthey Inc.
10:00 a.m.	***2015-01-1023***	***Investigations of SDPF -Diesel Particle Filter with SCR Coating for HD-Applications***
		Jan Czerwinski, Yan Zimmerli, Univ. of Applied Sciences Biel-Bienne; Andreas Mayer, TTM; Jacques Lemaire, AEEDA; Daniel Zürcher, Giovanni D'Urbano, BAFU
10:30 a.m.	***2015-01-1036***	***The Application and Optimization of EGR-LNT Synergetic Control System on Lean-burn Gasoline Engine***
		Lei Liu, Zhijun Li, Boxi Shen, Tianjin University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00480 and SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Advances in Nox Reduction Technology (Part 2 of 3)

Session Code: ***PFL424***

Room 360 ***Session Time:*** ***1:00 p.m.***

These sessions will focus on `Advances in NOx Reduction Technology¿. The topics covered will include: new materials for lean NOx traps (LNT) and Selective Catalytic Reduction (SCR); system integration and durability; advances in NOx catalyst substrates, novel reductants and mixing designs.

Organizers - *Brad Adelman, Navistar Inc.; Danan Dou, John Deere Product Engineering Center; Magdi K. Khair, Magdiesel Technologies; Rahul Mital, General Motors Co.; Shyam Santhanam, Navistar Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1024***	***Optimized NH3 Storage Control for Next Generation Urea-SCR System***
		Hisao Haga, Hiroyuki Kojima, Naoko Fukushi, Naoki Ohya, Takuya Mito, Honda R&D Co Ltd
2:00 p.m.	***2015-01-1027***	***The Study of Exhaust Heating to Improve SCR Cold Start Performance***
		David Culbertson, Watlow; Magdi Khair, Magdiesel Technologies; Sanhong Zhang, Julian Tan, Jacob Spooler, Watlow
2:30 p.m.	***2015-01-1025***	***Identifying Limiters to Low Temperature Catalyst Activity***
		Gordon J. Bartley, Southwest Research Institute

3:00 p.m.	***2015-01-1037***	***Analytical Investigation of Urea Deposits in SCR System***
		Colin L. Weeks, Dan R. Ibeling, Sonia Han, Lindsey Ludwig, University of Northern Iowa; Ponnaiyan Ayyappan, John Deere Power Systems
3:30 p.m.	***2015-01-1020***	***Advanced Close Coupled SCR Compact Mixer Architecture***
		Joel Michelin, Philippe Nappez, Frederic Guilbaud, Christof Hinterberger, Eric Ottaviani, Faurecia Exhaust Systems Inc.; Catherine Gauthier, Philippe Maire, Thierry Couturier, RENAULT SAS
	2015-01-1026	***Low Temperature SCR Catalysts Optimized for Cold-Start and Low-Load Engine Exhaust Conditions (Written Only -- No Oral Presentation)***
		Padmanabha Reddy Ettireddy, Adam Kotrba, Tenneco Inc.; Thirupathi Boningari, Panagiotis Smirniotis, University of Cincinnati

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Multi-Dimensional Engine Modeling (Part 3 of 5)

Session Code: ***PFL120***

Room 410 A ***Session Time:*** ***8:00 a.m.***

The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling: advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers - *Hardo Barths, General Motors; Sarah Diakhaby, Computational Dynamics, Ltd.; Stefano Fontanesi, Universita degli Studi di Modena; Allen David Gosman, CD-adapco*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0379***	***Numerical Simulation and Experimental Verification of Gasoline Intake Port Design***
		Yongli Qi, Xinyu Ge, Caterpillar Inc.; Lichun Dong, Chongqing University
8:30 a.m.	***2015-01-0380***	***The Effect of the Throttle Valve Rotational Direction on the Tumble Motion at Different Partial Load Conditions***
		Stefania Falfari, Gian Marco Bianchi, Giulio Cazzoli, Federico Brusiani, Claudio Forte, Cristian Catellani, University of Bologna
9:00 a.m.	***2015-01-0396***	***Computational Study of a Turbulent Jet Ignition System for Lean Burn Operation in a Rapid Compression Machine***
		Bryce Charles Thelen, Gerald Gentz, Elisa Toulson, Michigan State University
9:30 a.m.	***2015-01-0391***	***3D Modeling of Particulate Matter from Spark Ignition Engines***
		Yoshihiro Sukegawa, Kazuhiro Oryoji, Hitachi Ltd. Hitachi Research Laboratory

10:00 a.m.	***2015-01-0373***	***Large-Eddy Simulation Study on Unsteady Effects in a Statistically Stationary SI Engine Port Flow***
		Tobias Falkenstein, Mathis Bode, RWTH Aachen University; Seongwon Kang, Sogang University; Heinz Pitsch, RWTH Aachen University; Toshiyuki Arima, Hiroyoshi Taniguchi, Honda R&D Co Ltd
10:30 a.m.	***2015-01-0398***	***Partially Stratified Charge Natural Gas Combustion: A LES Numerical Analysis***
		Lorenzo Bartolucci, Stefano Cordiner, Vincenzo Mulone, Vittorio Rocco, University of Rome Tor Vergata; Edward Chan, The University of British Columbia
11:00 a.m.	***2015-01-0395***	***A Scale Adaptive Filtering Technique for Turbulence Modeling of Unsteady Flows in IC Engines***
		Federico Piscaglia, Andrea Montorfano, Angelo Onorati, Politecnico di Milano

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00466 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Multi-Dimensional Engine Modeling (Part 4 of 5)

Session Code: ***PFL120***

Room 410 A ***Session Time:*** ***1:00 p.m.***

The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling: advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers - *Hardo Barths, General Motors; Sarah Diakhaby, Computational Dynamics, Ltd.; Stefano Fontanesi, Universita degli Studi di Modena; Allen David Gosman, CD-adapco*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0392***	***Validation of a Reduced Chemical Mechanism Coupled to CFD Model in a 2-Stroke HCCI Engine***
		Mohammad Izadi Najafabadi, Bart Somers, Eindhoven University of Technology; Abdul Aziz Nuraini, Universiti Putra Malaysia
1:30 p.m.	***2015-01-0382***	***Implementation of a Rotary Engine (Wankel Engine) in a CFD Simulation Tool with Special Emphasis on Combustion and Flow Phenomena***
		Johann Spreitzer; Felix Zahradnik; Bernhard Geringer
2:00 p.m.	***2015-01-0386***	***RANS Based Multidimensional Modeling of an Ultra-Lean Burn Pre-Chamber Combustion System with Auxiliary Liquid Gasoline Injection***
		Prasanna Chinnathambi, Michael Bunce, Luke Cruff, MAHLE Powertrain LLC
2:30 p.m.	***2015-01-0388***	***A Hybrid Wall Heat Transfer Model for IC Engine Simulations***
		Sanjin Saric, Branislav Basara, Advanced Simulation Technologies, AVL

3:00 p.m.	***2015-01-0376***	***Automatic Mesh Generation for CFD Simulations of Direct-Injection Engines***
		Tommaso Lucchini, Augusto Della Torre, Gianluca D'Errico, Gianluca Montenegro, Marco Fiocco, Amin Maghbouli, Politecnico di Milano
3:30 p.m.	***2015-01-0384***	***An Extension of the Dynamic Mesh Handling with Topological Changes for LES of ICE in OpenFOAM®***
		Andrea Montorfano, Federico Piscaglia, Angelo Onorati, Politecnico di Milano

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Career Development

Session Code: ***CONG301***

Room 410 B ***Session Time:*** ***9:30 a.m.***

Developing the next generation of leaders is vital to the automotive industry. SAE recognizes the importance of providing unique settings where engineering professionals can learn. These are delivered through seminars, group discussions and panel discussions that will express and challenge conventional thoughts on leadership.

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***Building a Brand to Grow Your Career***
		Today we live in a digital economy that forces people to disrupt and re-think everything that has worked historically. Come and learn strategies on how to effectively create your personal brand to help you compete in the evolving workplace. With virtually unlimited access to information ¿ anytime, anywhere and the rise of the ubiquitous content delivery platform it is critical to understand how to cut through the clutter so that your message is heard and communicated effectively. Each participant will learn how to become a storyteller, brand ambassador and curator of a user experience and a relevant online profile that is career ready.</p> You will Learn how to ... </br>- Create a Personal Brand with a Competitive Position </br>- Establish a Career Ready Digital Identity/Profile (Trans media ¿ Channels and Platforms)</br> - Manage your reputation and Online Personal Branded Hub</br>
		Hajj Flemings, CEO and Founder, Brand Camp University

10:30 a.m.	***ORAL ONLY***	***Preparing Young Professionals for the Leadership Opportunities Ahead***

When today¿s leaders retire, millennials will be expected to become the leaders of tomorrow. Today Boomers (1946 ¿ 1965) occupy 50% of the work force, while Gen X (1966-1980) and Millennials (1981 ¿ 1995) occupy 15% and 35% respectfully. Studies show that an average of 10,000 Boomers retire daily, extending an opportunity for Generation Xers and Millennials to replenish those leadership gaps. With the Gen X workforce being 2/3¿s smaller than that of the Boomers, a large number of leadership positions will remain for Millennials to fill. Not only will Millennials be charged with entering these positions, but they will also be expected to do so at earlier points in their careers than has traditionally been required.</p>
To be considered for these leadership positions, candidates must be innovative, consistent, and flexible while possessing integrity, vision and excellent written and verbal communication skills. Join us as we discuss these and other relevant topics with John Calabrese, retired VP Global Vehicle Engineering, General Motors. </p>
During this session you will learn:</br>
- How to be a leader without the title</br>
- What you can do today to be prepared for tomorrow¿s opportunities</br>
- What executives¿ are expecting from future leaders</br>

John A. Calabrese, Retired, VP Global Vehicle Engineering, General Motors Co.

Wednesday, April 22

Treating Uncertainty in Engineering Modeling and Data Acquisition

Session Code: ***IDM113***

Room 410 B ***Session Time:*** ***1:00 p.m.***

Developments of experimental and theoretical schemes in engineering disciplines are growing in complexity. Complexity can be attributed to extensive acquisition of measured data as well as higher order levels of computational analysis. Uncertainty is inherent in both experimental and analytical engineering schemes. This session is a collection of current methods and new directions in treating the presence of uncertainty in: 1) data acquisition and analysis and 2) in the mechanical systems.

Organizers - *Mehdi Modares, Illinois Institute of Technology; Zissimos Mourelatos, Oakland University*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0486***	***Managing System Performance Data Acquisition Process for Duration and Quality Assurance of Input Data***
		Jamshid Mohammadi, Mehdi Modares, Illinois Institute of Technology
1:30 p.m.	***2015-01-0482***	***Uncertainty Analysis of Static Plane Problems by Intervals***
		Naijia Xiao, Rafi L. Muhanna, Francesco Fedele, Georgia Institute of Technology; Robert L. Mullen, Univ. of South Carolina
2:00 p.m.	***2015-01-0484***	***Interval Finite Element Analysis of Structural Dynamic Problems***
		Naijia Xiao, Rafi L. Muhanna, Francesco Fedele, Georgia Institute of Technology; Robert L. Mullen, Univ. of South Carolina

2:30 p.m.	***2015-01-0483***	***The Quantification of Errors in the Measurement of Nonlinear Ultrasonics***
		Zeynab Abbasi, Mary Cunningham, Didem Ozevin, Univ. of Illinois
3:00 p.m.	***2015-01-0481***	***Bayesian Large Model Calibration Using Simulation and Measured Data for Improved Predictions***
		Joshua Bergerson, Ralph Muehleisen, Argonne National Laboratory
3:30 p.m.	***2015-01-0485***	***Buckling Analysis of Uncertain Structures Using Imprecise Probability***
		Mehdi Modares, Illinois Institute of Technology; Joshua Bergerson, Argonne National Laboratory

Wednesday, April 22

Climate Control (Part 3 of 3)

Session Code: ***HX104***

Room 411 A ***Session Time:*** ***8:00 a.m.***

Climate control is a defining vehicle attribute and is associated with brand image. Thermal performance and quality of climate control are both critical to customer satisfaction. The system has strong design interaction with other vehicle systems, while its primary objective is to deliver thermal comfort and occupant safety with low energy consumption. Localized Comfort, Secondary Fluids, Air Quality, Controls, System Sizing and HVAC consumer interface are just a few of the recent advances.

Organizers - *Bashar AbdulNour, General Dynamics Land Systems; Jeffrey Bozeman, General Motors Co.; Tao Zhan, California Air Resources Board*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0366***	***A Rule-Based Control for Fuel-Efficient Automotive Air Conditioning Systems***
		Cristian Rostiti, Stephanie Stockar, Marcello Canova, Ohio State University
8:30 a.m.	***2015-01-0363***	***Optimization of MAC Side Window Demister Outlet by Parametric Modelling through DFSS Approach***
		Vasanth Balashunmuganathan, Ramakrishna Nukala, Sathishkumar Sampath Kumar, Chrysler India Automotive Pvt, Ltd.; Murali Govindarajalu, FCA US LLC
9:00 a.m.	***2015-01-0360***	***Numerical Investigation of Droplets Condensation on a Windshield: Prediction of Fogging Behavior***
		Maryline Leriche, ITLR - Universitat Stuttgart; Wolfgang Roessner, Heinrich Reister, Daimler AG; Bernhard Weigand, ITLR - Universitat Stuttgart
9:30 a.m.	***2015-01-0358***	***Exhaust Heat Powered Adsorption Air Conditioner for Automotive Applications***
		Praveen Balaj Balakrishnan, EASi Engineering Pvt. Ltd.; Xiaoyong Yu, Homag Machinery Co., Ltd.; Ka Chung Chan, Chi Yan Tso, Christopher Chao, Hong Kong University of Science and Technology
10:00 a.m.	***2015-01-0359***	***Experimental Investigation of Factors Affecting Odors Generating from Mobile AC Systems Equipped with Idling-Time Reduction Systems***
		Satoki Uematsu, Calsonic Kansei Tech. Ctr.; Toshiyuki Uehara, Calsonic Kansei Corp.; Toshiya Uchida, Gursaran D. Mathur, CalsonicKansei North America Inc.

10:30 a.m.	***2015-01-0354***	***Analysis of Microorganism Causing Odor in an Air-Conditioning System***
		Ji Wan Kim, Tae Hee Lee, Hyundai Motor Company
11:00 a.m.	***2015-01-0365***	***Experimental Measurements of Stored Energy in Vehicle's Cockpit Module at Cold Temperatures***
		Gursaran D. Mathur, CalsonicKansei North America Inc.
	2015-01-0368	***Impact Of Condenser Opening Area On A/C Performance of the Automotive HVAC System (Written Only -- No Oral Presentation)***
		Janampally Sandeep Kumar Reddy, Maruti Suzuki India Ltd; Shailendra Deopa; Abhay Sharma; Piyush Aggarwal
	2015-01-0369	***Cabin Air Humidity Model and its Application (Written Only -- No Oral Presentation)***
		Rupesh Sonu Kakade, General Motors Corporation
	2015-01-0370	***Towards Improved Automotive HVAC Control through Internet Connectivity (Written Only -- No Oral Presentation)***
		Modar Horani, Osamah Rawashdeh, Oakland University
	2015-01-0371	***Fast and Efficient Detection of Shading of the Objects (Written Only -- No Oral Presentation)***
		Rupesh Sonu Kakade, Prashant Mer, General Motors Corporation
	2015-01-0372	***Least-Enthalpy Based Control of Cabin Air Recirculation (Written Only -- No Oral Presentation)***
		Rupesh Sonu Kakade, General Motors Corporation

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Wednesday, April 22

Fire Safety

Session Code: ***SS200***

Room 411 A ***Session Time:*** ***1:00 p.m.***

The fire safety session will focus on current developments in the fields of vehicle fire science, statistics, risks, assessment and mitigation. Papers addressing vehicle design, live-fire tests and fire investigation issues applicable to traditional, electric and alternatively fueled vehicles will be presented.

Organizers - *Mark William Arndt, Transportation Safety Tech. Inc.; Steven Hodges, Alion Science & Technology; Jeffrey Santrock, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1381***	***Test Protocols for Motorcoach Fire Safety***
		Jason P. Huczek, Southwest Research Institute; R. Rhoads Stephenson, Friedman Research Corp
1:30 p.m.	***2015-01-1382***	***Fire in electric cars***
		Lisa Schei Blikeng; Siril Hegén Agerup
2:00 p.m.	***2015-01-1379***	***Basic Study on Thermal Runaway Propagation through Lithium Ion Cells***
		Hideki Matsumura, Shinichiro Itoh, Kenichi Ando, National Traffic Safety & Enviro Lab

2:30 p.m.	***2015-01-1383***	***Full-scale Fire Tests of Electric Drive Vehicle Batteries***
		Andrew Blum, Richard Thomas Long, Exponent Inc.
3:00 p.m.	***2015-01-1380***	***Flammability of Plastics in Today's Automobiles***
		Kumar Kumar, Albemarle Corporation
3:30 p.m.	***ORAL ONLY***	***Compressed Natural Gas Vehicle Safety System and Method***
		Daniel McNicholas, Controlled Natural Gas LLC

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Planned by Fire Safety Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Thermal Systems Modeling and Simulation (Part 3 of 3): Power Train and Engines

Session Code: ***HX102***

Room 411 B ***Session Time:*** ***8:00 a.m.***

The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

Organizers - *Ales Alajbegovic, Exa Corporation; Alaa El-Sharkawy, FCA US LLC; Wilko Jansen, Jaguar & Land Rover; Jason Aaron Lustbader, National Renewable Energy Laboratory; Gursaran D. Mathur, CalsonicKansei North America Inc.; Kumar Srinivasan, FCA US LLC; Sudhi Uppuluri, Computational Sciences Experts Group*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0327***	***Conjugate Heat Transfer and Thermo-Mechanical Heat Cycle Analysis of an Automotive Exhaust Muffler System***
		Elizabeth M. Patterson, Iman Goldasteh, Salamah Maaita, CalsonicKansei North America, Inc.
8:30 a.m.	***2015-01-0336***	***Model Predictive Control for Engine Powertrain Thermal Management Applications***
		Amey Karnik, Ford Motor Co; Daniel Pachner, Adrian M. Fuxman, David Germann, Honeywell Automotive Software; Mrdjan Jankovic, Ford Research and Innovation Center; Christopher House, Ford Motor Co
9:00 a.m.	***2015-01-0342***	***Simulated Real-World Energy Impacts of a Thermally Sensitive Powertrain Considering Viscous Losses and Enrichment***
		Forrest Jehlik, Argonne National Laboratory; Eric Wood, Jeffrey Gonder, Sean Lopp, National Renewable Energy Laboratory
9:30 a.m.	***2015-01-0340***	***Challenges and Opportunities of Numerically Simulating the Idle Load Case for Vehicle Thermal Management***
		Jan Eller, IVK / FKFS University of Stuttgart; Thomas Binner, Heinrich Reister, Daimler AG; Nils Widdecke, Jochen Wiedemann, IVK / FKFS University of Stuttgart
10:00 a.m.	***2015-01-0343***	***An Integrated Simulation Methodology of Thermal Management Systems for the CO₂ Reduction after Engine Cold Start***
		Carlo N. Grimaldi, Claudio Poggiani, Alessandro Cimarello, Universita degli Studi di Perugia; Matteo De Cesare, Giovanni Osbat, MAGNETI MARELLI SpA

10:30 a.m.	***2015-01-0341***	***Synergetic 1D-3D-Coupling in Engine Development Part I: Verification of Concept***
		Georg Rauch, Johannes Lutz, Martin Werner, Sagar Gurwara, BMW AG; Peter Steinberg, TU-Cottbus (BTU)
	2015-01-0344	***Cabin Thermal Comfort Simulation of Truck Based on CFD (Written Only -- No Oral Presentation)***
		Yingchao Zhang, Weijiang Meng, ASCL, Jilin University; Tao Chen, Yong Hao, FAW Jie Fang Automotive Company, Ltd.; Wei Ding, ASCL, Jilin University
	2015-01-0346	***The Research of Supercooled Boiling in Bridge Zone of Cylinder Head (Written Only -- No Oral Presentation)***
		Lei Dongxu, Minli Bai, Jizu Lv, Peng Wang, Chengzhi Hu, Yuyan Wang, Dalian University of Technology
	2015-01-0347	***Experimental and Numerical Investigation of Thermal Comfort Zone of an Agricultural Tractor Operator (Written Only -- No Oral Presentation)***
		Logesh Shankar Somasundaram, S Sriraman, Rakesh Verma, Tractors & Farm Equipment, Ltd.
	2015-01-0348	***Analysis of the Thermal Deformation in an Automotive Exhaust-Based Thermoelectric Generator (Written Only -- No Oral Presentation)***
		Chuqi Su, Meng Xu, Wuhan University of Technology; Naiqiang Tong, Guangzhou Automobile Group Co. Ltd; Yulian Chen, Wuhan University of Technology
	2015-01-0349	***Optimization of a Vehicle Under Hood Airflow Using 3D CFD Analysis (Written Only -- No Oral Presentation)***
		Suvankar Manna, Yogendra Singh Kushwah, Subros, Ltd.
	2015-01-0350	***Thermoelectric Module Temperature Stability Control for the Vehicle Engine Exhaust Heat Recovery (Written Only -- No Oral Presentation)***
		Zhi Li, Gangfeng Tan, Jing Cai, Zhongjie Yang, YiRui Wang, Wuhan University of Technology; Haobo Xu, Heli Specal Auto Manufacture Co., Ltd.

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Planned by Thermal Management Activity / EMB Land and Sea Group

Wednesday, April 22

Thermal System Components

Session Code: ***HX101***

Room 411 B ***Session Time:*** ***1:00 p.m.***

Thermal Management represents one of the key aspects of the vehicle development. It ensures that the temperatures in the underhood and underbody areas are in desired ranges, that thermal systems operate as designed, and that no component operation is at risk due to excessive temperatures. This session covers the design of thermal components and systems and their vehicle integration.

Organizers - *Ronald Semel, General Motors Co.; Gursaran D. Mathur, CalsonicKansei North America Inc.; Alaa El-Sharkawy, FCA US LLC; Ramesh Goyal*

Time	***Paper No.***	***Title***

1:00 p.m.	***2015-01-1693***	***The Characterisation of a Centrifugal Separator for Engine Cooling Systems***
		Mark Allen, Graham Hargrave, Petros Efthymiou, Loughborough University; Viv Page, Jean-Yves Tillier, Chris Holt, Caterpillar
1:30 p.m.	***2015-01-1689***	***Underhood Air Duct Design to Improve A/C System Performance by Minimizing Hot Air Recirculation***
		Xu Song, Ryan Fortier, Scott Sarnia, Hyundai-Kia America Technical Center Inc
2:00 p.m.	***2015-01-1694***	***Phase Separation in Second Header of MAC Condenser***
		Jun Li, Predrag Hrnjak, Univ of Illinois
2:30 p.m.	***2015-01-1690***	***Characterization of Different Types of Diesel (EGR Cooler) Soot Samples***
		Cristina Arnal, Yolanda Bravo, Carmen Larrosa, Valeo; Valentina Gargiulo, Michela Alfè, Anna Ciajolo, Istituto di Ricerche Sulla Combustione; María Ujué Alzueta, Ángela Millera, Rafael Bilbao, I3A-Universidad de Zaragoza
3:00 p.m.	***2015-01-1691***	***Development of State of the Art Compact and Lightweight Thermoelectric Generator Using Vacuum Space Structure***
		Manabu Matsumoto, Masayoshi Mori, Tomohide Haraguchi, Makoto Ohtani, Tomoya Kubo, Kanji Matsumoto, Hiroshi Matsuda, Honda R&D Co., Ltd.
3:30 p.m.	***2015-01-1695***	***Development of Mg₂(SiSn) Thermoelectric Material for Automobile***
		Satoki Tada, Takahiro Nagai, Naoki Shioda, Hirofumi Fujiu, Shunji Kumagai, Hideaki Abe, Mitsuba Corp.; Yukihiro Isoda, Yoshikazu Shinohara, National Institute for Materials Science
4:00 p.m.	***2015-01-1692***	***Single Layer Cooling Module for A-B Segment Vehicles***
		Walter Ferraris, Fausto Di Sciullo, Carloandrea Malvicino, Francesco Vestrelli, Fabrizio Beltramelli, Giancarlo Gotta, CRF Spca

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Planned by Thermal Management Activity / EMB Land and Sea Group

Wednesday, April 22

Energy Efficiency of Thermal Systems

Session Code: ***HX103***

Room 411 C ***Session Time:*** ***8:00 a.m.***

Proper thermal management can significantly contribute to overall system energy efficiency. This session highlights the latest developments in thermal management energy efficiency.

Organizers - *Jeffrey Bozeman, General Motors Co.; Gursaran D. Mathur, CalsonicKansei North America Inc.; Ronald Semel, General Motors Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1604***	***A Smart Engine Cooling System - Experimental Study of Integrated Actuator Transient Behavior***
		Tianwei (Thomas) Wang, John R. Wagner, Clemson Univ.

8:30 a.m.	***2015-01-1609***	***New MAC Technologies: Fuel Efficiency Effect in Real Driving of the Air Intake Flap Management***
		Roberto Monforte, Francesco Lovuolo, Matteo Rostagno, Riccardo Seccardini, CRF Spca; Teron Matton, University of Windsor
9:00 a.m.	***2015-01-1605***	***Development of the Waste Heat Management System***
		Hee Sang Park, Hyundai Motor Co. & KIA Motors Corp.
9:30 a.m.	***2015-01-1606***	***Investigating the Potential of Waste Heat Recovery as a Pathway for Heavy-Duty Exhaust Aftertreatment Thermal Management***
		Saroj Pradhan, Arvind Thiruvengadam, Pragalath Thiruvengadam, Marc C. Besch, Daniel Carder, West Virginia University
10:30 a.m.	***2015-01-1603***	***Fabricating and Testing of a Thermoelectric Generator Based on Silicon Nanowires***
		Ahmed A. Abdel-Rehim, Ahmed A. Hamouda, The British University in Egypt
	2015-01-1607	***Guidelines for Effectively Applying an ORC System to Rural Alaska Diesel Power Industry Based on Experimental Data (Written Only -- No Oral Presentation)***
		Chuen-Sen Lin, Vamshi Avadhanula, Vamsi Mokkapati, Daisy Huang, Brent Sheets, University of Alaska Fairbanks
	2015-01-1608	***Effects of an ORC Based Heat Recovery System on the Performances of a Diesel Engine (Written Only -- No Oral Presentation)***
		Davide Di Battista, Marco Mauriello, Roberto Cipollone, University of L'Aquila
	2015-01-1610	***The Organic Medium Physical State Analysis for Engine Exhaust Thermal Recovery (Written Only -- No Oral Presentation)***
		Xiaomeng Shen, Gangfeng Tan, Quan Zhou, Zhongjie Yang, Min Hua, Wuhan University of Technology
	2015-01-1611	***Boiling Coolant Vapor Fraction Analysis for Cooling the Hydraulic Retarder (Written Only -- No Oral Presentation)***
		Wei Liu, Gangfeng Tan, Xuexun Guo, Jiafan Li, Yuanqi Gao, Wei Li, Wuhan University of Technology
	2015-01-1612	***Integrated Cooling Evaporation System for the Hydraulic Retarder (Written Only -- No Oral Presentation)***
		Wei Liu, Gangfeng Tan, Jiafan Li, Xin Li, Fuzhao Mou, Yongqiang Ge, Wuhan University of Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00512 and SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Thermal Management Activity / EMB Land and Sea Group

Wednesday, April 22

Automotive Tribology (Part 1 of 2)

Session Code: ***M214***

Room 411 C ***Session Time:*** ***1:00 p.m.***

This technical session focuses on fundamental and applied research that lowers frictional energy losses and enhances reliability and durability of automotive components. The topics include, but not limited to engine and drivetrain tribology, seals, bearing and gear lubrication, materials tribology, surface engineering, lubricants and additives, computer-aided tribology, tribotesting, as well as friction, wear and lubrication fundamentals.

Organizers - *Yucong Wang, General Motors Co.; Qingmin Yang, Federal-Mogul Corp.; Qian Zou, Oakland University*

Chairpersons - *Qian Zou, Oakland University*

Moderators - *Qingminn Yang, Federal-Mogul Corp*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0679***	***Development of a Novel Ultrasonic Viscometer for Real Time and In-Situ Applications in Engines***
		Michele Maria Schirru, University of Sheffield; Mike Sutton, Lubrizol Ltd; Rob Dwyer-Joyce, University of Sheffield; Oliver Smith, Lubrizol Corp; Robin Mills, University of Sheffield
1:30 p.m.	***2015-01-0685***	***Development of Si-DLC Coated Tappet for Improved Wear Resistance***
		Jeong Uk Ahn, Sung Moon Choi, Hyundai Motor Company
2:00 p.m.	***2015-01-0687***	***Surface Effect of a PEO Coating on Friction at Different Sliding Velocities***
		Guang Wang, Xueyuan Nie, Jimi Tjong, University of Windsor
2:30 p.m.	***2015-01-0686***	***Wear Properties of Car Engine Shaft in Actual Engine Environment***
		Kenji Matsumoto, Hideharu Koga, Honda R&D Co., Ltd.; Yuji Mihara, Tokyo City University
3:00 p.m.	***2015-01-0681***	***Effect of Surface Irregularities of Piston Ring and Sleeve Materials in High-Speed Reciprocating Test***
		Yuki Ono, Kenji Matsumoto, Honda R&D Co., Ltd.
	2015-01-0689	***Cryogenic Treatment of SG Iron for Disc Brake Application (Written Only -- No Oral Presentation)***
		R. Rajendran, G. Ramanjaneyulu, T R Tamilarasan, B S Abdur Rahman University; Vladimir I. Semenov, Ufa State Aviation Technical University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00488, and also individually. To purchase visit collections.sae.org

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

IVT / CVT

Session Code: ***PFL630***

Room 412 A ***Session Time:*** ***8:00 a.m.***

This Session includes papers on IVT/CVT systems and related topics.

Organizers - *Joel Gunderson, Farzad Samie, General Motors Co.; Robert A. Smithson, Dana Holding Corporation*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1102***	***Development of High Fatigue Strength Maraging Steel for CVT Belt***
		Katsuhiko Ohishi, Toshihiro Uehara, Ichirou Kishigami, Hitachi Metals, Ltd
8:30 a.m.	***2015-01-1101***	***Development of New Continuously Variable Transmission for 2.0-Liter Class Vehicles***
		Jun ¿akamagi, Tetsuya Kono, Ryoji Habuchi, Naoki Nishimura, Masahiro Tawara, Naoki Tamura, Toyota Motor Corp.

9:00 a.m.	***2015-01-1103***	***Improvement of Transmission Efficiency in CVT Shifting Mechanism Using Metal Pushing V-Belt***
		Taiki Ando, Tooru Yagasaki, Shuji Ichijo, Kyohei Sakagami, Soichiro Sumida, Honda R&D Co Ltd
9:30 a.m.	***2015-01-1104***	***Progress in Demonstration Prototypes Using the Continuously Variable Planetary Technology in a C-Class RWD Car and a Fork Lift Truck***
		Patrick Sexton, Dana; Robert A. Smithson, Gordon McIndoe, Dana Holding Corp.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00003, and also individually. To purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

CAD/CAM/CAE Technology (Part 3 of 3)

Session Code: ***SS101***

Room 412 A ***Session Time:*** ***10:00 a.m.***

This session publishes papers and presentations advancing the knowledge in product design, manufacturing processes, and engineering analysis using the state-of-the-art computer technology. The scope includes such areas as CFD, manufacturing and assembly simulation, crash-worthiness, computational mechanics, mold flow, ride simulation, ergonomic design, NVH, reverse engineering, etc. Developments in numerical methods applicable to automotive engineering problems will also be considered.

Organizers - *Randy Gu, Oakland University; Jared Song, General Motors Co.; Yu J. Teng; Qichao Zheng, General Motors Co.*

Time	***Paper No.***	***Title***
10:00 a.m.	***ORAL ONLY***	***Realistic Visualization of Crash Results***
		Eric Dehoff, Honda R & D Americas Inc.
10:30 a.m.	***2015-01-1324***	***Door Slam CAE Method Investigation***
		Guangtian Gavin Song, Chin-An Tan, Wayne State University
11:00 a.m.	***2015-01-1345***	***Investigation of Stresses and Deflection in Multi Stage Leaf Spring of Heavy Duty Vehicle by FEM and Its Experimental Verification***
		Srinivas Kurna, Arpit Mathur, Sandeep Sharma, Volvo Group
	2015-01-1326	***Influence of Linear and Parabolic Elements in Structural Rigidity of Converter Mounting Brackets (Written Only -- No Oral Presentation)***
		Sivanandi Rajadurai, Guru Prasad Mani, Kavin Raja, Sundaravadivelu Mohan, Sharda Motor Industries, Ltd.
	2015-01-1328	***Research and Verification on Ideal Stiffness Characteristic Curve of Suspension Coil Springs (Written Only -- No Oral Presentation)***
		Da-Wei Gao, Xing-Xing Huang, Jun Xu, Song-Lin Zheng, University of Shanghai for Science & Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00470, and also individually. To purchase visit collections.sae.org

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity; Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Driveline Components/Subsystems

Session Code: ***PFL670*** ***1:00 p.m.***

Room 412 A ***Session Time:***

This session includes papers on the full array of transmission and driveline related components

Organizers - *Patrick Robert Darmstadt, Boeing Vertical Lift; Chunhao Lee, General Motors Co.; Brian Carl Schneidewind, Toyota Technical Center USA Inc.*

Time	Paper No.	Title
2:00 p.m.	***2015-01-1128***	***Driveline Optimization by Mini Crossmember***
		Amrut A. Patki, Navistar Inc.
3:00 p.m.	***~~2015-01-1137~~***	***Hydraulic Performance of Transmission Gerotor Pump***
	ORAL ONLY	*Tony Asghari, Michael Miller, Continental Automotive*
4:00 p.m.	***2015-01-1136***	***Boost System with Auxiliary Gas Turbine Used for Recovering Diesel Engine Power at Plateau Conditions***
		Liu Yang; Chaochen Ma, Beijing Institute of Technology
	2015-01-1127	***The Experimental Study and Performance Analysis of Air-Friction Reduction System for Hydraulic Retarder (Written Only -- No Oral Presentation)***
		Wenbin Liu, Gangfeng Tan, Xiaoqing Tian, Zhiqiang Hu, Yuanqi Gao, Zhi Li, Junyi Yuan, Wei Liu, Wuhan University of Technology
	2015-01-1130	***Dynamics of Overrunning Clutches of Relay Type (Written Only -- No Oral Presentation)***
		Sergei Aliukov, Andrei Keller, Alexander Alyukov, South Ural State University
	2015-01-1132	***Transient Dynamic Analysis of Self-Locking Gears (Written Only -- No Oral Presentation)***
		Jiaxing Zhan, Mohammad Fard, RMIT University
	2015-01-1133	***Design and Testing of a Novel Multiple-Disc Magneto-Rheological Clutch Applied in Vehicles (Written Only -- No Oral Presentation)***
		Liangxu Ma, Liangyao Yu, Jian Song, WenWei Xuan, Xuhui Liu, Tsinghua University
	2015-01-1135	***Detent Profile Optimization to Improve Shift Quality of Manual Transmissions (Written Only -- No Oral Presentation)***
		Karthik Bhargav Siriyapuraju, Viswasai Konduru, Prithiviraj Eswaramoorthy, Mahindra & Mahindra Ltd.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00003, and also individually. To purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Driveline Modeling (Part 1 of 2)

Session Code: ***PFL680***

Room 412 B ***Session Time:*** ***8:00 a.m.***

This session covers transmission and driveline modeling, including topics related to transmission hardware, software, and system integration.

