

Vienna
Motor
Symposium
2021

42nd International
Vienna Motor Symposium
29 – 30 April 2021

VIRTUAL PROGRAMME

The top half of the advertisement features a vibrant, abstract background with a color gradient from purple to yellow. It is filled with numerous black silhouettes of people in various dynamic, dancing or athletic poses. In the center, a white rectangular frame contains the text 'AVL' in a bold, sans-serif font, followed by the AVL logo, which consists of a stylized, multi-lobed circular emblem.

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Vienna Motor Symposium 2021

42nd International Vienna Motor Symposium
29-30 April 2021

Dear participants,

Welcome to the 42nd International Vienna Motor Symposium, which will take place as a virtual live event from 29 - 30 April 2021.

We look forward to your participation and would like to inform you below about the event:

Please find the **programme** of the Virtual Vienna Motor Symposium on the following pages and space for your notes on the last pages. In addition to the **48 lectures** in the 14 moderated sessions, broadcast live from the "Festsaal" and "Zeremoniensaal" studios, **further 28 lectures** are available in the form of video-on-demand contributions.

The lecturers, all experts in their fields, will present the latest developments, trends, and perspectives in automotive technology. The transformation of the powertrain technology will be omnipresent.

You can also visit the **virtual exhibition** of well-known companies and organizations on the virtual symposium platform.

Please take an **active part** in the event. We look forward to your **questions directly** after the presentations via chat function or in the Speakers Corner. Please contact the virtual exhibitors who will be happy to inform you about their products.

Did you miss a lecture or want to hear a lecture a second time? No problem, you will find the live stream of the event on the Virtual Motor Symposium platform until the end of July 2021. The videos and the digital documents are also available to you for a further 12 months.

We wish you an exciting and interesting event and look forward to your active participation.

Best regards

Univ.-Prof. Dr. Bernhard Geringer

FESTSAAL

ZEREMONIENSAAL

OFFICIAL OPENING

08:45

PLENARY OPENING SESSION

Chairman: Univ.-Prof. Dr. B. **Geringer**,
Vienna University of Technology

Dipl.-Ing. Markus **Duesmann**,
Chairman of the Board of Management and
Board of Management Member for Product Lines,
AUDI AG, Ingolstadt:
**The Next 50 Years of "Vorsprung durch Technik" –
How Audi Is Shaping the Mobility of the Future**

09:00

Dr. Stefan **Hartung**,
Member of the Board of Management,
Chairman Business Sector Mobility Solutions,
Robert Bosch GmbH, Stuttgart:
**Powertrains of the Future: How We Will Meet our Climate Goals
through Technology Neutrality**

09:20

Uwe **Wagner**,
Chief Technical Officer,
Schaeffler AG, Herzogenaurach:
**System Competence Enables Innovative Powertrain Solutions –
How a Supplier Drives the Technical Transformation in Automotive**

09:40

Discussion of the lectures in this session

10:00

HYDROGEN COMBUSTION ENGINES IN COMMERCIAL VEHICLES

Chairman: Univ.-Prof. Dr. H. **Eichseder**,
Graz University of Technology

Dipl.-Ing. R. **Dreisbach**, Dipl.-Ing. A. **Arnberger**, Dipl.-Ing. A. **Zukancic**,
Dipl.-Ing. M. **Wieser**, N. **Kunder** MSc, Dr.-Ing. M. **Plettenberg**,
Ing. Dipl.-Ing. (FH) Dipl.-Ing. B. **Raser**, AVL List GmbH, Graz;
Univ.-Prof. Dr. H. **Eichseder**, Graz University of Technology:
The Heavy-Duty Hydrogen Engine and its Realization until 2025

Dipl.-Ing. T. **Korn**, R.-F. **Nobile**, D. **Grassinger**,
KEYOU GmbH, Munich:
**Zero-Emission, Maximum Performance – The Latest Generation
of Hydrogen Combustion Engines**

