



Society of Petroleum Engineers

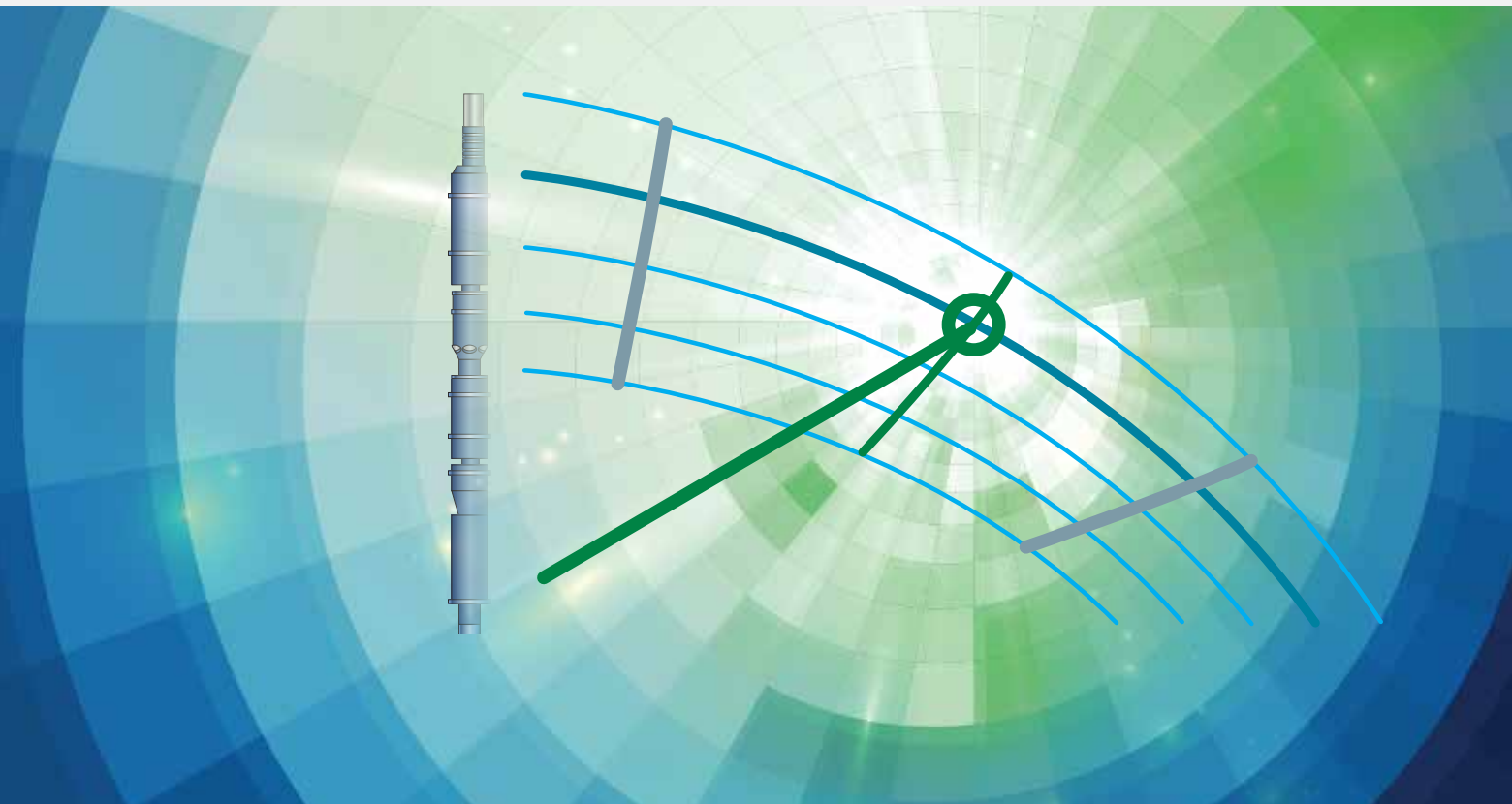
# SPE Gulf Coast Section Electric Submersible Pumps Symposium

**4–8 October 2021**

Marriott Waterway Hotel and Convention Center  
Virtual [UTC -5] and The Woodlands, Texas, USA

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## Conference Program



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# Welcome from the Chairperson

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Dear Colleagues,

Electric submersible pumps (ESPs) have been utilized in oil production since the early 1900s and remain an integral piece of production equipment to this day. ESP applications range from benign conventional high water cut wells to some of the most challenging applications in the world. As the frontiers of ESP utilization continue to challenge the limitations of technologies it is important for those in the industry to share knowledge, new technology, challenges, and successes in order to drive innovation in the utilization of this important form of artificial lift.