Organizers - *Dongxu Li, Thomas Martin, General Motors Co.; David Popejoy, Ford Motor Co.*

Time	Paper No.	Title

8:00 a.m.	***2015-01-1141***	***Normally-Engaged Dual-Piston Clutch for Engine Stop-Start Application***
		Chengwu Duan, Farzad Samie, General Motors Co.; Kumaraswamy Hebbale, GM R&D Center; Dongxu Li, Chunhao Lee, General Motors Co.
8:30 a.m.	***2015-01-1147***	***Transmission Dynamic Modeling and Parametric NVH Analysis***
		Dongxu Li, General Motors Co.
9:00 a.m.	***2015-01-1144***	***Dry Dual Clutch Transmission (DCT) Thermal Model***
		Kumaraswamy Hebbale, Farzad Samie, Jonathan Kish, General Motors Company
9:30 a.m.	***2015-01-1146***	***Estimation of Wet Clutch Friction Parameters in Automotive Transmissions***
		Matthew Barr, Krishnaswamy Srinivasan, Ohio State University
10:00 a.m.	***2015-01-1145***	***Automatic Transmission Gear Ratio Optimization and Monte Carlo Simulation of Fuel Consumption with Parasitic Loss Uncertainty***
		Darrell Robinette, Daniel Wehrwein, General Motors Co.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00513, and also individually. To purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Driveline Modeling (Part 2 of 2)

Session Code: ***PFL680***

Room 412 B ***Session Time:*** ***1:00 p.m.***

This session covers transmission and driveline modeling, including topics related to transmission hardware, software, and system integration.

Organizers - *Dongxu Li, Thomas Martin, General Motors Co.; David Popejoy, Ford Motor Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1142***	***Development and Testing of an Automatic Transmission Shift Schedule Algorithm for Vehicle Simulation***
		Kevin Newman, John Kargul, Daniel Barba, US Environmental Protection Agency
1:30 p.m.	***2015-01-1140***	***Benchmarking and Modeling of a Conventional Mid-Size Car Using ALPHA***
		Kevin Newman, John Kargul, Daniel Barba, US Environmental Protection Agency
2:00 p.m.	***2015-01-1143***	***Investigation of Black Box Modeling Approaches for Representation of Transient Gearshift Processes in Automotive Powertrains with Automatic Transmission***
		Ivan Rot, Daniel Fritz Plöger, Stephan Rinderknecht, TU Darmstadt
2:30 p.m.	***2015-01-1138***	***Prediction of Friction Drive Limit of Metal V-Belt***
		Kyohei Sakagami, Honda R&D Co., Ltd.

	2015-01-1148	***Analysis on Synchronizer of Manual Transmission using Finite Element Analysis (Written Only -- No Oral Presentation)***
		Xi Li; Weiguo Zhang, Jinning Li, Huazhong University of Science and Tech; Ming Jiang, Dongfeng Commercial Vehicle Tech Ctr; Yunqing Zhang, Huazhong University of Science and Tech

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00513, and also individually. To purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Welding and Joining and Fastening

Session Code: ***M216***

Room 413 A ***Session Time:*** ***8:00 a.m.***

We are seeking papers related to welding and joining of similar or dissimilar materials of plastics, composites, aluminum, magnesium, titanium, and conventional and advanced high strength steels. Papers related to friction stir (spot) welding, ultrasonic welding, resistance welding, arc welding, laser welding, brazing or soldering, riveting and bolting, and adhesive joining are welcome. Papers related to strength, fracture and fatigue of welds, joints and fasteners are also welcome.

Organizers - *Jwo Pan; Michael Santella; Tau Tyan, Ford Motor Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0702***	***Nondestructive Evaluation of Adhesively-Joined Aluminum Alloy Sheets Using an Ultrasonic Array***
		Bita Ghaffari, Jonathan Dekam, Kevin Haddix, Kimberly Lazarz, Ford Motor Company; Sergey Titov, Roman Maev, Inst. for Diagnostic Imaging Research
8:30 a.m.	***2015-01-0708***	***Stress Intensity Factor Solutions for Gas Metal Arc Welds in Lap-Shear Specimens***
		Catherine M. Amodeo, Johnson Controls; Jwo Pan, University of Michigan
9:00 a.m.	***2015-01-0705***	***Resistance Spot Welding Process with Pulsed Current Pattern to Improve Joint Strength of Ultra High Strength Steel Sheets***
		Koichi Taniguchi, Hiroshi Matsuda, Rinsei Ikeda, Kenji Oi, JFE Steel Corporation
9:30 a.m.	***2015-01-1754***	***Stress Intensity Factor Solutions for Dissimilar Welds in Lap-Shear Specimens of Steel, Magnesium, Aluminum and Copper Sheets***
		Wei-Jen Lai, Jwo Pan, University of Michigan
10:00 a.m.	***2015-01-0701***	***Impact Welding of Aluminum Alloy 6061 to Dual Phase 780 Steel Using Vaporizing Foil Actuator***
		Anupam Vivek, Bert Liu, Ohio State University; Daniel Sakkinen, Mark Harris, Johnson Controls Inc; Glenn Daehn, Ohio State University
10:30 a.m.	***2015-01-0706***	***Failure Mode and Fatigue Behavior of Dissimilar Laser Welds in Lap-Shear Specimens of Low Carbon Steel and HSLA Steel Sheets***
		Zheng-Ming Su, Pai-Chen Lin, National Chung Cheng Univ.; Wei-Jen Lai, Jwo Pan, University of Michigan
11:00 a.m.	***~~2015-01-0700~~*** ***ORAL ONLY***	***Failure Mode and Fatigue Behavior Flow Drill Screw Joints in Aluminum Sheets***
		Seung Hoon Hong, University of Michigan; Jwo Pan; Aindrea Campbell, Xuming Su, Ford Motor Co

11:30 a.m.	***ORAL ONLY***	***Using Adhesive to Advance Fuel Efficiency of Future Vehicle Body Structures***
		Benjamin J. Meaige, Honda R & D Americas Inc.

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 22

Fluid flow Measurement & Analysis

Session Code: ***PFL140***

Room 413 A ***Session Time:*** ***1:00 p.m.***

The focus of this session is the measurement and analysis of in-cylinder and port flows in research and production engines. Topics may including PIV, PTV, LDV, and fluorescent tracer measurements of velocity and turbulence characteristics and modeling analysis of engine flows.

Organizers - *Oivind Andersson, Lund University; Matthew J. Hall, Univ. of Texas-Austin; Benjamin Petersen, Ford Motor Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1696***	***Principal Component Analysis and Study of Port-Induced Swirl Structures in a Light-Duty Optical Diesel Engine***
		Federico Perini, University of Wisconsin; Kan Zha, Stephen Busch, Paul Miles, Sandia National Laboratories; Rolf D. Reitz, University of Wisconsin
1:30 p.m.	***2015-01-1699***	***Characterization of Flow Asymmetry During the Compression Stroke Using Swirl-Plane PIV in a Light-Duty Optical Diesel Engine with the Re-entrant Piston Bowl Geometry***
		Kan Zha, Stephen Busch, Paul C. Miles, Sandia National Laboratories; Sameera Wijeyakulasuriya, Saurav Mitra, P. K. Senecal, Convergent Science, Inc.
2:00 p.m.	***2015-01-1697***	***The Influence of Cylinder Head Geometry Variations on the Volumetric Intake Flow Captured by Magnetic Resonance Velocimetry***
		Daniel Freudenhammer, TU Darmstadt; Brian Peterson, University of Edinburgh; Carl-Philipp Ding, Benjamin Boehm, Sven Grundmann, TU Darmstadt
2:30 p.m.	***2015-01-1698***	***Experimental and Numerical Investigations of Tumble Motion on an Optical Single Cylinder Engine***
		Balamurugan Rathinam, RNTBCI; Frederic Ravet, Renault; Cedric Servant, Renault Technocentre; Laurent Delahaye, RENAULT SAS; Upendra Naithani, RNTBCI

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Systems Diagnostics (Part 1 of 2)

Session Code: ***AE203***

Room 413 B ***Session Time:*** ***8:00 a.m.***

Vehicle diagnostics deals with the development, delivery and execution of diagnostic procedures for vehicle systems. This session will explore new technologies, processes and trends in the area of vehicle diagnostics.

Organizers - *Robert Gruszczynski, Volkswagen of America; Kathleen E. Kedzior, MAHLE Powertrain LLC*

Time	***Paper No.***	***Title***

8:00 a.m.	***2015-01-0206***	***ADvanced Encryption STAndard (ADESTA) for Diagnostics over CAN***
		Jihas Khan, Tata Elxsi, Ltd.
8:30 a.m.	***2015-01-0210***	***Misfire Detection in a Dynamic Skip Fire Engine***
		S Kevin Chen, Li-Chun Chien, Masaki Nagashima, Joel Van Ess, Sam Hashemi, Tula Technology Inc.
9:00 a.m.	***2015-01-0208***	***Detection of Unintended Acceleration in Longitudinal Car Following***
		Hongtao Yu; Reza Langari, Texas A&M Univ.
9:30 a.m.	***ORAL ONLY***	***OBD and ODX - ISO Compliant Components for OBD II***
		Andreas Hege, RA Consulting GMBH
10:00 a.m.	***2015-01-0207***	***Combined Frequency Domain Analysis and Fuzzy Logic for Engine Misfire Diagnosis***
		Xiping Ma, ZF lenksysteme(Shanghai) Management; Zhenchun Xia; Haotian Wu, Purdue Univ-West Lafayette; Xianan Huang, Univ of Michigan
10:30 a.m.	***2015-01-0205***	***New Technology to Speed Vehicle Electrical System Fault Rectification***
		Steve Trythall, Mentor Graphics Corp.
11:00 a.m.	***ORAL ONLY***	***Challenges for Inspection and Maintenance***
		Robert Gruszczynski, Volkswagen of America

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Wednesday, April 22

Systems Diagnostics (Part 2 of 2)

Session Code: ***AE203***

Room 413 B ***Session Time:*** ***1:00 p.m.***

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Organizers - *Robert Gruszczynski, Volkswagen of America; Kathleen E. Kedzior, MAHLE Powertrain LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***ORAL ONLY***	***Implementing SAE J2892 - Graphics-Based Service Information and Enhancing the Standard***
		Arnold Taube, John Deere World Headquarters

1:30 p.m.	***Panel***	***Technical Expert Panel Discussion: SAE's J817 - Engineering Design Serviceability Guidelines***

Construction and Industrial Machinery treats product maintenance in terms of 1940s through 1970s approaches. Today's concepts of Condition Based Maintenance and Prognostics deserve to be included. Furthermore, service consists of maintenance, diagnosis and repair. J817 only addresses maintenance. Learn about a new project to update J817 to address these issues. It is an exciting opportunity to make long-lasting contributions to the design and manufacture of more productive and repairable products.

Organizers - *Robert Gruszczynski, Volkswagen of America; Kathleen E. Kedzior, MAHLE Powertrain LLC*

Moderators - *Mark N. Pope, General Motors Co.*

Panelists - *Joseph Barkai, Management Consultant; Jeffrey Minter, Wisconsin Technical College System; Daniel C. Morris, Caterpillar Inc.; Peter Subke, Softing Automotive Electronics Gmbh; Arnold Taube, John Deere World Headquarters; James E. Wagner, Caterpillar Inc.;*

3:00 p.m.	***Panel***	***Technical Expert Panel Discussion: Windows Based Diagnostic Platforms Present Special Challenges for Automotive Technicians***

This panel will cover the challenges and concerns of laptop based diagnostic platforms and how to avoid the common mistakes that limit functions and increase downtime.

Organizers - *Robert Gruszczynski, Volkswagen of America; Kathleen E. Kedzior, MAHLE Powertrain LLC*

Moderators - *Kurt Immekus, Volkswagen Group of America Inc.*

Panelists - *Dave Bardelski, Ford Motor Company; Louis Scott Bolt, Mahle Inc.;*

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Wednesday, April 22

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Time	***Paper No.***	***Title***

ORAL ONLY	***Learn more about the panelists***
	Jeffrey Minter, Wisconsin Technical College System; Daniel C. Morris, Caterpillar Inc.; Peter Subke, Softing Automotive Electronics GmbH; Arnold Taube, John Deere World Headquarters; James E. Wagner, Caterpillar Inc.

Wednesday, April 22

Technical Expert Panel Discussion: Windows Based Diagnostic Platforms Present Special Challenges for Automotive Technicians

Session Code: ***AE203***

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This panel will cover the challenges and concerns of laptop based diagnostic platforms and how to avoid the common mistakes that limit functions and increase downtime.

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Moderators - *Kurt Immekus, Volkswagen Group of America Inc.*

Panelists - *Dave Bardelski, Ford Motor Company; Louis Scott Bolt, Mahle Inc.;*

Wednesday, April 22

Control System Design & Calibration (Part 1 of 4)

Session Code: ***PFL130***

Room 414 A ***Session Time:*** ***8:00 a.m.***

Separate sub-sessions cover powertrain control, calibration, and system-level optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and subsystems related to energy management in conventional and hybrid operation, considering the simultaneous optimization of hardware design parameters and control software calibration parameters.

Organizers - *Kody G. Klindt, IAV Automotive Engineering Inc.; Feilong Liu, Delphi Corp.; Xuefei Chen, FCA US LLC; Peter J. Maloney, MathWorks; Matti Vint, VALEO*

Chairpersons - *Matti Vint, VALEO; Peter J. Maloney, MathWorks; Kody G. Klindt, IAV Automotive Engineering Inc.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1620***	***Estimation Algorithms for Low Pressure Cooled EGR in Spark-Ignition Engines***
		Feilong Liu, Jeffrey Pfeiffer, Delphi Corp.
8:30 a.m.	***2015-01-1639***	***An Investigation into the Use of the EGR Cooler Pressure Drop to Measure EGR Flow Rate***
		Indranil Brahma, Odinmma Ofili, Matthew Campbell, Henrique Chiang, Vincent Giralo, Peter Stryker, Daniel Johnson, Aaron Clark, Bucknell Univ.
9:00 a.m.	***2015-01-1637***	***A Study of Fuel Economy Improvement on US Fuel Economy Test Cycle by Model Based Cooled HP EGR System and Robust Logic through S-FMEA***
		SeungBum Kim, SeongMin Park, DongUk Han, Hyundai Motor Co.

9:30 a.m.	***2015-01-1617***	***Turbocharger Turbine Inlet Isentropic Pressure Observer Model***
		Brien Fulton, Ford Motor Co.; Simon Petrovic, Ford Forschungszentrum Aachen GmbH; Michiel Van Nieuwstadt, Jon Dixon, Ford Motor Co.; Daniel Roettger, Ford Forschungszentrum Aachen GmbH; Andres Arevalo, Ford Motor Co.
10:00 a.m.	***2015-01-1623***	***Estimation of the Engine Thermal State by in-Cylinder Pressure Measurement in Automotive Diesel Engines***
		Ivan Arsie, Rocco Di Leo, Stefano Falco, Cesare Pianese, Università di Salerno; Matteo De Cesare, Magneti Marelli
10:30 a.m.	***2015-01-1619***	***Continued Development of a High-Fidelity 1D Physics-Based Engine Simulation model in MATLAB/Simulink***
		Bradley Thompson, Hwan-Sik Yoon, University of Alabama
11:00 a.m.	***2015-01-1629***	***An Objective Evaluation of Characterisation Matrix for Two Wheeler Powertrain with Control Oriented Mathematical Model***
		Himadri Bushan Das, Imperial College & TVS Motor Company Ltd; Simos A Evangelou, Imperial College; Samraj Jabez Dhinagar, TVS Motor Company Ltd
	2015-01-1643	***Detection of Stationary Operating States of Internal Combustion Engines (Written Only -- No Oral Presentation)***
		Benedikt von Imhoff, Johannes Zweck, Georg Wachtmeister, TU Muenchen

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00465 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Control System Design & Calibration (Part 2 of 4)

Session Code: ***PFL130***

Room 414 A ***Session Time:*** ***1:00 p.m.***

Separate sub-sessions cover powertrain control, calibration, and system-level optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and subsystems related to energy management in conventional and hybrid operation, considering the simultaneous optimization of hardware design parameters and control software calibration parameters.

Organizers - *Kody G. Klindt, IAV Automotive Engineering Inc.; Feilong Liu, Delphi Corp.; Xuefei Chen, FCA US LLC; Peter J. Maloney, MathWorks; Matti Vint, VALEO*

Chairpersons - *Peter J. Maloney, MathWorks; Matti Vint, VALEO; Kody G. Klindt, IAV Automotive Engineering Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1630***	***Generic software architecture for cost efficient powertrain electrification***
		Wolfgang Ebner, Michael Stolz, Markus Bachinger, Virtual Vehicle Research Center; Evgeny Korsunsky, AVL LIST GmbH
1:30 p.m.	***2015-01-1633***	***Design of Multitask Template for Diesel Engine Control Software Based on Real-Time Operating System***
		Donghao Hao, Changlu Zhao, Ying Huang, Xiaoyan Dai, Jiawei Liu, Beijing Institute of Technology

2:00 p.m.	***2015-01-1638***	***Engine-Out NOx Models for on-ECU Implementation: A Brief Overview***
		Dejan Kihas, Michael R. Uchanski, Honeywell Automotive Software
2:30 p.m.	***2015-01-1626***	***Predicting the Nitrogen Oxides Emissions of a Diesel Engine using Neural Networks***
		Qingning Zhang, Andrew Pennycott, Richard Burke, Sam Akehurst, Chris Brace, Univ. of Bath
3:00 p.m.	***2015-01-1635***	***Pressure Based Virtual Sensing of Transient Particulate Matter of CI Engines***
		Zhen Zhang, Stephan Stadlbauer, Harald Waschl, Richard Fuerhapter, Luigi del Re, Johannes Kepler University Linz
3:30 p.m.	***2015-01-1621***	***The Low Level Driver Design to Improve Dwell Timing of Engine Management System***
		Jin Seo Park, Infineon Technologies Asia Pacific Pte; Sungsu Han, Infineon Technologies Korea Co Ltd; Deepak Kasaragod Purushotham, Infineon Technologies India; Alfredo Baratta, Infineon Technologies AG; Keum Cheol Jeong, Hyundai Kia Motor Company; Ilhong Suh, Hanyang Univ
4:00 p.m.	***2015-01-1634***	***Development of a Push Button-Type Electrically Controlled Gear Selector***
		Toru Ishino, Shinichi Takai, Honda R&D Co., Ltd.

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Systems Engineering (Part 3 of 3)

Session Code: ***AE101***

Room 414 B ***Session Time:*** ***8:00 a.m.***

This session covers intelligent and efficient approaches to high level system design, analysis and integration as well as considerations for vehicle-level optimization of cost and energy. System definition includes components, sub-assemblies and complete integrated vehicle systems, including electronic systems and human machine interfaces.

Organizers - *Subramaniam Ganesan, Kanaparty Rao, Oakland University*

Time	***Paper No.***	***Title***
8:30 a.m.	***2015-01-0145***	***EE-Architecture the Real Competence Field for Automotive OEMs***
		Reinhold Blank, Zuken GmbH
9:00 a.m.	***2015-01-0146***	***Analysis of Failure Modes of Bearing Outer Race Rotation***
		Salah Alhasia, Lawrence Technological Univ.; Sharif Gindy, Sensor Data Technologies, lnc.; Selin Arslan, Badih Jawad, Chris Riedel, Lawrence Technological Univ.
9:30 a.m.	***2015-01-0147***	***Adding Depth: Establishing 3D Display Fundamentals for Automotive Applications***
		Matthew J. Pitts, University of Warwick; Elvir Hased¿i¿, Lee Skrypchuk, Jaguar Land Rover; Alex Attridge, Mark Williams, University of Warwick

10:00 a.m.	***2015-01-0151***	***Induction Mode Operation in the Electrical Machine with DC Stator Excitation***
		Sergey P. Gladyshev, Michigan-Dearborn University; Irina Okrainskaya, South Ural State University; Pavel Gladyshev, University College Dublin
10:30 a.m.	***2015-01-0148***	***A Versatile Approach for an ISO26262 Compliant Hardware-Software Interface Definition with Model-Based Development***
		Georg Macher, Harald Sporer, Graz University of Technology; Eric Armengaud, AVL LIST GmbH; Christian Kreiner, Graz University of Technology
	2015-01-0134	***An Innovative Approach to Avoid Battery Drainage in Motorcycles with DC Lighting System (Written Only -- No Oral Presentation)***
		Durga Madhab Mishra, Bimal Kant Gupta, Hero MotoCorp Limited
	2015-01-0136	***Study of a new Analysis Method of Risk Priority Number Based on FMEA (Written Only -- No Oral Presentation)***
		Ying Fan, Taiyuan University of Science and Technology
	2015-01-0137	***Research on the Application of Triangular Fuzzy Number and AHP in Risk Evaluation (Written Only -- No Oral Presentation)***
		Ying Fan, Taiyuan University of Science and Technology
	2015-01-0139	***Air Compressor Duty Cycle Reduction in Passenger Bus Application (Written Only -- No Oral Presentation)***
		Harish Kumar Gangwar, Ankur Sharma, Dipak Dabhole, Tata Motors, Ltd.; Ambekar Prasad, Tata Technologies Ltd.
	2015-01-0144	***Agility in Systems Engineering (Written Only -- No Oral Presentation)***
		Diljith Muthuvana, Renuka prasad, Delphi Automotive Systems, Ltd.
	2015-01-0149	***The Energy Management for Solar Powered Vehicle Parking Ventilation System (Written Only -- No Oral Presentation)***
		Can Wang, Gangfeng Tan, Xuexun Guo, Zhewen Tian, Zhanwei Tian, Jiafan Li, Wuhan University of Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00482, and also individually. To purchase visit collections.sae.org

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Wednesday, April 22

Glass Applications and Wiper Systems: Innovations and Issues

Session Code: ***SS106***

Room 414 B ***Session Time:*** ***1:00 p.m.***

Together, the wiper system and windshield glass assure the driver's forward visibility needed for safe operation of the vehicle. Design, analysis and experiments related to windshield wipers are discussed, including innovative ideas and findings in empirical studies and numerical simulations as well as fundamental advancements with tribology, mechanisms, fluid flow, and heat transfer. Further discussion on laminated glass, to meet an ever-expanding world-wide regulation will also occur.

Organizers - *Randy Gu, Oakland University; Joseph E. Poley, Poley Technology LLC; Jared Song, General Motors Co.; Yu J. Teng; Qichao Zheng, General Motors Co.*

Time	***Paper No.***	***Title***

1:00 p.m.	***2015-01-1376***	***Novel Lightweight Laminate Concept with Ultrathin Chemically Strengthened Glass for Automotive Windshields***
		Thomas Leonhard, Thomas Cleary, Michael Moore, Shane Seyler, W Keith Fisher, Corning Inc
1:30 p.m.	***2015-01-1377***	***Development of Original Self-Oscillating Washer Nozzle***
		Hiroshi Yokoyama, Atsushi Otani, Naoyuki Shirota, Takao Umezawa, Mitsuba Corp.
2:00 p.m.	***2015-01-1378***	***Improvement in Washing Efficiency in Windshield Washer***
		Takeshi Sasaki, Tatsuya Ohmaru, Taisuke Goto, Honda

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Design Tools and Digital Modeling

Session Code: ***SS104***

Room 414 B ***Session Time:*** ***2:30 p.m.***

Researchers and engineers involved in development in simulation and digital modeling of manufacturing process. Studies in wear patterns, failure modes, extending life in modern tools, optimal layout of tools are also welcome. The session also focuses on the design of tools involved in manufacturing processes.

Organizers - *Randy Gu, Oakland University; Jared Song, General Motors Co.; Yu J. Teng; Qichao Zheng, General Motors Co.*

Time	***Paper No.***	***Title***
2:30 p.m.	***2015-01-1371***	***Suspension Mount Utilizing Robot Flexibility***
		Samuel T. Bartlett, Honda Engineering North America Inc
3:00 p.m.	***2015-01-1373***	***Study on Transient Oil-Filling Characteristics of Hydraulic Retarder based on Modular Modeling***
		Yulong Lei, Hui Tang, Xingjun Hu, Jilin University ASCL; Ge Lin, China FAW Group Corpration; Bin Song, Hangzhou Advance Gearbox Group Co., Ltd
3:30 p.m.	***2015-01-1375***	***Simple Models Allow Simulation and Verification Early in the Design***
		James Price, Mentor Graphics Corp.

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Vehicle to Vehicle and Vehicle to Infrastructure (Part 1 of 2)

Session Code: ***AE502***

Room 415 A ***Session Time:*** ***8:00 a.m.***

V2x communications technology for safety, mobility and environmental applications is a key component in the USDOT's Connected Vehicle program. V2x communications will significantly improve safety by addressing 82% of crash scenarios according to NHTSA and enable a new set of compelling mobility and green applications. The papers cover all aspects of V2x, the enabling wireless technologies, architectures, testing and resulting applications.

Organizers - *David McNamara, MTS; Mohammad Naserian, Hyundai America Technical Center*

Time	***Paper No.***	***Title***

8:00 a.m.	***2015-01-0288***	***Performance Analysis of Existing 1609.2 Encodings v ASN.1***
		Virendra Kumar, William Whyte, Security Innovation
8:30 a.m.	***ORAL ONLY***	***V2V Communication Quality Assessment in Field Measurement and Computer Simulation***
		Fumio Watanabe, Alps Electric (USA) Inc
9:30 a.m.	***2015-01-0289***	***V2V Communication - Analysis and Validation of Propagation Models in Real World Scenarios***
		Yuan Chen, Bhavin Chamadiya, Ulrich Bueker, Hella KGaA Hueck & Co.
10:00 a.m.	***2015-01-0286***	***DSRC Rebroadcasting***
		Radovan Miucic, David Weber, Honda R & D Americas Inc.
10:30 a.m.	***2015-01-0292***	***Over-The-Air Testing and Certification for Connected vehicles***
		Pascal Herve, CSA Group

Planned by Electronics in Transportation / Automobile Electronics Activity

Wednesday, April 22

Vehicle to Vehicle and Vehicle to Infrastructure (Part 2 of 2)

Session Code: ***AE502***

Room 415 A ***Session Time:*** ***1:00 p.m.***

V2x communications technology for safety, mobility and environmental applications is a key component in the USDOT's Connected Vehicle program. V2x communications will significantly improve safety by addressing 82% of crash scenarios according to NHTSA and enable a new set of compelling mobility and green applications. The papers cover all aspects of V2x, the enabling wireless technologies, architectures, testing and resulting applications.

Organizers - *David McNamara, MTS; Mohammad Naserian, Hyundai America Technical Center*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0285***	***Co-Simulation of Cooperative Vehicle Safety Applications and Communication Networks***
		Ehsan Moradi-Pari, S M Osman Gani, Yaser P. Fallah, West Virginia Univ; Mohammad Naserian, Allan Lewis, Hyundai America Technical Center
2:00 p.m.	***2015-01-0291***	***Improving Motorcycle Safety through DSRC Motorcycle-to-Vehicle Communication***
		Radovan Miucic, Samer Rajab, Sue Bai, Honda R & D Americas Inc.; James Sayer, Dillon Funkhouser, University of Michigan
2:30 p.m.	***2015-01-0290***	***System Architecture for Cooperative Vehicle-Pedestrian Safety Applications Using DSRC Communication***
		Amin Tahmasbi-Sarvestani, Hadi Kazemi, Yaser P. Fallah, West Virginia University; Mohammad Naserian, Allan Lewis, Hyundai America Technical Center
3:00 p.m.	***ORAL ONLY***	***Technical Aspects of Stolen Vehicle Tracking and Recovering***
		Hirofumi Onishi, Alpine Electronics of America Inc.

	2015-01-0293	***A Case for Connected Vehicles in reducing Total Cost of Ownership in Indian CV Industry (Written Only -- No Oral Presentation)***
		Yaamini Devi Loganathan, Foton Motors

Planned by Electronics in Transportation / Automobile Electronics Activity

Wednesday, April 22

Tire and Wheel Technology (Part 1 of 2)

Session Code: ***SS700***

Room 415 B ***Session Time:*** ***8:00 a.m.***

The aim of this symposium is to provide a forum to bring together researchers do discuss and disseminate the research on tire and wheel technology. Examples of topics to this symposium include (but are not limited to) nonlinear behavior of tires and wheels, static/dynamic stress analysis, nonlinear material modeling, contact stress, impact, noise, vibration, traction, hydroplaning, effect of tires on vehicle performance, rolling resistance, and durability. Session 1/2

Organizers - *David L. Howland, General Motors Co.; Jaehyung Ju, Univ. of North Texas; Neel K. Mani, Timothy A. Marantis, Bridgestone Americas Inc.; Rick S. Wallace, General Motors Co.; Peter Zmolek, Continental Tire North America Inc.*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Technical Keynote: Tire/Vehicle/Road Interaction***
		Thomas Schulze, Burkhard Wies, Continental AG
9:00 a.m.	***2015-01-1517***	***Scalable Vehicle Models for Tire Testing***
		David Stalnaker, Ke-Jun Xie, Bridgestone Americas Operations; Terence Wei, Bridgestone Americas Inc
9:30 a.m.	***2015-01-1521***	***An Adaptive Tire Model for Enhanced Vehicle Control Systems***
		Kanwar Bharat Singh, Srikanth Sivaramakrishnan, Goodyear Tire & Rubber Co.
10:00 a.m.	***2015-01-1511***	***Experimental Investigation of the Influence of Tire Design Parameters on Anti-lock Braking System (ABS) Performance***
		Srikanth Sivaramakrishnan, Kanwar Bharat Singh, Peter Lee, Goodyear Tire & Rubber Co.
10:30 a.m.	***2015-01-1519***	***Comparative Analysis of Tire Evaluation Methods for an indirect Tire Pressure Monitoring System (iTPMS)***
		Robert Suender, Günther Prokop, Dresden University of Technology; Thomas Roscher, AUDI AG
11:00 a.m.	***2015-01-1522***	***A Study of Tire Characteristics and Vehicle Performance on Snow-covered Roads***
		Takahiro Yokoyama, Koji Hiratsuka, Shinya Notomi, Honda R&D Co., Ltd.

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Planned by Tire and Wheel Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

Tire and Wheel Technology (Part 2 of 2)

Session Code: ***SS700***

Room 415 B ***Session Time:*** ***1:00 p.m.***

The aim of this symposium is to provide a forum to bring together researchers do discuss and disseminate the research on tire and wheel technology. Examples of topics to this symposium include (but are not limited to) nonlinear behavior of tires and wheels, static/dynamic stress analysis, nonlinear material modeling, contact stress, impact, noise, vibration, traction, hydroplaning, effect of tires on vehicle performance, rolling resistance, and durability. Session 2/2

Organizers - *David L. Howland, General Motors Co.; Jaehyung Ju, Univ. of North Texas; Neel K. Mani, Timothy A. Marantis, Bridgestone Americas Inc.; Rick S. Wallace, General Motors Co.; Peter Zmolek, Continental Tire North America Inc.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-1520***	***Race Motorcycle Smart Wheel***
		Massimiliano Gobbi, Giampiero Mastinu, Federico Ballo, Giorgio Previati, Politecnico di Milano
2:00 p.m.	***2015-01-1516***	***Prediction of Component Failure using `Progressive Damage and Failure Model¿ and Its Application in Automotive Wheel Design***
		Mohammed K Billal, Rizwan Basha, Anilkumar Nesarikar, Abdul Haiyum, Chrysler India Automotive Pvt, Ltd.; Thomas Oery, FCA US LLC
2:30 p.m.	***2015-01-1514***	***Study of Parameters Affecting the Impact Performance of an Alloy Wheel and Noble Approach Followed to Improve the Impact Performance***
		Deepak Tiwari, Japveer Arora, Rakesh Khanger, Maruti Suzuki India, Ltd.
3:00 p.m.	***2015-01-1512***	***Deformation and Heat Generation in a Nonpneumatic Tire with Lattice Spokes***
		Sairom Yoo, Korea Aerospace University; Md Salah Uddin, Hyeonu Heo, Jaehyung Ju, University of North Texas; Doo Man Kim, Korea Aerospace University; Seok-Ju Choi, Hankook Tire
3:30 p.m.	***2015-01-1523***	***Method of Experimental Identification of Change in Dynamic Characteristics of Rolling Tires***
		Takahiro Uesaka, Honda Motor Co., Ltd.; Tatsuya Suma, ESTECH Co., Ltd.
4:00 p.m.	***2015-01-1515***	***Optimization of Nonpneumatic Tire with Hexagonal Lattice Spokes for Reducing Rolling Resistance***
		Kwangwon Kim, Korea Aerospace Univ.; Hyeonu Heo, Md Salah Uddin, Jaehyung Ju, Univ. of North Texas; Doo-Man Kim, Korea Aerospace Univ.
	2015-01-1510	***In-tyre sensors induced benefits on sideslip angle and friction coefficient estimation (Written Only -- No Oral Presentation)***
		Edoardo Sabbioni, Davide Ivone, Francesco Braghin, Federico Cheli, Politecnico di Milano
	2015-01-1513	***Using Surface Texture Parameters to Relate Flat Belt Laboratory Traction Data to the Road (Written Only -- No Oral Presentation)***
		Anudeep K. Bhoopalam, Virginia Tech; Kevin Kefauver, National Tire Research Center
	2015-01-1518	***On Finite Element Tyre Modal Analysis (Written Only -- No Oral Presentation)***
		Emmanuel O. Bolarinwa, Federal Highway Administration; Oluremi Olatunbosun, Univ of Birmingham
	2015-01-1524	***Research on Tire Lateral Force Prediction under High-Load Condition (Written Only -- No Oral Presentation)***
		Ping Chen, Nan Xu, Konghui Guo, Rongsheng Liu, ASCL, Jilin University

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Planned by Tire and Wheel Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 22

High Efficiency IC Engines Concepts (Part 2 of 3)

Session Code: ***PFL170***

Room 420 A ***Session Time:*** ***8:00 a.m.***

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency, fully variable valvetrains, and other new and developing technologies. Papers focused on waste heat recovery technologies should be submitted to HX102/103.

Organizers - *Vasudha Patri, Argonne National Laboratory; David B. Roth, BorgWarner Inc.; James P. Szybist, Oak Ridge National Laboratory; Alok Warey, General Motors Global R & D*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1266***	***Downsized Boosted Engine Benchmarking and Results*** *Mark Stuhldreher, Charles Schenk, Jessica Brakora, David Hawkins, Andrew Moskalik, Paul DeKraker, US Environmental Protection Agency*
9:00 a.m.	***2015-01-1255***	***A study of a highly boosted and efficient downsized Ethanol Direct Injection (EDI) engine in two different configurations for the purpose of replacing high-displacement gasoline engines*** *Michael Pontoppidan, Numidis Sarl; Jose G. C. Baeta, Federal University of Minas Gerais-UFMG*
10:00 a.m.	***2015-01-1258***	***A New De-throttling Concept in a Twin-Charged Gasoline Engine System*** *Bo Hu, Colin Copeland, Pengfei Lu, Sam Akehurst, Chris Brace, Univ. of Bath; J.W.G Turner, Jaguar Land Rover; Alessandro Romagnoli, Nanyang Technological Univ.; Ricardo Martinez-Botas, Imperial College London*
10:30 a.m.	***2015-01-1260***	***Double Compression Expansion Engine Concepts: A Path to High Efficiency*** *Nhut Lam, Martin Tuner, Per Tunestal, Lund University; Arne Andersson, Staffan Lundgren, Volvo Group; Bengt Johansson, Lund University*
11:00 a.m.	***2015-01-1250***	***Charging Technologies for CO₂ Optimization by Millerization*** *Nisar Al-Hasan, Johannes Beer, Jan Ehrhard, Continental Automotive GmbH; Thomas Lorenz, Ludwig Stump, Ford-Werke GmbH*
	2015-01-1252	***Ultra-Downsizing of Internal Combustion Engines (Written Only -- No Oral Presentation)*** *Victor Gheorghiu, Hamburg University of Applied Sciences*
	2015-01-1262	***Synergy between Boost and Valve Timings in a Highly Boosted Direct Injection Gasoline Engine Operating with Miller Cycle (Written Only -- No Oral Presentation)*** *Yuanping Li, Hua Zhao, Brunel University London; Phil Stansfield, Paul Freeland, MAHLE Powertrain Ltd*

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SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

High Efficiency IC Engines Concepts (Part 3 of 3)

Session Code: ***PFL170***

Room 420 A ***Session Time:*** ***1:00 p.m.***

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency, fully variable valvetrains, and other new and developing technologies. Papers focused on waste heat recovery technologies should be submitted to HX102/103.