Dipl.-Ing. L. **Walter**, Dipl.-Ing. (FH) A. **Sommermann**,
Dipl.-Ing. (FH) D. **Hyna**, Dipl.-Ing. T. **Malischewski**,
Dipl.-Ing. (FH) M. **Leistner**, Dipl.-Ing. F. **Hinrichsen**,
Dr.-Ing. P. **Wöhner**, Dipl.-Ing. (FH) J. **Schmitt**, Dr.-Ing. M. **McMackin**,
MAN Truck & Bus SE, Munich / Nuremberg:
**The H₂ Combustion Engine – The Forerunner of a Zero Emissions
Future**

Dr.-Ing. L. **Virnich**, Dipl.-Ing. B. **Lindemann**, Dr.-Ing. M. **Müther**,
Dr.-Ing. J. **Schaub**, Dr.-Ing. V. **Huth**, Dr.-Ing. J. **Geiger**,
FEV Europe GmbH, Aachen:
**How to Improve Transient Engine Performance of HD Hydrogen
Engines while Maintaining Lowest NO_x Emissions**

Lunch Break

NEW S.I. ENGINES

Chairman: Univ.-Prof. Dr. G. **Hohenberg**,
Darmstadt University of Technology

11:00 Y. **Tsuchiya**, K. **Matsuoka**, S. **Kiga**,
Nissan Motor Co., Ltd., Kanagawa, Japan:
**The New Nissan VC-TURBO (Variable Compression Turbocharged)
1.5L 3Cyl Engine**

11:30 Dr.-Ing. T. **Leroy**, Dr.-Ing. L. **Nowak**, Ing. X. **Gautrot**,
Ing. L. **Martinez Alvarado**, Dr.-Ing. M. **Kassa**, Ing. P. **Granier**,
IFP Energies nouvelles, Rueil-Malmaison; Ing. D. **François**,
Ing. N. **Bontemps**, Ing. P. **Davies**, Garrett – Advancing Motion,
Thaon-les-Vosges; Ing. L. **Odillard**, Ing. G. **Ridolfi**,
Ing. R. **Puertolas**, Valeo, Le Mesnil Saint Denis / Cergy / Zaragoza:
**SWUMBLE 3-Cylinder High Efficiency Gasoline Engine for Future
Electrified Powertrains**

12:00 Dipl.-Ing. H. **Diel**, Dipl.-Ing. W. **Kotauschek**,
Dipl.-Ing. (FH) S. **Dreyer**, Dipl.-Ing. U. **Baretzky**,
AUDI AG, Neckarsulm / Ingolstadt:
**The Audi 2.0 l R4 TFSI Race Engine for the DTM –
Victory for Efficiency**

12:30 Lunch Break

13:00

FESTSAAL

ZEREMONIENSAAL

Lunch Break

Lunch Break

LIFE CYCLE ASSESSMENT OF VEHICLE POWERTRAINS / CO₂ LEGISLATION

Chairman: Univ.-Prof. Dr. C. **Beidl**,
Darmstadt University of Technology

14:30

Dr. T. **Bruckmüller**, Dr. W. **Tober**, Vienna University of Technology:
Life Cycle Assessment for Vehicle Fleets – Combination of Life Cycle Assessment and Emissions Forecast for Overall Environmental Assessment of Existing and Future Alternative Powertrains and Fuels

SYNTHETIC FUELS

Chairman: Univ.-Prof. Dr. S. **Pischinger**,
RWTH Aachen University

15:00

P.-O. **Calendini**, N. **Rankovic**, P. **Gaillard**, V. **Gordillo**, W. **Lilley**,
Aramco Overseas BV, Rueil-Malmaison;
A. **Amer**, T. **Javed**, H. **Babiker**, Saudi Aramco R&D, Dhahran,
Saudi Arabia; A. **Abdul-Manan**, Aramco Asia, Beijing, China:
Synthetic Fuel: A Promising H₂ Carrier for Transport Sector

H. **Helms**, Dr.-Ing. K. **Biemann**, M. **Allekotte**, J. **Jöhrens**, D. **Münter**,
A. **Liebich**, H. **Fehrenbach**, U. **Lambrecht**,
ifeu - Institut für Energie- und Umweltforschung, Heidelberg:
Defossilisation in Road Goods Transport: Life-Cycle Climate Impacts of Alternative Truck Technologies and Fuels