The SPE Electric Submersible Pumps Symposium brings together ESP technical experts from around the world, both from operators and manufacturers, to share innovative information and ‘lessons learned’ solutions pertaining to ESP technology, production, and operations. The ESP Symposium brings together a strong technical program, a world-class exhibition showing and demonstrating the newest offerings from manufactures with live technical demonstrations, and multiple continuing education opportunities dedicated to ESP related equipment and applications.

This unique event is only held once every two years and is one of the very few industry events that is solely dedicated to ESPs. Don’t miss this opportunity to learn, network and see firsthand the latest in ESP technology and industry knowledge.

The program committee members look forward to seeing you in The Woodlands, Texas in October 2021.



**Lissett Barrios**

Program Committee Chairperson  
Shell



Society of Petroleum Engineers

## About the Society of Petroleum Engineers

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association whose more than 140,600 members in 144 countries are engaged in oil and gas exploration and production. SPE is a key resource for technical knowledge providing publications, events, training courses, and online resources at [www.spe.org](http://www.spe.org).

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## Registration and Badge Pick-Up

*Town Center Foyer*

### Registration Hours

Monday, 4 October ..... 1500–1900  
Tuesday, 5 October ..... 0700–1500  
Wednesday, 6 October ..... 0700–1500  
Thursday, 7 October ..... 0700–1300

## Speaker Check-In Hours

*Waterway 4–5*

Speakers are requested to report to their assigned session room 30 minutes prior to the start of the session.

Tuesday, 5 October ..... 0715–0745 | 1215–1245  
Wednesday, 6 October ..... 0730–0800 | 1215–1245  
Thursday, 7 October ..... 0800–0830 | 1215–1245

## Coffee Breaks

*Town Center*

Tuesday, 5 October ..... 1000–1045 | 1415–1500  
Wednesday, 6 October ..... 1000–1045 | 1415–1500  
Thursday, 7 October ..... 1000–1045

## Welcome Reception

*Town Center*

Tuesday, 4 October ..... 1800–2000

## Networking Luncheons

*Town Center*

Tuesday, 5 October ..... 1145–1245  
Wednesday, 6 October ..... 1145–1245  
Thursday, 7 October ..... 1145–1245

## Closing Reception

*Town Center*

Thursday, 7 October ..... 1500–1700

## Networking Event: 21ESPS Golf Tournament

*Gleannloch Pines Golf Club: Spring, Texas*

Friday, 8 October ..... 0650–1400

\*Bus departs from the Marriott at 0650. Shot gun start at 0800.

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## Tuesday, 5 October

0800–0900	<b>Welcome and Keynote Presentation</b>	Waterway 4–5
0900–1000	<b>Session 01:</b> Data Acquisition and Optimization – Part I	Waterway 4–5
1005–1015	<b>P01 Tuesday AM ePoster Session</b>	Town Center Alcove
1045–1145	<b>Session 02:</b> ESP Reliability – Part I	Waterway 4–5
1245–1415	<b>Session 03:</b> New ESP Technologies	Waterway 4–5
1415–1430	P02 Tuesday PM ePoster Session	Town Center Alcove
1500–1630	<b>Session 04:</b> Extreme Applications	Waterway 4–5
1645–1800	<b>B01 Breakout Session I:</b> ISO 15551-1: A New Revision	Waterway 1
1645–1800	<b>B02 Breakout Session II:</b> PMMs—Barriers, Challenges, What’s Needed to Exploit the Full Potential?	Waterway 2

## Wednesday, 6 October

0800–1000	<b>Session 05:</b> ESP Thermal Operations – Part I	Waterway 4–5
1000–1015	<b>P03 Wednesday AM ePoster Sessions</b>	Town Center Alcove
1045–1145	<b>Session 06:</b> Data Acquisition and Optimization – Part II	Waterway 4–5
1245–1415	<b>Session 07:</b> ESP Reliability – Part II	Waterway 4–5
1415–1430	<b>P04 Wednesday PM ePoster Session</b>	Town Center Alcove
1500–1630	<b>Session 08:</b> ESP Permanent Magnet Motors – Part I	Waterway 4–5
1645–1800	<b>B03 Breakout Session III:</b> Power Harmonics—Clean Up or Get Off the Grid	Waterway 1
1645–1800	<b>B04 Breakout Session IV:</b> Downhole Gauges and Data Analytics	Waterway 2