Organizers - *Vasudha Patri, Argonne National Laboratory; David B. Roth, BorgWarner Inc.; James P. Szybist, Oak Ridge National Laboratory; Alok Warey, General Motors Global R & D*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1265***	***Characterization of High Efficiency Octane-On-Demand Fuels Requirement in a Modern Spark Ignition Engine with Dual Injection System*** *Yoann Viollet, Marwan Abdullah, Abdullah Alhajhouje, Junseok Chang, Saudi Aramco*
1:30 p.m.	***2015-01-1264***	***Octane-on-Demand as an Enabler for Highly Efficient Spark Ignition Engines and Greenhouse Gas Emissions Improvement*** *Junseok Chang, Yoann Viollet, Abdullah Alzubail, Amir Faizal Naidu Abdul-Manan, Abdullah Al Arfaj, Saudi Aramco*
2:00 p.m.	***2015-01-1251***	***Multi-Cylinder Opposed Piston Transient and Exhaust Temperature Management Test Results*** *Fabien Redon, Arunandan Sharma, John Headley, Achates Power Inc*
2:30 p.m.	***2015-01-1256***	***A Study on Improving Fuel Consumption of Heavy-Duty Diesel Engine Specifically Designed for Long-Haul Trucks on Highway*** *Mori Ishii, Kiyohiro Shimokawa, Koichi Machida, Hiroshi Nakajima, Hino Motors Ltd*
3:00 p.m.	***2015-01-1259***	***Novel Crank Mechanism Increasing Engine Efficiency and Reducing CO2 Emissions*** *Tapio Pohjalainen, Waulis Motors Ltd.; Martti Larmi, Aalto University*
3:30 p.m.	***ORAL ONLY***	***Performance of a High Temperature Diesel Engine*** *Jonas Adler, Todd Bandhauer, Colorado State University*
4:00 p.m.	***ORAL ONLY***	***High Efficiency, Powerful, and Low Cost IC Engines by a Simple Piston Modification*** *Miin Yan, Yan Engines Inc.*

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Engine Boosting Systems (Part 1 of 2)

Session Code: ***PFL520*** ***8:00 a.m.***

Room 420 B ***Session Time:***

This session will cover conceptual, modeling and experimental studies relating to advanced turbochargers/superchargers and advanced boosting systems to achieve increased power density, better fuel economy, and reduced emissions.

Organizers - *Marcello Canova, Ohio State University; Eric Krivitzky, Concepts NREC; Arjun D. Tuteja*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1286***	***Effects of Charging System Variability on the Performance and Fuel Economy of a Supercharged Spark-Ignition Engine*** *A. Meghani, J. Allen, Cosworth, Ltd.; J.W.G. Turner, A. Popplewell, D.J. Marshall, J.S. Hoyle, Jaguar Land Rover; S. McBroom, R. Urista, M. Bazyn, Fallbrook Technologies Inc*
8:30 a.m.	***2015-01-1282***	***SuperGen on Ultraboost: Variable-Speed Centrifugal Supercharging as an Enabling Technology for Extreme Engine Downsizing*** *J.W.G. Turner, A. Popplewell, D.J. Marshall, T.R. Johnson, Jaguar Land Rover; L. Barker, J. King, J. Martin, Integral Powertrain Ltd; A.G.J. Lewis, S. Akehurst, C.J. Brace, C.D. Copeland, University of Bath*
9:00 a.m.	***ORAL ONLY***	***Standardisation of the requirements on test methods to validate the sustainable reduction of the CO2 emissions by using turbo chargers in passenger cars and trucks.*** *René Nast, Automotive Testing Laboratories Inc.*
9:30 a.m.	***2015-01-1278***	***Turbocharger Matching Method for Reducing Residual Concentration in a Turbocharged Gasoline Engine*** *Muhammad Izzal Ismail, Aaron Costall, Ricardo Martinez-Botas, Imperial College London; Srithar Rajoo, Universiti Teknologi Malaysia*
10:00 a.m.	***2015-01-1283***	***Gasoline Engine Turbocharger Matching Based on Vehicle Performance Requirements*** *Qiwei Wang, Jimin Ni, Xiuyong Shi, Yue Liu, Tongji University*
10:30 a.m.	***2015-01-1279***	***Explore and Extend the Effectiveness of Turbo-compounding in a 2.0 litres Gasoline Engine*** *Pengfei Lu, Chris Brace, Bo Hu, University of Bath*
11:00 a.m.	***2015-01-1288***	***A Scalable Modeling Approach for the Simulation and Design Optimization of Automotive Turbochargers*** *Marcello Canova, Massimo Naddeo, Yuxing Liu, Junqiang Zhou, Ohio State University; Yue-Yun Wang, General Motors Co*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00500 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Engine Boosting Systems (Part 2 of 2)

Session Code: ***PFL520***

Room 420 B ***Session Time:*** ***1:00 p.m.***

This session will cover conceptual, modeling and experimental studies relating to advanced turbochargers/superchargers and advanced boosting systems to achieve increased power density, better fuel economy, and reduced emissions.

Organizers - *Marcello Canova, Ohio State University; Eric Krivitzky, Concepts NREC; Arjun D. Tuteja*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1289***	***Experimental Investigation of Variable Geometry Compressor for Highly Boosted Gasoline Engines***
		Fabian Herbst, Peter Eilts, Technische Universität Braunschweig
1:30 p.m.	***2015-01-1284***	***Two-Stroke Gasoline Engines for Small-Medium Passenger Cars***
		Enrico Mattarelli, Carlo Alberto Rinaldini, Universita di Modena e Reggio Emilia
2:00 p.m.	***2015-01-1280***	***Automotive Turbochargers Compressor Onset of Surge Prediction using Computational Fluid Dynamics***
		Ahsanul Karim, Keith Miazgowicz, Brian Lizotte, Ford Motor Co.
2:30 p.m.	***2015-01-1285***	***The Effect of Oil Debris in Turbocharger Journal Bearings on Subsynchronous NVH***
		Dingfeng Deng, Fanghui Shi, Louis Begin, Isaac Du, General Motors Co
3:00 p.m.	***2015-01-1287***	***Heat Transfer Effects on Performance Map of a Turbocharger Compressor for Automotive Application***
		Silvia Marelli, Giulio Marmorato, Massimo Capobianco, Università degli Studi di Genova; Andrea Rinaldi, CRITT M2A

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Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Wednesday, April 22

Technical Expert Panel Discussion: Fuel/Engine Interactions

Session Code: ***PFL399***

Room 420 B Technical Expert Panel Discus: ***Session Time:*** ***3:30 p.m.***

In light of the upcoming 2025 CAFE standards and LEV III/Tier III emissions standards, there is growing interest in how modifying fuel properties and/or more tightly regulating their variability could enable more efficient and cleaner engines. Panelists with expertise in SI and CI engine technologies as well as fuels will present introductory remarks on this topic followed by a moderated question and answer period.

Moderators - *Paul C. Miles, Sandia National Laboratories; Jeffrey Naber, Michigan Technological Univ.*

Panelists - *John Farrell, National Renewable Energy Laboratory; Gautam Kalghatgi, Saudi Aramco; Thomas Mccarthy, Ford Motor Company; Arun Solomon, General Motors Co.;*

Wednesday, April 22

Keynote Speaker: The Outlook for Energy: A View to 2040 - Tahmid Mizan, Exxon Mobil Corporation

Session Code: ***KEY102***

Room AVL Technology Leadership Center/C ***Session Time:*** ***9:00 a.m.***

Time	Paper No.	Title

9:00 a.m. ***ORAL ONLY*** ***Learn More about the Wednesday Keynote Speaker***

Tahmid Mizan, Senior Technology Advisor, ExxonMobil

Wednesday, April 22

In The Balance - Fuel Implications, Government Regulations and Market Demand for Fuel Efficiency

Session Code: ***ANN103***

Room AVL Technology Leadership Center/C ***Session Time:*** ***9:45 a.m.***

With improving energy extraction technologies and increased oil production both in the US and abroad, the energy future looks very different than it did just a few years ago. The fuel efficiency of the new car fleet improves as OEMs continue to find new and innovative ways of getting more mileage out of every gallon of fuel. </p>
Even with the stringent Greenhouse CO2 standards globally, ultimately it will be the consumer who will decide the best powertrain solution for their situation. Looking forward, the industry needs to keep a close eye on the customer and their willingness to purchase premium technologies. If a gap develops between what customers are willing to pay for, and the fuel types available, automakers will need to address this and find new ways to market multiple fuel efficient technology solutions and spur customer demand for these products. </p>
This panel will explore the future trends in the oil sector and what impacts these could have on the auto industry.
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Moderators - *Guenter K. Fraidl, Director, AVL LIST GmbH*

Panelists - *Michael Hartrick, FCA US LLC; G. Mustafa Mohatarem, Chief Economist, General Motors Company; Wolfgang Warnecke, Chief Technical Officer, Shell; Michael Webber, Associate Professor of Mechanical Engineering, Deputy Director of the Energy Institute, Co-Director of the Clean Energy Incubator, and Josey Centennial Fellow in Energy Resources, University of Texas - Webber Energy Group;*

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the Panelists***

G. Mustafa Mohatarem, General Motors Co.; Wolfgang Warnecke, Shell Global Solutions (Deutschland)GmbH; Michael Webber, University of Texas; Guenter K. Fraidl, AVL LIST GmbH; Michael Hartrick, FCA US LLC

Wednesday, April 22

Innovation in Powertrain Technology to Achieve 2025 Requirements & Beyond

Session Code: ***ANN104***

Room AVL Technology Leadership Center/C ***Session Time:*** ***1:30 p.m.***

With product development well underway to meet 2016 standards in the next product cycle, advanced engineering development is focused on achieving even more stringent CO2 standards by 2025. While achieving this will require significant vehicle level changes, the relentless pressure on powertrain efficiency will continue to increase. In the same timeframe, fleet average emissions will reduce to a level that only a small fraction of the current production fleet can meet. </p>
Which direction is the powertrain industry headed for 2025 and even beyond? Are evolutions of existing technologies sufficient to meet future requirements or are revolutionary technologies required? What are the potential game changers or disruptive technologies, and how will the auto industry meet these challenges and remain competitive and profitable in a global marketplace?

Moderators - *Patrick Davis, Program Manager, Vehicle Technologies, US Department of Energy*

Panelists - *Chris Cowland, Director ¿ Advanced and SRT Powertrain, FCA US LLC; Uwe Dieter Grebe, Exec. VP Engrg, AVL LIST GmbH; Dean Guard, General Motors; Ayumu Matsuo, Chief Engineer, Honda R&D Co., Ltd.; Kregg S. Wiggins, Senior Vice President, Powertrain NA, Continental Automotive;*

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the Panelists***

Chris Cowland, FCA US LCC; Uwe Dieter Grebe, AVL LIST GmbH; Ayumu Matsuo, Honda R&D Co., Ltd.; Kregg S. Wiggins, Continental Automotive; Dean Guard, General Motors; Patrick Davis, US Department of Energy

Wednesday, April 22

Light-Duty Diesel Market Shares are Increasing. What are the technical drivers that are causing this?

Session Code: ***ANN203***

Room FEV Innovation Forum/Grand Rivervi ***Session Time:*** ***9:45 a.m.***

Is the advent of the diesel passenger car upon us? Experts will assess the current market share status and forecast for light-duty diesel vehicles. A panel of experts will discuss the technology and market changes that are driving this increase and compare the development status of the light-duty diesel with its gasoline counterpart.

Moderators - *Thomas Körfer lng, FEV GmbH*

Panelists - *Gary Arvan, GM; Brian Bolton, Nissan; Roderick J. Renwick, Chief Engineer, Ford Motor Company; Walter Riedl, Vice President Powertrain Systems Business Customers, BMW AG;*

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the Panelists***

Gary Arvan, GM; Roderick J. Renwick, Ford Motor Co.; Walter Riedl, BMW AG; Thomas koerfer, FEV GmbH; Brian Bolton, Nissan

Wednesday, April 22

Vehicle Complexity is Booming. But is it Safe?

Session Code: ***ANN204***

Room FEV Innovation Forum/Grand Rivervi ***Session Time:*** ***1:00 p.m.***

As electronics and control systems continue to permeate every vehicle subsystem, the functional safety challenge of reliably ensuring proper function of these devices and systems throughout their lifecycle is becoming a major challenge for engineers. The need for systematic evaluation of potential issues is greater than ever to avoid future warranty recalls. Subject matter experts will discuss how the industry will meet this need over the next five to ten years and identify key areas where functional safety development is necessary to avoid the industry¿s next Achilles heel.

Moderators - *Jay Joseph, Assistant Vice President, Dealer Communication & Training, American Honda Motor Co. Inc.*

Panelists - *David D. Hartfelder, General Motors Co.; Joseph D. Miller, TRW Automotive US LLC; Meg Novacek, Director of NAFTA Embedded Systems Quality Engineering, Fiat Chrysler Automobiles; Tom Tasky, FEV Inc.;*

Time ***Paper No.*** ***Title***

ORAL ONLY ***Learn more about the Panelists***

David D. Hartfelder, General Motors Co.; Jay Joseph, American Honda Motor Co. Inc.; Joseph D. Miller, TRW Automotive US LLC; Tom Tasky, FEV Inc.; Margaret Novacek, Fiat Chrysler Automobiles

Wednesday, April 22

Tech Hub

Session Code: ***TH200*** ***ALL DAY***

Room Tech Hub/Exhibit Hall ***Session Time:***

Time	***Paper No.***	***Title***
10:30 a.m.	***Panel***	***Dual Interview: What are the Future Needs of a Connected Consumer in a Multimodal World and What can Automotive do to Help?*** ***Moderators -*** *David Sedgwick, Automotive News* ***Panelists -*** *David Acton, P3 North America Inc.; Andreas Mai, Cisco Systems Inc.;*
11:30 a.m.	***ORAL ONLY***	***Future Cities and Transportation: on the Road to Nowhere?*** *By 2050, more than two thirds of the world¿s population will live in urban areas with huge implications for the way we live and how we travel. Cities now need to start planning for this future by radically rethinking their transportation systems. Poor air quality, climate change impacts, ever-increasing levels of traffic congestion, and demographic changes mean that unless we drastically alter our urban transportation patterns the world will be heading on a road to nowhere. A wholesale reimagining of city mobility and the removal of the car from the urban environment may be key to dealing with these emerging problems. Can behaviour change, virtual travel, on-demand transportation services and advanced high-speed public transportation systems transform city life for the better?* *Sujith Kollamthodi, Ricardo - AEA*
11:50 a.m.	***ORAL ONLY***	***Austin 2 to 2.5*** *How does a city and region integrate an additional half million people into an already constrained transportation system? A traffic engineering division must grow into a Transportation Department. The focus must shift from maintaining to future planning. As the region¿s hub, Austin is taking the lead. Looking farther into the future, how can technology help make things work better? From autonomous vehicles, to big data and signal technology ¿ the possibilities are endless.* *W. Gordon Derr, Assistant Director, Austin Texas Transportation Department*
1:30 p.m.	***ORAL ONLY***	***Driving on Mars*** *The Curiosity rover landed on Mars on August 5th 2012 and is currently characterizing the planet to assess if it ever had an environment able to support life. Matt will present an overview of the Mars Science Laboratory mission and talk about the challenges of driving a robot on the surface of a planet 300 million kilometers away.* *Matthew Heverly, NASA JPL*

2:45 p.m. ***ORAL ONLY*** ***Why the Safest Vehicles will Ignore Talking Cars and Infrastructure***

In this personal and engaging talk, Intel¿s Chief ADAS Architect presents a critical perspective on the evolution of ADAS technologies as they scale to full Autonomous Driving solutions and argues that the current industry and regulatory focus on Vehicle to Vehicle and Vehicle to Infrastructure (V2X) communications may be a distraction from bringing Autonomous Driving to the mainstream. He suggests that the industry should be laser-focused on the design of situationally aware vehicles first, and utilize V2X at a later time for complementary usages, but not as a safety critical element of a mainstream ADAS or Autonomous Driving solution.

Jack Weast, Intel Corp.

3:30 p.m. ***ORAL ONLY*** ***Cyber-Safety: Navigating the Roads Ahead***

The Automotive industry has an admirable record of innovation and safety. These advancements are increasingly enabled by connectivity and software, moving cars toward a mobile computing platform. Physical safety and cyber security collide in these new automotive technology platforms. Cars are more than just computers on wheels, we entrust our lives and the lives of those we love to them.</p>

Automotive engineers are masters of their domain and cyber security professionals are masters of ours. We will reach the safest outcomes the soonest by collaborating - learning from past mistakes and successes. We aren¿t looking to supplant your judgement with our own, rather we want to inform your decision-making with a cyber security perspective. </p>

Automotive cyber security research has been drowned in hype. Good work from the Automotive industry and cyber security researchers has been obscured beneath implausible threats and straw men. We will explore the facts and map the possible routes ahead. The connected vehicle is the future, and safety decisions made now will have effects into the coming decades. The security community can¿t tell you what to do (nor would you want us to), but we can provide guidance to keep you - the automakers - in the driver¿s seat of our common journey.

Beau Woods, I Am The Calvary

3:50 p.m. ***ORAL ONLY*** ***CyberSecurity: Who are You Playing Chess Against***

David M. Martin, Federal Bureau of Investigation

4:10 p.m. ***ORAL ONLY*** ***Systems Engineering best practices for Connected Vehicles***

From news program reports, to numerous academic, industry and hacker publications, automobiles clearly have security exposures. Connected vehicles are transformative, but they also add another dimension of complexity. Cars & light trucks contain more than 50 separate electronic control units connected through a number of networks. Vehicle functionality, safety & privacy all depend on the functions of these units, as well as their ability to communicate with one another. We will discuss how the automotive community can better address safety & security through systems engineering best practices. We will also explore how the automotive industry can leverage evolving Internet of Things (IoT) standards to address these complexities, and provide secure, scalable, and efficient connected vehicle communication.

Brett Hillhouse, IBM Rational Software

Small Engine Technology

Session Code: ***PFL540***

Room 140 C ***Session Time:*** ***8:00 a.m.***

In this session, research and development of small engine technology, including two-stroke cycle, will be covered. Topics include combustion, scavenging, emissions, fuel systems, control, and NVH.

Organizers - *Robert Kee, Queen's University Belfast; David Masser, Ford Motor Co.*

Time	Paper No.	Title
8:30 a.m.	***2015-01-1727***	***Development of a Low Pressure Direct Injection System for a Small 2S Engine. Part I - CFD Analysis of the Injection Process*** *Francesco Balduzzi, Giovanni Vichi, Luca Romani, Giovanni Ferrara, University of Florence; Paolo Trassi, Jacopo Fiaschi, Federico Tozzi, Betamotor S.p.A.*
9:30 a.m.	***2015-01-1730***	***Development of a Low Pressure Direct Injection System for a Small 2S Engine. Part II - Experimental Analysis of the Engine Performance and Pollutant Emissions*** *Luca Romani, Giovanni Vichi, Giovanni Ferrara, Francesco Balduzzi, University of Florence; Paolo Trassi, Jacopo Fiaschi, Federico Tozzi, Betamotor S.p.A.*
10:00 a.m.	***2015-01-1732***	***Impact of Ethanol and Isobutanol Gasoline Blends on Emissions from a Closed-Loop Small Spark-Ignited Engine*** *Marie-Josee Poitras, Deborah Rosenblatt, Jeffery Goodman, Environment Canada*
10:30 a.m.	***2015-01-1731***	***Pump-End Control Technology for Small Engine Management System*** *Yanxiang Yang, Bingqian Tan, Changwen Liu, Tianjin University; Ping Zhang, Zhejiang University; Daguang Xi, Zhejiang FAI Electronics Co. Ltd.*
	2015-01-1728	***Effect of Automatic Choke System on Emissions, Light-off Characteristics and Cold Start-Ability of Four-Stroke Scooter Engine (Written Only -- No Oral Presentation)*** *Sampoornananda Basrur, Pradeep Subramanian Srinivasan, Rahul Sharma, C Subramoniam, TVS Motor Company Ltd*
	2015-01-1729	***Investigation of Control Method for Starting of Linear Internal Combustion Engine-Linear Generator Integrated System (Written Only -- No Oral Presentation)*** *Chenle Sun, Zhe Wang, Zhaolei Yin, Tong Zhang, Tongji University*
	2015-01-1733	***Gaseous Emissions from Gasoline-to-CNG/LPG Converted Motorcycles (Written Only -- No Oral Presentation)*** *Michele De Gennaro, Elena Paffumi, Giorgio Martini, Urbano Manfredi, EC Joint Research Centre; Roberto Rossi, Paolo Massari, IPSIA Leon Battista Alberti; Roberto Roasio, Ecomotive Solutions S.r.l.*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Electric Motor & Power Electronics (Part 2 of 2)

Session Code: ***PFL740***

Room 140 D ***Session Time:*** ***8:30 a.m.***

Power electronics and electric motors are essential for improving vehicle efficiency through drivetrain electrification. Technologies that support high efficiency, high power density, and low cost motors and power modules are required for the success of vehicle electrification.

Organizers - *John Czubay, General Motors Company; Sergey P. Gladyshev; Laura Marlino, Oak Ridge National Laboratory; Constantine N. Raptis, GM Advanced Vehicle Engrg; Serdar Yonak, Ford Motor Co.*

Time	Paper No.	Title
8:30 a.m.	***2015-01-1204***	***Electric Vehicle Behavioral Modeling Methods for Motor Drive System EMI Design Optimization***
		Ji Zhang, Zhi Liao, Zechang Sun, Tongji University
9:00 a.m.	***2015-01-1209***	***Direct Coil Cooling of a High Performance Switched Reluctance Machine (SRM) for EV/HEV Applications***
		Zhengyu Liu, Robert Bosch GmbH, German Aerospace Center; Thomas Winter, Robert Bosch GmbH; Michael Schier, German Aerospace Center DLR
9:30 a.m.	***2015-01-1202***	***Investigation of Cost-effective SiC Based Hybrid Switch and Improved Inductor Design Procedure for Boost Converter in Electrical Vehicles Application***
		Weimin Zhang, Saeed Anwar, Daniel J. Costinett, Fred Wang, University of Tennessee
10:00 a.m.	***2015-01-1201***	***Power Dense and Robust Traction Power Inverter for the Second-Generation Chevrolet Volt Extended-Range EV***
		Mohammad Anwar, General Motors Corporation; Monty Hayes, Delphi Electronics & Safety; Anthony Tata, Mehrdad Teimorzadeh, Thomas Achatz, General Motors Corporation
	2015-01-1211	***Research of Active Power Source Based on Electronic Hydraulic Braking System (Written Only -- No Oral Presentation)***
		Zhuoping Yu, Caitao Jian, Songyun Xu, Lu Xiong, Tongji Univ

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Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Emission Control Modeling (Part 3 of 3)

Session Code: ***PFL430***

Room 140 E ***Session Time:*** ***8:00 a.m.***

Papers cover exhaust aftertreatment system models, as well as their validation and application. Technologies encompassed include DOC, HC Trap, DPF, GPF, LNT, TWC, SCR, SCRF, ammonia oxidation catalysts, hybrid or combined catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3D models of individual components to system level simulation, optimization, variation, degradation, and control.

Organizers - *Christopher Depcik, Univ. of Kansas; Maruthi Devarakonda, General Electric Company; Thomas McKinley, Cummins Inc.; Vincenzo Mulone, Univ. Of Roma Tor Vergata; Achuth Munnannur, Cummins Inc.; Balaji Sukumar, Johnson Matthey ECT*

Time	Paper No.	Title

8:00 a.m.	***2015-01-1054***	***Advanced Spray Impingement Modelling for an Improved Prediction Accuracy of the Ammonia Homogenisation in SCR Systems***
		Henrik Smith, Markus Zöchbauer, Thomas Lauer, Vienna University of Technology
8:30 a.m.	***2015-01-1046***	***Advanced SCR Flow Modeling with a Validated Large Eddy Simulation***
		Markus Zöchbauer, Henrik Smith, Thomas Lauer, Vienna University of Technology
9:00 a.m.	***2015-01-1055***	***Predictive Modeling of Impact of ANR Non-Uniformity on Transient SCR System DeNOx Performance***
		Apoorv Kalyankar, Achuth Munnannur, Z. Gerald Liu, Cummins Emission Solutions
9:30 a.m.	***2015-01-1057***	***Application of Automatic Meshing to Urea-Water Injection Simulation for Engine Aftertreatment***
		Scott Drennan, Gaurav Kumar, Shaoping Quan, Mingjie Wang, Convergent Science, Inc.
10:00 a.m.	***2015-01-1060***	***Model Based Study of DeNOx Characteristics for Integrated DPF/SCR System over Cu-Zeolite***
		Yangdongfang Yang, Univ of Wisconsin; Gyubaek Cho, Korea Institute of Machinery & Materials; Christopher Rutland, Univ of Wisconsin

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advances in Particulate Filter Substrates (Part 1 of 2)

Session Code: ***PFL423***

Room 140 F ***Session Time:*** ***8:00 a.m.***

This session covers the complete particulate filter system, from particle deposition, new cell geometries to DPF regeneration. There are also several presentations on ash deposition and how to measure the ash in the DPF.

Organizers - *Kirby Baumgard, John Deere Power Systems; Thorsten Boger, Corning GmbH; Jong Lee, Aramco Services Co.; Julian Tan, Isuzu Mfg Services Of America*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1018***	***Scanning Electron Microscopic Visualization of Transition from Surface Pore Filtration to Cake Filtration Inside Diesel Particulate Filter Walls***
		Ryoko Sanui, Katsunori Hanamura, Tokyo Institute of Technology
8:30 a.m.	***2015-01-1019***	***Pressure Drop Characteristics Through DPF with Various Inlet to Outlet Channel Width Ratios***
		Changpu Zhao, Man Bai, Tianjin University; Junwei Yang, Chery Automobile Co., Ltd.; Fang Shang, Gang Yu, Tianjin University

9:00 a.m.	***2015-01-1016***	***Further Experimental Study of Asymmetric Plugging Layout on DPFs: Effect of Wall Thickness on Pressure Drop and Soot Oxidation*** *Hidemasa Iwata, Ibiden Co Ltd; Athanasios Konstandopoulos, CERTH/CPERI and Aristotle University; Kazuki Nakamura, Akihito Ogiso, Kazutake Ogyu, Toshiaki Shibata, Kazushige Ohno, Ibiden Co Ltd*
9:30 a.m.	***ORAL ONLY***	***Effect of regeneration strategy on the ash distribution and packing density measured with neutron and X-ray radiography*** *Todd Toops, Charles Finney, Oak Ridge National Laboratory; Carl Kamp*
10:00 a.m.	***2015-01-1012***	***Ash Accumulation and Impact on Sintered Metal Fiber Diesel Particulate Filters*** *Carl Justin Kamp, Paul Folino, Massachusetts Institute of Technology; Yujun Wang, Rypos Inc; Alexander Sappok, Massachusetts Institute of Technology; Jim Ernstmeyer, Amin Saeid, Rakesh Singh, Bachir Kharraja, Rypos Inc; Victor W. Wong, Massachusetts Institute of Technology*
10:30 a.m.	***ORAL ONLY***	***Mid-Channel Solid Ash Deposits in the Diesel Particulate Filter and Impact on Filter Performance*** *Carl Justin Kamp, Nicholas Custer, Alexander Sappok, Victor W. Wong, Massachusetts Institute of Technology*

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advances in Particulate Filter Substrates (Part 2 of 2)

Session Code: ***PFL423***

Room 140 F ***Session Time:*** ***1:00 p.m.***

This session investigates a new plasma ignited burner for DPF regeneration and a new DPF substrate for SCR on the filter plus one presentation on optimizing a DOC for DPF systems.

Organizers - *Kirby Baumgard, John Deere Power Systems; Thorsten Boger, Corning GmbH; Jong Lee, Aramco Services Co.; Julian Tan, Isuzu Mfg Services Of America*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1017***	***Development of New High Porosity Diesel Particulate Filter for Integrated SCR Technology/Catalyst*** *Yuki Jin, Narimasa Shinoda, Yosuke Uesaka, Tatsuyuki Kuki, Masataka Yamashita, Hirofumi Sakamoto, NGK Insulators, Ltd.; Tasuku Matsumoto, Philipp Kattouah, Claus Dieter Vogt, NGK Europe GmbH*
1:30 p.m.	***2015-01-1010***	***Combustion Efficiency of a Plasma-Ignited Diesel Burner for DPF Regeneration*** *Hongsuk Kim, Hoyeol Lee, Sunyoup Lee, Gyubaek Cho, Korea Institute of Machinery & Materials*

2:00 p.m.	***2015-01-1013***	***Optimization of Diesel Oxidation Catalyst (DOC) on Passenger Cars to Improve Emission Robustness***
		Shankar Ramadas, Sunil Prasanth Suseelan, Thiyagarajan Paramadhayalan, Ambalavanan Annamalai, General Motors India Ltd.; Rahul Mital, General Motors Co.
2:30 p.m.	***2015-01-1011***	***Feasibility Study on the Filter Design of Re-Crystallized SiC-GPF for TWC Coating Application***
		Kazutake Ogyu, Toyoki Ogasawara, Yuichi Nagatsu, Yuya Yamamoto, Tatsuhiro Higuchi, Kazushige Ohno, Ibiden Co Ltd
	2015-01-1015	***Evaluation of New 10.5¿ Substrates for Heavy Duty Diesel Applications (Written Only -- No Oral Presentation)***
		Guanyu Zheng, Jianhua Zhang, Fengshuang Wang, Kaihua Zhao, Weichai Power Emission Solutions Technology Inc.

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Load Simulation and Vehicle Performance: Handling and Dynamics (Part 1 of 2)

Session Code: ***M210***

Room 140 G ***Session Time:*** ***8:00 a.m.***

This session focuses on analysis and enhancement of vehicle dynamics performance including handling/ braking/ traction characteristics as well as robustness and active stability under the influence of loading, tire forces and intelligent tire technology for enhancing overall vehicle system dynamics and safety characteristics and robustness. Load variations and other uncertainties, impact of system hybridization and electrification on vehicle dynamics and controls will be discussed.

Organizers - *Dongpu Cao, Lancaster University; Nenggen Ding, Beihang University; Jianmin Gu, Volvo Car Corporation; Ken Kang, Honda R & D Americas Inc.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0647***	***Car-in-the-Loop Complete Vehicle Test Rig***
		Rafael Fietzek, Stephan Rinderknecht, TU Darmstadt
8:30 a.m.	***2015-01-0650***	***Vehicle Handling Prediction with Hybrid Uncertainty Using a New Analysis Method***
		Xingxing Feng, Jinglai Wu, Yunqing Zhang, Huazhong University of Science and Tech; Ming Jiang, Dongfeng Commercial Vehicle Tech Ctr
9:00 a.m.	***2015-01-0643***	***Influence of the Tire Inflation Pressure Variation on Braking Efficiency and Driving Comfort of Full Electric Vehicle with Continuous Anti-Lock Braking System***
		Dzmitry Savitski, Kristian Hoepping, Valentin Ivanov, Klaus Augsburg, Ilmenau University of Technology
9:30 a.m.	***2015-01-0649***	***Assessment of Ride Comfort and Braking Performance Using Energy-Harvesting Shock Absorber***
		Liangyao Yu, Shuhao Huo, WenWei Xuan, Tsinghua University; Lei Zuo, Virginia Tech
	2015-01-0653	***Allocation-Based Control with Actuator Dynamics for Four-Wheel Independently Actuated Electric Vehicles (Written Only -- No Oral Presentation)***
		Yu Wang, Weiwen Deng, Bing Zhu, ASCL, Jilin University; Qingrong Zhao, Bakhtiar Litkouhi, General Motors R&D Center

	2015-01-0654	***Accurate Speed Control of the DC Motor for Anti-Lock Braking System (Written Only -- No Oral Presentation)***
		Bing Zhu, Jiapeng Gong, Jian Zhao, Jian Wu, Weiwen Deng, State Key Lab of Automotive Simulation & Control, Jilin Univ

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 23

Load Simulation and Vehicle Performance: Handling and Dynamics (Part 2 of 2)

Session Code: ***M210***

Room 140 G ***Session Time:*** ***1:00 p.m.***

This session focuses on analysis and enhancement of vehicle dynamics performance including handling/ braking/ traction characteristics as well as robustness and active stability under the influence of loading, tire forces and intelligent tire technology for enhancing overall vehicle system dynamics and safety characteristics and robustness. Load variations and other uncertainties, impact of system hybridization and electrification on vehicle dynamics and controls will be discussed.

Organizers - *Dongpu Cao, Lancaster University; Nenggen Ding, Beihang University; Jianmin Gu, Volvo Car Corporation; Ken Kang, Honda R & D Americas Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0646***	***Simulation Analysis and Optimization of Vehicle Transient Response Characteristics under Steering Angle Input***
		Jian Ou, Qing-lin Zhang, Yong Zhang, E-chuan Yang, Mei-zhi Liu, Chongqing University of Technology
1:30 p.m.	***2015-01-0655***	***A Detailed Thermo-Mechanical Tire Model for Advanced Handling Applications***
		Francesco Calabrese, Fraunhofer Gesellschaft; Manfred Baecker; Carlos Galbally; Axel Gallrein
2:00 p.m.	***2015-01-0651***	***Road Profile Estimation for Active Suspension Applications***
		Mustafa Ali Arat, Delft University; Saied Taheri, Virginia Tech; Edward Holweg, Delft University
3:00 p.m.	***2015-01-0656***	***New Slip Control System Considering Actuator Dynamics***
		Amir Soltani, Cranfield Univ.; Francis Assadian, Univ. of California
	2015-01-0645	***Integrated Longitudinal Vehicle Dynamics Control with Tire/Road Friction Estimation (Written Only -- No Oral Presentation)***
		Jian Zhao, Jin Zhang, Bing Zhu, Jilin Univ
	2015-01-0652	***Implementation and Experimental Study of a Novel Air Spring Combined with Hydraulically Interconnected Suspension to Enhance Roll Stiffness on Buses (Written Only -- No Oral Presentation)***
		Hui Hua, Hunan University; Lifu Wang, University of Technology, Sydney; Hengmin Qi, Jie Zhang, Nong Zhang, Hunan University
	2015-01-0657	***Methods of Test for Balanced Value and Control over Balance Continuity in Automobile ABS when ¿=1 (Written Only -- No Oral Presentation)***
		Binglu Tu; Kai Shen, Inst of Sci & Tech Info of Zhejiang Prov

	2015-01-0658	***Experimental Investigation of Interconnected Hydraulic Suspensions with Different Configurations to Soften Warp Mode for Improving Off-Road Vehicle Trafficability (Written Only -- No Oral Presentation)***
		Min Zhou, Hunan University; Lifu Wang, University of Technology; Jie Zhang, Nong Zhang, Hunan University
	2015-01-0659	***An Improvement on Optimal Preview Acceleration Driver Model on Urgent Cornering (Written Only -- No Oral Presentation)***
		Yan Bai, Xiao Ren, Rui Fu, School of Automobile, Chang'an University

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 23

Dilute SI Combustion (Stratified Charge, EGR)

Session Code: ***PFL216***

Room 142 A ***Session Time:*** ***8:00 a.m.***

This session focuses on the dilute SI combustion processes including lean, stratified, and EGR operation. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - *Christopher J. Chadwell, Southwest Research Institute; Mark C. Sellnau, Delphi Corp.; Ruonan Sun, US Environmental Protection Agency; Richard S. Davis, General Motors Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0783***	***LPL EGR and D-EGR® Engine Concept Comparison Part 1: Part Load Operation***
		Raphael Gukelberger, Jess Gingrich, Terrence Alger, Steven Almaraz, Bradley Denton, Southwest Research Institute
8:30 a.m.	***2015-01-0781***	***LPL EGR and D-EGR® Engine Concept Comparison Part 2: High Load Operation***
		Raphael Gukelberger, Jess Gingrich, Terrence Alger, Steven Almaraz, Southwest Research Institute
9:00 a.m.	***2015-01-0784***	***Potential and Challenges for a Water-Gas-Shift Catalyst as a Combustion Promoter on a D-EGR® Engine***
		Raphael Gukelberger, Jess Gingrich, Terrence Alger, Steven Almaraz, Southwest Research Institute
9:30 a.m.	***ORAL ONLY***	***The Role of Spray-Enhanced Swirl Flow for Combustion Stabilization in a Stratified-Charge DISI Engine***
		Wei Zeng, Magnus Sjoberg, Sandia National Laboratories; David Reuss, University of Michigan, Sandia Labs; Zongjie Hu, Tongji Univ
10:00 a.m.	***2015-01-0782***	***Investigations on the Heat Transfer in a Single Cylinder Research SI Engine with Gasoline Direct Injection***
		Philipp Huegel, Heiko Kubach, Thomas Koch, Amin Velji, Karlsruhe Institute of Technology (KIT)

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Transmission Systems/Drive Unit

Session Code: ***PFL610***

Room 142 B ***Session Time:*** ***8:00 a.m.***

This session deals with the automotive transmissions of different types. It includes development of new transmission concepts, transmission enhancements and the advancement of the state of the art of transmission system design & integration with the objective of improving the transmission efficiency, NVH, durability and shift pleaseability.