15:30

A. **Güdden** MSc, Prof. S. **Pischinger**, RWTH Aachen University;
Dr.-Ing. J. **Geiger**, Dipl.-Wirt.-Ing. B. **Heuser**, Dr.-Ing. M. **Müther**,
FEV Europe GmbH, Aachen:
Green Methanol – A CO₂ Neutral Energy Carrier Enabling 50+% Engine Efficiency with Ultra-Low Pollutant Emissions

Dr. N. **Steininger**, Dr. D. **Savvidis**,
European Commission, Brussels:
Heavy Duty Vehicles GHG Legislation Paving the Way towards Decarbonisation of Transport

16:00

M. **Hultman** MSc, Dr. T. **Sarjovaara** DSc,
Neste Oyi, Stockholm / Espoo:
Utilizing the Full Potential of Renewable Fuels

Dr. D. **Bothe**, T. **Steinfurt**, Frontier Economics, Cologne;
D. **Goericke**, FVW e.V., Frankfurt:
Taking a Systemic View – A Sustainable Mixture of Drive Technologies Must Be Based on Fundamental Facts and Has to Consider the Full Product Life Cycle

NEW C.I. ENGINES

Chairman: Univ.-Prof. Dr. M. **Bargende**,
University of Stuttgart

Ing. V. **de Carlo**, Ing. S. **Scalabrini**, Ing. P. **Bisci**, Ing. P. **Cocozza**,
Ing. V. **Formica**, Ing. F. **Irlando**, Ing. F. **Numidi**, Ing. G. **Pedrazzani**,
Ing. M. **Spoto**, Dr.-Ing. A. **Vassallo**, Punch Torino SpA, Torino;
Ing. H. **Dettmer**, Dr.-Ing. A. **De Filippo**,
Opel Automobile GmbH, Rüsselsheim;
Ing. T. **Chyo**, General Motors, Milford, USA:
The New General Motors 2.0L Diesel 4-Cylinder Engine

Dipl.-Ing. C. **Helbing**, Dipl.-Ing. M. **Köhne**, Dr.-Ing. T. **Kassel**,
Dipl.-Ing. T. **Herbst**, Dipl.-Ing. B. **Wietholt**, Dipl.-Ing. J. **Schleyer**,
S. **Kraus** MEng, Volkswagen AG, Wolfsburg; Dr.-Ing. M. **Düsterhöft**,
Dr.-Ing. A. **Groenendijk**, Dr.-Ing. S. **Büchner**, J. **Stroscherer** BSc,
Volkswagen AG Nutzfahrzeuge, Wolfsburg:
**Making Transport Tasks Clean and Efficient – The New TDI Engines
in the Volkswagen Commercial Vehicles**

Dipl.-Ing. J. **Lehmann**, R. **Aneja** MSME, Dr.-Ing. P. **Kožuch**,
J. **Barton** MSME, Daimler Truck AG, Stuttgart / Detroit, USA:
**Detroit DD15 – The New Heavy-Duty Truck Engine from
Daimler Truck AG**

BATTERY STORAGE

Chairman: Univ.-Prof. Dr. G. **Brasseur**,
Graz University of Technology

17:00

Dipl.-Ing. M. **Liebl**, Miba Friction Holding GmbH, Laakirchen;
T. **Haidwagner** MSc, Dipl.-Ing. F. **Pöhn**,
Dipl.-Ing. Dr. A. **Sonnleitner**, Miba eMobility GmbH, Laakirchen;
Dipl.-Ing. (FH) S. **Gaigg**, Voltlabor GmbH,
Bad Leonfelden / Miba eMobility GmbH, Laakirchen:
Miba FLEXcooler® – Next Level Battery Cooling Technology

17:30

Dipl.-Ing. P. **Krammer**, Dr.-Ing. M. **Thoennes** MBA,
Dr. P. **Karayaylali**, Dipl.-Ing. C. **Cotte**, Dipl.-Ing. F. **Greber**,
Faurecia, Augsburg / Bavans:
**Cost-Efficient Battery System with Integrated High-Performance
Thermal-Management**

18:00

Dr. P. **Schuhmacher**,
BASF, Iselin, USA:
**BASF's Cathode Active Materials – We Reduce the Carbon
Footprint of Electric Vehicles for a Sustainable Europe**