## Thursday, 7 October

0830–1000	<b>Session 09:</b> ESP Surveillance and Optimization	Waterway 4–5
1000–1015	P05 Thursday AM ePoster Sessions	Town Center Alcove
1045–1145	<b>Session 10:</b> ESP Permanent Magnet Motors – Part II	Waterway 4–5
1145–1200	P06 Thursday AM ePoster Sessions	Town Center Alcove
1245–1415	<b>Session 11:</b> ESP Surveillance - Part II & ESP Reliability – Part III	Waterway 4–5
1500–1700	Closing Reception	



**Society of Petroleum Engineers**  
**TRAINING COURSES**

Monday, 4 October | 0800-1700

Montgomery A

## ESP Reliability Data Collection and Analysis

**Instructor:** Francisco E. Trevisan

This course is designed to give the attendees an overview of the existing best practices towards ESP reliability data collection, metrics, and analyses. Discussions begin with some important nomenclature definitions, parameters typically collected, and best practices for building an ESP installation database.

Monday, 4 October | 0800-1700

Montgomery B

## ESP Teardown and Root Cause Failure Analysis

**Instructors:** Jeff Dwiggins and Kristen Munguia

This advanced course is intended for artificial lift and production professionals currently working with or managing ESPs. The teardown (or dismantle) of the ESP is the final phase of an ESP's operation, but one that can give the most information on how the ESP performed during its life. Additionally, and maybe more importantly, the teardown and subsequent analysis can tell you why it failed. This key step is not simply taking each component apart, the ESP must be disassembled in a particular order, carefully inspecting for specific failure modes at each step, and, that order may vary with conditions and circumstances.

Monday, 4 October | 0800-1700

Montgomery C

## ESP Surface Electrical Power System Technology and Application

**Instructors:** Rocky Mulanti and Shannon Hill

Course participants will receive an overview of the components that make up the surface electrical power system, safety considerations, advantages and disadvantages of various system designs, application considerations, power quality concerns and mitigation strategies, control architectures, basic maintenance considerations, surface electrical power system design considerations and more.

### In case you missed the training...

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Register for SPE Training Courses online at [go.spe.org/SPETraining](http://go.spe.org/SPETraining) or send an email to [trainingcourses@spe.org](mailto:trainingcourses@spe.org).



Tuesday, 5 October | 0800-0900

Waterway 4-5

### Keynote Session: Silver Linings and Silver Bullets: What Did the ESP Industry Learn From the Pandemic?

Speaker: Shauna Noonan, Occidental Petroleum



#### Shauna Noonan, Occidental Petroleum

Shauna is the Senior Director of Supply Chain Management – International and Gulf of Mexico assets for Occidental Petroleum Corporation, based in The Woodlands, TX. Until December 2020, she was the Director of Artificial Lift Engineering for Oxy based in Houston, where she directed the company’s efforts in artificial lift system performance globally. Prior to joining Oxy in late 2015, she worked worldwide on artificial lift projects and technology development at ConocoPhillips and Chevron for over 22 years.

She has authored or co-authored more than 25 technical publications on artificial lift, is a frequent speaker at industry events and has received several industry awards, including the SPE Regional award for Production and Operations by the Gulf Coast section. She has driven the development of industry standards and recommended practices for artificial lift systems while serving as chair for ISO and API committees. She served on the SPE International Board of Directors as the Technical Director for Production and Operations from 2012-2015 and as the 2020 SPE President. In 2020, Hart Energy Magazine named her as one of the 25 Most Influential Women in Energy. Noonan holds a BS degree in petroleum engineering from the University of Alberta.



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## Tuesday, 5 October

### 01 Data Acquisition and Optimization - Part I

0900–1000 | Waterway 4–5

**Session Chairpersons:** Michael Romer, ExxonMobil; Steve Schreck, Pioneer Natural Resources

Artificial intelligence and machine learning is considered to be one of the biggest innovations since the microchip. These computing techniques will have influence on many complex machines and processes for decades to come. This session will explore the application of artificial intelligence and machine learning as well as improvement of ESP control, surveillance and operations.