Organizers - *Berthold Martin, FCA US LLC; Tejinder Singh, General Motors Co.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1086***	***Performance Characterization of Automatic Transmission Upshifts with Reduced Shift Times***
		Darrell Robinette, Gabriel Gibson, David Szpara, Eugene Tehansky, General Motors Co.
8:30 a.m.	***2015-01-1092***	***Innovative Configuration of the Closed-Loop Test Stand***
		Gabriela Achtenova, Ondrej Milacek, Czech Technical Univ.
9:00 a.m.	***2015-01-1090***	***Analytical Mechanical Loss Model for Planetary Gearset***
		Sachin Bhide, FCA US LLC
9:30 a.m.	***2015-01-1088***	***Development of a Compact Ultra-Flat Torque Converter Equipped with a High-Performance Damper***
		Tomohiko Usui, Tomoya Okaji, Honda R&D Co., Ltd.; Tatsuya Muramatsu, Yutaka Giken Co., Ltd.; Yoshiyuki Yamashita, F.C.C. Co., Ltd.
10:00 a.m.	***2015-01-1094***	***Advanced Technology for Dry Multi-Plate Clutch in FWD HEV Transmission (JATCO CVT8 HYBRID)***
		Tsuyoshi Aoyagi, JATCO, Ltd.; Shigeru Ishii, Nissan Motor Co., Ltd.; Hiroki Uehara, JATCO, Ltd.
10:30 a.m.	***2015-01-1087***	***Advancement in NVH- and Fuel-Saving Transmission and Driveline Technologies***
		Juergen Greiner, Martin Grumbach, Albert Dick, Christoph Sasse, ZF Friedrichshafen AG
11:00 a.m.	***2015-01-1091***	***Development of New CVT for Compact Car***
		Fumikazu Maruyama, Moichio Kojima, Tomoyuki Kanda, Honda R&D Co Ltd
11:30 a.m.	***2015-01-1093***	***General Motors Front Wheel Drive Seven Speed Dry Dual Clutch Automatic Transmission***
		Kirby S. Clark, Tejinder Singh, Ronald P. Buffa, Jack M. Gayney, William L. Cousins, Zhe Xie, Steven P. Moorman, Alexandria Wilson, Michael P. Fannin, Mark L. Graham, Christopher B. Preston, Michael B. Solt, David J. Varda, Mark R. Gilmore, Martin G. Foulkes, Rebecca K. Risko, General Motors Co.
	2015-01-1089	***Study of Optimum Gear Ratio Selection and Gear Shift Strategy for Automated Manual Transmission for Two Wheelers (Written Only -- No Oral Presentation)***
		Ajay Vasantrao Shinde, Prashant Jha, Anshuman Dev, Mahindra 2 Wheelers Limited
	2015-01-1095	***Development of Dc Motor based E-Shift Mechanism for Manual Transmission (Written Only -- No Oral Presentation)***
		Makarand Kumbhar, Tata Motors Ltd

	2015-01-1096	***Hydro-Mechanical Transmission Implements Regenerative Braking for the Postal LLV Trucks and a Hydraulic Hybrid Passenger Vehicle at a Lower Cost than a Conventional Vehicle (Written Only -- No Oral Presentation)***
		Robert Lloyd, Lloydco LLC

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Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

SI Combustion Ignition

Session Code: ***PFL215***

Room 142 B ***Session Time:*** ***1:00 p.m.***

This session focuses on the SI combustion ignition process and advanced ignition systems. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - *William P. Attard, FCA US LLC; Thomas Edward Briggs, Southwest Research Institute; Richard S. Davis, General Motors Co.*

Chairpersons - *Thomas Briggs, Southwest Research Institute; William Attard, Fiat Chrysler Automobiles*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0776***	***Reduction of Fuel Consumption and Engine-out NO_x Emissions in a Lean Homogeneous GDI Combustion System, Utilizing Valve Timing and an Advanced Ignition System***
		Gerben Doornbos, Stina Hemdal, Chalmers Univ. of Technology; Daniel Dahl, Volvo Cars Corporation
1:30 p.m.	***2015-01-0777***	***Study of Ignition System for Demand Voltage Reduction***
		Yuya Abe, Akimitsu Sugiura, Kaori Doi, Masamichi Shibata, DENSO Corp.; Nozomi Yokoo, Koichi Nakata, Toyota Motor Corp.
2:00 p.m.	***2015-01-0778***	***Parametric Study and Secondary Circuit Model Calibration Using Spark Calorimeter Testing***
		Zainal Abidin, Christopher Chadwell, Southwest Research Institute
2:30 p.m.	***2015-01-0779***	***Combustion Visualization, Performance, and CFD Modeling of a Pre-Chamber Turbulent Jet Ignition System in a Rapid Compression Machine***
		Gerald Gentz, Bryce Thelen, Michigan State University; Paul Litke, USAF; John Hoke, Innovative Scientific Solutions Inc; Elisa Toulson, Michigan State University
3:00 p.m.	***2015-01-0780***	***Design of a High Ignitability Spark Plug with a Flow Guide Plate***
		Noriaki Nishio, Takanobu Aochi, Nippon Soken, Inc.; Nozomi Yokoo, Koichi Nakata, Toyota Motor Corp; Yuya Abe, Ken Hanashi, DENSO Corp

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Safety-Critical Systems (Part 3 of 4)

Session Code: ***AE403***

Room 142 C ***Session Time:*** ***ALL DAY***

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - *Barbara J. Czerny, FCA US LLC; Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech. Computertechnik AG*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0268***	***Automatic Detection of Incomplete and Inconsistent Safety Requirements*** *Pablo Oliveira Antonino, Mario Trapp, Ashwin Venugopal, Fraunhofer IESE*
8:30 a.m.	***2015-01-0260***	***Formal Verification in Model Based Development*** *Ashlie B. Hocking, John C. Knight, M. Anthony Aiello, Dependable Computing Inc.; Shin'ichi Shiraishi, Toyota Info Technology Center USA*
9:00 a.m.	***2015-01-0279***	***Formal Verification Method for Safety Diagnosis Software*** *Fumio Narisawa, Masahiro Matsubara, Masataka Nishi, Hitachi Ltd; Tomohito Ebina, Hitachi Automotive Systems*
9:30 a.m.	***2015-01-0275***	***Developing Functional Safety Requirements using Process Model Variables*** *Gokul Krithivasan, William Taylor, Jody Nelson, kVA*
10:00 a.m.	***2015-01-0266***	***Implementing Mixed Criticality Software Integration on Multicore - A Cost Model and the Lessons Learned*** *Dominik Juergens, EFS GmbH; Dominik Reinhardt, BMW AG; Rolf Schneider, AUDI AG; Georg Hofstetter, EFS GmbH; Udo Dannebaum, Infineon Technologies AG; Andreas Graf, Technische Universitaet Muenchen*
10:30 a.m.	***2015-01-0280***	***Adapting Commercial Off-The-Shelf Multicore Processors for Safety-Related Automotive Systems Using Online Monitoring*** *Falco K. Bapp, Oliver Sander, Timo Sandmann, Viet Vu Duy, Steffen Baehr, Juergen Becker, Karlsruhe Institute of Technology (KIT)*
11:00 a.m.	***ORAL ONLY***	***Timing verification of real-time automotive Ethernet networks: what can we expect from simulation?*** *Nicolas Navet, University of Luxembourg; Jan Seyler, Daimler AG - Mercedes-Benz Cars; Jörn Migge, RealTime-At-Work*

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Planned by Electronics in Safety Committee / Automobile Electronics Activity

Thursday, April 23

Safety-Critical Systems (Part 4 of 4)

Session Code: ***AE403***

Room 142 C ***Session Time:*** ***1:00 p.m.***

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - *Barbara J. Czerny, FCA US LLC; Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech. Computertechnik AG*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Enabling Functional Safety for Semiconductor Designs***
		Lauri Ora, ARM, Ltd.
1:30 p.m.	***2015-01-0267***	***Diagnostic Coverage Evaluation Method for Analog Circuits to Comply with Functional Safety Standards***
		Ryoichi Inada, Teppei Hirotsu, Hitachi, Ltd.; Yasushi Morita, Takahiro Hata, Hitachi Automotive Systems, Ltd.
2:00 p.m.	***2015-01-0263***	***Automotive MOSFETs Operating in the Safe Operating Area***
		Marco Puerschel, Andreas Kiep, Infineon Technologies AG; Chris Spielman, Infineon Technologies North America Corp
2:30 p.m.	***2015-01-0269***	***Understanding Short Circuit Events and Power Semiconductors***
		Andreas Kiep, Marco Puerschel, Infineon Technologies AG; Chris Spielman, Infineon Technologies North America Corp
3:00 p.m.	***2015-01-0264***	***Frequency of Accidental CO Deaths Due to Vehicle Exhaust in Enclosed Areas***
		Jeya Padmanaban, JP Research Inc
3:30 p.m.	***ORAL ONLY***	***Modeling and Simulation for Functional Safety***
		Charles Moore, Michael Frahm, Bosch Engineering; Christian Liebler, Christopher Irwin, Bosch Engineering GmbH
	2015-01-0261	***Functional Safety Development of E-motor Drive System for PHEV (Written Only -- No Oral Presentation)***
		Shuai Li, Cheng Chang, Huichao Zhao, China FAW R&D Center
	2015-01-0262	***An Approach to Support FMEA Specification in Automotive Systems (Written Only -- No Oral Presentation)***
		Aline Cristina Dos Santos Satvanyi, Continental Automotive; Pablo Oliveira Antonino, Fraunhofer IESE

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Planned by Electronics in Safety Committee / Automobile Electronics Activity

Thursday, April 23

Engine Block Structures, Oil & Water Pumps, Intake, and Exhaust Systems

Session Code: ***PFL580***

Room 250 A ***Session Time:*** ***8:00 a.m.***

This session describes the design, modeling and performance validation of cylinder heads, lubrication pumps, intake manifolds, exhaust manifolds, and engine block structures.

Organizers - *Dwight Doig, Gabriel Moreno, Cummins Inc.*

Time	Paper No.	Title

8:00 a.m.	***ORAL ONLY***	***Gerotor CFD Modeling & Test Correlation***
		Tony A. Asghari, Continental Automotive; Sreedevi Krishnan, ANSYS Inc; Michael miller, Continental Automotive
8:30 a.m.	***2015-01-1734***	***Sizing of Coolant Passages in an IC Engine Using a Design of Experiments Approach***
		Pallavi Annabattula, Owais Iqbal, Manyam Sanka, Kunal Arora, FCA US LLC
9:00 a.m.	***2015-01-1735***	***Exhaust Manifold Durability Subject to Splash Quenching***
		Robert Wade, Jerry C. Hsieh, Ford Motor Company
9:30 a.m.	***2015-01-1736***	***Heat Rejection and Skin Temperatures of an Externally Cooled Exhaust Manifold***
		Justin Cartwright, Ahmet Selamet, Ohio State University; Robert Wade, Keith Miazgowicz, Ford Motor Co; Clayton Sloss, Wescast Industries Inc
10:00 a.m.	***2015-01-1737***	***Cumulated Microslip in Component Assembly of Engine and Gearbox***
		Jean-louis Ligier, Mathieu Benoit, Sylvain Damaz, Institut COMATEC
11:00 a.m.	***2015-01-1739***	***Simulation Driven Design of Engine Cylinder Head***
		Padmesh Mandloi, ANSYS Fluent India Pvt, Ltd.; Sourabh Shrivastava, Chetan Patil, ANSYS India; Santosh Kottalgi, ANSYS Inc.
11:30 a.m.	***2015-01-1740***	***Gaskets for Extreme Exhaust Test Applications***
		Kelsie S. Richmond, SGS Commercial Aging Services LLC; Stephen Henry, Metal Tech Industries; Russell Richmond, SGS Commercial Aging Services LLC; David Belton, General Motors Co
	2015-01-1738	***Maximizing Volumetric Efficiency of IC Engine through Intake Manifold Tuning (Written Only -- No Oral Presentation)***
		Dileep Namdeorao Malkhede, College of Engineering; Hemant Khalane, Greaves Cotton Ltd
	2015-01-1742	***Prediction and Reduction of Cylinder Liner Bore Deformation for a Two Wheeler Single Cylinder Gasoline Engine (Written Only -- No Oral Presentation)***
		Arnab Ganguly, Vikas Kumar Agarwal, Tanmay Santra, Mahindra Two Wheelers Ltd.
	2015-01-1743	***Sealing Prediction and Improvement at Cylinder Head & Block Interface under Thermo-Mechanical Loading involving Multi- Layer Steel Gasket (Written Only -- No Oral Presentation)***
		Tanmay Santra, Vikas Kumar Agarwal, Mahindra & Mahindra Ltd

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Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Powertrain Materials and Special Applications (Part 1 of 2)

Session Code: ***M103***

Room 250 B ***Session Time:*** ***8:00 a.m.***

This session features the latest material developments in automotive powertrain, suspension and fuel system applications with a variety of manufacturing methods.

Organizers - *David W. Anderson, American Iron and Steel Institute; Brandon M. Hance, Novelis Inc.; Michael L. Shaw, FCA US LLC; S Luckey, Ford Motor Co*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Analysis of Time-dependent Residual Strain Relief during Solution Heat Treatment of Al Engine Blocks using In-situ Neutron Diffraction*** *Anthony Lombardi, Ryerson University; Dimitry Sediako, Canadian Neutron Beam Centre; Alan Machin, C. (Ravi) Ravindran, Ryerson University; Robert Mackay, Nemak USA/Canada*
8:30 a.m.	***2015-01-0523***	***Composite Piston Pin, A New Lightweight Design Concept*** *Marco Maurizi, Mahle GmbH; Roland Lochmann*
9:00 a.m.	***2015-01-0517***	***Development of Materials for Gear with Superior Impact Wear Resistance*** *Masaaki Kawahara, Noriaki Katori, Tatsuya Koyama, Hino Motors, Ltd.*
9:30 a.m.	***2015-01-0522***	***Effects of Chemical Composition, Heat Treatment, and Microstructure in Splittable Forged Steel Connecting Rods*** *Robert Cryderman, Danielle Rickert, Kelly Puzak, John Speer, David Matlock, Colorado School of Mines; Michael Burnett, TimkenSteel*
10:00 a.m.	***2015-01-0521***	***The Impact upon Applicability of Metal Fuel Tank Using Different Biodiesel*** *Yong-Yuan Ku, National Chung-Hsing Univ.; Ta-Wei Tang, Ko Wei Lin, Automotive Research & Testing Center; Steven Chan, LC Fuel Tank Manufacture Co.*

Planned by Metallic Materials Committee / Materials Engineering Activity

Thursday, April 23

Powertrain Materials and Special Applications (Part 2 of 2)

Session Code: ***M103***

Room 250 B ***Session Time:*** ***1:00 p.m.***

This session features the latest material developments in automotive powertrain, suspension and fuel system applications with a variety of manufacturing methods.

Organizers - *David W. Anderson, American Iron and Steel Institute; Brandon M. Hance, Novelis Inc.; Michael L. Shaw, FCA US LLC; S Luckey, Ford Motor Co*

Time	Paper No.	Title
1:00 p.m.	***2015-01-0520***	***Development of Lead-Free Copper Alloy Bearing Material with Improved Conformability*** *Takaaki Kitahara, Takuo Imai, Osamu Ishigo, Miodrag Perovic, Daido Metal Co., Ltd.*
1:30 p.m.	***2015-01-0524***	***Development of Porous Free Combustion Chamber Prototype Cylinder Head Casting in Sand Casting*** *Maniraj Perumal, Baskar Anthonysamy, Ashokkumar Sundaramoorthy, Hero Motocorp Limited*

2:00 p.m.	***2015-01-0518***	***Effect of Surface Heat Treatment on Corrosion-Related Failure of the Suspension Spring***
		Hirokuni Fuchigami, Honda R&D Co., Ltd.
2:30 p.m.	***2015-01-0519***	***Development of ¿¿-Fe₄N Phase Control Technology and Low-Carbon Alloy Steel for High-Strength Nitrided Gear***
		Susumu Maeda, Honda R&D Co., Ltd.; Atsushi Kobayashi, Honda R&D Asia Pacific Co., Ltd.; Yuichiro Shimizu, Dowa Thermotech Co., Ltd.; Masao Kanayama, Dowa Thermo Engineering Co., Ltd.; Masato Yuya, Hideki Imataka, Nippon Steel & Sumitomo Metal Corp.

Planned by Metallic Materials Committee / Materials Engineering Activity

Thursday, April 23

Fuel Injection and Sprays (Part 5 of 6)

Session Code: ***PFL320***

Room 250 C ***Session Time:*** ***8:00 a.m.***

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Gerald Micklow, Florida Institute of Technology; Jacqueline O'Connor, Pennsylvania State University*

Chairpersons - *Jacqueline O'Connor, Pennsylvania State University; Kan Zha, Sandia National Laboratories*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0937***	***Characterization of Partially Stratified Direct Injection of Natural Gas for Spark-Ignited Engines***
		Philip Zoldak, Joel John Joseph, William Shelley, Advanced Green Innovations LLC; Jaclyn Johnson, Jeffrey Naber, Michigan Technological University
8:30 a.m.	***2015-01-0950***	***The Behavior of a Simplified Spray Model for Different Diesel and Bio-Diesel Surrogates***
		Jonas Galle, Roel Verschaeren, Sebastian Verhelst, Ghent University
9:00 a.m.	***2015-01-0933***	***Investigation of the Impact of Impingement Distance on Momentum Flux Rate of Injection Measurements of a Diesel Injector***
		Jaclyn Johnson, Jeffrey Naber, Meng Tang, Zachary Taylor, Kyle Yeakle, Michigan Technological University; Eric Kurtz, Nan Robarge, Ford Motor Co
9:30 a.m.	***2015-01-0926***	***Understanding the Effects of Fuel Type and Injection Conditions on Spray Evaporation Using Optical Diagnostics***
		Tianyun Li, Min Xu, David Hung, Shengqi Wu, Siqi Cheng, Shanghai Jiao Tong Univ
10:00 a.m.	***2015-01-0914***	***Pollutant Emission Reduction and Increased Efficiency for Compression Ignition Engines Utilizing Biodiesel through Optimization of the Fuel Injection Process***
		Ehsan Tootoonchi, Gerald Micklow, Florida Institute of Technology

11:00 a.m.	***2015-01-0919***	***Characterization Spray and Combustion Processes of Acetone-Butanol-Ethanol (ABE) in a Constant Volume Chamber***
		Timothy H. Lee, Univ of Illinois; Yilu Lin, Tsinghua University; Han Wu, Chang'an University; Lei Meng, Wuhan University of Technology; Alan Hansen, Chia-Fon Lee, Univ of Illinois
	2015-01-0915	***Application of Fuel Momentum Measurement Device for Direct Injection Natural Gas Engines (Written Only -- No Oral Presentation)***
		Ehsan Faghani, Patrick Kirchen, Steven N. Rogak, University of British Columbia

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Fuel Injection and Sprays (Part 6 of 6)

Session Code: ***PFL320***

Room 250 C ***Session Time:*** ***1:00 p.m.***

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Gerald Micklow, Florida Institute of Technology; Jacqueline O'Connor, Pennsylvania State University*

Chairpersons - *Gerald Micklow, Florida Institute of Technology; Tarek M. Abdel-Salam, East Carolina University*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0940***	***Response Surface Analysis on Fuel Injection Quantity Fluctuation of Electronic In-Line Pump System for Diesel Engines***
		Yun Bai, Liyun Fan, Xiuzhen Ma, Enzhe Song, Xin Yan, Harbin Engineering University
1:30 p.m.	***2015-01-0932***	***An Experimental Study of Injection and Combustion with Dimethyl Ether***
		Satoru Sasaki, Masaaki Kato, Takamasa Yokota, DENSO Corp; Mitsuru Konno, Ibaraki University; Denis Gill, AVL LIST GmbH
2:00 p.m.	***2015-01-0929***	***Measurements of Time-Resolved Mass Injection Rates for a Multi-Hole and an Outward Opening Piezo GDI Injector***
		Petter Dahlander, Chalmers Univ. of Technology; Daniele Iemmolo, Yifei Tong, Politecnico di Torino
	2015-01-0911	***Experimental Investigation of the Primary Spray Development of GDI Injectors for Different Nozzle Geometries (Written Only -- No Oral Presentation)***
		Juliane Wetzel, Michael Henn, Mark Gotthardt, Volkswagen AG; Hermann Rottengruber, Otto-von-Guericke Universität Magdeburg

	2015-01-0920	***Transient Spray Characteristics of Air Assisted Fuel Injection (Written Only -- No Oral Presentation)***
		J. Sureshkumar, R Elayaraja, UCAL Fuel Systems, Ltd.; J M Mallikarjuna, Ganesan Venkitachalam, Indian Institute of Technology
	2015-01-0925	***Injected Droplet Size Effects on Diesel Spray Results with RANS and LES Turbulence Models (Written Only -- No Oral Presentation)***
		Erik Elmtoft, A. S. (Ed) Cheng, San Francisco State University; Nick Killingsworth, Russell Whitesides, Lawrence Livermore National Laboratory

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Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Thermal Systems for Hybrid and Electric Vehicles

Session Code: ***HX105***

Room 251 A ***Session Time:*** ***8:00 a.m.***

The purpose of this session is to share experiences and lessons learned to advance the technology in the field of thermal management of electric and hybrid vehicle systems. This session presents papers covering both testing and simulation of hybrid and electric vehicle thermal systems.

Organizers - *Ales Alajbegovic, Exa Corporation; Ramesh Goyal; John Rugh, National Renewable Energy Laboratory; Sudhi Uppuluri, Computational Sciences Experts Group*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1711***	***New Methods of Heating Hybrid and Electric Vehicles***
		Christian Hainzlmaier, Webasto Thermo & Comfort SE; Alejandro S. Regueiro, Webasto Thermo & Comfort NA Inc.; Marvin Lappe, Webasto Thermo & Comfort SE
8:30 a.m.	***2015-01-1709***	***Combined Fluid Loop Thermal Management for Electric Drive Vehicle Range Improvement***
		Daniel Leighton, National Renewable Energy Laboratory
9:00 a.m.	***2015-01-1708***	***Modeling of an Electric Vehicle Thermal Management System in MATLAB/Simulink***
		Tibor Kiss, Jason Lustbader, Daniel Leighton, National Renewable Energy Laboratory
9:30 a.m.	***2015-01-1710***	***A Hybrid Electric Vehicle Thermal Management System - Nonlinear Controller Design***
		Xinran Tao, Clemson Univ.; Kan Zhou, Universion of Michigan; Andrej Ivanco, John R. Wagner, Clemson Univ.; Heath Hofmann, University of Michigan; Zoran Filipi, Clemson-ICAR
10:00 a.m.	***2015-01-1712***	***Impact of TEGs on the Fuel Economy of Conventional and Hybrid Vehicles***
		Ram Vijayagopal, Aymeric Rousseau, Argonne National Laboratory

	2015-01-1713	***Thermal Effectiveness of Multilayer Heat Shielding Automotive Components - Influences of Different Layers on Heat Radiant and Convection Heat Measurements (Written Only -- No Oral Presentation)***
		Manfred Klaus Kirschning, Frank Reußwig, Zipper-Technik GmbH

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Planned by Thermal Management Activity / EMB Land and Sea Group

Thursday, April 23

Models for CI Combustion and Emissions

Session Code: ***PFL113***

Room 251 A ***Session Time:*** ***1:00 p.m.***

This sub-session covers zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of CI engines with respect to combustion and emissions.

Organizers - *Jan Macek, Czech Technical Univ.; Federico Millo, Politecnico di Torino; Christof Schernus, Christof Schernus, FEV GmbH; Xiaofeng Yang, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1744***	***Modified Heat Release Analysis for Diesel-Assisted CNG Combustion***
		Jonathan M. S. Mattson, Chenaniah Langness, Christopher Depcik, Univ. of Kansas
1:30 p.m.	***2015-01-1745***	***Towards Control-Oriented Modeling of Natural Gas-Diesel RCCI Combustion***
		Cemil Bekdemir, Rik Baert, Frank Willems, TNO Automotive; Bart Somers, Eindhoven University of Technology
2:00 p.m.	***2015-01-1746***	***Development and Validation of a New Zero-Dimensional Semi-Physical NOx Emission Model for a D.I. Diesel Engine Using Simulated Combustion Process***
		Hassan Karaky, Gilles Mauviot, Renault; Xavier Tauzia, Alain Maiboom, Ecole Centrale De Nantes
2:30 p.m.	***2015-01-1748***	***Sequential Model for Residual Affected HCCI with Variable Valve Timing***
		Hrishikesh A. Saigaonkar, Mohammadreza Nazemi, Mahdi Shahbakhti, Michigan Technological Univ

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Reliability and Robust Design in Automotive Engineering: Model Validation and Verification (Part 1 of 2)

Session Code: ***IDM106***

Room 251 B ***Session Time:*** ***8:00 a.m.***

Model Validation and Verification invite papers that deal with the theoretical and/or applied aspects of one or more of the following representative topics: model development, model correlation/calibration, model verification, model validation, uncertainty quantification, uncertainty propagation, validation metrics, predictive capability assessment, etc.

Organizers - *Zhimin Xi, University of Michigan - Dearborn; Zhenfei Zhan, Chongqing University*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0448***	***New Trivial Principal Component Method: System Modeling*** *Balakrishna Chinta, General Motors Powertrain*
8:30 a.m.	***2015-01-0455***	***An Adaptive Copula-Based Approach for Model Bias Characterization*** *Hao Pan; Zhimin Xi, University of Michigan; Ren-Jye Yang, Ford Motor Co*
9:30 a.m.	***ORAL ONLY***	***Advanced Model Validation and UQ Procedures applied to Thermal-Mechanical Response and Weld Failure in Heated Pressurized Canisters*** *Vicente Romero, Amalia Black, Nicole Breivik, George Orient, Amanda Dodd, Jill Suo-Anttila, Bonnie Antoun, Sandia National Laboratories*
10:00 a.m.	***2015-01-0443***	***Research on Validation Metrics for Multiple Dynamic Response Comparison under Uncertainty*** *Zhenfei Zhan, Junqi Yang, Chongqing University; Yan Fu, Ren-Jye Yang, Saeed Barbat, Ford Motor Co; Ling Zheng, Chongqing University*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00504, and also individually. To purchase visit collections.sae.org

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Thursday, April 23

Reliability and Robust Design in Automotive Engineering: Model Validation and Verification (Part 2 of 2)

Session Code: ***IDM106***

Room 251 B ***Session Time:*** ***1:00 p.m.***

Model Validation and Verification invite papers that deal with the theoretical and/or applied aspects of one or more of the following representative topics: model development, model correlation/calibration, model verification, model validation, uncertainty quantification, uncertainty propagation, validation metrics, predictive capability assessment, etc.

Organizers - *Zhimin Xi, University of Michigan - Dearborn; Zhenfei Zhan, Chongqing University*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0446***	***The Business Case for Model-Based Software Development*** *Ronald Lannan, LHP Software LLC*
1:30 p.m.	***2015-01-0452***	***Development of a Comprehensive Validation Method for Dynamic Systems and Its Application on Vehicle Design*** *Junqi Yang, Zhenfei Zhan, Chong Chen, Yajing Shu, Ling Zheng, Chongqing University; Ren-Jye Yang, Yan Fu, Saeed Barbat, Ford Motor Co*

2:00 p.m.	***2015-01-0453***	***Validation Metric for Dynamic System Responses under Uncertainty***
		Zhimin Xi, University of Michigan; Hao Pan; Yan Fu, Ren-Jye Yang, Ford Motor Co
2:30 p.m.	***2015-01-0447***	***Simulation Based Process Reliability Design***
		Venkatesh Agaram, Julian Venegas, PTC Inc.
3:00 p.m.	***ORAL ONLY***	***Reliable Design with Problematic Models: Uncertainties, Interdependent and Coupled Uncertainties, Suggestions and Case Studies***
		Zhimin Xi, University of Michigan - Dearborn; Ren-Jye Yang, Ford Motor Co
3:30 p.m.	***2015-01-0451***	***A Simplified Three-Dimensional Finite Element Model of Serpentine Belt and its Application into a Belt Driving System***
		Hao Zhu, Yumei Hu, Changlong Li, Biwen Zhou, Xi Tan, Chongqing University
	2015-01-0444	***Prediction Considering Multi-Model and Model Form Uncertainty in the Parameter Space (Written Only -- No Oral Presentation)***
		Xueqian Chen, Zhanpeng Shen, Qinshu He, Institute of Systems Engineering, CAEP
	2015-01-0449	***Improvement and Validation of Hybrid III Dummy Knee Finite Element Model (Written Only -- No Oral Presentation)***
		Libo Cao, Kai Zhang, Xin Lv, Lingbo Yan, Hunan University
	2015-01-0454	***Study on Area Metric Based upon Multiple Correlated System Response Quantities (Written Only -- No Oral Presentation)***
		Zhanpeng Shen, Engineering & Design; Xueqian Chen; Qinshu He; Chao Ping Zang

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Thursday, April 23

Business Modeling/Operation Research/Big Data Analytics (Part 1 of 2)

Session Code: ***IDM110***

Room 251 C ***Session Time:*** ***8:00 a.m.***

Business Modeling/Operation Research/Big Data Analytics are key enablers for the next wave of innovation and growth across most industries and will address complex issues and systems that involve multiple objective, many alternatives, trade-offs between competing effects, large amounts of data and situations involving uncertainty or risk. This session will address new technical advances in these areas and provide valuable insights through the applications of real-world case studies.

Organizers - *Michael Cavaretta, Ford Motor Co.; Wei Chen, Northwestern Univ.; Yan Fu, Ford Motor Co.; Ramakrishna Koganti, Ramk Inc.*

Time	***Paper No.***	***Title***
8:30 a.m.	***ORAL ONLY***	***21st Century INORA Math Engine for Big Data Analysis***
		Prakash T. Sathe
9:00 a.m.	***2015-01-0460***	***Effective Decision Making and Data Visualization Using Partitive Clustering and Principal Component Analysis (PCA) for High Dimensional Pareto Frontier Data***
		Saket Kansara, ESTECO Software India Pvt. Ltd.; Sumeet Parashar, Zhendan Xue, ESTECO North America Inc

9:30 a.m.	***2015-01-0466***	***Potential Natural Gas Impact on Cost Efficient Capacity Planning for Automakers and Electricity Generators in a Carbon Constrained World***
		Boxiao Chen, University of Michigan; Yan Fu, Margaret Strumolo, Ford Motor Company; Xiuli Chao, University of Michigan; Michael Tamor, Ford Motor Company
10:00 a.m.	***2015-01-0461***	***The Analysis of Vehicle Telediagnostic Parametric Data***
		Dennis Craggs, FCA US LLC
11:00 a.m.	***2015-01-0464***	***Process-Integrated Measurements of Products and Parts - Innovation Management for Applied Photography and Photogrammetry***
		Christian-Andreas Schumann, Eric Forkel, Thomas Klein, University of Zwickau; Dieter Gerlach, Dimensional Technology International Inc; Egon Mueller, Chemnitz University of Technology

Thursday, April 23

Business Modeling/Operation Research/Big Data Analytics (Part 2 of 2)

Session Code: ***IDM110***

Room 251 C ***Session Time:*** ***1:00 p.m.***

Business Modeling/Operation Research/Big Data Analytics are key enablers for the next wave of innovation and growth across most industries and will address complex issues and systems that involve multiple objective, many alternatives, trade-offs between competing effects, large amounts of data and situations involving uncertainty or risk. This session will address new technical advances in these areas and provide valuable insights through the applications of real-world case studies.

Organizers - *Michael Cavaretta, Ford Motor Co.; Wei Chen, Northwestern Univ.; Yan Fu, Ford Motor Co.; Ramakrishna Koganti, Ramk Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0463***	***An Empirical Approach Applied in Assessing the Software Product Quality through VPRS Analysis (Written Only -- No Oral Presentation)***
		Kasiraja Thangapandian, Immanuel Rajkumar, Visteon Technical and Services Centre
1:30 p.m.	***2015-01-0468***	***Analyzing and Predicting Heterogeneous Customer Preferences in China's Auto Market Using Choice Modeling and Network Analysis***
		Mingxian Wang, Wei Chen, Northwestern Univ.; Yan Fu, Yong Yang, Ford Motor Co.
2:00 p.m.	***ORAL ONLY***	***Industry 4.0: Long Term Aspiration or Inevitable Next Step?***
		Adrian Jennings, Ubisense Inc.
2:30 p.m.	***ORAL ONLY***	***Product Cost Management***
		Edward E. Mabley, Siemens Industry Software
	2015-01-0469	***City Readiness System Assessment of Electric Vehicle Adoption in China (Written Only -- No Oral Presentation)***
		Ning Wang; Yafei Liu

Thursday, April 23

RCCI and Dual-Fuel Low Temperature Combustion (Part 3 of 3)

Session Code: ***PFL262***

Room 252 A ***Session Time:*** ***8:00 a.m.***

Computational modeling and analysis of Reactivity Controlled Compression Ignition (RCCI) combustion. Papers focus on analyzing and improving RCCI combustion using novel injection strategies, combustion chamber designs, and fueling combinations.