18:30

FESTSAAL

HYDROGEN POWERTRAINS

Chairman: Univ.-Prof. Dr. H. **Eichlseder**,
Graz University of Technology

Ing. R. **Golisano**, Ing. S. **Scalabrini**, Dr.-Ing. A. **Arpaia**,
Dr.-Ing. F. **Pesce**, Dr.-Ing. A. **Vassallo**, Ing. L. **Borgia**, Ing. C. **Cubito**,
Ing. V. **Biasin**, PUNCH Torino SpA, Torino;
Ing. T. **Knichel**, PUNCH Flybrid Ltd, Silverstone;
Prof. F. **Millo**, Dr.-Ing. A. **Piano**, Dr.-Ing. L. **Rolando**, Politecnico di Torino:
**PUNCH Hydrogen Internal Combustion Engine & KERS:
An Appealing Value-Proposition for Green Power Pack**

Dr.-Ing. A. **Kufferath**, Dr.-Ing. E. **Schünemann**,
Dr.-Ing. Michael **Krüger**, Dipl.-Ing. Martin **Krüger**,
Robert Bosch GmbH, Stuttgart; Dr. S. **Jianye**, United Automotive
Electronic Systems Co. Ltd., Shanghai, China;
Univ.-Prof. Dr. H. **Eichlseder**, Graz University of Technology;
Prof. Dr. sc. techn. T. **Koch**, Karlsruhe Institute of Technology (KIT):
H₂ ICE Powertrains for Future On-Road Mobility

Dipl.-Ing. M. **Sens**, Dr.-Ing. C. **Danzer**, Dipl.-Ing. C. **von Essen**,
Dr.-Ing. M. **Brauer**, Dipl.-Ing. R. **Wascheck**, Dr.-Ing. J. **Seebode**,
Dipl.-Ing. M. **Kratzsch**, IAV GmbH, Berlin:
**Hydrogen Powertrains in Competition to Fossil Fuel Based Internal
Combustion Engines and Battery Electric Powertrains**

Prof. Dr. rer. nat. C. H. **Mohr dieck**, K. J. **Eisfeld**,
cellcentric GmbH & Co. KG, Kirchheim eck/Nabern;
J. **Kempf**, Daimler Truck AG, Stuttgart:
**Modular Fuel Cell Engines: Implementation of Requirements
for the Long-Haul Heavy-Duty Truck Application**

ZEREMONIENSAAL

ENGINE CONCEPTS / ENGINE CONTROL

Chairman: Assoc. Prof. Dr. P. **Hofmann**,
Vienna University of Technology

08:00

S. **Choi** PhD, H. **Im** MSc, K. **Choi** MSc,
Hyundai Kia Motor Group, Namyang, South Korea;
S.-J. **Kim** MSc, Vitesco Technologies GmbH, Regensburg;
B. **Varoquie** PhD, Vitesco Technologies, Toulouse:
In-Cylinder Pressure Based Gasoline Engine Combustion Control

08:30

G. **Signorelli** PhD, A. **Cavani** MSc, M. **Petrone** MSc,
S. **Petrecchia** MSc, Marelli Europe, Bologna;
M. **Nishida** MSc, Mazda Motor Corporation, Hiroshima, Japan:
**GDI Very High Pressure Injector for High Compression Gasoline
Engine**

09:00

Dipl.-Ing. (FH) M. **Graz**, F. **Obrist**, Dipl.-Ing. P. **Zanolin**,
Dipl.-Ing. (FH) O. **Obrist**, Obrist Powertrain GmbH, Lustenau:
**ZVG (50kWe) The Vibration Free, Emission Minimized and
Sustainable Solution for an Electrified Future**

09:30

Dr. A. **Bisenius**, J. **Groß** MSc, Dipl.-Ing. M. **Hackmann**,
Dipl.-Ing. J. **Schenk**, Dipl.-Kfm. Techn. R. **Stanek**,
P3 automotive GmbH, Düsseldorf / Munich / Stuttgart:
**The CO₂ Footprint in the Life Cycle of Passenger Cars –
A Comparison of Hybrid, Plug-In and Electric Vehicles with
a Detailed Consideration of Battery Production and the
Country-Specific Energy Mix**