Time	Paper #	Presentation
0900	204516	<b>Development and Implementation of an Automated ESP Failure Database and Reliability Analysis Platform</b> R. Rabbitt, J.E. Chacin, ConocoPhillips
0930	204508	<b>Reinforcement Learning Control Scheme For Electrical Submersible Pumps</b> S. Agrawal, D. Kelly, J. Chong, Sensia; N. Nguyen, formerly Sensia; M. Monzon, Apache Corp.

### P01 Tuesday ePoster Session

1000–1015 | Towncenter Alcove

**Session Chairpersons:** Wayne Klaczek, C-FER Technologies

Join authors for ePoster presentations covering various ESP related topics. These ePoster sessions are always engaging and a great way to interact with the authors of these technical papers.

Time	Paper #	Presentation
1000	204519	<b>Automated ESP Failure Root Cause Identification and Analyses Using Machine Learning and Natural Language Processing Technologies</b> S. Karnik, N. Yenuganti, B.F. Jusri, S. Gupta, P. Nirgudkar, M. Mohajer, A. Malik, Schlumberger

### 02 ESP Reliability – Part I

1045–1145 | Waterway 4–5

**Session Chairpersons:** Curtis Goulet, Baker Hughes; Anastasia Musorina, Salym Petroleum Corporation

Appropriate actions to improve reliability require a good understanding of the factors influencing the most frequent failures, but this is sometimes elusive even to experts. In this session, insights will be shared on factors that may be affecting failures of Seal Chamber Sections and Motors, in particular for SAGD applications. The insights were obtained from studying mechanical shaft seals, and detailed motor skin temperature analysis.

Time	Paper #	Presentation
1045	204500	<b>Forty-Seven-Well Case Study: How a Holistic ESP Design for Deep Deviated Wells with Low Flow Rates Achieved Economic Production</b> L.A. Camilleri, J.L. Villalobos, P. Escalona, A. Correal, C. Reyes Hill, L. Enriquez Cisneros, J. Gallegos, Schlumberger
1115	204503	<b>Reliability of Electric Submersible Pumps (ESP) &amp; Determination of Weibull Parameters for Failure Characterization, Ecuador Case Study</b> D.R. Ayala, W. Padilla, L. Carrera, E.P. Petroecuador

## Tuesday, 5 October

### 03 New ESP Technologies

1245-1415 | Waterway 4-5

**Session Chairpersons:** Tom Millar, Sercel-Grc; Octavio Castelloes, Petrobras

Global oil and gas organizations, operating under increasingly challenging conditions, require innovative solutions to remain competitive. Development and support of cost saving solutions, and cutting-edge technologies, will continue to play an important role in our global ESP market space. This session covers different approaches in increasing reliability via new technology, design and applications improvements.

Time	Paper #	Presentation
1245	204495	<b>Demonstration of Advanced Magnetic Technologies for a Highly Reliable and Retrievable Electric Submersible Pump Topology</b> P. McMullen, D.J. Biddick, Upwing Energy
1315	204489	<b>Qualification and Deployment of The Highest Power ESP In The World</b> M.D. Rojas, A.F. Merlino, D.J. Liney, L.A. Obst, M. Kotteman, A. Horton, Shell; R. Rivera, Kinetic Pump Innovations; J. Herriman, R. King, Baker Hughes
1345	204484	<b>Using ESP Permanent Magnet Motor Technology In High-temperature Geothermal Applications</b> N. Lykova, D. Martiushev, Novomet

### P02 Tuesday PM ePoster Session

1445-1430 | Towncenter Alcove

**Session Chairperson:** Wayne Klaczek, C-FER Technologies

Join authors for ePoster presentations covering various ESP related topics. These ePoster sessions are always engaging and a great way to interact with the authors of these technical papers.

Time	Paper #	Presentation
1415	204517	<b>Challenges of D-SAGD Completion</b> J.K. Graham, Suncor Energy Inc. (Retired); C. Hollohan, Baker Hughes

### 04 Extreme Applications

1500-1630 | Waterway 4-5

**Session Chairpersons:** Francisco Alhanati, C-FER Technologies; Elizabeth Bierhaus, Denbury Resources

Deterioration in the structure of oil reserves, recorded in the last decade, objectively leads to complications in the operating conditions of oil producing wells. These complications include growth in the number of deep directional wells, extreme reservoir temperatures, high-viscosity fluid production and low flow rates. ESPs must now withstand extreme conditions in order to achieve a successful run-life.