Organizers - *Scott Curran, Oak Ridge National Laboratory; Andrew Ickes, Argonne National Laboratory; Sage Kokjohn, Univ. of Wisconsin Madison; Benjamin Lawler, Stony Brook Univ.; William F. Northrop, Univ. of Minnesota-Twin Cities*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0843***	***Comparison of Variable Valve Actuation, Cylinder Deactivation and Injection Strategies for Low-Load RCCI Operation of a Light Duty Engine*** *Anand Nageswaran Bharath, Yangdongfang Yang, Rolf D. Reitz, Christopher Rutland, University of Wisconsin*
8:30 a.m.	***2015-01-0839***	***Isobutanol as Both Low Reactivity and High Reactivity Fuels with Addition of Di-Tert Butyl Peroxide (DTBP) in RCCI Combustion*** *Dan DelVescovo, Hu Wang, Martin Wissink, Rolf D. Reitz, University of Wisconsin*
9:00 a.m.	***2015-01-0858***	***Active Injection Control for Enabling Clean Combustion in Ethanol-Diesel Dual-Fuel Mode*** *Xiaoye Han, Prasad Divekar, Graham Reader, Ming Zheng, Jimi Tjong, Univ of Windsor*
9:30 a.m.	***2015-01-0859***	***Energy Efficiency Comparison between Butanol and Ethanol Combustion with Diesel Ignition*** *Tongyang Gao, Graham Reader, Jimi Tjong, Ming Zheng, Univ. of Windsor*
10:00 a.m.	***2015-01-0844***	***An Experimental Investigation of Injection and Operating Strategies on Diesel Single Cylinder Engine under JP-8 and Dual-Fuel PCCI Combustion*** *Sanghyun Chu, Jeongwoo Lee, Jaehyuk Cha, Seoul National Univ; Hoimyung Choi, Advanced Institutes of Convergence Tech; Kyoungdoug Min, Seoul National Univ*
10:30 a.m.	***2015-01-0854***	***An Investigation into the Operating Strategy for the Dual-Fuel PCCI Combustion with Propane and Diesel under a High EGR Rate Condition*** *Jeongwoo Lee, Sanghyun Chu, Jaehyuk Cha, Seoul National Univ; Hoimyung Choi, Advanced Institutes of Convergence Tech; Kyoungdoug Min, Seoul National Univ*

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advanced Battery Technologies (Part 3 of 4)

Session Code: ***PFL730***

Room 252 B ***Session Time:*** ***8:00 a.m.***

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - *James Miller, Argonne National Laboratory; Wayne Cai, General Motors; Yi Ding; Alvaro Masias, Ford Motor Co.; Ramesh Rebba, General Motors Co.*

Time	Paper No.	Title

8:00 a.m.	***2015-01-1179***	***Electrochemically Powered Vehicles: Current Possibilities and Investigation of the Li-O2 Electrochemical Reaction on Catalyst Surfaces: Implications for a Metal-Air Battery*** *Christopher J. Brooks, Eric Kreidler, Honda Research Institute USA Inc.*
8:30 a.m.	***2015-01-1193***	***Degradation Analysis of Pouch Cell Using High-Energy Cathode Material for Advanced Lithium-ion Battery*** *Hiroto Maeyama, Toru Sukigara, Honda R&D Co., Ltd.*
9:00 a.m.	***2015-01-1198***	***Simulation of Lithium Ion HEV Battery Aging Using Electrochemical Battery Model under Different Ambient Temperature Conditions*** *Ming Cheng, Lei Feng, Bo Chen, Michigan Technological University*
9:30 a.m.	***2015-01-1187***	***Employing Real Automotive Driving Data for Electrochemical Impedance Spectroscopy on Lithium-Ion Cells*** *Nils Lohmann, Peter Haussmann, Patrick Wesskamp, Joachim Melbert, Thomas Musch, Ruhr-University Bochum*
10:30 a.m.	***2015-01-1180***	***Modeling of Open Circuit Voltage Hysteresis for LiFePO₄ Batteries*** *Letao Zhu, Zechang Sun, Haifeng Dai, Xuezhe Wei, Tongji University*
	2015-01-1182	***Three-Dimensional Electrochemical Analysis of a Graphite/LiFePO₄ Li-Ion Cell to Improve Its Durability (Written Only -- No Oral Presentation)*** *Mehrdad Mastali Majdabadi Kohneh, Ehsan Samadani, University of Waterloo; Siamak Farhad, University of Akron; Roydon Fraser, Michael Fowler, University of Waterloo*

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Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advanced Battery Technologies (Part 4 of 4)

Session Code: ***PFL730***

Room 252 B ***Session Time:*** ***1:00 p.m.***

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - *James Miller, Argonne National Laboratory; Wayne Cai, General Motors; Yi Ding; Alvaro Masias, Ford Motor Co.; Ramesh Rebba, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1184***	***Thermal Management of Lithium-Ion Pouch Cell with Indirect Liquid Cooling using Dual Cold Plates Approach*** *Satyam Panchal, Scott Mathewson, Roydon Fraser, Richard Culham, Michael Fowler, University of Waterloo*

1:30 p.m.	***2015-01-1197***	***An Application of the Linear and Time-Invariant Method for the System-Level Thermal Simulation of an EV Battery***
		Chao Chen, Industrial Mathematics Competence Center; Franz Diwoky, Zoran Pavlovic, Johann Wurzenberger, AVL LIST GmbH
2:00 p.m.	***2015-01-1189***	***Experimental Measurements of Thermal Characteristics of LiFePO₄ Battery***
		Satyam Panchal, Scott Mathewson, Roydon Fraser, Richard Culham, Michael Fowler, University of Waterloo

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Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Combustion in Compression-Ignition Engines: Efficiency and Emissions

Session Code: ***PFL221***

Room 258 ***Session Time:*** ***8:00 a.m.***

Papers focusing on efficiency and emissions for classical diesel engine combustion with relatively short ignition delay, including papers dealing with low CR and high EGR calibrations. Subject matter may include both experimental and simulation results focused on applications of piston bowl design, heat transfer, and fuel injection, or other factors affecting fuel efficiency and engine-out emissions.

Organizers - *Raul Payri, Universidad Politecnica de Valencia; Rishikesh Venugopal, Achates Power Inc.; Robert M. McDavid, Caterpillar Inc.; Paul C. Miles, Sandia National Laboratories; Dale R. Tree, Brigham Young Univ.; John F. Wright, Cummins Inc.; Ming Zheng, Univ. of Windsor; Mark Musculus, Sandia National Laboratories*

Chairpersons - *Yongli Qi, Caterpillar Inc; Ming Zheng, Univ of Windsor*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0785***	***Fuel Consumption Improvement of 2.4L ULPC Diesel Engine by Optimizing the Combustion System; Nozzle, Swirl Ratio and Piston Bowl Geometry***
		Dockoon Yoo, Jihun Song, Yeongchu Kim, Wook Jung, Duksang Kim, Doosan Infracore Co., Ltd.
9:00 a.m.	***2015-01-0786***	***A Study on Reduction of Heat Loss by Optimizing Combustion Chamber Shape***
		Keita Arato, Teruyuki Takashima, ISUZU Advanced Engineering Center, Ltd.
9:30 a.m.	***2015-01-0788***	***Small Bore Diesel Engine Combustion Concept***
		Kentaro Nishida, Takashi Ogawa, Takeshi Hashizume, Shinobu Ishiyama, Ryo Hasegawa, Toyota Motor Corporation
	2015-01-0787	***Ozone-Assisted Combustion: Experimental Assessment of the Influence of Ozone in a Single-Cylinder Diesel Engine (Written Only -- No Oral Presentation)***
		Michael Mangus, Christopher Depcik, University of Kansas; Colter Ragone, Honda R & D Americas Inc; Edward Peltier, University of Kansas
	2015-01-0789	***Bowl Shape Design Optimization for Engine-Out PM Reduction in Heavy Duty Diesel Engine (Written Only -- No Oral Presentation)***
		Jongyoon Lee, Sangyul Lee, Jungho Kim, Duksang Kim, Doosan Infracore Co., Ltd.

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Chat with the Experts: Connected Vehicles Pilot Certification Testing

Session Code: ***CHAT***

Room 258 Chat with the Experts ***Session Time:*** ***3:00 p.m.***

This session will introduce the approach and concepts for Certification Testing, to qualify a device for the Test Bed, that are being developed in a cooperative agreement between USDOT, OSC, 7Layers, and Danlaw. Come learn what is happening, chat with the leading experts in the certification field, and find out how to prepare for Connected Vehicle Pilot Certification Testing.

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the experts***
		Walton L. Fehr, US Dept. of Transportation; Andrew Donaldson, Danlaw Inc.; Michael Brown, OCS/Southwest Research Institute; Shubha P. Gopalakrishna, 7Layers

Thursday, April 23

HCCI (Part 1 of 2): Simulation and Experimental Studies

Session Code: ***PFL230***

Room 259 ***Session Time:*** ***8:00 a.m.***

Classical HCCI combustion with temperature controlling combustion onset and only a modest effect of fuel injection. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and mode change are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are encouraged to be submitted into PFL 110 or PFL120 modeling sessions.

Organizers - *Scott Goldsborough, Argonne National Laboratory; Darko Kozarac, Univ. of Zagreb; Samveg Saxena, Lawrence Berkeley National Laboratory; Mahdi Shahbakhti, Michigan Technological Univ.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0816***	***Modeling HCCI Engine Combustion Coupling Cantera to KIVA 4***
		Carlos Felipe Forigua Rodriguez, Juan Mantilla, Universidad Nacional de Colombia
8:30 a.m.	***2015-01-0821***	***Simulating a Complete Performance Map of an Ethanol-Fueled Boosted HCCI Engine***
		Alvaro Pinheiro, David Vuilleumier, University of California; Darko Kozarac, University of Zagreb; Samveg Saxena, Lawrence Berkeley National Laboratory
9:00 a.m.	***2015-01-0822***	***Model Predictive Control for Combustion Timing and Load Control in HCCI Engines***
		Khashayar Ebrahimi, Charles Koch, Univ of Alberta
9:30 a.m.	***2015-01-0825***	***Optimization of Heat Release Shape and the Connecting Rod Crank Radius Ratio for Low Engine Noise and High Thermal Efficiency of Premixed Diesel Engine Combustion***
		Gen Shibata, Koki Ishi, Hokkaido Univ.; Hirooki Ushijima, Subaru Motors; Yushi Shibaike, Hideyuki Ogawa, Hokkaido Univ.; David E. Foster, University of Wisconsin

10:00 a.m.	***2015-01-0818***	***Investigation of Negative Valve Overlap Reforming Products Using Gas Sampling and Single-Zone Modeling***
		Brian Peterson, Sandia National Laboratories, University of Edinburgh; Isaac Ekoto, Sandia National Laboratories; William Northrop, Univ of Minnesota
10:30 a.m.	***2015-01-0811***	***Ignition Characteristics of Ethane and Its Roles in Natural Gas for HCCI Engine Operation***
		Hiroki Tanaka, Kazunobu Kobayashi, Takahiro Sako, Osaka Gas Co., Ltd.; Yasuyuki Sakai, University of Fukui; Masahiro Furutani, Nagoya Institute of Technology; Kazunari Kuwahara, Osaka Institute of Technology

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

HCCI (Part 2 of 2): Experimental Studies

Session Code: ***PFL230***

Room 259 ***Session Time:*** ***1:00 p.m.***

Classical HCCI combustion with temperature controlling combustion onset and only a modest effect of fuel injection. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and mode change are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are encouraged to be submitted into PFL 110 or PFL120 modeling sessions.

Organizers - *Scott Goldsborough, Argonne National Laboratory; Brian C. Kaul, Oak Ridge National Laboratory; Darko Kozarac, Univ. of Zagreb; Samveg Saxena, Lawrence Berkeley National Laboratory; Mahdi Shahbakhti, Michigan Technological Univ.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0813***	***Effects of Gasoline Reactivity and Ethanol Content on Boosted, Premixed and Partially Stratified Low-Temperature Gasoline Combustion (LTGC)***
		John E. Dec, Sandia National Laboratories; Yi Yang, Univ of Melbourne; Jeremie Dernotte, Chunsheng Ji, Sandia National Laboratories
1:30 p.m.	***2015-01-0824***	***Energy Distribution Analysis in Boosted HCCI-like / LTGC Engines - Understanding the Trade-Offs to Maximize the Thermal Efficiency***
		Jeremie Dernotte, John E. Dec, Chunsheng Ji, Sandia National Laboratories
2:00 p.m.	***2015-01-0820***	***Reaction Zone Propagation by Spark Discharge in Homogeneous Lean Charge after Low-Temperature Oxidation***
		Kazunari Kuwahara, Osaka Institute of Technology; Masahiro Furutani, Yasuhiko Ohta, Nagoya Institute of Technology; Hiromitsu Ando, Imagineering, Inc.
2:30 p.m.	***2015-01-0828***	***Investigations of the Effect of Ambient Condition on SACI Combustion Range***
		Brandon Mendrea, Robert Bosch LLC; Yan Chang, Univ of Michigan; Yusuf Zeynel Abidin Akkus, Jeff Sterniak, Robert Bosch LLC; Stanislav Bohac, Univ of Michigan

3:30 p.m.	***ORAL ONLY***	***Experimental Investigation of the Impact of In-cylinder Pressure Oscillations on Piston Heat Transfer***
		Eric Gingrich, Daniel Janecek, Jaal Ghandhi, Univ of Wisconsin Madison
	2015-01-0827	***Comparison of Performance, Efficiency and Emissions between Gasoline and E85 in a Two-Stroke Poppet Valve Engine with Lean Boost CAI Operation (Written Only -- No Oral Presentation)***
		Yan Zhang, Macklini Dalla Nora, Hua Zhao, Brunel University

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Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Vehicle Electrification Strategies for Sustainability

Session Code: ***SDP117***

Room 260 Portside Ballroom ***Session Time:*** ***8:00 a.m.***

In this session speakers will explore the issues and design strategies of bringing sustainable EV, PHEV and vehicle electrification technologies to market. Identifying the customer value of these sustainable technologies is key to their success and growth. The design models and systems presented in this session highlight ways to optimize customer value to make these technologies successful.

Organizers - *Richard T. Paul, Environmental Management Consultants; Nakia Simon, FCA US LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1687***	***Quantifying the Effect of Fast Charger Deployments on Electric Vehicle Utility and Travel Patterns via Advanced Simulation***
		Eric Wood, Jeremy S. Neubauer, Evan Burton, National Renewable Energy Laboratory
8:30 a.m.	***2015-01-1688***	***Measuring the Benefits of Public Chargers and Improving Infrastructure Deployments Using Advanced Simulation Tools***
		Eric Wood, Jeremy S. Neubauer, Evan Burton, National Renewable Energy Laboratory
9:00 a.m.	***2015-01-1686***	***Study of a Dynamic Charging System for Achievement of Unlimited Cruising Range in EV***
		Takamitsu Tajima, Wataru Noguchi, Tomohisa Aruga, Honda R & D Co., Ltd.
9:30 a.m.	***2015-01-1685***	***Electric Vehicles in the Gulf Region: Performance and Potential***
		Omar Abu Mohareb, Phan-Lam Huynh, FKFS; A. Al-Janabi, Sultan Qaboos University; Michael Grimm, Hans-Christian Reuss, FKFS
10:00 a.m.	***ORAL ONLY***	***Mesoscopic Power Demand Modeling for Transportation Electrification in an Urban Environment***
		Jan-Mou Li, Syndney Jenkins, Oak Ridge National Laboratory

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Planned by Sustainable Development Program Committee / Engineering Meetings Board

Thursday, April 23

Chat with the Experts: Design, Simulation, Testing, Production, and Process Optimization: The Role of the Materials Engineer

Session Code: ***CHAT***

Room 260 Portside Ballroom / Chat with the ***Session Time:*** ***4:00 p.m.***

Everything has to be made out of something. What is the best material for a given application? How can designers know what material properties to use in a simulation? How does processing influence a material¿s performance? How can failure analysis provide insights for better designs? Materials expertise can inform decision-making at all stages of the product development cycle. How can materials engineers best support the needs of their organizations? How can organizations get the best value from their materials engineers? This discussion will focus on how materials engineering can provide a key supporting role in design and analysis, simulation, testing, production, and process optimization.

Time	*Paper No.*	*Title*
	ORAL ONLY	***Learn more about the expert***
		David Elijah Palmer, BRP US Inc.

Thursday, April 23

Body Engineering and Design (Part 1 of 2)

Session Code: ***SS100***

Room 312 A ***Session Time:*** ***8:00 a.m.***

BE & D cover several important areas that are related to vehicle body, including its components such as instrument panel, steering column and wheel, seats, hood, decklid, transmission cross-member, hard mounted chassis, CRFM, etc. Topics included are: Novel concepts, Analysis, Design, Testing, Predictions of strength, stiffness, and fatigue life, welding methods, vehicle body quality, durability, reliability, safety, ride & handling, NVH, aerodynamics, mass reduction, as well as fuel economy.

Organizers - *Mallikarjuna Bennur, General Motors Co.; Raghu Echempati, Kettering Univ.; Ramakrishna Koganti, Ramk Inc.; Vesna Savic, General Motors Co.*

Chairpersons - *Mallikarjuna Bennur, General Motors Co.*

Time	*Paper No.*	*Title*
8:00 a.m.	*ORAL ONLY*	***A Novel Rear-view Side Mirror to Improve Both Aerodynamic Resistance and Blind Spot***
		Hyunbin Park, Jaekwang Cha, Minseob Sim, SIT & YICT, Yonsei University
8:30 a.m.	*2015-01-1313*	***Accounting for Thermal and Gravity Force Effects on Automotive Components Using 3D Simulation Software***
		Donald Jasurda, DCS Inc.
9:00 a.m.	*2015-01-1312*	***Re-design of Power Sliding Door Pulley System***
		MyoungKwon Je, Hyundai Motor Company
9:30 a.m.	*2015-01-1309*	***A Study of Wheel Guards for Reduction of High Frequency Road-Noise***
		Hyunggyung Kim, Hyundai Motor Company
	2015-01-1310	***Evaluation of Two Wheeled Vehicle Frame through Virtual Simulation and Testing (Written Only -- No Oral Presentation)***
		Rama Subbu, Baskar Anthonysamy, Piyush Mani Sharma, Prasanna Mahendiran, Hero MotoCorp Ltd
	2015-01-1318	***Study of Sliding Door Closing Speed for a Manually Operated Sliding Door (Written Only -- No Oral Presentation)***
		Mohammad Muneer, Yogesh Sharma, Maruti Suzuki India, Ltd.

2015-01-1368	***Analysis and optimization of All Terrain Wheelchair (Written Only -- No Oral Presentation)***	
	Shikhar Agarwal, Saumya Gautam, Krishna Institute of Engrg & Technology	

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Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity; Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Body Engineering and Design (Part 2 of 2)

Session Code: ***SS100***

Room 312 A ***Session Time:*** ***1:00 p.m.***

BE & D cover several important areas that are related to vehicle body, including its components such as instrument panel, steering column and wheel, seats, hood, decklid, transmission cross-member, hard mounted chassis, CRFM, etc. Topics included are: Novel concepts, Analysis, Design, Testing, Predictions of strength, stiffness, and fatigue life, welding methods, vehicle body quality, durability, reliability, safety, ride & handling, NVH, aerodynamics, mass reduction, as well as fuel economy

Organizers - *Mallikarjuna Bennur, General Motors Co.; Raghu Echempati, Kettering Univ.; Ramakrishna Koganti, Ramk Inc.; Vesna Savic, General Motors Co.*

Chairpersons - *Mallikarjuna Bennur, General Motors Co.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1314***	***EPOSIL® for Automotive Suspension Components, Coils Springs and High Pressure Vessels***
		Max Sardou, Sardou Societe Anonyme; Patricia Djomseu, Qip Sarl
1:30 p.m.	***2015-01-1319***	***Manufacturing Technology for Hollow Structure Large Aluminum Parts Production by High Pressure Die Casting (HPDC)***
		Eitaro Koya, Yukihide Fukuda, Shinya Kitagawa, Honda R&D Co., Ltd.; Mitsunori Murakami, Atsushi Kawauchi, Sadanori Furue, Kyushu Yanagawa Seiki Co., Ltd.
2:00 p.m.	***2015-01-1311***	***Design of a Composite Structural Panel for High Volume Production***
		Leland Decker, James Truskin, FCA US LLC
2:30 p.m.	***2015-01-1316***	***FEA Development of Spot Weld Modeling with Fracture Forming Limit Diagram(FFLD) Failure Criteria and Its Application to Vehicle Body Structure***
		Hwawon Lee, Parvath Police, Lisa Koch, Rajmouli Komarivelli, Brice Willis, General Motors Co.
3:00 p.m.	***~~2015-01-1308~~***	***Is BIW light-weighting really lighter on pocket?***
	ORAL ONLY	*Rajiv Hiralal Pant, Tata Motors, Ltd.; Vyankatesh Govind Naidu, Tata Technologies*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00510, and also individually. To purchase visit collections.sae.org

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity; Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Occupant Protection: Biomechanics

Session Code: ***SS501***

Room 312 B ***Session Time:*** ***8:00 a.m.***

The Biomechanics session presents new research on automotive occupant kinematics, human injury biomechanics, and human tolerance in an automotive environment. This includes new methodologies in the study of human injury, studies of human interaction with occupant protection systems, technological advances in physical and virtual anthropomorphic test devices, and other experimental, analytical and modeling studies on the biomechanics of human injury.

Organizers - *Elizabeth M. Fievisohn, Virginia Tech.; Jacob L. Fisher, Exponent Inc.; Warren N. Hardy, Virginia Tech.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1437***	***Field-based Assessments of Various AIS2+ Head Risk Curves for Frontal Impact***
		Tony R. Laituri, Raed E. El-Jawahri, Scott Henry, Kaye Sullivan, Ford Motor Co.
8:30 a.m.	***2015-01-1441***	***Assessment of Similarity of a Set of Impact Response Time Histories***
		Yibing Shi, Guy Nusholtz, FCA US LLC
9:00 a.m.	***2015-01-1442***	***Precise Dummy Head Trajectories in Crash Tests based on Fusion of Optical and Electrical Data: Influence of Sensor Errors and Initial Values***
		Wolfgang Sinz, Jörg Moser, Christoph Klein, Robert Greimel, Graz University of Technology; Karsten Raguse, Class Middendorff, Volkswagen AG; Christina Steiner, Audi AG
9:30 a.m.	***2015-01-1439***	***Investigation on an Injury Criterion Related to Traumatic Brain Injury Primarily Induced by Head Rotation***
		Toshiyuki Yanaoka, Yasuhiro Dokko, Yukou Takahashi, Honda R&D Co., Ltd.
	2015-01-1443	***Injury Mitigation Performance of a Head Protection Wear with Polyurethane Honeycomb (Written Only -- No Oral Presentation)***
		Morteza Seidi, Marzieh Hajiaghamemar, University of Maine; James Ferguson, Alba-Technic, LLC; Vincent Caccese, University of Maine

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Mobility Issues for an Aging Population

Session Code: ***SS304***

Room 312 B ***Session Time:*** ***1:00 p.m.***

Aging mobility is important to the automotive industry for the following reasons:
¿ 37% of the population is over age 50
¿ 52% of vehicles sold in 2012 were to > 55 years of age consumers.
¿ A 65 year old is 4x more likely to buy a new car than a 25 year old.

This group will have unique issues associated with it that will need to be addressed by the automotive industry as they design vehicles for this ever growing population. Papers and presentations on these topics are welcome in this session.

Organizers - *Marilyn Vala, Retired*

Time	Paper No.	Title

1:00 p.m.	***2015-01-1399***	***Improvement of Blind Spot Alert Detection by Elderly Drivers*** *Dee Kivett, Victor Gallas Cervo, Aparna Mantha, John Smith, Clemson University*
1:30 p.m.	***2015-01-1400***	***Improved Mobility with a Neutral, Motion-Amplifying Controller for an Experimental Exoskeleton*** *Umashankar Nagarajan, Ambarish Goswami, Honda Research Institute USA Inc*
2:00 p.m.	***ORAL ONLY***	***Envisioning an Improved Seat Buckle: A guided Design for Elderly Drivers and Passengers*** *Justin Hatfield, Cassandra Coravos, Martin Hewitt, Sameer Srivastava, Jenny Wang, Avery Fisher, Northwestern Univ.*
2:30 p.m.	***Panel***	***Technical Expert Panel Discussion: Mobility Issues for an Aging Population*** ***Organizers -*** *Marilyn Vala, Retired* ***Moderators -*** *Marilyn Vala, Retired* ***Panelists -*** *Cassandra Coravos, Northwestern Univ.; Ambarish Goswami, Honda Research Institute USA Inc.; Dee Kivett, Nextgen SCI; Sameer Srivastava, Northwestern Univ.;*

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Technical Expert Panel Discussion: Mobility Issues for an Aging Population

Session Code: ***SS304***

Room 312 B Technical Expert Panel Discus: ***Session Time:*** ***2:30 p.m.***

Organizers - *Marilyn Vala, Retired*

Moderators - *Marilyn Vala, Retired*

Panelists - *Cassandra Coravos, Northwestern Univ.; Ambarish Goswami, Honda Research Institute USA Inc.; Dee Kivett, Nextgen SCI; Sameer Srivastava, Northwestern Univ.;*

Thursday, April 23

Models for Air & Exhaust Management and Air-Borne Noise

Session Code: ***PFL111***

Room 313 B ***Session Time:*** ***8:00 a.m.***

This sub-session covers zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and EGR management.

Organizers - *Fabio Bozza, Univ. of Naples; Michael L. Briggs; Federico Millo, Politecnico di Torino; Christof Schernus, FEV GmbH*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1717***	***Modeling and Simulation of Airflow Dynamics in a Dynamic Skip Fire Engine*** *Li-Chun Chien, Matthew Younkins, Mark Wilcutts, Tula Technology Inc.*

8:30 a.m.	***2015-01-1714***	***A Zero-Dimensional Intake Dilution Tracking Algorithm for Real-Time Feedback on Exhaust Gas Recirculation***
		Usman Asad, Jimi Tjong, University of Windsor
9:00 a.m.	***2015-01-1715***	***Incorporating Thermo- and Aerodynamic Losses into Compressor Models for Real-Time Applications***
		Farouq Meddahi, Robert Bosch GmbH; Alain Charlet, Yann Chamaillard, Universite D'Orleans; Christian Fleck, Robert Bosch GmbH
9:30 a.m.	***2015-01-1719***	***Fitting Turbocharger Maps with Multidimensional Rational Functions***
		Daniel Pachner, Lukas Lansky, David Germann, Honeywell Automotive Software; Markus Eigenmann, Jaquet Technology Group AG
10:00 a.m.	***2015-01-1718***	***Physical Model of a Twin-scroll Turbine with Unsteady Flow***
		Jan Macek, Zdenek Zak, Oldrich Vitek, Czech Technical Univ.
10:30 a.m.	***2015-01-1720***	***Experimental Investigation and 1D Simulation of a Turbocharger Compressor Close to Surge Operation***
		Vincenzo De Bellis, Fabio Bozza, Univ of Naples; Silvia Marelli, Massimo Capobianco, Univ of Genoa

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Thursday, April 23

General Thermodynamics & Fundamentals

Session Code: ***PFL116***

Room 313 B ***Session Time:*** ***1:00 p.m.***

This sub-session covers zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of internal combustion engines with respect to: fundamentals of engine thermodynamics and heat transfer.

Organizers - *Kevin L. Hoag, Southwest Research Institute; Federico Millo, Politecnico di Torino; Christof Schernus, FEV GmbH*

Chairpersons - *Kevin L. Hoag, Southwest Research Institute; Federico Millo, Politecnico di Torino*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1751***	***A Promising High Efficiency RM-HCCI Combustion Proposed by Detail Kinetics Analysis of Exergy Losses***
		Feng Yan, Wanhua Su, Tianjin Univ
1:30 p.m.	***2015-01-1750***	***Assessment of Empirical Heat Transfer Models for a CFR Engine Operated in HCCI Mode***
		Stijn Broekaert, Thomas De Cuyper, Ghent University; Kam Chana, University of Oxford; Michel De Paepe, Sebastian Verhelst, Ghent University
2:00 p.m.	***2015-01-1752***	***Parametric 1-D Modeling Study of a 5-Stroke Spark-Ignition Engine Concept for Increasing Engine Thermal Efficiency***
		Alex Melin, David Kittelson, William Northrop, Univ. of Minnesota
	2015-01-1753	***Nanofluids and Thermal Management Strategy for Automotive Application (Written Only -- No Oral Presentation)***
		Mario Vila Millan, Stephen Samuel, Oxford Brookes University

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Vehicle Aerodynamics (Part 6 of 7): Fundamental Aerodynamics

Session Code: ***SS800***

Room 321 ***Session Time:*** ***8:00 a.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Jeffrey Bordner, General Motors; Edward G. Duell, Jacobs Technology Inc.; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Fiat Chrysler Automobiles; Kevin Golsch, Exa Corporation; Arturo Guzman, FCA US LLC; Taeyoung Han, Bahram Khalighi, General Motors Co.; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; Mesbah Uddin, UNC Charlotte Motorsports Engineering; H. Robert (Bob) Welge, Robert's Engineering Development; James T. McKillen, Honda R & D Americas Inc.; Mark E. Gleason, retired, FCA US LLC; Adrian P. Gaylard, Jaguar Land Rover; Kurt Zielinski, Honda R & D Americas Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1546***	***Base Pressure and Flow-Field Measurements on a Generic SUV Model***
		Andrew Wood, Martin Passmore, David Forbes, Daniel Wood, Loughborough Univ; Adrian Gaylard, Jaguar Land Rover
8:30 a.m.	***2015-01-1561***	***Scaling Considerations for Fluidic Oscillator Flow Control on the Square-back Ahmed Vehicle Model***
		Matthew Metka, James Gregory, Ohio State University; Aaron Sassoon, James McKillen, Honda R & D Americas Inc
9:00 a.m.	***2015-01-1560***	***Influence of Short Rear End tapers on the Base Pressure of a Simplified Vehicle.***
		Anna-Kristina Perry, Martin Passmore, Ashley Finney, Loughborough Univ
9:30 a.m.	***2015-01-1559***	***Aerodynamic Drag of Passenger Cars at Yaw***
		Jeff Howell, Loughborough University
10:00 a.m.	***2015-01-1529***	***Structures of Flow Separation on a Passenger Car***
		Sabine Bonitz, Lars Larsson, Lennart Lofdahl, Chalmers University of Technology; Alexander Broniewicz, Volvo Car Corporation
10:30 a.m.	***2015-01-1553***	***Open Grille DrivAer Model - First Results***
		Felix Wittmeier, Timo Kuthada, FKFS
11:00 a.m.	***2015-01-1525***	***Experimental Investigation of Underbody Thermal and Aerodynamic Flow-Field Features***
		Rocky Khasow, Univ of Ontario Institute of Technology; Scott Best, Aiolos Engineering Corp; Martin Agelin-Chaab, John Komar, Gary Elfstrom, Univ of Ontario Institute of Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00464, and also individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Vehicle Aerodynamics (Part 7 of 7): CFD Methods Development

Session Code: ***SS800***

Room 321 ***Session Time:*** ***1:00 p.m.***

This 7 part session focuses on aerodynamic development, drag reduction and fuel economy, handling and stability, cooling flows, surface soiling and water management, vehicle internal environment, tire aerodynamics and modelling, aeroacoustics, structural response to aerodynamic loading, simulating the on-road environment, onset flow turbulence, unsteady aerodynamics, fundamental flow structures, new test methods and facilities, and new applications of computational fluid dynamics simulation

Organizers - *Jeffrey Bordner, General Motors; Edward G. Duell, Jacobs Technology Inc.; Gary M. Elfstrom, Univ. of Ontario Institute of Technology; Gregory Fadler, Fiat Chrysler Automobiles; Mark E. Gleason, retired, FCA US LLC; Arturo Guzman, FCA US LLC; Taeyoung Han, Bahram Khalighi, General Motors Co.; Todd Lounsberry, FCA US LLC; James T. McKillen, Thomas N. Ramsay, Honda R & D Americas Inc.; Sivapalan Senthooran, Exa Corporation; David Sims-Williams, Durham Univ.; Sandeep Sovani, ANSYS Inc.; Mesbah Uddin, UNC Charlotte Motorsports Engineering; H. Robert (Bob) Welge, Robert's Engineering Development; Raymond Leto, TotalSim LLC; Kevin Golsch, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Kurt Zielinski, Honda R & D Americas Inc.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1549***	***Advances in Modelling A-Pillar Water Overflow*** *Jonathan Jilesen, Exa Corporation; Adrian Gaylard, Jaguar Land Rover; Iwo Spruss, Timo Kuthada, Jochen Wiedemann, FKFS*
1:30 p.m.	***2015-01-1536***	***Simulating DrivAer with Structured Finite Difference Overset Grids*** *Brett C. Peters, Mesbah Uddin, UNC Charlotte Motorsports Engineering; Jeremy Bain, Bain Aero LLC; Alex Curley, Maxwell Henry, UNC Charlotte Motorsports Engineering*
2:00 p.m.	***2015-01-1538***	***Comparison of RANS and DES methods for the DrivAer automotive body*** *Neil Ashton, Alistair Revell, University of Manchester*
2:30 p.m.	***2015-01-1548***	***Automated Aerodynamic Vehicle Shape Optimization Using Neural Networks and Evolutionary Optimization*** *Anton Lundberg, Per Hamlin, Davangere Shankar, ÅF Industry; Alexander Broniewicz, Tim Walker, Christoffer Landström, Volvo Car Corp.*
3:00 p.m.	***2015-01-1539***	***CFD investigation of the effect of the salient flow features in the wake of a generic open-wheel race car*** *Joshua Newbon, Robert Dominy, David Sims-Williams, Durham University*
3:30 p.m.	***2015-01-1550***	***Flow Field Data Mining Based on a Compact Streamline Representation*** *Lars Graening, Honda Research Institute Europe GmbH; Thomas Ramsay, Honda R & D Americas Inc*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00464 and SUB-TP-00004, and also individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

CI & SI Power Cylinder Systems

Session Code: ***PFL530***

Room 331 A/B/C ***Session Time:*** ***8:00 a.m.***

This session covers the Power Cylinder: piston, piston rings, piston pins, and connecting rods. The papers include information on reducing friction and increasing fuel economy, improving durability by understanding wear, and decreasing oil consumption and blow-by.

Organizers - *Yong-Ching Chen, Cummins Inc.; William D. McNulty, Cummins Engines Co.; Dan Richardson, Cummins Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1721***	***Overview of Newly Developed Three dimensional Cylinder Bore Surface Finish Measuring System for use in Minimizing Oil Consumption and Excessive Wear*** *Harold Edward McCormick, John Crain, William Pisoni, C-K Engineering Inc.; Manas Lakshmipathy, Zygo Corporation*
8:30 a.m.	***2015-01-1722***	***Advancements in Powder Forged Connecting Rod Technology to Facilitate Downsizing of Direct Injection Turbocharged Engines*** *Edmond Ilia, Giorgio Lanni, Kevin Tutton, Doug Sinclair, Metaldyne Performance Group*
9:00 a.m.	***2015-01-1723***	***TopWeld® Steel Piston for High Speed Diesel Engines*** *Dieter Gabriel, Thomas Hettich, MAHLE*
9:30 a.m.	***2015-01-1724***	***Modeling of Piston Ring-Cylinder Bore-Piston Groove Contact*** *Chao Cheng, Ali Kharazmi, Harold Schock, Michigan State University*
10:00 a.m.	***2015-01-1725***	***Graded Freeform Machining of Cylinder Bores using Form Honing*** *Gerhard Konrad Flores, Gehring*
	2015-01-1726	***Optimization of Piston Skirt Profile Design to Eliminate Scuffing and Seizure in a Water Cooled Gasoline Engine (Written Only -- No Oral Presentation)*** *Ajay Paul John, Vikas Kumar Agarwal, Mahindra & Mahindra, Ltd.*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by New Engines, Components, Actuators and Sensors / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Chat with the Expert: Combustion Efficiency & Knock Mitigation

Session Code: ***CHAT***

Room 331 A/B/C Chat with the Experts ***Session Time:*** ***3:30 p.m.***

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the expert*** *Curtis Collie, IAV Automotive Engineering Inc.*

Thursday, April 23

Chat with the Experts: Model Based Controls & Diagnostics

Session Code: ***CHAT***

Room 331 A/B/C Chat with the Experts ***Session Time:*** ***3:30 p.m.***

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn more about the expert***
		Purvi Janani Limaye, Christophe Laurent, IAV Automotive Engineering Inc.

Thursday, April 23

Chat with the Experts: Vehicle2X

Session Code: ***CHAT***

Room 331 A/B/C Chat with the Experts ***Session Time:*** ***3:30 p.m.***

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn more about the expert***
		Karthik Chinnivakkam Suresh, IAV Automotive Engineering Inc.

Thursday, April 23

Chat with the Experts: Highly Automated Driving

Session Code: ***CHAT***

Room 331 A/B/C Chat with the Experts ***Session Time:*** ***3:30 p.m.***

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn more about the expert***
		Lars Eggenstein, IAV Automotive Engineering Inc.

Thursday, April 23

Chat with the Experts: Transmission Technology

Session Code: ***CHAT***

Room 331 A/B/C Chat with the Experts ***Session Time:*** ***3:30 p.m.***

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn more about the expert***
		Wayne Petzke, IAV Automotive Engineering Inc.

Thursday, April 23

Electronic Vision Systems and Applications

Session Code: ***AE205*** ***8:00 a.m.***

Room 332 ***Session Time:***

Camera and radar technologies have advanced so much finding applications in active safety systems, rear view monitoring, surround view systems, forensic imaging, vulnerable road user detection etc. The advancements in camera and radar technologies and its applications in commercial vehicles will be discussed in this session.

Organizers - *Stephen Buckley, FCA US LLC; Scott W. Piper, General Motors*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0216***	***Noise Filtering in Autonomous Emergency Braking Systems with Sensor Fusions***
		Ping-Min Hsu, Ming Hung Li, Kuo-Ching Chang, Automotive Research & Testing Center
8:30 a.m.	***2015-01-0217***	***Measurements of Deer with RADAR and LIDAR for Active Safety Systems***
		William Buller, Michigan Technological University; Rini Sherony, Toyota Motor Engineering & Mfg NA Inc.; Brian Wilson, Michelle Wienert, Michigan Technological University
	2015-01-0213	***HSV Space Based De-Hazing Technique for Vision Based Advanced Driver Assistance Applications (Written Only -- No Oral Presentation)***
		Vinuchackravarthy Senthamilarasu, Anusha Baskaran, Krishnan Kutty, KPIT Technologies Ltd.
	2015-01-0214	***Detection of Visual Saliency Region for ADAS Applications (Written Only -- No Oral Presentation)***
		Ramya Deshpande, KPIT Technologies Ltd; Krishnan Kutty, Shanmugaraj Mani, CREST, KPIT Technologies Ltd
	2015-01-0215	***Redundant Data Removal from Images (Written Only -- No Oral Presentation)***
		Reena Kumari Behera, Smita Nair, Vinay Vaidya, KPIT Technologies Ltd.
	2015-01-0218	***Vision Based Face Expression Recognition (Written Only -- No Oral Presentation)***
		C Sreelakshmi, Krishnan Kutty, KPIT Technologies Ltd.