10:00

Coffee Break

HYBRID SYSTEMS

Chairman: Univ.-Prof. Dr. W. **Eichlseder**,
Montanuniversitaet Leoben

Dr.-Ing. K. **Sabzewari**, M. **Vieracker**, J. **Hofstetter**, P. **Meerbrei**,
Vitesco Technologies, Regensburg / Nuremberg:
**PlugIn for All – Cost Efficiency for PHEV Powertrain Based on
Dedicated Hybrid Transmission**

Dr.-Ing. T. **Uhlmann**, Dr.-Ing. N. **Alt**, Dr.-Ing. D. **Lückmann**,
Dr.-Ing. A. **Balazs**, Dipl.-Ing. P. **Zwar**, Dipl.-Ing. A. **Müller**,
Dr.-Ing. M. **Thewes**, J. **Frese** BSc, FEV Europe GmbH, Aachen:
xHEV Concept Achieving 2030 CO₂ Targets

I. **Scholten**, S. **Li**, Y. **Liu**, Dr. H. **Sandquist**, Dr. Y. **Chen**,
Zhejiang Geely Holding Group, China:
Geely's Modular Hybrid Propulsion System

Lunch Break

FUEL CELL AND STORAGE

Chairman: Univ.-Prof. Dr. S. **Pischinger**,
RWTH Aachen University

10:30

Dipl.-Ing. (FH) T. **Dehne**, T. **Bruhn** BSc, AVL List GmbH, Graz;
G. **Chu** BSc Eng, AVL Fuel Cell Canada, Vancouver, Canada:
Online Detection of Fuel Cell Degradation Mechanisms

11:00

Dipl.-Ing. Y. **Bin**, Dr. T. P. **Sidiki**, Dr. R. R. **Janssen**,
DSM Engineering Materials, Geleen:
**Material Solutions to Increase Tank-to-Wheel Efficiency and
Life-Time Reliability of Fuel Cell Vehicles**

11:30

Dipl.-Ing. (FH) Dr. J. **Winklhofer**,
SAG Innovation GmbH, Lend:
**Cryogenic Storage of Liquid Hydrogen: Opportunities and
Challenges of LH₂ in Heavy Duty Trucks**

12:00

V. **Baumesnil**, Automobile Club de l'Ouest, Le Mans;
Dr. B. **Niclot**, Win Innovation, Paris:
Le Mans 24h Hydrogen Racing Category in 2024

12:30

Lunch Break

Friday, 30 April 2021, Afternoon

FESTSAAL

ZEREMONIENSAAL

Lunch Break

FUTURE VEHICLE DRIVES AND ENERGY

Chairman: Univ.-Prof. Dr. L. **Eckstein**,
RWTH Aachen University

Univ.-Prof. Dr. G. **Brasseur**, Graz University of Technology;
Univ.-Prof. Dr. J. **Lercher**, Technical University Munich,
Garching / Pacific Northwest National Laboratory, Richland, USA:
New Opportunities and Constraints Emerging for Carbon-Neutral Individual Transport

Dr. G. **Fraidl**, Dipl.-Ing. (FH) B. **Enzi**, Dr. P. **Kapus**, Dr. C. **Martin**,
Dipl.-Ing. (FH) M. **Rothbart**, AVL List GmbH, Graz:
**Passenger Car Powertrains and Future Energy Scenarios:
From Technical Facts towards Political Reality**

Dr. M. **Alt**, F. **Gouzonnat**, R. **Matthé**, L. K. **Cloos**,
Opel Automobile GmbH, Rüsselsheim:
**Pure Electric, Gasoline and Diesel: The Propulsion Systems
of the New Opel Mokka**

Dipl.-Ing. C. **Helbing**, Dr. rer. nat. K. **Bennewitz**,
Dipl.-Ing. P. **Lück**, Dr.-Ing. J. **Tousen**, Dr.-Ing. J. **Peter**,
Volkswagen AG, Wolfsburg:
The e-Drive Portfolio of the MEB from Volkswagen