Time	Paper #	Presentation
1500	204494	<b>ESP Mechanical Shaft Seals: Trials and Tribulations of Lab Testing</b> J.W. Sheldon, F.J. Alhanati, J.S. Schoepp, C-FER Technologies
1530	204518	<b>3D Measurement of ESP Motor Skin Thermal Profile in Horizontal SAGD Well</b> L.B. Waldner, CNOOC International Limited; M. Raum, B. Coates, Baker Hughes
1600	204486	<b>BC10 Field Mudline Pump Operation Case Study: A Deepwater, Long Tie Back, High GVF and High Viscosity Application</b> I.V. Debacker, D.J. Liney, Shell; M. Palacios, N. Fletcher, Technip FMC Brazil

**Tuesday, 5 October**

## **B01 Breakout Session I: ISO15551-1: A New Revision**

**1645–1800 | Waterway 1**

**Moderators:** Octavio Castellões, Petrobras; Mark Cowie, Equinor ASA; Leon Ben Waldner, CNOOC International Limited; Shauna G. Noonan, Occidental Petroleum Corp.

The ISO 15551-1 ESP Manufacturing standard has undergone a major revision as part of the standard's 5-year review. In this session we will review the key changes to the document and how these changes will make the standard easier to use and more directly applicable to the majority of ESP users. The session will cover: A) The first years: the attempt to ramp up adoption B) Improving and refining the standard C) How the revised standard is organized D) Under the hood: How does it work? E) Ask the Experts (Q&A session with several of the committee members who worked on the document revision).

## **B02 Breakout Session II: PMMs—Barriers, Challenges, What's Needed to Exploit the Full Potential?**

**1645–1800 | Waterway 2**

**Moderators:** Joseph McMannus, Baker Hughes; Bryan David Bugg, Felix Energy

PMMs offer the promise of increased efficiency, reduced ESG impact, and significantly improved power density... so why has the industry been reluctant to adopt this technology? PMMs are 10-30% more efficient than conventional induction motors, and can provide a step change reduction in Scope I and Scope II emissions associated with operation. A smaller PMM, about 50% shorter or with reduced diameter, generates the same amount of power as an induction motor, allowing operators to increase downhole horsepower where they may have historically been constrained by casing diameter. PMMs perform exceptionally across the full operating range of ESPs, extending system operational flexibility, and their efficiency impacts all components of the electrical system allowing for reductions in the requirements of cable, VSDs, transformers, generators, and more. The technological promise is challenged by issues of complexity, difficulty utilizing existing VSDs, political risk with legacy manufacturers, increased cost, and material safety concerns associated with installation and operation. We believe the most pressing issues keeping the industry from exploiting the full potential of PMMs are the safety concerns associated with PMM installation and operations. Induction motors and permanent magnet motors can both be used as generators, but induction motors require an external excitation power or residual magnetization to start the power generation process. PMMs generate energy without external excitation in the presence of mechanical rotation of the rotors because they have imbedded (permanent) magnets on their rotors, ensuring constant magnetization. When a PMM's rotor is mechanically rotated, the PMM becomes a generator, which creates an HSE risk during the installation and operation of the ESP. PMM manufacturers have worked hand-in-hand with operators to mitigate risk through procedures and improved technology. This session will provide a great discussion opportunity to try to understand the industry's most critical needs in order to exploit the full promise of PMM technology.

Wednesday, 6 October

**05 ESP Thermal Operations – Part I**

**0800–1000 | Waterway 4–5**

**Session Chairpersons:** **Eduardo Rubiano**, Occidental Petroleum; **Rajan N. Chokshi**, Accutant Solutions

ESPs operating under thermal regimes face severe challenges. The industry has overcome these challenges by improving designs, manufacturing, and operational best practices. This session covers recent learnings in SAGD that contribute to improved reliability, increased run lives, and better operational management.