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Thursday, April 23

Driver Assistance Systems

Session Code: ***AE401***

Room 332 ***Session Time:*** ***1:00 p.m.***

Advanced Driver Assistance systems (ADAS) such as Lane Departure Warning, Drowsy Driver Warning, Forward Collision Warning, Autonomous Emergency Braking system, Sensor Fusion etc are gaining importance in both passenger and commercial vehicle segments. The effectiveness of these systems are evaluated and reported by NHTSA and FMCSA. This session will explore the recent developments in the advanced driver assistance systems for commercial vehicles using radar, lidar, camera etc.

Organizers - *Scott Craig, Infineon Technologies North America Corp.; Chris Semanson*

Time	Paper No.	Title
1:00 p.m.	***ORAL ONLY***	***Integrating Infotainment and Safety-Critical Features in the Car***
		Scott Pennock, QNX Software Systems, Ltd.

2:00 p.m.	***2015-01-0259***	***Development and Evaluation of a Portable Driving Performance and Analysis System for Education Purposes***
		Tyler Zellmer, Julio Rodriguez, John R. Wagner, Kim Alexander, Philip Pidgeon, Clemson Univ.
2:30 p.m.	***2015-01-0257***	***Real-time Determination of Driver's Handling Behavior***
		Jianbo Lu, Dimitar Filev, Sanghyun Hong, Ford Motor Co.
3:00 p.m.	***2015-01-0256***	***Driver Models for Virtual Testing of Automotive Run-Off-Road and Recovery Control Systems and Education Strategies***
		Changbo Fu, Paul (Tim) Freeman, John R. Wagner, Clemson Univ.
	2015-01-0258	***Parallelization and Porting of Multiple ADAS Applications on Embedded Multicore Platforms (Written Only -- No Oral Presentation)***
		Venkatesh Kareti, Priti Ranadive, Vinay Vaidya, CREST, KPIT Technologies Ltd.

Planned by Electronics in Safety Committee / Automobile Electronics Activity

Thursday, April 23

Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 2 of 3)

Session Code: ***M202***

Room 333 ***Session Time:*** ***8:00 a.m.***

Papers with an emphasis on, but not limited to, innovative ideas to enhance automotive safety with improved material constitutive modeling, analysis method developments, simulation and pre/post processing tools, optimization techniques, crash code developments, finite element model updating, model validation and verification techniques, dummies and occupants, restraint systems, passive safety as well as lightweight material applications and designs are highly encouraged.

Organizers - *Jwo Pan, University of Michigan, Ann Arbor; Tau Tyan, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Wei Li, General Motors Co.; William J. Altenhof, Univ. of Windsor; Sheng-Dong Liu, Generalety LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0581***	***Estimating the Cost Impact of Lightweighting Automotive Closures***
		Luke Deptula, Center For Automotive Research; Alaa Noah
8:30 a.m.	***2015-01-0574***	***Mass Benchmarking Using Statistical Methods Applied to Automotive Closures***
		Donald E. Malen, Univ. of Michigan; Jason Hughes, A2Mac1 Automotive Benchmarking
9:00 a.m.	***2015-01-0575***	***Influence of Mass Distribution of Battery and Occupant on Crash Response of Small Lightweight Electric Vehicle***
		SongAn Zhang, Qing Zhou, Yong Xia, Tsinghua University
9:30 a.m.	***2015-01-0559***	***Cost-Effectiveness of a Lightweight Design for 2020-2025: An Assessment of a Light-Duty Pickup Truck***
		Cheryl Caffrey, Kevin Bolon, US EPA; Greg Kolwich, FEV North America, Inc.; Robert Johnston, EDAG, Inc.; Timothy Shaw, Munro & Associates, Inc.

10:00 a.m.	***2015-01-0571***	***Holistic Approach for Improved Safety Including a Proposal of New Virtual Test Conditions of Small Electric Vehicles***
		Andreas Teibinger, Virtual Vehicle Research Center; Christian Mayer, Daimler AG; Ernö Dux, Institut für Kraftfahrzeuge-RWTH Aachen; Gian Antonio D¿Addetta, Robert Bosch GmbH; Peter Luttenberger, Graz University of Technology; Jac Wismans, Chalmers University of Technology; Rémy Willinger, Université de Strasbourg
10:30 a.m.	***2015-01-0580***	***Research on Three Main Lightweight Approaches for Automotive Body Engineering Considering Materials, Structural Performances and Costs***
		Fei Lei, Xin Chen, Xiao Ping Xie, Jing Zhu, Hunan University

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 23

Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 3 of 3)

Session Code: ***M202***

Room 333 ***Session Time:*** ***1:00 p.m.***

Papers with an emphasis on, but not limited to, innovative ideas to enhance automotive safety with improved material constitutive modeling, analysis method developments, simulation and pre/post processing tools, optimization techniques, crash code developments, finite element model updating, model validation and verification techniques, dummies and occupants, restraint systems, passive safety as well as lightweight material applications and designs are highly encouraged.

Organizers - *Jwo Pan, University of Michigan, Ann Arbor; Tau Tyan, Ford Motor Co.; Guofei Chen, United States Steel Corporation; Wei Li, General Motors Co.; William J. Altenhof, Univ. of Windsor; Sheng-Dong Liu, Generalety LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0576***	***CAD/CAE and Optimization of a Twist Beam Suspension System***
		Jiaquan Chen, Yongfeng Jiang, Min Qin, Wenquan Hao, FAW R&D Center China; Yin-Ping Chang, Oakland University; Lingge Jin, FAW R&D Center China
1:30 p.m.	***2015-01-0560***	***Energy-Absorption Behaviors of Glass Fiber Reinforced Plastic (GFRP) Plates with Hemispherical/Corrugated Force-Multipliers***
		Lakshmanan Palanimuthu, Anindya Deb, Indian Institute of Science; Pankaj Mallick, Univ of Michigan
2:00 p.m.	***2015-01-0564***	***Observation of the Lab-Scale Windeshield Impact Test and Simulation using the Time Dependent Dynamic Failure Criterion***
		Sung Wook Moon, Byunghyun Kang, Korea Univ; Jaeyoung Lim; Byoung-Ho Choi, Korea Univ
2:30 p.m.	***2015-01-0578***	***Simulation Fidelity Improvement of H350 Lower Tibia Indices***
		Wei Li, Yi-Pen Cheng, Lisa Furton, General Motors Co.
3:30 p.m.	***2015-01-0582***	***Design For Six Sigma (DFSS) for Optimization of Stamping Simulation Parameters to Improve Springback Prediction***
		Deepak Ranjan Bhuyan, Sreekanth Netapalli, Sathya Dev, Soundarya Srinivasan, Chrysler India Automotive Pvt, Ltd.

	2015-01-0570	***Lightweight Potential of Ultra High Strength Steel Tubular Body Structures (Written Only -- No Oral Presentation)***
		Horst Lanzerath, Ford Motor Co.; Markus Tuerk, LINDE + WIEMANN GmbH KG

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 23

Key Success Factors for DFSS and Lean Manufacturing

Session Code: ***IDM400***

Room 336 ***Session Time:*** ***8:00 a.m.***

This technical session deals with research and development efforts addressing the advancement and applications of Lean methodologies and Quality improvement in the mobility Industry. Papers presented in this session will portray the latest developments in the principles, practices, tools, processes, and applications of Lean and Quality improvement methodologies.

Organizers - *Mohamed El-Sayed, Kettering Univ.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0506***	***Innovative Production System Based on Auto-Assembly Cells***
		Toshiyuki Kondo, Shinichiro Watanabe, Nobuhiro Nanba, Honda Engineering Co., Ltd.
8:30 a.m.	***2015-01-0507***	***The Development of High Efficient Machining and Transfer Process for Cylinder Head/Block Machining Line***
		Taro Nakamura, Honda Engineering Co., Ltd.

Planned by Lean - Six Sigma Committee / Integrated Design and Manufacturing Activity

Thursday, April 23

Battery and Energy Storage Systems

Session Code: ***AE305***

Room 353 ***Session Time:*** ***8:00 a.m.***

Most advanced propulsion systems include high density electrical energy storage devices of varying chemistries. This session will present the latest developments in the applications of these devices, including cell and module management, state-of-charge/health management and safety.

Organizers - *Scott Phillips, TE Connectivity*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Technical Keynote: Vehicle Electrification - Global Trends and Battery Technology***
		Prabhakar B. Patil, LG Chem Power Inc.
8:30 a.m.	***2015-01-0252***	***Model-Based Parameter Identification of Healthy and Aged Li-ion Batteries for Electric Vehicle Applications***
		Ryan Ahmed, McMaster Univ.; Javier Gazzarri, MathWorks Inc.; Simona Onori, Clemson Univ.; Saeid Habibi, McMaster Univ.; Robyn Jackey, Kevin Rzemien, MathWorks Inc.; Jimi Tjong, Ford Motor Co.; Jonathan LeSage, MathWorks Inc.

9:00 a.m.	***2015-01-0255***	***Guide for the Focused Utilization of Aging Models for Lithium-Ion Batteries - An Automotive Perspective***
		Claudia Meis, Stefan Mueller, Stephan Rohr, Matthias Kerler, Markus Lienkamp, Technische Universitaet Muenchen
9:30 a.m.	***2015-01-0251***	***Development of Li-ion Battery Control Technology for HEV***
		Yoshikazu Nishida, Satoru Komoda, Naoki Maruno, Honda R&D Co., Ltd.
10:00 a.m.	***2015-01-0254***	***Design and Thermal Analysis of a Passive Thermal Management System Using Composite Phase Change Material for Rectangular Power Batteries***
		Chunjing Lin, Sichuan Xu, Zhao Li, Guofeng Chang, Tongji University
10:30 a.m.	***2015-01-0248***	***Battery Heating System for Electric Vehicles***
		Hiroyasu Baba, Koji Kawasaki, Nippon Soken, Inc.; Hideomi Kawachi, Denso Corporation
	2015-01-0249	***Approach to Estimate Life of Li-Ion Power Battery for Mild Hybrid Application in India (Written Only -- No Oral Presentation)***
		Kannan Subramanian, Ganesh Kumar Ramakrishnan, Sindhuja Renganathan, Karthik Vssnt, Kumar Prasad Telikepalli, Aravapalli Sriniwas, Mahindra & Mahindra, Ltd.
	2015-01-0250	***Research on Driving Range Estimation for Electric Vehicles Based on Corrected Battery Model (Written Only -- No Oral Presentation)***
		Yanjing Wang, Chao Feng, ChongQing Changan NewEnergyAuto Co. Ltd.; Guangming Liu, Tsinghua University; Hong Fu, Shan Xue, ChongQing Changan NewEnergyAuto Co. Ltd.; Languang Lu, Jianfeng Hua, Minggao Ouyang, Tsinghua University
	2015-01-0253	***Power-Balance and Wavelet-Transform Based Power Management of Battery-Supercapacitor Hybrid System for Electric Vehicles (Written Only -- No Oral Presentation)***
		Qiao Zhang, Weiwen Deng, Jian Wu, State Key Lab of ASCL Jilin University

The papers in this session are available in SAE Technical Paper Collection, SUB-GTL-00001, and also individually. To purchase visit collections.sae.org

Planned by Electronics in Powertrain Committee / Automobile Electronics Activity

Thursday, April 23

Drivetrain Electrification

Session Code: ***AE304***

Room 353 ***Session Time:*** ***1:00 p.m.***

Battery Electric Vehicles (BEV) and Hybrid Electric Vehicles (HEV) are generating excitement and popularity. BEV and HEV production is now a major part of the automotive industry. All manufacturers are ramping up to meet the demand and fuel economy standards for the future, which will require this technology. This session covers electric motors, controls, EMC, diagnostics and other drivetrain requirements for BEV and HEV vehicles.

Organizers - *Eugene F. Saltzberg, GM*

Time	***Paper No.***	***Title***
1:00 p.m.	***ORAL ONLY***	***Technical Keynote: Everything Old Is New Again - The Resurrection of the Electric Automobile***
		Donald L. Wood

2:00 p.m.	***2015-01-0246***	***Development of Energy Management for Small Electric Buses***
		Hisashi Higashi, Hino Motors, Ltd.
2:30 p.m.	***ORAL ONLY***	***Advanced electrical design tools helping to answer tomorrow¿s demand for fully electric vehicles***
		James Price, Mentor Graphics Corp.
3:00 p.m.	***2015-01-0247***	***Identification Nomenclature for Electric Motors and Generators***
		Sonakshi Sharma, Shubhranshu Garg, Vipul Kumar, Vidya College of Engineering; Sudhir Kashinath Gupte, A D Patel Inst of Technology

Planned by Electronics in Powertrain Committee / Automobile Electronics Activity

Thursday, April 23

Occupant Protection: Event Data Recorders (EDR)

Session Code: ***SS502***

Room 354 ***Session Time:*** ***8:00 a.m.***

This session includes the latest research on Event Data Recorders (EDRs) equipped in passenger cars, light trucks, and commercial vehicles (heavy trucks and motorcoaches). Emphasis is placed on the application, interpretation and use of EDRs in the investigation of motor vehicle crashes.

Organizers - *Craig Wilkinson, MEA Forensic Engineers & Scientists; John T. Sprague, General Motors Co.; Heath Spivey, Delta V Forensic Engrg; John C. Steiner, Mecanica Scientific Services Corporation; David Plant, D P Plant & Associates; Christopher D. Armstrong, Mecanica Scientific Services Corp.; Alan F. Asay, Asay Engineering LLC; Geoff Germane, Germane Engineering; Richard Frank Lambourn, Transport Research Laboratory, Ltd.; L. Daniel Metz, Metz Engineering & Racing; Nathan A. Rose, Kineticorp LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1445***	***Analysis of Crash Data from a 2012 Kia Soul Event Data Recorder***
		Wesley Vandiver, Orange County District Attorney's Office; Robert Anderson, Biomechanics Analysis; Isaac Ikram, Bryan Randles, Christopher Furbish, Biomechanical Research & Testing
8:30 a.m.	***2015-01-1448***	***EDR Pulse Component Vector Analysis***
		Lee Carr, Robert Rucoba, Dan Barnes, Steven Kent, Aaron Osterhout, Carr Engineering Inc.
9:00 a.m.	***2015-01-1450***	***Extracting Event Data from Memory Chips within a Detroit Diesel DDEC V***
		Jeremy Daily, Andrew Kongs, James Johnson, Jose Corcega, University of Tulsa
9:30 a.m.	***2015-01-1449***	***Survivability of Event Data Recorder Data in Exposure to High Temperature, Submersion, and Static Crush***
		Ada H. Tsoi, Virginia Tech; John Hinch; Michael Winterhalter, L-3 Communications Aviation Recorders; H. Gabler, Virginia Tech
10:00 a.m.	***2015-01-1444***	***Analysis of Event Data Recorder Survivability in Crashes with Fire, Immersion, and High Delta-V***
		Ada H. Tsoi, Virginia Tech; John Hinch; H. Gabler, Virginia Tech

10:30 a.m.	***2015-01-1447***	***Injury Estimation in Frontal Collisions for Automobiles Equipped with Event Data Recorders (EDRs)***
		Hirotoshi Ishikawa, Emergency Medical Network of Helicopter; Kunihiro Mashiko, Medical Foundation Eiseikai; Tetsuyuki Matsuda, Emergency Medical Network of Helicopter; Koichi Fujita, Asuka Sugano, Toru Kiuchi, Toyota Motor Corporation; Hirotsugu Tajima, Masaaki Yoshida, Isao Endou, Sompo Japan Nipponkoa Insurance Inc.
11:00 a.m.	***2015-01-1446***	***Using NFPA Compliant Fire Apparatus Vehicle Data Recorders for Collision Investigation - Weldon Type 6444***
		Timothy P. Austin, Wisconsin State Patrol; David P. Plant, D P Plant & Associates; Joseph E. LeFevre, Fox Valley Technical College

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006 and SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Occupant Protection: Rear Impact, Rollover, and Side Impact

Session Code: ***SS506***

Room 354 ***Session Time:*** ***1:00 p.m.***

This session presents papers related to advancing the science of occupant safety in vehicle rear, rollover and side impact collisions.

Organizers - *Jarrod Carter, Origin Engineering; Donald Parker, Exponent Failure Analysis; Jeffery W. Sankey, Transportation Research Center Inc.; Mukul K. Verma*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-1477***	***Steering Maneuver with Furrow-Tripped Rollovers of a Pickup and Passenger Car***
		Robert Larson, Jeffrey Croteau, Cleve Bare, John Zolock, Daniel Peterson, Jason Skiera, Exponent Inc.; Jason R. Kerrigan, Univ. of Virginia; Mark D. Clauser, Toyota Technical Center USA Inc.
2:00 p.m.	***2015-01-1487***	***Further Development of a Method to Reproduce Highly Dynamic Force Distance Based Intrusions of Vehicle Side Structure Components***
		Andreas Teibinger, Harald Marbler-Gores, Virtual Vehicle Research Center; Harald Schluder, Veit Conrad, AUDI AG; Hermann Steffan, Technische Univ of Graz; Josef Schmidauer, DSD
2:30 p.m.	***2015-01-1472***	***Lightweight Seat Design and Crash Simulations***
		Roberto Arienti, Carlo Cantoni, Brembo Performance; Massimiliano Gobbi, Giampiero Mastinu, Mario Pennati, Giorgio Previati, Politecnico di Milano
3:00 p.m.	***2015-01-1475***	***Rollover Testing of a Sport Utility Vehicle (SUV) with an Inertial Measurement Unit (IMU)***
		Alan F. Asay, Asay Engineering; Jarrod Carter, Origin Engineering; James Funk, University of Virginia; Gregory Stephens, Collision Research & Analysis

3:30 p.m.	***2015-01-1478***	***Occupant Kinematics and Injury Response in Steer Maneuver-Induced Furrow Tripped Rollover Testing***
		Michelle Heller, Sarah Sharpe, William Newberry, Alan Dibb, John Zolock, Jeffrey Croteau, Michael Carhart, Exponent Inc; Jason Kerrigan, University of Virginia; Mark Clauser, Toyota Technical Center USA Inc
4:00 p.m.	***2015-01-1486***	***Simplified Side Impact FE Model - SSM***
		Craig A. Markusic, Ram Songade, Honda R & D Americas Inc.
4:30 p.m.	***2015-01-1756***	***The Influence of Body Mounted Shoulder Seat Belt Anchor (D-Ring) Displacement During Dynamic Vehicle-to-Ground Impacts***
		Daniel E. Toomey, Design Research Engineering; Debora R. Marth, Safety Forensics PLLC; William G. Ballard, Jamel E. Belwafa, Roger Burnett, Robert W. McCoy, Ford Motor Company
	2015-01-1473	***CAE Based Development of an Ejection Mitigation (FMVSS 226) SABIC using Design for Six Sigma (DFSS) Approach (Written Only -- No Oral Presentation)***
		Kalu Uduma, FCA US LLC; Dipu Purushothaman, Darshan Subhash Pawargi, Chrysler India Automotive Pvt, Ltd.; Sukhbir Bilkhu, Mahindra North American Technical Center; Brian Beaudet, FCA US LLC
	2015-01-1476	***CAE Prediction and Test Correlation for Tractor Roll-over Protective Structure (ROPS) (Written Only -- No Oral Presentation)***
		P Selvakumar, Arun Mahajan, R Murasolimaran, C Elango, Mahindra & Mahindra Ltd.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Automotive Composites Structures (Part 1 of 2)

Session Code: ***M302***

Room 356 ***Session Time:*** ***8:00 a.m.***

This session contains papers which describe the use of modern automotive composites in structural applications. Design, process, and analytical presentations are included, as well as papers presenting results of bonding strategies and techniques. Engineers involved in the design and use of advanced composites will find this session of particular value.

Organizers - *Somasekhar Bobba, SABIC Innovative Plastics; Srikanth Pilla, Clemson Univ.; Richard Dale Tonda, SEA, Ltd.; Y Charles Lu, Univ. of Kentucky; Jian Tao, FCA US LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Cutting and Grinding Fluids for Ceramics and Composites***
		Mark Fretz, Hangsterfer's Laboratories Inc.
8:30 a.m.	***ORAL ONLY***	***Damage Initiation and Development in Composite Disk Springs***
		Seyedmohammad Shams, Peng Yang, Rani Elhajjar, Univ. of Wisconsin Milwaukee
9:00 a.m.	***2015-01-0722***	***High Speed Reactive Resin Transfer Moulding (RTM) Process Simulation for Mass Production of Automotive Structural Parts***
		Mathieu Imbert, ESI Group / ECN

9:30 a.m.	***ORAL ONLY***	***Processing and Characterization of Biobased Epoxy-Natural Fiber Thermoset Composites***
		Bopaiah Ittira Biddappa, Johannes Falb, Clemson University; Anup Mallikarjuna Shastry, CU-ICAR Clemson Univ Int'l Center For Au; Kimberly Ivey, Clemson University; Srikanth Pilla, Clemson Univ
10:00 a.m.	***2015-01-0727***	***FRP Mold and Panel Manufacturing for FSAE Body Panel and Driver Seat***
		Udayakumar Rajamanickam, Anshul Singhal, Miller Jothi, BITS Pilani Dubai Campus
10:30 a.m.	***ORAL ONLY***	***Thermal Residual Stresses in Functionally Graded Materials***
		Farag Khouja, Shuvra Das, Nassif E. Rayess, Univ of Detroit Mercy

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Thursday, April 23

Automotive Composites Structures (Part 2 of 2)

Session Code: ***M302***

Room 356 ***Session Time:*** ***1:00 p.m.***

This session contains papers which describe the use of modern automotive composites in structural applications. Design, process, and analytical presentations are included, as well as papers presenting results of bonding strategies and techniques. Engineers involved in the design and use of advanced composites will find this session of particular value.

Organizers - *Somasekhar Bobba, SABIC Innovative Plastics; Srikanth Pilla, Clemson Univ.; Richard Dale Tonda, SEA, Ltd.; Y Charles Lu, Univ. of Kentucky; Jian Tao, FCA US LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***ORAL ONLY***	***Biobased Thermoset Composites from Epoxidized Pine Oil-Areca/Coir Fibers for Automotive Applications***
		Anup Shastry, Bopaiah Ittira Biddappa, Clemson University; Kimberly Ivey, Clemson Univeristy; Srikanth Pilla, Clemson University
1:30 p.m.	***2015-01-0724***	***Design, Testing and Analysis of a Novel Multiple-Disc Magnetorheological Braking Applied in Vehicles***
		Liangxu Ma, Liangyao Yu, Jian Song, WenWei Xuan, Xuhui Liu, Tsinghua University
2:00 p.m.	***2015-01-0729***	***A Study into the Mechanical Behavior of Adhesively-Bonded Jute Fiber-Reinforced Composite***
		Anshul Mittal, Anindya Deb, Indian Institute of Science; Clifford Chou, Wayne State Univ
2:30 p.m.	***2015-01-0723***	***Development of a Composite Prototype Vehicle Structure***
		Sebastian Bender, Raymond Khoo, Christoph Große, Felix M. Wunner, Tum Create Centre for Electromobility; Heong Wah Ng, Nanyang Technological University; Markus Lienkamp, TU Muenchen
3:00 p.m.	***~~2015-01-0726~~ ORAL ONLY***	***EPOSIL® for Automotive Suspension Components, Coil Springs and High Pressure Vessels***
		Max Sardou, Sardou Societe Anonyme; Patricia Djomseu, Qip Sarl

	2015-01-0725	***Development and Characterization of a Composite Cylindrical Column with an Aluminum Foam Core (Written Only -- No Oral Presentation)***
		Mohamed Eghfaier, Nassif E. Rayess, Univ of Detroit Mercy
	2015-01-0728	***Effect of Interfacial Shear Stress on Flexural Properties of Wood Filled Steel Tube (Written Only -- No Oral Presentation)***
		Ravindra Rachappa Malagi, Bharatesh Adappa Danawade, Visvesvaraya Tech. University

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Thursday, April 23

Occupant Protection: Structural Crashworthiness and Occupant Safety

Session Code: ***SS510***

Room 357 ***Session Time:*** ***8:00 a.m.***

Paper offers advancing the science of occupant safety in vehicle collisions are welcome.

Organizers - *Saeed Barbat, Jamel E. Belwafa, Ford Motor Co.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1488***	***Front Underride Protection Devices (FUPDs): Multi-Objective Optimization***
		Adam G. M. Cook, Moustafa El-Gindy, University of Ontario Institute of Techn; David Critchley, Volvo Trucks North America
8:30 a.m.	***2015-01-1493***	***Optimization of Front Bumper Beam for RCAR Performance using Design of Six Sigma and Finite Element Analysis***
		Vinay L. Virupaksha, General Motors Co.; Stuart Brown, GM R&D Center
9:00 a.m.	***2015-01-1491***	***Small Overlap Impact Countermeasures for Automobiles***
		Dinesh Munjurulimana, Dhanendra Nagwanshi, Matthew Marks, SABIC
9:30 a.m.	***2015-01-1492***	***Influence of Introduction of Oblique Moving Deformable Barrier Test on Collision Compatibility***
		Kazunobu Ogaki, Takayuki Kawabuchi, Satoshi Takizawa, Honda R&D Co., Ltd.
10:00 a.m.	***2015-01-1490***	***Injury Distributions of Belted Drivers in Various Types of Frontal Impact***
		Tony R. Laituri, Scott Henry, Kaye Sullivan, Ford Motor Co.
10:30 a.m.	***2015-01-1489***	***Finite-Element-Based Transfer Equations: Post-Mortem Human Subjects versus Hybrid III Test Dummy in Frontal Sled Impact***
		Raed E. El-jawahri, Tony R. Laituri, Agnes S. Kim, Stephen W. Rouhana, Para V. Weerappuli, Ford Motor Co.
11:00 a.m.	***ORAL ONLY***	***History of Deformable Barriers and Manufacturing Processes of the PDB and AE-MDB***
		Patrick Gay, Carmen Roesch, CELLBOND

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00007, and also individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Occupant Protection: Safety Test Methodology

Session Code: ***SS508***

Room 357 ***Session Time:*** ***1:00 p.m.***

The Safety Test Methodology session in 2015 SAE Congress presents the following safety related topics: (1) A protection mechanism for rear occupant protection, (2) Analysis of load cell data from NHTSA-research oblique test, (3) An apparatus for safety belt testing, (4) Component development in PU foam and GFRP, (5) Evaluation of airbag electronic sensing system performance, and 96) Study of brake burnishing effect on automatic emergency braking performance.

Organizers - *Clifford C. Chou; Anindya Deb, Indian Institute of Science; Jerry Le, Ford Motor Co.; P. Miller II, MGA Research Corp.*

Chairpersons - *Anindya Deb, Indian Institute of Science; Helen A. Kaleto, MGA Research Corp.; Robert W. McCoy, Ford Motor Co.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-1485***	***Safety Belt Testing Apparatus***
		Jiri Kral, Theresa Kondel, Mark Morra, Stephen Cassatta, Peter Bidolli, Patrick Stebbins, General Motors Co.; Vikas Joshi, ETA Inc.
2:00 p.m.	***2015-01-1479***	***Load Cell Wall Analysis in Oblique Tests***
		Adria Ferrer, Eduard Infantes, Applus + Idiada Spain
2:30 p.m.	***2015-01-1482***	***A Comparison of the Behaviors of Steel and GFRP Hat-Section Components under Axial Quasi-Static and Impact Loading***
		Bisheshwar Haorongbam, Anindya Deb, Indian Institute of Science; Clifford Chou, Wayne State University
3:00 p.m.	***2015-01-1483***	***An Alternative Approach for Formulation of a Crushable PU Foam Considering its Behavior under Compressive Loads***
		Anindya Deb, N Shivakumar, Indian Institute of Science; Clifford Chou, Wayne State University
3:30 p.m.	***2015-01-1484***	***Evaluation of Air Bag Electronic Sensing System Collision Performance through Laboratory Simulation***
		Daniel E. Toomey, Eric S. Winkel, Design Research Engineering; Ram Krishnaswami, Ford Motor Co
4:00 p.m.	***2015-01-1481***	***Brake Burnishing Effect on AEB Performance***
		Myles Wilson, David Aylor, David Zuby, Joseph Nolan, Insurance Institute for Highway Safety
	2015-01-1480	***A Study on the rear passenger protection mechanism in a wagon vehicle (Written Only -- No Oral Presentation)***
		Seung Kwon Cha, Jong Heon Lee, Hyundai Motor Group; Un Ko, Hanil E-HWA Co Ltd; Tae Hoon Song, Hyundai Motor Group; HangChul Ko, Hanil E-HWA Co Ltd; YangGi Lee, Hyundai Motor Group

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Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Advances in Nox Reduction Technology (Part 3 of 3)

Session Code: ***PFL424***

Room 360 ***Session Time:*** ***8:00 a.m.***

These sessions will focus on `Advances in NOx Reduction Technology¿. The topics covered will include: new materials for lean NOx traps (LNT) and Selective Catalytic Reduction (SCR); system integration and durability; advances in NOx catalyst substrates, novel reductants and mixing designs.

Organizers - *Brad Adelman, Navistar Inc.; Danan Dou, John Deere Product Engineering Center; Magdi K. Khair, Magdiesel Technologies; Rahul Mital, General Motors Co.; Shyam Santhanam, Navistar Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1031***	***AUS-32 Injector Spray Imaging on Hot Air Flow Bench***
		Nic van Vuuren, Continental Automotive Systems; Gabriele Brizi, Giacomo Buitoni, Lucio Postrioti, Università degli Studi di Perugia; Carmine Ungaro, Loccioni Group
8:30 a.m.	***2015-01-1039***	***Optical Investigation on the Ability of a Cordierite Substrate Mixing Device to Combat Deposits in SCR Dosing Systems***
		Thomas Lockyer, Benjamin Reid, Graham Hargrave, Paul Gaynor, Jonathan Wilson, Loughborough University
9:00 a.m.	***2015-01-1038***	***Detection of Injected Urea Quantity and Correction for SCR Urea Dosing Control***
		Jinbiao Ning, Fengjun Yan, McMaster University
9:30 a.m.	***2015-01-1028***	***An Experimental Investigation into DEF Dosing Strategies for Heavy Duty Vehicle Applications***
		Paul Gaynor, Benjamin Reid, Graham Hargrave, Thomas Lockyer, Jonathan Wilson, Loughborough University
10:00 a.m.	***2015-01-1035***	***Study on a Versatile Liquid Dosing Device for IC Engine After-Treatment System***
		Yanxiang Yang, Bingqian Tan, Changwen Liu, Tianjin Univ.; Ping Zhang, Zhejiang Univ.; Daguang Xi, Zhejiang FAI Electronics Co. Ltd.
	2015-01-1021	***Direct Injection into the Exhaust Stream of Gaseous Ammonia: Design and Efficiency of Injection and Mixing Hardware (Written Only -- No Oral Presentation)***
		Brad Adelman, Navtej Singh, Paul Charintranond, Greg Griffin, Shyam Santhanam, Ed Derybowski, Adam Lack, Navistar Inc

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00480 and SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Technical Expert Panel Discussion: Emissions And Efficiency Solutions 5-10 Years Out; Regulations, Solutions, Obstacles, Most-Likely Surprises, Etc.

Session Code: ***PFL4***

Room 360 Technical Expert Panel Discussic ***Session Time:*** ***3:30 p.m.***

The internal combustion engine is facing the most significant challenges in its history. Despite the significant improvements from millions of engineer-hours over the decades, the ICE is under regulation to drop emissions another 80-90%, and fuel consumption by 10-30% (HD, LD) by 2025. This expert panel is prepared to discuss how this will be accomplished in an open Q&A with the audience.

Organizers - *Timothy V. Johnson, Corning Inc.*

Moderators - *Timothy V. Johnson, Corning Inc.*

Panelists - *Douglas Ball, Umicore Autocat USA Inc.; William Charmley, US Environmental Protection Agency; Feilong Liu, Delphi Corp.; Thomas Reinhart, Southwest Research Institute; Robert M. Wagner, Oak Ridge National Laboratory; Andrew Peter Walker, Johnson Matthey Inc.;*

Thursday, April 23

Multi-Dimensional Engine Modeling (Part 5 of 5)

Session Code: ***PFL120***

Room 410 A ***Session Time:*** ***8:00 a.m.***

The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling: advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers - *Hardo Barths, General Motors; Sarah Diakhaby, Computational Dynamics, Ltd.; Stefano Fontanesi, Universita degli Studi di Modena; Allen David Gosman, CD-adapco*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0387***	***A Reduced Chemical Kinetic Mechanism of Toluene Reference Fuel (toluene/n-heptane) for Diesel Engine Combustion Simulations*** *Zhengxin Xu, Zhichao Zhao, Juncheng Li, Hunan University; Mianzhi Wang, Univ of Illinois; Jingping Liu, Hunan University; Chia-Fon Lee, Wayne Chang, Univ of Illinois; Jie Hou, Wuhan University of Technology*
8:30 a.m.	***2015-01-0389***	***Experimental and Numerical Investigation of Soot Mechanism of Acetone-Butanol-Ethanol (ABE) with Various Oxygen Concentrations*** *Zhichao Zhao, Zhengxin Xu, Jingping Liu, Hunan University; Mianzhi Wang, Chia-Fon Lee, Wayne Chang, Univ of Illinois; Jie Hou, Wuhan University of Technology*
9:00 a.m.	***2015-01-0390***	***A Representative Interactive Linear Eddy Model (RILEM) for Non-Premixed Combustion*** *Tim Lackmann, Chalmers Tekniska Hogskola; Alan Kerstein, Consultant; Michael Oevermann, Chalmers Tekniska Hogskola*
10:00 a.m.	***~~2015-01-0377~~*** ***ORAL ONLY***	***Modeling diesel-biodiesel spray combustion using detailed vaporization and chemistry models*** *Sujith Sukumaran, Iowa State Univ.; Song-Charng Kong*
	2015-01-0399	***Modeling of Transport and Mixing Phenomena in Turbulent Flows in Closed Domains (Written Only -- No Oral Presentation)*** *Alexander Jaust, Bastian Morcinkowski, Stefan Pischinger, RWTH Aachen University; Jens Ewald, FEV GmbH*
	2015-01-0400	***Large Eddy Simulation of an n-Heptane Spray Flame with Dynamic Adaptive Chemistry under Different Oxygen Concentrations (Written Only -- No Oral Presentation)*** *Lei Zhou, Zhen Lu, Zhuyin Ren, Tsinghua University; Tianfeng Lu, Univ of Connecticut; K.H Luo, University College London*
	2015-01-0401	***Numerical Simulation and Experimental Research on PPC Combustion and Emissions Characteristics of Diesel Engine (Written Only -- No Oral Presentation)*** *Bei Liu, Xiaobei Cheng, Liang Qiu, Shijun Dong, Xin Wang, Huazhong University of Sci. and Tech.*

	2015-01-0402	***Numerical Investigation of Effect of Bowl Profiles on Performance and Emission Characteristics of a Diesel Engine (Written Only -- No Oral Presentation)***
		P Brijesh, S Abhishek, S Sreedhara, Indian Institute of Technology Bombay

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Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advanced Fuel Cell Vehicle Applications (Part 1 of 2)

Session Code: ***PFL720***

Room 410 B ***Session Time:*** ***8:00 a.m.***

This session covers fuel cell advances from vehicle manufacturers in the first stage of series production FCEVs. In addition, there are modeling studies and evaluation of components mainly in PEM fuel cell systems, hydrogen storage and hydrogen fueling.

Directly following the technical paper session, there will be a panel of key industry members to discuss commercialization of fuel cell vehicles in PFL 799.

Organizers - *Anita Chaudhari, Ford Motor Co.; Jesse Schneider, BMW*

Chairpersons - *Jesse Schneider, BMW*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1176***	***Parametric Analysis of Syn-Gas Fueled SOFC with Internal Reforming***
		Tushar Choudhary, Sanjay, Pilaka Murty, NIT
8:30 a.m.	***2015-01-1174***	***The Newly Developed Components for the Fuel Cell Vehicle, Mirai***
		Nobuhiko Nakagaki, Toyota Boshoku Corp.
9:00 a.m.	***2015-01-1171***	***Performance Recovery of Fuel Cell Stack for FCEV***
		Hyun Suk Choo, Dae Kuen Chun, Jae Hyuk Lee, Hwan Soo Shin, Sung Kuen Lee, Yong Sun Park, Byung Ki Ahn, Hyundai Motor Group
9:30 a.m.	***2015-01-1172***	***Air Compressors for Fuel Cell Vehicles: An Systematic Review***
		Wan Yu, Xu Sichuan, Tongji Univ.; HuaiSheng Ni, Shanghai Fuel Cell Vehicle Powertrain Co.
10:00 a.m.	***2015-01-1175***	***Development of Compact and High-Performance Fuel Cell Stack***
		Norishige Konno, Seiji Mizuno, Hiroya Nakaji, Toyota Motor Corporation; Yuji Ishikawa, Nippon Soken Inc.