13:45

Lunch Break

DIESEL EXHAUST AFTERTREATMENT

Chairman: Dr. W. **Böhme**,
Austrian Society of Automotive Engineers

14:15

M. **Nilsson** MSc, Dr. H. **Birgersson**, Scania CV AB, Södertälje;
Dipl.-Ing. W. **Müller**, Umicore AG & Co. KG, Hanau-Wolfgang;
Dr. P. **Gabrielsson**, E. **Senar Serra** MSc,
Umicore Denmark ApS, Hørsholm:
**Next Generation Global Emission Solution Platform with Dual Urea
Dosing – Meeting Future Emission and Efficiency Requirements**

14:45

Dr. P. **Mendoza Villafuerte**, Dr. J. **Demuyneck**,
D. **Bosteels** MSc MBA, AECC, Brussels;
Dipl.-Ing T. **Wilkes**, Dr. L. **Robb**, Dr. M. **Schönen**, FEV GmbH, Aachen:
**Demonstration of Extremely Low NO_x Emissions with Partly Close-
Coupled Emission Control on a Heavy-Duty Truck Application**

15:15

Univ.-Prof. Dr. techn. C. **Beidl**, Dr. J. **Hipp**, Darmstadt University of
Technology; M. **Keck**, D. **Knaf**, BIN Boysen Innovationszentrum
Nagold GmbH & Co. KG, Nagold; Univ.-Prof. Dr.-Ing. G. **Hohenberg**,
M. **Conin**, IVD Deutschland GmbH, Darmstadt;
J. **Kreuz**, Dr. U. **Goebel**, Umicore AG & Co. KG, Hanau-Wolfgang:
48 V Pre-Turbo-DeNO_x-System for Lowest Urban Emissions

15:45

Coffee Break

**PLENARY CLOSING SESSION:
VIEW TO THE FUTURE**

Univ.-Prof. Dr. B. **Geringer**, Vienna University of Technology

Thomas **Stierle**,
Executive Vice President Electrification Technology,
Vitesco Technologies, Nuremberg:
Leading the Fast Transition to Electric Mobility

16:15

Dr. Torsten **Eder**,
Chief Engineer Mercedes-Benz Drivetrains,
Mercedes-Benz AG, Stuttgart:
**Ambition2039: Hybrid Concepts as an Integral Part of the
Transformation**

16:35

Dr. Oliver **Blume**,
Chairman of the Executive Board,
Dr. Ing. h.c. F. Porsche AG, Stuttgart:
The Future of the Sportscar

16:55

Discussion of the lectures in this session

17:15

CLOSING ADDRESS

17:45

18:00

End of Programme

ELECTRIC DRIVES

Y. **Gotoda** BA, DENSO Corp., Aichi, Japan;
Dipl.-Ing. (FH) U. **Schwarz**,
DENSO AUTOMOTIVE Deutschland GmbH, Wegberg:
**DENSO's Contribution towards a CO₂ Neutral Society Using
Revolutionary, Unique E-Motor Technology and Intelligent
Control Strategy**

S. **Morgenstern** BEng, F. **Colineau** MSc, M. **Bantz** BEng,
Prof. Dr.-Ing. E. **Bock**, Freudenberg FST GmbH, Weinheim:
**Avoiding Gear and Bearing Damage with Electrically
Conductive Shaft Seals in Electric Powertrain**

C. **Kneissl** BSc, Univ.-Prof. Dr. P. **Fischer**,
Graz University of Technology;
Dr. J. **Schmid**, Ing. P. **Stögmüller**, Dr.-Ing. H. **Bauhoffer**,
Oberaigner Powertrain GmbH, Nebelberg:
**2-Speed Transmission for E-Drives without Mechanical
Synchronization and Clutch**

Dipl.-Ing. A. **Sturm**, Prof. Dr.-Ing. F. **Küçükay**,
Technical University Braunschweig:
Optimal Drives for Automated HEV and BEV

M. **Younkins** PhD, P. **Carvell** BSEE, J. **Fuerst** BSME MBA,
Tula Technology, San Jose, USA:
**Dynamic Motor Drive: Optimizing Electric Motor Controls
to Improve Efficiency**