Time	Paper #	Presentation
0800	204521	<b>Intentionally Deadheading SAGD ESPs—An Unconventional Approach To Improve Run Life</b> J.D. Studer, J.E. Chacin, R. Walters, T. Nguyen, ConocoPhillips
0830	204482	<b>Gas Purging System To Extend Thrust Bearing Life In ESPs</b> J. Caridad, A.I. Watson, S. Shang, E. Nguyen, G. Chochua, Schlumberger
0900	204523	<b>SAGD ESP Intake Design Improvement</b> F. Zhong, P.J. Keough, K.J. Martel, R.J. Delaloye, ConocoPhillips; C.J. Goulet, B. Coates, Baker Hughes
0930	204501	<b>An Overview of ConocoPhillips Surmont SAGD ESP Gas Handling Project to Mitigate Production Effects of NCG Co-Injection</b> K. Nesor, R. Walters, J.D. Studer, ConocoPhillips; C.J. Goulet, B. Coates, Baker Hughes

**P03 Wednesday ePoster Session**

**1000–1015 | Towncenter Alcove**

**Session Chairperson:** **Wayne Klaczek**, C-FER Technologies

Join authors for ePoster presentations covering various ESP related topics. These ePoster sessions are always engaging and a great way to interact with the authors of these technical papers.

Time	Paper #	Presentation
1000	204511	<b>Defining A New Era For Induction Motors</b> K. Escobar Patron, M. Radov, C. Vasilache, Schlumberger

**06 Data Acquisition and Optimization – Part II**

**1045–1145 | Waterway 4–5**

**Session Chairpersons:** **Mark Cowie**, Equinor; **Diego Narvaez**, Schlumberger (Retired)

While ESP systems enable operators to achieve their initial accelerated production goals; the uptime, run-life and reliability of the systems, in the early stages, were substantially below targets. Close collaboration between Operators, of unconventional plays, and service providers are proving successful in developing fit-for-purpose equipment, workflows and best practices. These developments have lead to drastic improvements in performance and run-life of ESP systems in challenging environments.

Time	Paper #	Presentation
1045	204525	<b>ESP Field Operational Score—A Unified Approach to ESP Performance Benchmarking</b> A.M. Al-Jazzaf, A.A. Abdal, A. Shehab, N. Al-Maqsseed, Kuwait Oil Company; A. Gorlov, Shell
1115	204513	<b>Digitalization Creates the Big Picture of Integrated ESP Optimization in Shushufindi Field</b> O. Maulidani, C. Bonilla, M. Paredes, P. Escalona, J. Villalobos, L. Bravo, Schlumberger; D. Estevez, A. Pineda, Tecpetrol; E. Chicango, G. Ramos, CSSFD; L. Alabuella, J. Guaman, Petroecuador EP

Wednesday, 6 October

**07 ESP Reliability – Part II**

**1245–1415 | Waterway 4–5**

**Session Chairpersons:** Jose Caridad, Schlumberger; Walter Dinkins, Consultant

Reliability is a key part of our field economy and profitability. The papers to be presented in this session are addressing, in their own ways, the understanding of reliability, how to use reliability on field economy and how could we improve reliability by engineering.

Time	Paper #	Presentation
1245	204483	<b>Keep Your ESPs Running: Case Studies Exhibiting a Holistic Methodology for Run-Life Improvement</b> L.A. Camilleri, A.I. Watson, Y. Liu, M. El Gindy, Schlumberger
1315	204493	<b>Improving Motor Performance and Runtime In ESP Applications With Novel Sinewave Filter</b> A. Hoevenaars, M. McGraw, Mirus International; C. Burley, E.A. Bierhaus, Denbury Onshore LLC
1345	204524	<b>Overview of Opportunities and Challenges of Electrical Submersible Pumps (ESP) in the Geothermal Energy Production Systems</b> P. Shoeibi Omrani, K. van der Valk, TNO; W. Bos, ECW Energy; E. Nizamutdinov, L. van der Sluijs, J. Eilers, Shell; H. Pereboom, K. Castelein, F. van Bergen, TNO

**P04 Wednesday PM ePoster Session**

**1415–1430 | Towncenter Alcove**

**Session Chairperson:** Wayne Klaczek, C-FER Technologies

Join authors for ePoster presentations covering various ESP related topics. These ePoster sessions are always engaging and a great way to interact with the authors of these technical papers.