10:30 a.m.	***Panel***	***Technical Expert Panel Discussion: Commercialization of Fuel Cell Vehicles and Hydrogen Infrastructure***

The first generation of -consumer available- Fuel Cell Vehicles have just begun to be sold in parts of the US (California and the Northeast) in 2015. Though, there are still remaining hurdles to be had regarding hydrogen infrastructure and cost of the technology.

This is a panel of experts to discuss the status and remaining challenges for the wide-scale commercialization of these vehicles and infrastructure.

PFL799 is to follow the PFL720 on Advanced Fuel Cell Vehicle Applications session.

Organizers - *Jesse Schneider, BMW*
Panelists - *Robert Adler, Linde; Takashi Moriya, Honda R&D Co., Ltd.; Byung Ki Ahn, Hyundai Motor Group; Charles E. Freese, General Motors Co.; Aaron Harris, Air Liquide America Corp.; Justin Ward, Toyota Motor Engineering & Mfg NA Inc.;*

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advanced Fuel Cell Vehicle Applications (Part 2 of 2)

Session Code: ***PFL720***

Room 410 B ***Session Time:*** ***1:00 p.m.***

This session covers fuel cell advances from vehicle manufacturers in the first stage of series production FCEVs. In addition, there are modeling studies and evaluation of components mainly in PEM fuel cell systems, hydrogen storage and hydrogen fueling.

Directly following the technical paper session, there will be a panel of key industry members to discuss commercialization of fuel cell vehicles in PFL 799.

Organizers - *Anita Chaudhari, Ford Motor Co.; Jesse Schneider, BMW*

Chairpersons - *Jesse Schneider, BMW*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1170***	***Development of Boost Converter for MIRAI***
		Yoshinobu Hasuka, Hiroyuki Sekine, Koji Katano, Yasuhiro Nonobe, Toyota Motor Corporaiton
1:30 p.m.	***2015-01-1169***	***Development of High-Pressure Hydrogen Storage System for the Toyota ¿Mirai¿***
		Akira Yamashita, Masaaki Kondo, Sogo Goto, Nobuyuki Ogami, Toyota Motor Corp.
2:00 p.m.	***ORAL ONLY***	***Hydrogen Fueling Standardization: Enabling FCEVs to safely fast fill with Hydrogen and high resulting SOC/ Range***
		Jesse Schneider, BMW
2:30 p.m.	***2015-01-1177***	***Field Validation of the MC Default Fill Hydrogen Fueling Protocol***
		Steven Mathison, Honda R&D Americas Inc.; Kiyoshi Handa, Honda R&D Co., Ltd.; Timothy McGuire, Tyler Brown, Mercedes-Benz RDNA, Inc.; Todd Goldstein, Michael Johnston, General Motors Powertrain

3:00 p.m.	***ORAL ONLY***	***New Method for Refueling Hydrogen into High Pressure Tanks***
		Masanori Monde, Kyushu University; Fuminori Yamanashi, HySUT (dispatched from Nissan)

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Technical Expert Panel Discussion: Commercialization of Fuel Cell Vehicles and Hydrogen Infrastructure

Session Code: ***PFL799***

Room 410 B Technical Expert Panel Discus ***Session Time:*** ***11:00 a.m.***

The first generation of -consumer available- Fuel Cell Vehicles have just begun to be sold in parts of the US (California and the Northeast) in 2015. Though, there are still remaining hurdles to be had regarding hydrogen infrastructure and cost of the technology.

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Organizers - *Jesse Schneider, BMW*

Panelists - *Robert Adler, Linde; Takashi Moriya, Honda R&D Co., Ltd.; Byung Ki Ahn, Hyundai Motor Group; Charles E. Freese, General Motors Co.; Aaron Harris, Air Liquide America Corp.; Justin Ward, Toyota Motor Engineering & Mfg NA Inc.;*

Thursday, April 23

Multi-Discipline Interaction CAE Applications

Session Code: ***M213***

Room 411 A ***Session Time:*** ***8:00 a.m.***

Papers should concentrate on multi-discipline CAE applications in vehicle development involving multiple type of physical problems and their coupled interactions. The multi-discipline CAE methods may address couplings between fluid, structural, thermal, mechanical, electrical, control or other systems.

Organizers - *Fan Li, GM; Robert L. Geisler, General Motors Co.; Peiran Ding, ANSYS Inc.*

Time	***Paper No.***	***Title***
9:00 a.m.	***2015-01-0671***	***A Multi-Physics 3D Modeling Methodology for Multi-Cylinder Diesel Engine Thermal Management and Fatigue Life Prediction***
		Saeed Jahangirian, Ashutosh Srivastava, Seyed Alireza Hosseini, ANSYS Inc; Steven Ballard, Naiqiang Wu, John Kiedaisch, Navistar Inc
	2015-01-0669	***Failure Analysis of Injection Molded Parts Using Multi-Physics Approach (Written Only -- No Oral Presentation)***
		Nagarjun Jawahar, Saharash Khare, Hero MotoCorp Limited
	2015-01-0672	***Complete Multi-Discipline Simulation for Sloshing Noise (Written Only -- No Oral Presentation)***
		Douglas Marriott, Takeshi Ohtomo, MSC Software Ltd.; Tohru Wako, Honda R&D Co. Ltd. Automobile R&D Center
	2015-01-0673	***Study of Fluid Structure Interaction due to Water Splashing on the Rear Fender of Motorcycles (Written Only -- No Oral Presentation)***
		Rohit Ray, Nagarjun Jawahar, Hero MotoCorp Limited

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 23

Engineering Education

Session Code: ***CONG101***

Room 411 A ***Session Time:*** ***10:00 a.m.***

There has never been a time when the demand for engineers has been greater. Against this backdrop of a skills shortage, employers are demanding a broader range of skills as well as a refined project and team capability. In this session we will consider the factors that are contributing to the skills shortage, and solutions that are emerging. We consider the whole experience from primary education through to early career, all of which is vital to secure an effective engineering workforce.

Organizers - *Michael Royce; Richard K. Stobart, Loughborough Univ.*

Time	Paper No.	Title
10:00 a.m.	***2015-01-0411***	***More Leaders and Fewer Initiatives: Key Ideas for the Future of Engineering*** *Richard K. Stobart, Loughborough Univ.; W. Ethan Eagle, Sandia National Laboratories; Xunzhe Zhang, University of Nottingham*
10:30 a.m.	***2015-01-0414***	***Design of the University of Idaho Formula Hybrid Vehicle*** *Rory Lilley, University of Idaho; M. Sh. Asfoor, Egyptian Armed Forces; Michael Santora, Dan Cordon, Edwin Odom, Steven W. Beyerlein, University of Idaho*
11:00 a.m.	***~~2015-01-0413~~*** ***ORAL ONLY***	***Partnership with industry in course development ¿ a case study on engine calibration methodologies*** *Anoma Malalasekera; Richard K. Stobart, Loughborough Univ.*

Thursday, April 23

Alternative and Advanced Fuels

Session Code: ***PFL330***

Room 411 B ***Session Time:*** ***8:00 a.m.***

This session includes four papers related to spark-ignition engines and their fuels and five papers related to the processes of compression ignition combustion of different fuels.

Organizers - *Casey Maxwell Allen, Marquette Univ.; Mebougna Drabo, Alabama A & M University; George Karavalakis, Univ. of California-Riverside; Paul Richards; Elisa Toulson, Michigan State University*

Chairpersons - *George Karavalakis, Univ. of California-Riverside; Mebougna Drabo, Alabama A & M University*

Time	Paper No.	Title
8:30 a.m.	***2015-01-0957***	***A Complete Assessment of the Emissions Performance of Ethanol Blends and Iso-Butanol Blends from a Fleet of Nine PFI and GDI Vehicles*** *George Karavalakis, Daniel Short, Diep Vu, Robert Russell, Akua Asa-Awuku, Thomas Durbin, University of California*
9:00 a.m.	***2015-01-0963***	***Lignin Derivatives as Potential Octane Boosters*** *Miao Tian, Robin Van Haaren, Jos Reijnders, Michael Boot, Eindhoven University of Technology*
9:30 a.m.	***2015-01-0965***	***Air-to-Fuel Ratio Calculation Methods for Oxygenated Fuels in Two-Stroke Engines*** *James M. Sevik, Thomas Wallner, Argonne National Laboratory; Scott Miers, Michigan Technological Univ; Jeff Wasil, Bombardier Recreational Product Inc.*

10:00 a.m.	***2015-01-0960***	***Mixture-Formation Analysis by PLIF in an HSDI Diesel Engine Using C₈-Oxygenates as the Fuel***
		Thomas Huelser, Daniel Klein, Benedikt Heuser, Thorsten Brands, Christian Schulz, Gerd Grunefeld, Stefan Pischinger, RWTH Aachen Univ.
10:30 a.m.	***2015-01-0952***	***Effects of Fuel Physical Properties on Auto-Ignition Characteristics in a Heavy Duty Compression Ignition Engine***
		Michael A. Groendyk, David Rothamer, Univ. of Wisconsin
11:00 a.m.	***2015-01-0951***	***Experimental Characterization of the Thermodynamic Properties of Diesel Fuels Over a Wide Range of Pressures and Temperatures***
		JM Desantes, FJ Salvador, M Carreres, D Jaramillo, Universitat Politecnica de Valencia
	2015-01-0954	***Low Cost Wet Ethanol for Spark-Ignited Engines: Further Investigations (Written Only -- No Oral Presentation)***
		Mario Martins; Thompson Lanzanova; Rafael Sari
	2015-01-0955	***Investigation of Ethylene Glycol Monomethyl Ether Soyate as a Biofuel (Written Only -- No Oral Presentation)***
		Hejun Guo, Xi'an Research Institute of High Technology; Qining Xun, Shandong Institute of Nonmetal Materials; Shenghua Liu, Xi'an Jiaotong Univ; Xuanjun Wang, Xi'an Research Institute of High Technology
	2015-01-0958	***Blending of Higher Alcohols with Vegetable Oil Based Fuels for Use in Compression Ignition Engine (Written Only -- No Oral Presentation)***
		Naveen Kumar, Delhi Technological University; Sidharth Bansal, Maharaja Agrasen Inst of Technology; Harveer Singh Pali, Noida Inst. of Engg.& Tech.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00009, and also individually. To purchase visit collections.sae.org

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Vehicle Networks and Communication

Session Code: ***AE201***

Room 411 B ***Session Time:*** ***1:00 p.m.***

Vehicle networks and communication protocols play a key role in meeting today's complex system requirements and product flexibility. This session will explore the challenges and future prospects for vehicle communication networks and protocols. Papers are sought in the areas of network design, protocol design, network-enabled vehicle functions, network integration, network and protocol testing, network bus technology, CAN, CAN-FD, J1939, Ethernet, FlexRay.

Organizers - *Christopher Lupini, Delphi Corp.; Mark Zachos, DG Technologies*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0196***	***(R)evolution of E/E Architectures***
		Varun M. Navale, Kyle Williams, Robert Bosch LLC; Athanassios Lagospiris, Michael Schaffert, Markus-Alexander Schweiker, Robert Bosch GmbH
1:30 p.m.	***2015-01-0201***	***Gradient and Mass Estimation from CAN Based Data for a Light Passenger Car***
		Robert Wragge-Morley, Guido Herrmann, University of Bristol; Phil Barber, Jaguar Cars; Stuart Burgess, University of Bristol

2:00 p.m.	***2015-01-0198***	***A Novel Distortion Cancelling Technique Enabling 50-Mbps High Speed Data Transmission for Bus Connected ECUs***
		Hironobu Akita, Nobuaki Matsudaira, Chao Chen, Takasuke Ito, Shigeki Ohtsuka, DENSO Corp.
2:30 p.m.	***2015-01-0197***	***Insights on the Configuration and Performances of SOME/IP Service Discovery***
		Jan Seyler, Daimler AG - Mercedes-Benz Cars; Nicolas Navet, University of Luxembourg; Loïc Fejoz, RealTime-At-Work (RTaW)
3:00 p.m.	***2015-01-0199***	***Real Time Ethernet and Synchronizing with Inhomogeneous Physical Layers: CAT5 and Unshielded Twisted Single Pair Cabling***
		Stefan Fuchs, Hans-Peter Schmidt, East Bavarian Technical University (OTH)
3:30 p.m.	***2015-01-0200***	***GBit Ethernet - The Solution for Future In-Vehicle Network Requirements?***
		Karsten Schmidt, Audi Electronics Venture GmbH; Udo Dannebaum, Harald Zweck, Infineon Technologies AG

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Thursday, April 23

Automotive Tribology (Part 2 of 2)

Session Code: ***M214***

Room 411 C ***Session Time:*** ***8:00 a.m.***

This technical session focuses on fundamental and applied research that lowers frictional energy losses and enhances reliability and durability of automotive components. The topics include, but not limited to engine and drivetrain tribology, seals, bearing and gear lubrication, materials tribology, surface engineering, lubricants and additives, computer-aided tribology, tribotesting, as well as friction, wear and lubrication fundamentals.

Organizers - *Yucong Wang, General Motors Co.; Qingmin Yang, Federal-Mogul Corp.; Qian Zou, Oakland University*

Chairpersons - *Qingminn Yang, Federal-Mogul Corp*

Moderators - *Yucong Wang, General Motors Co*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-0684***	***Boosting the Friction Performance of Amine Friction Modifiers with MoDTC***
		Sarah M. Lundgren, Katja Eriksson, Akzo Nobel Surface Chemistry AB; Brenda Rossenaar, AkzoNobel Chemicals BV
8:30 a.m.	***2015-01-0677***	***Methodology for Predictive Friction Modeling in Direct-Acting Mechanical Bucket Valvetrain System***
		Marcin Marek Okarmus, Rifat Keribar, Gamma Technologies Inc.; Rob Zdrodowski, Arup Gangopadhyay, Ford Motor Company
9:00 a.m.	***ORAL ONLY***	***Correlation of Ring on Liner Friction Test to Single Cylinder Engine Performance***
		Michael A. Baumbarger, Honda R & D Americas Inc.; Todd Fitz, Ryosuke Kogure, Honda R & D Americas Inc

9:30 a.m.	***ORAL ONLY***	***Sustainable reduction of CO2 and friction through highly wear resistant engine components***
		Dr. Nazlim Bagcivan, Dr. Yashar Musayev, Ladislaus Dobrenizki, Dr. Tim Hosenfeldt, Dr. Edgar Schulz, Schaeffler Technologies AG & Co. KG
10:30 a.m.	***2015-01-0690***	***Mechanical, Tribological Properties and Surface Characteristics of Developed Polymeric Materials Reinforced by CNTs***
		Salah H. R. Ali, National Institute for Standards (NIS); Badr S. N. Azzam, Cairo Univ
11:00 a.m.	***2015-01-0691***	***Proposed Metrological Method for Identifying Automotive Brake Discs***
		Salah H. R. Ali, Sarwat Z. A. Zahwi, National Institute for Standards (NIS); Hassan H. Dadoura, Helwan Univ.
	2015-01-0676	***Finite Element Analysis of Transient Thermoelastic Behavior in Multi-Disc Clutches (Written Only -- No Oral Presentation)***
		Oday Ibraheem Abdullah, Hamburg University of Technology; Wassan Abd Al-Sahb, University of Baghdad; Abdullah Al-Shabibi, Sultan Qaboos University
	2015-01-0680	***Scuffing Test Rig for Piston Wrist Pin and Pin Bore (Written Only -- No Oral Presentation)***
		Rong Zhang, Qian Zou, Gary Barber, Oakland University; Ben Zhou, Yucong Wang, General Motors
	2015-01-0682	***Life Prediction of Shift Valve for Wet Shift Clutch under Abrasive Wear (Written Only -- No Oral Presentation)***
		Yong Liu, Biao Ma, Changsong Zheng, Beijing Institute of Technology
	2015-01-0683	***Effect of Surface Roughness and Lubrication on Scuffing for Austempered Ductile Iron (ADI) (Written Only -- No Oral Presentation)***
		Jiman Han, Qian Zou, Gary Barber, Oakland University; Xichen Sun, FCA US LLC
	2015-01-0688	***A Three Dimensional Finite Element Analysis for Grooved Friction Clutches (Written Only -- No Oral Presentation)***
		Wassan Abd Al-Sahb; Oday Ibraheem Abdullah

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00488, and also individually. To purchase visit collections.sae.org

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 23

Advances in Alternative Energy Sources for Sustainable Development in the Transportation Sector

Session Code: ***SDP110***

Room 411 C ***Session Time:*** ***1:00 p.m.***

This session explores advances in the creation of sustainable energy sources and their usage in the transportation sector. Topics can include research and in-production technology used to produce renewable energy sources and materials. A discussion on lifecycle analysis of the energy sources is also highly recommended. The SDPC encourages usage of papers, presentations, and panels in this session to display leading edge technologies and practical tools for engineers.

Organizers - *Rahul Jhavar, Caterpillar Inc.; Navtej Singh, Navistar Inc.*

Time	***Paper No.***	***Title***

1:30 p.m.	***2015-01-1683***	***A Study of Potential Fuel Economy Technologies to Achieve CAFE 2025 Regulations using Fleet Simulation Modeling Software***
		Bernie Porter, Hugh Blaxill, Noor Jariri, MAHLE Powertrain LLC
3:30 p.m.	***2015-01-1680***	***A Mechanical Regenerative Brake and Launch Assist using an Open Differential and Elastic Energy Storage***
		David H. Myszka, Andrew Murray, Kevin Giaier, Vijay Krishna Jayaprakash, University of Dayton; Christoph Gillum, Stress Engineering Services Inc
4:00 p.m.	***2015-01-1679***	***Commercial Viability Study for LPG as Alternative Mass Transportation Fuel***
		Lynn C. McLean, McLean Consulting & Associates Inc.; Mohamed El-Sayed, Kettering Univ.
	2015-01-1677	***Comparative Study of Emissions and Performance of Hydrogen Boosted SI Engine Powered by Gasoline Methanol Blend and Gasoline Ethanol Blend (Written Only -- No Oral Presentation)***
		Amaya Kak, Naveen Kumar, Bharat Singh, Somendra Singh, Dhruv Gupta, Delhi Technological University
	2015-01-1678	***Optimization Analysis of Injection Angle and Injector Nozzle of an Advanced Compressed Air Engine Kit (Written Only -- No Oral Presentation)***
		Akshay Kumar, Naveen Kumar, Dhruv Gupta, Delhi Technological University; Vasu Kumar
	2015-01-1681	***Development of a Single Cylinder Dedicated CNG Engine for Small 4 Wheeler Commercial Vehicles (Written Only -- No Oral Presentation)***
		Girish Khairnar, Jagrit Shrivas, Sachin Pande, Rohit Londhe, Yaser Hussaini, Yogesh Ambekar, Greaves Cotton, Ltd.
	2015-01-1682	***Biodiesel (Mangifera Oil Methyl Ester) Derived from Triglycerides of Mangifera Kernel Seed and Leaves Oil by using Heterogeneous Catalyst (Written Only -- No Oral Presentation)***
		Sangram D. Jadhav, Madhukar S Tandale, Dr. Babasaheb Ambedkar Technological University
	2015-01-1684	***Effect of Hydrogen Addition on Combustion and Emission Characteristics of High Speed Spark Ignition Engine- An Experimental Study (Written Only -- No Oral Presentation)***
		KV Shivaprasad, PR Chitragar, GN Kumar, National Institute of Technology Karnataka

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Thursday, April 23

Fuel/Additive Effects on SI Combustion Processes

Session Code: ***PFL214***

Room 412 A ***Session Time:*** ***8:00 a.m.***

This session focuses on the impact of conventional and alternative fuels as well as fuel additives on the operation, performance and emissions of SI engines. Papers focus on the impact of bio-derived fuels (ethanol, butanol and others) on engine design and performance as well as gasoline properties and additives, and their impact.

Organizers - *Richard S. Davis, General Motors Co.; John O. Waldman, General Motors; Elana Chapman, General Motors Co.*

Chairpersons - *John Waldman, General Motors*

Time	Paper No.	Title
8:00 a.m.	2015-01-0768	**Experimental Investigation of a DISI Production Engine Fuelled with Methanol, Ethanol, Butanol and ISO-Stoichiometric Alcohol Blends** *Louis Sileghem, Ghent University; Andrew Ickes, Thomas Wallner, Argonne National Laboratory; Sebastian Verhelst, Ghent University*
8:30 a.m.	2015-01-0774	**Effect of Ethanol Ratio on Ignition and Combustion of Ethanol-Gasoline Blend Spray in DISI Engine-Like Condition** *Run Chen, Ryoma Okazumi, Keiya Nishida, Youichi Ogata, Univ of Hiroshima*
9:00 a.m.	2015-01-0767	**Effect of Octane on the Performance of Two Gasoline Direct Injection Passenger Cars** *Richard Stradling, Shell Global Solutions UK; David Rickeard, Heather Hamje, Concawe; John Williams, BP International Ltd; Peter Zemroch, Shell Global Solutions UK*
10:30 a.m.	2015-01-0775	**Laminar Burning Velocity of Alcohol Reforming Products and Effects of Cellularity on Flame Propagation** *Ahmad Omari, Michael Shapiro, Leonid Tartakovsky, Technion Israel Inst. of Technology*
	2015-01-0765	**Specific Heat Ratio of High Methane Fraction Natural Gas/Air in Confined Vessel (Written Only -- No Oral Presentation)** *Chenglong Tang, Zhanbo Si, Shuang Zhang, Zuohua Huang, Shiyi Pan, Jinhua Wang, Xi'an Jiaotong University; Jing Gong*
	2015-01-0766	**Effect of Compression Ratio on the Performance Characteristics of Spark Ignition Engine Fueled with Alternative Fuels: A Review (Written Only -- No Oral Presentation)** *Anshuman Goswami, Sagar Vashist, Ashish Nayyar, Swami Keshvanand Institute Of Technology*
	2015-01-0770	**A Numerical Investigation on a Spark Ignition Engine Fueled with the Hydrogen-Methane Blend Using a Quasi-Dimensional Method (Written Only -- No Oral Presentation)** *Mehrdad Afshari, Jafar Hashemi Daryan, Seyed Ali Jazayeri, Reza Ebrahimi, K N Toosi Univ of Technology; Farshad Salimi Naneh Karan, University of Tennessee*
	2015-01-0772	**Effect of Variable Compression Ratio and Intake Charge Dilution on Fuel Efficiency and Emission for a Spark Ignition Engine (Written Only -- No Oral Presentation)** *Ashish J. Chaudhari, Vinayak Kulkarni, Niranjan Sahoo, IIT Guwahati*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008 and SUB-TP-00012, and also individually. To purchase visit collections.sae.org

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Launch Devices

Session Code: ***PFL650***

Room 412 A ***Session Time:*** ***1:00 p.m.***

This Session includes papers on torque converter, launch devices and modeling.

Organizers - *Michael E. Fingerman, FCA US LLC*

Chairpersons - *Michael E. Fingerman, Brandon Otulakowski, FCA US LLC*

Time	Paper No.	Title
2:00 p.m.	***2015-01-1121***	***Experimental Analysis and Model Validation of a Dual Mass Flywheel for Passenger Cars***
		Enrico Galvagno, Mauro Velardocchia, Alessandro Vigliani, Antonio Tota, Politecnico di Torino
2:30 p.m.	***ORAL ONLY***	***Influence of Contamination between Clutch Release Bearing and Sliding Tube on the Clutch Pedal Hysteresis (SAE Brasil Best Paper # 2014-36-0153)***
		Levi Nascimento da Silva, Schaeffler Brasil Ltda
	2015-01-1119	***Multi-Objective Optimization Employing Genetic Algorithm for the Torque Converter with Dual-Blade Stator (Written Only -- No Oral Presentation)***
		Guangqiang Wu, Lijun Wang, Tongji University
	2015-01-1120	***Design of Clutch Pedal with Leaf Spring and Cam Mechanism to Reduce Clutch Pedal Effort (Written Only -- No Oral Presentation)***
		Siddhartha Singh; Sudha Ramaswamy

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Driveline NVH

Session Code: ***PFL660***

Room 412 A ***Session Time:*** ***3:00 p.m.***

This session addresses transmission noise, vibration, rattle issues and design solutions.

Organizers - *Fabio Da Silva Ferreira, Schaeffler Group USA Inc.; Michael E. Fingerman, FCA US LLC*

Time	Paper No.	Title
4:00 p.m.	***2015-01-1122***	***Adoption of Floating Seat in a Vehicle to Reduce Seat Vibration***
		Kengo Yabe, Toru Inagaki, Takashi Kondo, Honda
	2015-01-1123	***Low-Frequency Vibration Responses of a Single-Mode Power Split HEV Drive Train (Written Only -- No Oral Presentation)***
		Jiangwu Zhang, Donghao Liu, Shanghai Jiao Tong Univ; Haisheng Yu, Shanghai Maple Automobile Co. Ltd
	2015-01-1124	***Transfer and Perception of Automotive Transmission Rattle (Written Only -- No Oral Presentation)***
		Gerrit Knabe, Markus Zahlten, Ferit Kücükay, Institut für Fahrzeugtechnik

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Software Design Engineering and Development (Part 1 of 2)

Session Code: ***AE105***

Room 412 B ***Session Time:*** ***8:00 a.m.***

This session concentrates on the development and implementation of embedded software architectures that reside in production vehicle electronic modules. Topics include implementation on multi-core processors, parallel computing environments, multi-processor and multi-ECU systems, and the deployment of AUTOSAR. Expert speakers from the embedded software community are encouraged to share their experiences and opinions.

Organizers - *Larry Cramer, FCA US LLC; John Day, John Day's Automotive Electronics; Joe Fairchild, dSPACE Inc.; Robert Miller, Vector CANtech Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0180***	***On Timing Requirements and a Critical Gap between Function Development and ECU Integration*** *Karsten Schmidt, Denny Marx, Audi AG; Kai Richter, Symtavision GmbH; Konrad Reif, Duale Hochschule Baden-Württemberg; Andreas Schulze, Torsten Flämig, Volkswagen AG*
8:30 a.m.	***2015-01-0183***	***A Model-Based Configuration Approach for Automotive Real-Time Operating Systems*** *Georg Macher, Graz University of Technology; Muesluem Atas, Eric Armengaud, AVL List GmbH; Christian Kreiner, Graz University of Technology*
9:00 a.m.	***2015-01-0184***	***Jump-Starting AUTOSAR ECU Development*** *James Price, Mentor Graphics Corp.*
9:30 a.m.	***2015-01-0185***	***The Study of AUTOSAR Communication for Automotive Requirement*** *Younho Lee, YangNam Lim, Hyundai Autron; KokCheng Gui, Jin Seo Park, Infineon Technologies Asia Pacific Pte; Pawan Reddy, Infineon Technologies India Pvt.Ltd.; Syed Arshad Kazmi, Infineon Technologies Korea Co Ltd*
10:00 a.m.	***2015-01-0178***	***Design Automation and its Challenges in AUTOSAR-Based Vehicle E/E Systems*** *James Price, Mentor Graphics Corp.*
11:00 a.m.	~~***2015-01-0181***~~ ***ORAL ONLY***	***Efficiency of the automotive software design using the SPL architecture refinement framework*** *Takahiro Iida, Masahiro Matsubara, Fumio Narisawa, Hitachi Ltd; Hideyuki Kojima, Tohma Yamaguchi, Hitachi Automotive Systems, Ltd*
11:30 a.m.	~~***2015-01-0188***~~ ***ORAL ONLY***	***Teaching Automotive Product Development Standards ¿ AUTOSAR*** *Nagabhushana Siddalingappa, Vishnu Swaroop, BMS College of Engineering*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00497, and also individually. To purchase visit collections.sae.org

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Thursday, April 23

Software Design Engineering and Development (Part 2 of 2)

Session Code: ***AE105***

Room 412 B ***Session Time:*** ***1:00 p.m.***

This session concentrates on the development and implementation of embedded software architectures that reside in production vehicle electronic modules. Topics include implementation on multi-core processors, parallel computing environments, multi-processor and multi-ECU systems, and the deployment of AUTOSAR. Expert speakers from the embedded software community are encouraged to share their experiences and opinions.

Organizers - *Larry Cramer, FCA US LLC; John Day, John Day's Automotive Electronics; Joe Fairchild, dSPACE Inc.; Robert Miller, Vector CANtech Inc.*

Time	Paper No.	Title

1:00 p.m.	***2015-01-0176***	***Non-Intrusive Tracing at First Instruction***
		Karsten Schmidt, Audi Electronics Venture GmbH; Denny Marx, Audi AG; Jens Harnisch, Albrecht Mayer, Udo Dannebaum, Infineon Technologies AG; Herbert Christlbauer, Audi AG
2:00 p.m.	***2015-01-0190***	***Methods for Prediction, Simulation and Verification of Real-Time Software Architectural Design based on Machine Learning Algorithms***
		Mostafa Anwar Taie, Ibrahim El-Faramawy, Mohamed Elmawazini, Valeo
2:30 p.m.	***2015-01-0186***	***Improved ECU End of Line Testing using Multicore Microcontroller***
		Syed Arshad Kazmi, Infineon Technologies Korea Co., Ltd.; Jin Seo Park, Infineon Technologies Asia Pacific Pte; Jens Harnisch, Infineon Technologies AG
3:00 p.m.	***2015-01-0189***	***Software Parallelization in Automotive Multi-Core Systems***
		Rolf Schneider, AUDI AG; Dominik Juergens, Elektronische Fahrwerksysteme GmbH; Andre Kohn, Audi Electronics Venture GmbH
3:30 p.m.	***2015-01-0179***	***AUTOSAR Based Multicore Software Implementation for Powertrain Applications***
		Ralph Mader, Armin Graf, Gerd Winkler, Continental Automotive GmbH
4:00 p.m.	***2015-01-0177***	***On Designing Software Architectures for Next-Generation Multi-Core ECUs***
		Thomas Fuhrman, Shige Wang, General Motors LLC; Marek Jersak, Kai Richter, Symtavision Gmbh
	2015-01-0191	***Reducing Defects in Automotive Software Using Static Analysis (Written Only -- No Oral Presentation)***
		Priti R. Ranadive, CREST, KPIT Technologies Ltd.; Vinay Vaidya, Chaitanya Rajguru, KPIT Technologies Ltd.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00497 and SUB-TP-00002, and also individually. To purchase visit collections.sae.org

Planned by Automotive Embedded Software and Electronics Committee / Automobile Electronics Activity

Thursday, April 23

Infotainment Systems

Session Code: ***AE206***

Room 413 A ***Session Time:*** ***8:00 a.m.***

This session covers topics relating to vehicular entertainment and information systems. Specific subjects include multiband antennas, satellite radio reception, measuring and evaluating audio systems, navigation, displays, infotainment busses, audio amplifiers, and loudspeakers.

Organizers - *Lyle Stanley Bryan, TE Connectivity; Husein Dakroub, Visteon Electronic Systems Div.; Robert Klacza, Retired; Mohammad Naserian, Hyundai America Technical Center; Abraham Shocket, TE Connectivity*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Connected Car Nirvana: It¿s Time for a Reality Check***
		Leon Hong, Airbiquity Inc.
8:30 a.m.	***2015-01-0226***	***Enhancing Sound Quality in Bluetooth Audio Systems Using Kalman Filtering***
		Mahdi N. Ali, Hyundai-Kia America Technical Center

9:00 a.m.	***ORAL ONLY***	***Using Active Noise Control to Improve Driving Experience and Safety***
		Andrew Patterson, Mentor Graphics Corp
9:30 a.m.	***2015-01-0224***	***Addressing Challenges in Automotive Connectivity: Mobile Devices, Technologies, and the Connected Car***
		Patrick Shelly, Mentor Graphics Corp.
10:00 a.m.	***2015-01-0225***	***Development of Tool for Evaluation of Automotive Conformity of FM Receivers Using Two-Stage Method***
		Satoru Komatsu, Honda R&D Co., Ltd.; Suguru Imai, Kenji Taguchi, Tatsuya Kashiwa, Kitami Institute of Technology
10:30 a.m.	***2015-01-0222***	***Estimation of the Incoming Wave Characteristics by MUSIC Method Using Virtual Array Antenna***
		Suguru Imai, Kenji Taguchi, Tatsuya Kashiwa, Kitami Institute of Technology; Satoru Komatsu, Honda R&D Co., Ltd.
11:00 a.m.	***2015-01-0223***	***Automotive Ethernet AVB Landscape***
		Michael David Johas Teener, Broadcom Corp.
	2015-01-0221	***A Supervisory Learning Based Two-Wheeler Drive Pattern (Written Only -- No Oral Presentation)***
		Soham Banerjee, Anand Ganesan, Mahindra 2 Wheelers Ltd.; Sudharsan Sundaram, Mahindra & Mahindra Ltd.; Kiran Jasti, Mahindra 2 Wheelers Ltd.

Planned by Advanced Electronics Functions Committee / Automobile Electronics Activity

Thursday, April 23

Reliability and Robust Design in Automotive Engineering: Reliability and Accelerated Testing

Session Code: ***IDM103***

Room 413 A ***Session Time:*** ***1:00 p.m.***

This session presents methods and automotive applications on how to assess reliability and robustness in product development. Topics include among others, system reliability target allocation, interval analysis in robust design and imprecise reliability assessment. It also addresses new developments and applications in the area of accelerated testing.

Organizers - *Paul Lubinski, Thermo King Corp.; Yung-Li Lee, FCA US LLC; Mark A. Pompetzki, HBM-nCode*

Time	***Paper No.***	***Title***
1:00 p.m.	***ORAL ONLY***	***A New Approach for Durability, Reliability and Uncertainty Assessment of Engineering Systems***
		Zhigang Wei, Tenneco Inc.; Litang Gao, Limin Luo, Shengbin Lin, Tenneco Inc
1:30 p.m.	***2015-01-0427***	***Fatigue Design Curve Construction for Test Data with Linear/Linearized and Universal Slope Characteristics***
		Zhigang Wei, Limin Luo, Shengbin Lin, Tenneco Inc.
2:00 p.m.	***2015-01-0430***	***Obtaining a Swept Sine on Random Vibration Profile for Powertrain Mounted Component Qualification***
		Frédéric Kihm, Andrew Halfpenny, HBM-nCode; Benoît Beaum, PSA Peugeot Citroën

2:30 p.m.	***2015-01-0431***	***Warranty Data Analysis Method using Life Table and Its Practical Application*** *KI Woo Sung, Hyundai Motor Co. & KIA Motors Corp.; Jong Gurl Kim, Sungkyunkwan University; Dae-Un Sung, Hyundai Motor Co. & KIA Motors Corp.; Hye Mi Kim, Sungkyunkwan University*
3:00 p.m.	***2015-01-0429***	***A Test Bench for the Turbocharger Fatigue Life Based on the Self-Circulation*** *Na Xu, Chaochen Ma, Jianbing Gao, Zhiqiang Zhang, Xunzhi Qu, Beijing Institute of Technology*
3:30 p.m.	***2015-01-0428***	***Development of a Nonlinear, Hysteretic and Frequency Dependent Bushing Model*** *Sida Li, Xiaowu Yang, Bruce Minaker, Univ of Windsor; Xiaojin (Shine) Lan, FCA Canada Inc.; Mark Villaire, FCA US LLC*
4:00 p.m.	***~~2015-01-0426~~*** ***ORAL ONLY***	***A Virtual Shaker Table for Predicting Loads in Automotive Powertrain Mounts*** *Xiaowu Yang, Sida Li, Univ of Windsor; Xiaojin (Shine) Lan, FCA Canada; Bruce Minaker, Univ of Windsor; Mark Villaire, FCA US*

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Thursday, April 23

Advanced Vehicle Technology Competitions (Part 1 of 2)

Session Code: ***PFL760***

Room 413 B ***Session Time:*** ***8:00 a.m.***

The EcoCAR 3 student vehicle competition, sponsored by General Motors and the U.S. Department of Energy, tasks university teams with designing, implementing and refining advanced technology powertrains into a conventional Chevrolet Camaro. This session presents yearly results from teams in the competition, highlighting the entire EcoCAR vehicle development process and team accomplishments.