ENGINEERING METHODS

F. **Bobrik** MSc, R. **Dittrich** MSc, Dr.-Ing. S. **Clement**,
AUDI AG, Neckarsulm; Dipl.-Ing. C. **Doppelbauer**,
Dipl.-Ing. P. **Zojer**, Dipl.-Ing. B. **Huber**,
MAGNA Powertrain Engineering Center Steyr GmbH & Co KG,
St. Valentin:
**„Road To Rig“ – Dynamic Vehicle Simulation on a
High-Altitude and Climate Engine Test Bench**

Dipl.-Ing. W. **Novak**, Dr.-Ing. V. **Hennige**, AVL List GmbH, Graz;
Dr.-Ing. A. **Braun**, L. **Kallis** BEng, Dipl.-Ing. E. **Loechl**,
AVL Deutschland GmbH, Ingolstadt;
Dipl.-Betriebsw. M. **Neumann** MBA, AUDI AG, Ingolstadt:
**Battery Derivative Development Using Model Based Systems
Engineering**

Dr. P. **Schöggel**, Dipl.-Ing. E. **Bogner**, Dipl.-Ing. P. **Falk**,
Dr. P. **Nitsche**, Dipl.-Ing. M. **Oswald**, Dipl.-Ing. E. **Ramschack**,
Dipl.-Ing. (FH) R. **Vögl**, AVL List GmbH, Graz:
**Optimal Combination of Real and Virtual Development for
Next Generation of ADAS/AD**

G. **Vagnoni** MSc, M. **Kuipers** MSc, Dr.-Ing. M. **Stapelbroek**,
Dipl.-Wirtsch.-Ing. L. **Bauer**, FEV Europe GmbH, Aachen;
S. **Hosseininasab** MSc, M. **Mirsalehian** MSc,
RWTH Aachen University:
**Advancing Battery Safety – Detection and Prevention
Measures of Thermal Propagation**

R. **Mader**, G. **Winkler**, T. **Reindl**, N. **Pandya**,
Vitesco Technologies, Regensburg / Auburn Hills, USA:
**The Car's Electronic Architecture in Motion:
The Coming Transformation**

Dr. G. **Rösel**, N. **Daun**, P. **Mönius**, G. **Mühlberg**, A. **Reich**,
Vitesco Technologies, Regensburg / Nuremberg / Berlin:
Scalable Platform for an Efficient 400-Volt Axle Drive

ELECTRIC DRIVES IN SPECIAL VEHICLES

Dr. B. **Yan**, Dipl.-Ing. Z. **Cao**,
eKontrol GmbH, Vienna:
**Powershift Capable Electric Machines Driven Powertrain
in Heavy Duty Dumper Series Use**

Dipl.-Ing. M. **Kirchmair** MSc MBA, Dr.-Ing. A. **Muigg**,
PRINOTH AG, Sterzing:
**ZERO EMISSION. PERFECT SLOPES.
The Technology Leader PRINOTH Gives Insights to
Alternative Drives of Snow Groomers**

E-FUELS

Dr. A. **Neumann**, A. **von Gregory**,
Strategy Engineers, Munich;
P. **Gillbrand**, M. **Rothbart**,
AVL List GmbH, Graz:
**Economic Viability of Fuel Cell-Based Long-Haul
Heavy-Duty Transport: A TCO Comparison of Classical &
CO₂ Neutral Propulsion Systems**

Dr.-Ing. M. **Walters**, FEV Europe GmbH, Aachen;
S. **Dirkes** MSc, RWTH Aachen University:
**Degradation of PEM Fuel Cells:
Reducing Total Cost of Ownership by Optimization of Design
and Operating Strategy of FCEVs**

J. **Juhl** MSc, T. **Rudolf** MSc, L. **Kohout** MSc, Dr.-Ing. S. **Schwab**,
FZI Forschungszentrum Informatik, Karlsruhe;
Dr.-Ing. G. **Dummer**, IAVF Antriebstechnik GmbH, Karlsruhe;
Prof. Dr.-Ing. S. **Hohmann**, Prof. Dr. rer. nat. W. **Stork**,
KIT Karlsruhe Institute of Technology, Karlsruhe:
**Automated Anomaly Detection in Data Streams on Engine
Test Benches Using Multi-Scale Convolutional Recurrent
Encoder-Decoder**

Dipl.-Ing. H. **De Campos Garcia**, Dipl.-Ing. A. **Bacar**,
F. **Chopard** PhD, HUTCHINSON S.A. Center of Research &
Innovation, Chaux-de-Fonds; Dipl.-Ing. G. **Zotter**,
Dipl.-Ing. A. **Baumgartner**, J. **Humenberger** BSc,
Dipl.-Ing. (FH) P. **Drage**, AVL List GmbH, Graz:
**Hutchinson ThermalLab™: How to Shift Vehicle Thermal
Management Testing from Road to Rig**

V. M. **Prabhu**, Prof. Dr.-Ing. S. **Kowalewski**,
RWTH Aachen University;
J. **Vadakkappattath**, Dr.-Ing. G. **Keffler**, Dr.-Ing. M. **Jentges**,
FEV Europe GmbH, Aachen:
**A Lean Safety-Critical Software Development Process for
Future Vehicle Application**

ELECTRICAL STORAGE

Dr. T. **Arping**, Dr. A. **Tuchlenski**,
Lanxess Deutschland GmbH, Dormagen:
**Engineering Plastics in the Course of Powertrain
Transformation – New Challenges and Material Solutions**

ELECTRICAL STORAGE

Ing. A. **Kamar** BSc,
Schunk Transit Systems GmbH, Wettenberg;
Dr. S. **Reisinger**,
Schunk Carbon Technology GmbH, Bad Goisern:
Smart Solutions for Automated Fast Charging and the Thermal Challenges in High Power Charging

ENGINE COMPONENTS

Dipl.-Ing. M. **Braun**, M. **Becker**, Dipl.-Ing. F. **Heine**,
KAMAX Automotive GmbH, Homberg (Ohm):
KXtreme – Future Options for the Design of High Loaded Internal Combustion Engines

Dr. M. **Scheidt**, Ing. P. **Traversa**,
Dipl.-Ing. (FH) D. **Wolf**, Dipl.-Ing. S. **Hardes**,
Schaeffler Technologies AG & Co. KG, Herzogenaurach:
Valvetrain Solutions for Flexible Engine Families – Highest Optimization Potential for Varying Use Cases

HYDROGEN COMBUSTION ENGINE / COMPONENTS

Dr. sc. techn. ETH M. A. **Skopli**,
Antrova AG, Stein am Rhein:
Hydrogen Engines and the New Complex™ Pressure Wave Supercharger Concept

Dr. J. **Wittmann**, Global Panel Foundation, Prague:
Electric Car vs. Hydrogen Car – Acceptance of All-Electric Driving in Germany and the U.S.A. – An Explorative Youtube Study

Dipl.-Ing. R. **Herdin**, D. A. **Herdin** MSc, PGES GmbH, Vienna;
Dipl.-Ing. (FH) F. **Grewe**, S. **Knepper** MSc, 2G Energy AG, Heek:
Ready t(w)o Gas – The Hydrogen Engine with Variable Natural Gas Blending by 2G

Dr. S. **Munshi**, Dr. J. **Huang**,
Westport Fuel Systems Inc., Vancouver, Canada:
The Potential for a High Efficiency Hydrogen Engine Using Westport Fuel Systems' Commercially Available HPDI Fuel System

ZERO IMPACT EMISSIONS

Dr.-Ing. Michael **Krüger**, Dipl.-Ing. Martin **Krüger**,
Dr.-Ing. A. **Kufferath**, Dipl.-Ing. D. **Naber**,
Dr.-Ing. E. **Schünemann**, Robert Bosch GmbH, Stuttgart:
Future Euro 7 / VII Powertrains: Challenges and Feasibility

J. **Herrmann** MSc, Dr.-Ing. G. **Hagen**, Dr.-Ing. J. **Kita**,
Prof. Dr.-Ing. R. **Moos**, University of Bayreuth;
Dipl.-Ing. D. **Bleicker**, Dipl.-Ing. F. **Noack**,
CPK Automotive GmbH & Co. KG, Münster:
Concept of a Multi-Gas Sensor to Meet the Strictest Emission Requirements for Combustion Engines

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