Organizers - *Jesse Alley, Argonne National Laboratory; Trevor Crain, University of Washington*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Controls Development and Vehicle Refinement for a 99% Showroom Ready Parallel Through the Road Plug-In Hybrid Electric (SAE Paper 2014-01-2906)*** *Trevor Crain, Michael Ryan Mallory, Megan Cawley, Brian Fabien, Per Reinhall, University of Washington*
8:30 a.m.	***ORAL ONLY***	***Validation and Analysis of the Fuel Cell Plug-in Hybrid Electric Vehicle Built by Colorado State University for the EcoCAR 2: Plugging into the Future Vehicle Competition (SAE Paper 2014-01-2910)*** *Thomas Bradley, Benjamin Michael Geller, Jake D. Bucher, Shawn D. Salisbury, Colorado State Univ.; Clinton Knackstedt, Colorado State Univ*
9:00 a.m.	***2015-01-1235***	***Plug-in Hybrid Electric Vehicle Reengineering of a Conventional Sedan for EcoCAR2*** *Kevin L. Snyder, Jerry Ku, Wayne State University*
9:30 a.m.	***ORAL ONLY***	***NCSU Year Three Final Technical Report (SAE Paper 2014-01-2907)*** *Di Zhu, Ewan Pritchard, North Carolina State Univ.*

10:00 a.m.	***ORAL ONLY***	***Refinement of a Parallel-Series PHEV for Year 3 of the EcoCAR 2 Competition (SAE Paper 2014-01-2908)***
		Katherine Bovee, Eric Gallo, Jason Ward, Andrew Huster, Amanda Hyde, Matthew Joseph Organiscak, Margaret Yatsko, Matthew Yard, Giorgio Rizzoni, Shawn W. Midlam-Mohler, The Ohio State University
10:30 a.m.	***ORAL ONLY***	***Design and Implementation of a Series Plug-In Hybrid Electric Vehicle for the EcoCAR 2 Competition (SAE Paper 2014-01-2909)***
		Chris D. Monaco, Daniel C. Haworth, Chris Golecki, Jeffrey S. Mayer, Benjamin J. Sattler, Gary Neal, Pennsylvania State Univ.

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Advanced Vehicle Technology Competitions (Part 2 of 2)

Session Code: ***PFL760***

Room 413 B ***Session Time:*** ***1:00 p.m.***

The EcoCAR 3 student vehicle competition, sponsored by General Motors and the U.S. Department of Energy, tasks university teams with designing, implementing and refining advanced technology powertrains into a conventional Chevrolet Camaro. This session presents yearly results from teams in the competition, highlighting the entire EcoCAR vehicle development process and team accomplishments.

Organizers - *Jesse Alley, Argonne National Laboratory; Trevor Crain, University of Washington*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1229***	***Plant Modeling and Software Verification for a Plug-in Hybrid Electric Vehicle in the EcoCAR 2 Competition***
		Katherine Bovee, Amanda Hyde, Margaret Yatsko, Matthew Yard, Matthew Organiscak, Bharatkumar Hegde, Jason Ward, Andrew Garcia, Shawn Midlam-Mohler, Giorgio Rizzoni, Ohio State University
1:30 p.m.	***2015-01-1228***	***Hybrid Electric Vehicle Architecture Selection for EcoCAR 3 Competition***
		Zhuoran Zhang, Miriam Di Russo, Xianfeng Yan, Ahmed I. Uddin, Dhanya Sankaran, Jerry C. Ku, Wayne State Univ.
2:00 p.m.	***2015-01-1234***	***Internal Resistance Optimization Utilizing ¿Just in Time¿ Control***
		Patrick Ellsworth, William Scott, Michael Fowler, Roydon Fraser, Ben Gaffney, Daniel VanLanen, University Of Waterloo
2:30 p.m.	***2015-01-1230***	***Design and Simulation of Lithium-Ion Battery Thermal Management System for Mild Hybrid Vehicle Application***
		Ahmed Imtiaz Uddin, Jerry Ku, Wayne State University
	2015-01-1231	***An Illustrative Look at Energy Flow through Hybrid Powertrains for Design and Analysis (Written Only -- No Oral Presentation)***
		Eli H. White, Douglas J. Nelson, P. Christopher Manning, Virginia Tech

The papers in this session are available in SAE Technical Paper Collection, SUB-GTL-00001, and also individually. To purchase visit collections.sae.org

Planned by Hybrid and Electric Powertrains Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Control System Design & Calibration (Part 3 of 4)

Session Code: ***PFL130***

Room 414 A ***Session Time:*** ***8:00 a.m.***

Separate sub-sessions cover powertrain control, calibration, and system-level optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and subsystems related to energy management in conventional and hybrid operation, considering the simultaneous optimization of hardware design parameters and control software calibration parameters.

Organizers - *Kody G. Klindt, IAV Automotive Engineering Inc.; Feilong Liu, Delphi Corp.; Xuefei Chen, FCA US LLC; Peter J. Maloney, MathWorks; Matti Vint, VALEO*

Chairpersons - *Feilong Liu, Delphi Corp.; Xuefei Chen, FCA US LLC; Denise M. Rizzo, US Army TARDEC*

Time	Paper No.	Title
8:00 a.m.	***2015-01-1636***	***Toyota's Integrated Drive Power Control System for Downsized Turbocharged Engine***
		Asuka Takasaki, Takashi Inoue, Kazumitsu Sugano, Koji Nagata, Toyota Motor Corporation
8:30 a.m.	***2015-01-1632***	***Model Predictive Control as a Solution for Standardized Controller Synthesis and Reduced Development Time Application Example to Diesel Particulate Filter Temperature Control***
		Karim Bencherif, Dirk von Wissel, RENAULT SAS; Lukas Lansky, Dejan Kihas, Honeywell Automotive Software
9:00 a.m.	***2015-01-1631***	***Development of a Target Sensitivity Function based A/F F/B Controller by Sensor Response Characteristics***
		Michinori Tani, Atsuhiro Miyauchi, Yoshiaki Matsuzono, Honda R&D Co., Ltd.
9:30 a.m.	***2015-01-1622***	***Acoustic Emission Processing for Turbocharged GDI Engine Control Applications***
		Nicolo Cavina, Andrea Businaro, Giorgio Mancini, University of Bologna; Matteo De Cesare, Federico Covassin, Stefano Sgatti, Magneti Marelli
10:30 a.m.	***2015-01-1624***	***Individual Cylinder Control for Air-Fuel Ratio Cylinder Imbalance***
		Shinji Nakagawa, Hitachi, Ltd.; Akihito Numata, Toshio Hori, Hitachi Automotive Systems Ltd.
	2015-01-1627	***Fuzzy-PID Speed Control of Diesel Engine Based on Load Estimation (Written Only -- No Oral Presentation)***
		Xiang Di, Ying Huang, Yanwu Ge, Gang Li, Meiqi Hu, Beijing Institute of Technology
	2015-01-1644	***Research on the Cylinder-by-cylinder Variations Detection and Control Algorithm of Diesel Engine (Written Only -- No Oral Presentation)***
		Huan Li, Ying Huang, Gang Li, Yongguang Yang, Beijing Institute of Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00465, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Control System Design & Calibration (Part 4 of 4)

Session Code: ***PFL130***

Room 414 A ***Session Time: 1:00 p.m.***

Separate sub-sessions cover powertrain control, calibration, and system-level optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and subsystems related to energy management in conventional and hybrid operation, considering the simultaneous optimization of hardware design parameters and control software calibration parameters.

Organizers - *Kody G. Klindt, IAV Automotive Engineering Inc.; Feilong Liu, Delphi Corp.; Xuefei Chen, FCA US LLC; Peter J. Maloney, MathWorks; Matti Vint, VALEO*

Chairpersons - *Denise M. Rizzo, US Army TARDEC; Xuefei Chen, FCA US LLC; Feilong Liu, Delphi Corp.*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1625***	***Automated Calibration for Transmission on Powertrain Dynamometers***
		Frederic Boissinot, Jerome Bellavoine, Andrew Shabashevich, AVL Powertrain Engineering Inc.; Siegfried Puster, AVL LIST GmbH
1:30 p.m.	***2015-01-1628***	***Automated Model-Based Calibration for Drivability Using a Virtual Engine Test Cell***
		Nilufar Damji, Daniel Dresser, Jerome Bellavoine, AVL Powertrain Engineering Inc.; Mohan Swaminathan, AVL List GmbH
	2015-01-1618	***Black Box Dynamic Modeling of a Gasoline Engine for Constrained Model-Based Fuel Economy Optimization (Written Only -- No Oral Presentation)***
		Ke Fang, AVL Powertrain UK, Ltd.; Zongyan Li, Univ of Loughborough; Andrew Shenton, Univ of Liverpool; David Fuente, Bo Gao, AVL Powertrain UK, Ltd.
	2015-01-1640	***Benefiting from Sobol Sequences Experiment Design Type for Model-based Calibration (Written Only -- No Oral Presentation)***
		Farraen Mohd Azmin; Richard Stobart, Loughborough Univ
	2015-01-1642	***A New Approach in Measurement of Ignition Timing directly on a Two-Wheeler Using Embedded System (Written Only -- No Oral Presentation)***
		Shrey Aggarwal, Rama Subbu, Sanjay Gilotra, Hero MotoCorp Limited

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00465 and SUB-TP-00008, and also individually. To purchase visit collections.sae.org

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Emissions Measurement and Testing (Part 1 of 2)

Session Code: ***PFL440***

Room 414 B ***Session Time: 8:00 a.m.***

Sub-sessions cover emissions measuring techniques and testing regimes. This includes new analysis techniques and the novel application of existing techniques, the comparison of existing and proposed testing regimes with real world experience, including modeling.

Organizers - *Mike Braisher, Jaguar & Land Rover; Praveen Chavannavar, NGK Automotive Ceramics USA Inc.; Scott Allen Drennan, Convergent Science Inc.; Allen B. Duncan, Environmental Protection; Leslie Hill, Horiba, Ltd.; Mahmoud K. Yassine, FCA US LLC*

Time	Paper No.	Title

8:00 a.m.	***2015-01-1066***	***Synthetic Gas Bench (SGB) Tests Simulating Real and Dynamic Driving Conditions: A New and Cost Attractive Method for TWC Evaluation*** *Frank Adam, Jan Schoenhaber, Armin Wagner, Umicore AG & Co. KG*
8:30 a.m.	***2015-01-1069***	***Investigation of the Influencing Parameters Using Optimized Exhaust Emissions Measurement Systems with Different Modern Plug-in Hybrid Electrical Vehicles*** *Philipp Baumann, Matthias Schroeder, Harald Kurz, Horiba Europe GmbH; Thomas Maier, Technische Universität München; Wolfgang Thiel, TRT Engineering GmbH; Udo Strehl, Horiba Europe GmbH*
9:00 a.m.	***2015-01-1065***	***A Comparison of Carbon Dioxide Exhaust Emissions and Fuel Consumption for Vehicles Tested over the NEDC, FTP-75 and WLTC Chassis Dynamometer Test Cycles*** *Piotr Bielaczyc, Joseph Woodburn, Andrzej Szczotka, Bosmal Automotive R & D Institute Ltd*
9:30 a.m.	***2015-01-1061***	***Regulated and Unregulated Exhaust Emissions from CNG Fueled Vehicles in Light of Euro 6 Regulations and the New WLTP/GTR 15 Test Procedure*** *Piotr Bielaczyc, Andrzej Szczotka, Joseph Woodburn, Bosmal Automotive R & D Institute*
10:00 a.m.	***2015-01-1062***	***Sampling System Investigation for the Determination of Semi-Volatile Organic Compounds (SVOC) Emissions From Engine Exhaust*** *E. Robert Fanick, Svitlana Kroll, Southwest Research Institute; Stefan Simescu, GE Oil & Gas*
10:30 a.m.	***2015-01-1063***	***Experimental and Modeling Study of Ash Impact on DPF Backpressure and Regeneration Behaviors*** *Yi Liu, Changsheng Su, James Clerc, Arvind Harinath, Cummins Emission Solutions; Leigh Rogoski, Cummins Inc*

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Emissions Measurement and Testing (Part 2 of 2)

Session Code: ***PFL440***

Room 414 B ***Session Time:*** ***1:00 p.m.***

Sub-sessions cover emissions measuring techniques and testing regimes. This includes new analysis techniques and the novel application of existing techniques, the comparison of existing and proposed testing regimes with real world experience, including modeling.

Organizers - *Mike Braisher, Jaguar & Land Rover; Praveen Chavannavar, NGK Automotive Ceramics USA Inc.; Scott Allen Drennan, Convergent Science Inc.; Allen B. Duncan, Environmental Protection; Leslie Hill, Horiba, Ltd.; Mahmoud K. Yassine, FCA US LLC*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-1067***	***Evaluation of Field NO_x Performance of Diesel Vehicles using ECM - Provided OBD/SAEJ1979 Data*** *Kenneth S. Price, Lin Wang, Thomas Pauly, Umicore Autocat USA Inc.*

1:30 p.m.	***ORAL ONLY***	***The Potentials of Close Coupled SCR System and Novel PNA for Future Diesel Passenger Cars***
		Nebojsa Milovanovic, Shant Hamalian, Charles-Francois Tumelaire, Mahle Powertrain, Ltd.; Kenneth Malmstroem Larsen, Magnus Lewander, Haldor Topsoe A/S
2:00 p.m.	***ORAL ONLY***	***An Open Source Computer Program for Internal Combustion Engine Emissions Calculations and Uncertainty Analysis***
		Adam B. Dempsey, Jaal Ghandhi, Univ of Wisconsin Madison
	2015-01-1064	***Cold Start SI Passenger Car Emissions from Real World Urban Congested Traffic (Written Only -- No Oral Presentation)***
		Ahmad Khalfan, Hu Li, Gordon Andrews, University of Leeds
	2015-01-1068	***Fuel Economy and Emissions of a 7L Common Rail Diesel Engine during Torque Rise Transient Process (Written Only -- No Oral Presentation)***
		Rong Yang, Diming Lou, Piqiang Tan, Zhiyuan Hu, Hongjuan Ren, Tongji University

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Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 23

Intelligent Transportation Systems

Session Code: ***AE504***

Room 415 A ***Session Time:*** ***8:00 a.m.***

Intelligent Transportation Systems (ITS) includes smart vehicles, smart roads and infrastructure, and wired and wireless communications to link them together. This session will provide insights and progress reports on the latest ITS research, development, and deployment around the world. Time to collision estimations, embedded processor control, adaptive cruise control and image recognition along with discussion on the management of safety and safety systems.

Organizers - *Jan-Mou Li, Oak Ridge National Laboratory; Mohammad Naserian, Hyundai America Technical Center*

Chairpersons - *Jan-Mou Li, Oak Ridge National Laboratory; Mark Steffka, GM Powertrain*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Technical Keynote: CVRIA ¿ A Potential Facilitator for the Design of Vehicle Interactions***
		Walton L. Fehr, US Dept. of Transportation
8:30 a.m.	***ORAL ONLY***	***Technical Aspects of Stolen Vehicle Tracking and Recovering***
		Hirofumi Onishi, Alpine Electronics of America Inc.
9:00 a.m.	***2015-01-0295***	***Short Term Prediction of a Vehicle's Velocity Trajectory Using ITS***
		Dominik Moser, Harald Waschl, Roman Schmied, Hajrudin Efendic, Luigi del Re, Johannes Kepler University Linz

9:30 a.m.	***ORAL ONLY***	***Feasibility study to improve imprudent driving behaviors using M2M Platform***
		Takamasa Koshizen, Honda Automobile R&D Centre; Kazuhiko Yamakawa, MCI; Kazuhiro Kondo, Optima
10:00 a.m.	***2015-01-0296***	***A Simplified Fuel Efficient Predictive Cruise Control Approach***
		Roman Schmied, Harald Waschl, Luigi del Re, Johannes Kepler University Linz
10:30 a.m.	***2015-01-0294***	***Traffic Congestion Mitigation Using Intelligent Driver Model (IDM) Combined with Lane Changes - Why Congestion Detection is So Needed?***
		Takamasa Koshizen, Honda Automobile R&D Centre; MAS Kamal, University of Tokyo; Hiroyuki Koike, Honda Automobile R&D Centre
11:00 a.m.	***2015-01-0298***	***Turning Standard Line (TSL) Based Path Planning Algorithm for Narrow Parking Lots***
		Wontaek Lim, Junsoo Kim, Kichun Jo, Yongwoo Jo, Myoungho Sunwoo, Hanyang University
11:30 a.m.	***2015-01-0297***	***Real-time Determination of Driver's Driving Behavior during Car Following***
		Jianbo Lu, Dimitar Filev, Finn Tseng, Ford Motor Co.
	2015-01-0299	***Control of Vehicular Platoons using Nearest Neighbor Interactions (Written Only -- No Oral Presentation)***
		Saurav Talukdar, University of Minnesota

Planned by Electronics in Transportation / Automobile Electronics Activity

Thursday, April 23

Intelligent Vehicle Initiative

Session Code: ***AE501***

Room 415 A ***Session Time:*** ***1:00 p.m.***

This session presents papers by leading experts in the field of Intelligent Vehicle Technologies, such as: vehicle communications and networks, driver drowsiness and driving pattern detection, sensors and GPS, vehicle and chassis control and autonomous vehicles, route prediction, head-up displays and power transmission for electric vehicles.

Organizers - *Allan Lewis, Mohammad Naserian, Hyundai America Technical Center; Kenneth W. Webster, Transportation Research Center Inc.*

Time	***Paper No.***	***Title***
1:00 p.m.	***2015-01-0282***	***Collaborative Vehicle Tracking in Mixed-Traffic Environments: Scaled-Down Tests Using SimVille***
		Emrah Adamey, Guchan Ozbilgin, Umit Ozguner, Ohio State Univ
1:30 p.m.	***2015-01-0283***	***Wireless Charging System Localization for Electric Vehicles Using RSSI***
		Allan Lewis, Mohammad Naserian, Hyundai America Technical Center
2:00 p.m.	***2015-01-0281***	***Non-Uniform Time Window Processing of In-Vehicle Signals for Maneuvers Recognition and Route Recovery***
		Yang Zheng, Amardeep Sathyanarayana, John Hansen, Univ of Texas

2:30 p.m.	***ORAL ONLY***	***Technical Keynote: Autonomous Vehicles, their Legacy and Future***
		Robert Neff, Sales and Marketing Insight

Planned by Electronics in Transportation / Automobile Electronics Activity

Thursday, April 23

Steering and Suspension Technology Symposium (Part 1 of 2)

Session Code: ***SS600***

Room 415 B ***Session Time:*** ***8:00 a.m.***

The purpose of this session is to provide a forum for presentations on steering and suspension related topics as it applies to ground vehicles. Papers for this session should address new approaches as well as advances in application of steering, suspension related technologies.

Organizers - *Robert Ackley, Ford Motor Co.; Prashant Patel, FCA US LLC*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-1497***	***Elastokinematic Characteristics of Torsion Beam Suspensions***
		Hideaki Shibue, Devesh Srivastava, Honda R&D Co., Ltd.
8:30 a.m.	***2015-01-1507***	***Friction Behavior of Diamond-Like Carbon Coated Ball Joint: Approach to Improving Vehicle Handling and Ride-Comfort***
		Kentaro Komori, Takahito Nagataki, Honda R&D Co., Ltd.
9:00 a.m.	***2015-01-1501***	***A Semi-Active Suspension System Using Ride Control Based on Bi-linear Optimal Control Theory and Handling Control Considering Roll Feeling***
		Ryusuke Hirao, Kentaro Kasuya, Nobuyuki Ichimaru, Hitachi Automotive Systems, Ltd.
9:30 a.m.	***2015-01-1506***	***Damping A Passenger Car With A Gyroscopic Damper System***
		Bastian Scheurich, Tilo Koch, AUDI AG; Michael Frey, Frank Gauterin, Karlsruhe Institute of Technology
	2015-01-1494	***Simulation based Evaluation of the Electro-Hydraulic Energy-Harvesting Suspension (EHEHS) for Off-Highway Vehicles (Written Only -- No Oral Presentation)***
		Quan Zhou, Hubei Key Lab of Adv. Auto.C Tech., Wuhan Univ. of Tech; Xuexun Guo, Lin Xu, Guoling Wang, Jibing Zhang, Wuhan University of Technology
	2015-01-1504	***Main Parameters Analysis of Ball Screw Shock Absorber on Suspension System Performance (Written Only -- No Oral Presentation)***
		WeiNing Bao, Jianghan University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00492, and also individually. To purchase visit collections.sae.org

Planned by Steering and Suspension Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Steering and Suspension Technology Symposium (Part 2 of 2)

Session Code: ***SS600***

Room 415 B ***Session Time:*** ***1:00 p.m.***

The purpose of this session is to provide a forum for presentations on steering and suspension related topics as it applies to ground vehicles. Papers for this session should address new approaches as well as advances in application of steering, suspension related technologies.

Organizers - *Robert Ackley, Ford Motor Co.; Prashant Patel, FCA US LLC*

Time	Paper No.	Title
1:00 p.m.	***2015-01-1499***	***The Structure of an Advanced Independent Rear Toe-Control System***
		Tadatsugu Takada, Kazuki Tomioka, Honda R&D Co., Ltd.
1:30 p.m.	***2015-01-1500***	***Electric Power Assist Steering System Parameterization and Optimisation Employing Computer-Aided Engineering***
		Marcus Ljungberg, Volvo Car Corporation; Mikael Nybacka, Royal Institute of Technology; Gaspar Gil Gómez, Volvo Car Corporation; Diomidis Katzourakis, Volvo Car Group
2:00 p.m.	***2015-01-1495***	***Model Reference Adaptive Control for Active Trailer Steering of Articulated Heavy Vehicles***
		Qiushi Wang, Shenjin Zhu, Yuping He, Univ. of Ontario Institute of Technology
3:00 p.m.	***2015-01-1502***	***A New Type of Electro-Hydraulic Power Steering System for Heavy-Duty Commercial Vehicles***
		Liangyao Yu, Wenwei Xuan, Liangxu Ma, Jian Song, Xianmin Zhu, Shuai Cheng, Tsinghua University
3:30 p.m.	***ORAL ONLY***	***On Center Steering Feel Using Objective Evaluation for Straight Line Driving***
		Chulhee Kim, Hyundai Motor Co.
	2015-01-1496	***Small High-Efficiency Vane Pump Based on Vane Pump Theory (Written Only -- No Oral Presentation)***
		Yoshiharu Inaguma, Naohito Yoshida, JTEKT Corp.
	2015-01-1498	***Studies on Influencing Factors of Driver Steering Torque Feedback (Written Only -- No Oral Presentation)***
		Yuyao Jiang, Weiwen Deng, Sumin Zhang, Shanshan Wang, State Key Lab of ASCL Jilin University; Qingrong Zhao, Bakhtiar Litkouhi, General Motors R&D Center
	2015-01-1505	***Assessment of the Capability of EPS to Reduce Steering Wheel Pull and Vehicle Misalignment (Written Only -- No Oral Presentation)***
		Ibrahim A. Badiru, General Motors Co.
	2015-01-1508	***The Development and Verification of Hardware-in-the-loop Test-bench of Electrically Controlled Steering System (Written Only -- No Oral Presentation)***
		Lijiao Yu, Hongyu Zheng, ASCL, Jilin Univ.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00492, and also individually. To purchase visit collections.sae.org

Planned by Steering and Suspension Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 23

Additive (3D Printing) Manufacturing

Session Code: ***IDM302***

Room 420 A ***Session Time:*** ***8:00 a.m.***

This session deals with the manufacture of detail parts through laser sintering, stereo lithography, fused deposition modeling, and other emerging technologies. The session will explore technologies and methods for producing net or near net parts in various resins, plastics and metals directly from a CAD model that could employ design architectures that couldn't be achieved by other manufacturing methods.

Organizers - *Mohamed El-Sayed, Kettering Univ.; Randy Gu, Oakland University; Jared Song, General Motors Co.; Yu J. Teng; Qichao Zheng, General Motors Co.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-0505***	***Improving Heat Transfer and Reducing Mass in a Gasoline Piston Using Additive Manufacturing***
		Miguel Angel Reyes Belmonte, Colin D. Copeland, University of Bath; Drummond Hislop, George Hopkins, Adrian Schmieder, HiETA Technologies Ltd; Scott Bredda, GE Precision; Sam Akehurst, University of Bath
8:30 a.m.	***ORAL ONLY***	***America Makes - the National Accelerator for Additive Manufacturing & 3D Printing***
		Kevin D. Creehan, National Center for Defense Manufacturin
9:00 a.m.	~~***2015-01-0504***~~ ***ORAL ONLY***	***Additive Manufacturing Solutions in Automotive***
		John Dobstetter, Stratasys
9:30 a.m.	***ORAL ONLY***	***Eco friendly, Rapid Prototyping, & Mass Custom Additive Manufacturing Engineering Trades in Automotive & Aerospace Applications where "Complexity is Free".***
		Joe Razum, 3D Systems Inc.; Sandeep Rana, 3D Systems
10:00 a.m.	***ORAL ONLY***	***BAAM and Beyond - Applications and Advancements in Large Scale Additive Manufacturing***
		Brian K. Post, Oak Ridge National Laboratory

Thursday, April 23

Technical Expert Panel Discussion: Global Trends in Technologies and Requirements for On-Road and In-Use Vehicle Emissions: Control, Diagnostics, Monitoring and Compliance

Session Code: ***PFL399***

Room 420 B Technical Expert Panel Discus: ***Session Time:*** ***8:00 a.m.***

Global trends towards closer real-world rules and enforcement and technology developments will be addressed. It is timely to discuss proper test protocols or metrics to ensure on-going compliance by in-use vehicles, in view of evolving expectations of emission levels and characteristics around the world. The Panel will share experience with regulatory trends and technologies of in-use emission monitoring and applications to enforcement or surveillance. How local variations in fuel and lubricant qualities affect emission control systems and compliance will also be addressed.

Organizers - *Victor W. Wong, Massachusetts Institute of Technology; Simon C. Tung, Vanderbilt Chemicals, LLC*

Moderators - *Victor W. Wong, Massachusetts Institute of Technology; Simon C. Tung, Vanderbilt Chemicals, LLC*

Panelists - *David Booker, Chief Technology Officer, Sensors Inc.; Stefan Hausberger, Professor, Technical University of Graz; David Sosnowski, US EPA; Rainer Vogt, Director - Environment & Health, Ford Research & Advanced Engg Europe; Michael P. Walsh, The Intl. Council on Clean Transportation; Yat-Shing Yam, Hong Kong Environmental Protection Dept.;*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Vehicle Inspection and Maintenance (I/M) in the United States: Its Past, Present and Future***
		David Sosnowski, US EPA
8:30 a.m.	***ORAL ONLY***	***Strengthened Control of Vehicle Emissions Using Remote-Sensing Equipment and Transient Dynamometer Emission Testing - The Experience in Hong Kong***
		Yat-Shing Yam, Hong Kong Environmental Protection Dept.

9:00 a.m.	***ORAL ONLY***	***Investigation of Real-Driving Emissions from Light-Duty Vehicles in Europe***
		Rainer Vogt, Ford Motor Co.
9:30 a.m.	***ORAL ONLY***	***Recent Advances in Portable Emission Measurement Systems (PEMS) for Meeting Regulatory-Driven Heavy-Duty and Light-Duty On-vehicle Emission Measurements***
		David Booker, Sensors Inc.
10:00 a.m.	***ORAL ONLY***	***RDE Monitoring and Certification: How Remote Sensing, On-board Emission Tests and Test Benches Can Be Used Efficiently***
		Stefan Hausberger, Technische Univ. of Graz
10:30 a.m.	***ORAL ONLY***	***The Global Focus on Actual In-Use Vehicle Emissions - A Work in Progress***
		Michael P. Walsh, The Intl. Council on Clean Transportation
11:00 a.m.	***ORAL ONLY***	***Open Discussion with Panelists - Global Trends in In-Use Vehicle Emissions: Control, Diagnostics, Monitoring and Compliance***
		Moderated by: Victor W. Wong, Massachusetts Institute of Technology; Simon C. Tung, Vanderbilt Chemicals

Thursday, April 23

Keynote Speaker: Always On for Future Mobility, Helmut Matschi, Continental

Session Code: ***KEY103***

Room AVL Technology Leadership Center/C ***Session Time:*** ***9:00 a.m.***

The future of mobility is rapidly being defined by consumer trends and societal demands. It is precisely this interweaving of social conditions and personal mobility preferences that challenges the automotive industry today. How do we as an industry bring automatization and connectivity to consumers while controlling the challenges from growing expectations such as: a dynamic and holistic HMI, and innovation incubation times that rival the Consumer Electronic industry all while maintaining quality as our core? What will our business models look like in the future and how is quality measured when software becomes ever more crucial for our products? </p>

Helmut Matschi, Member of the Executive Board of Continental and President of the Interior Division, will address these changing demands and reveal some key findings of Continental¿s 2015 Mobility Study.

Time	***Paper No.***	***Title***
9:00 a.m.	***ORAL ONLY***	***Learn More about the Thursday Keynote Speaker***
		Helmut Matschi, Continental VDO Automotive AG

Thursday, April 23

The Future of Mobility Innovation

Session Code: ***ANN105***

Room AVL Technology Leadership Center/C ***Session Time:*** ***9:45 a.m.***

Fuel efficiency, Profitability, CO2, Safety, Globalization, Regulations¿. there are number of serious challenges / opportunities in front of the auto industry today. The need for innovation has never been greater. Each company is pouring resources into these and other critical issues and working toward providing the best product for the customer. </p>
However, there is a limit on each of our resources. This panel will address the issues surrounding innovation today and in the future. What does the future of innovation look like in the auto industry? Will most of the new innovation come from within the industry or from the outside? Is there a limit on the cost the customer will pay for innovation? Can OEMs continue to pour money into innovative solutions on their own or should we focus on sharing resources or cooperate?
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Moderators - *Steven Lietaert, President, HELLA*

Panelists - *Samit Ghosh, President & CEO, P3 Group, North America; Swamy Kotagiri, Chief Technology Officer, Magna International; Seval Oz, Continental; Bernhard A. Sendhoff, EU President for Research, Honda Research Institute;*

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the Panelists***
		Samit Ghosh, P3 North America Inc.; Swamy Kotagiri, Magna Intl. Inc.; Seval Oz, Continental; Bernhard Sendhoff, Honda R&D Europe GmbH; Steven Lietaert, Hella Corporate Center USA

Thursday, April 23

Is Octane Number Important for Optimizing Well-to-Wheel Energy Use?

Session Code: ***ANN205***

Room FEV Innovation Forum/Grand Rivervi ***Session Time:*** ***9:45 a.m.***

The domestic OEM¿s are launching a campaign to raise the octane number for ¿regular¿ US gasoline to 95 RON, similar to regular European gasoline. Speakers will discuss the technical reasons that this change would contribute to better fuel economy as well as an assessment of whether the global market is creating an incentive for a common octane standard that enables common powertrain technologies across borders.

Moderators - *Dean Tomazic, FEV Inc.*

Panelists - *Stephen Gill, Ford Motor Co.; Coleman Jones, General Motors Co.; Amir Maria, Chevron; Kristin Moore, Renewable Fuels Association;*

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the Panelists***
		Stephen Gill, Ford Motor Co.; Coleman Jones, General Motors Co.; Kristin Moore, Renewable Fuels Association; Amir Maria, Chevron; Dean Tomazic, FEV North America Inc.

Thursday, April 23

The Coming STEM Crisis

Session Code: ***ANN301***

Room FEV Innovation Forum/Grand Rivervi ***Session Time:*** ***1:30 p.m.***

Across North America, a storm is brewing. Companies are increasingly finding it difficult to fill positions requiring high-value skills that are common to STEM occupations, yet the number of graduates in STEM related fields is not growing. The scarcity of candidates to fill these positions is not only a cost driver, but also a sap on productivity as companies increasingly reach out further, geographically, to find qualified candidates and also increasingly fill positions by hiring employees away from customers and competitors. This issue is now becoming a national business imperative, yet there is little evidence of a nationally collaborative effort to solve it. The goal of this session will be to bring educators, legislators and corporate representatives together to discuss the problem and identify a potential solution framework that a broad spectrum of stakeholders can adapt to.

Moderators - *Jeffrey C. Klei, President NAFTA, Continental Automotive Systems US Inc.*

Panelists - *Christopher M. Ciuca, Director of Pre-Professional Programs, SAE International; Ben Dollar, Deloitte Consulting LLP; Douglas Patton, EVP DENSO International America and President of DENSO Foundation; Van Walling, President, Walling Consulting Services;*

Time	Paper No.	Title
	ORAL ONLY	***Learn more about the Panelists***
		Christopher M. Ciuca, SAE International; Douglas Patton, DENSO International America Inc.; Van Walling, Walling Consulting Services; Jeffrey C. Klei, Continental Automotive Systems US Inc.; Ben Dollar, Deloitte Consulting LLP

Thursday, April 23

Tech Hub

Session Code: ***TH300***

Room Tech Hub/Exhibit Hall ***Session Time:*** ***ALL DAY***

Time	*Paper No.*	*Title*
10:30 a.m.	***ORAL ONLY***	***From Designed to Driven: Putting the World's first 3D-Printed Car on the Road***
		Justin Fishkin, Local Motors International LLC
11:30 a.m.	***ORAL ONLY***	***Value Proposition of VR for Design, Manufacturing & Service***
		Arnold Taube, John Deere World Headquarters
11:50 a.m.	***ORAL ONLY***	***Changing the Pace of Manufacturing: Building Airplanes in an Augmented factory***
		In this talk, we will explore some conceptual use cases of Augmented Reality in manufacturing and other industrial applications, and the technology gaps that currently exist preventing them from turning into a reality. We¿ll elaborate on this theme by looking at how current marketing for this technology has led to over-inflated expectations for what exists today, and the effect that is having on its perception outside of the community. To continue we will look at work being done both in industry and academia to address these technology gaps and how we are moving closer to meeting those expectations, and finally we¿ll uncover the huge benefits in manufacturing operations once we are successful.
		Paul Davies, Boeing Research & Technology
12:10 p.m.	***ORAL ONLY***	***Further than the Eye Can See***
		How can augmentation support automated driving? In this Tech Talk, learn how the ability of the car can go far beyond the human scope with the use of augmented reality technology.
		Robert Drury, Continental Corp.

1:30 p.m. ***ORAL ONLY*** ***Intersection of Design***

The intersection is happening. The intersection between the vehicle and the product world is finally happening. And one quick walk on this year¿s CES at Las Vegas and NAIAS at Detroit will ascertain the right confluence of the same. Albeit the apparent differences in the lead-time of the development processes, there is a lot to be cross-pollinated between these two not-so-distinct ecosystems.</p>

Because fundamental core sits the end user ¿ the human being. And prevalent school of thoughts in both the disciplines are rightfully acknowledging the human centricity needed to plan for and design ¿objects¿ and ¿services¿ as an seamless offering. Gone are the days to just push metal or cheap plastic artifacts to the consumer, as that definition of consumer itself is changing. The new millennial user is smart, she is design conscious, cares for the environment and wants all market place offerings to the ¿meaningful¿</p>

So let¿s try to compare and contrast the design methodologies from both these worlds and distill out the needed creative approaches to design thinking, to ultimately establish design as one of the leading strategic differentiators for sustainable growth of business.

Jeevak A. Badve, Sundberg-Ferar Inc.

2:45 p.m. ***ORAL ONLY*** ***When is a Robot not a Robot***

Toyota Partner Robotics looks to your future through the lens of personal robotics. Drawing from Toyota's two main pillars, Respect for People and Continuous Improvement, the Partner Robotics group investigates the technology to bring real world solutions for real world people. Robotics as an intersection of multiple engineering disciplines tackles the challenge of complex human interaction with real world understanding. Join me as I discuss the background of Partner Robotics and how we might help you

Douglas Moore, Toyota Motor Engineering & Mfg NA Inc.

3:30 p.m. ***ORAL ONLY*** ***Expediting the Process: Getting Start Up companies in Front of Suppliers and OEMs with Product Ideas***

Winners of the Global Automotive Innovation Competition