Time	Paper #	Presentation
1415	204514	<b>Riding Through Power Disturbances Using Local Energy Storage</b> C. Burley, Denbury Onshore LLC; M. Arefeen, A.C. Davidson, Raptor Lift Solutions, LLC

**08 ESP Permanent Magnet Motors – Part I**

**1500–1630 | Waterway 4–5**

**Session Chairpersons:** Anton Shakirov, Lex Submersible Pumps; Matthew Sikes, Baker Hughes

Permanent Magnet Motors (PMM’s) are the biggest innovation to Electric Submersible Pumps (ESP’s) since the invention of the multistage centrifugal pump. With the development of this new and exciting technology comes the responsibility of operators and service companies to implement PMM’s safely. This session will cover the safety aspect of PMM’s and the implementation and innovation of this latest motor offering.

Time	Paper #	Presentation
1500	204487	<b>Permanent Magnet Motors Safety</b> B.L. Nicholson, C. Yicon, Occidental; D.J. Harris, Chevron; R.J. Delaloye, ConocoPhillips Co
1530	204499	<b>Hybrid Permanent Magnet Motor Application To Electric Submersible Pumps In SAGD Wells</b> H. Mansir, M. Rimmer, COREteQ Systems; L.B. Waldner, CNOOC International Limited; C. Hong, Cenovus Energy; J.K. Graham, Retired; M. Wolanski, Suncor Energy; B. Duong, Alberta Innovates Technology Futures
1600	204496	<b>Development of A 1,000-hp High-Power Density Pmm For Deepwater Wireline Retrievable ESP Systems</b> S.A. Cheblak, O. Benzaid, AccessESP



## Wednesday, 6 October

### **B03 Breakout Session III: Power Harmonics— Clean Up or Get Off the Grid**

**1645–1800 | Waterway 1**

**Moderators:** Shannon Hill, C-FER Technologies, Brian Haapanen, Baker Hughes

Have you ever thought about how your ESP systems are seen by the power provider? When purchasing a variable frequency drive (VFD) or moving surface equipment from one well to another, are input harmonics considered? Why does the power provider care and what is IEEE-519? What do you do when your power provider is telling you to reduce harmonic levels or you will be removed from the grid? This breakout session will focus on the effects of VFDs on the power supply. Panelists will be present to answer questions and provide expert opinions on how harmonics in the L48 have gotten out of hand and the challenges of mitigating these harmonics. Guided discussion topics may include: IEEE 519 – what the power providers want, and harmonic mitigation measures for new and existing systems (where there isn't a one-size-fits-all solution).

### **B04 Breakout Session IV: Downhole Gauges and Data Analytics**

**1645–1800 | Waterway 2**

**Moderators:** William Milne, Baker Hughes; Shelby Williams, Theta

This breakout session will level set participants on current technology. It will also endeavor to identify gaps and the needs of operators in the short to medium term as it relates to data provision. Sampling rates and communications protocol play an important role in connecting data to analytics packages and will also be discussed. High resolution / High sample rates require consideration of data accessibility, processing and storage. Future technological needs to align with current trends in the Artificial Lift area.

- High speed communications
- Permanent Magnet Motors
- Variable Speed Control – including high frequency data collection
- Geothermal / High temperature

Thursday, 7 October

**09 ESP Surveillance and Optimization**

**0830-1000 | Waterway 4-5**

**Session Chairpersons:** Alfredo Leon, Baker Hughes; Jesus E. Chacin, ConocoPhillips

ESP surveillance is key to understanding well production performance and achieving reliability targets. This session will focus on innovative surveillance experiences that have proven valuable in various operating environments.

Time	Paper #	Presentation
0830	204506	<b>Identification of Failure Source in 7000 Foot Subsea ESP Power Distribution System Using Electrical Waveform Monitoring</b> L. Obst, A.F. Merlino, Shell; A. Parlos, D. Rubio, Veros Systems
0900	204507	<b>Brazil Deepwater BC-10 ESP Operation without Downhole ESP Gauges</b> L.J. Barrios, I. Debacker, R. Rivera, M. Basilio, D. Liney, Shell
0930	204490	<b>Surface Tubing Temperature Transducers Reduce Damage to Downhole Equipment Following a Downhole Gauge Failure</b> L. Zihlmann, Summit ESP, A Halliburton Service; M. Parker, Reynolds Lift Technology; L. Malsam, Equinor

**P05 Thursday AM ePoster Session**

**1000-1015 | Towncenter Alcove**

**Session Chairperson:** Wayne Klaczek, C-FER Technologies

Join authors for ePoster presentations covering various ESP related topics. These ePoster sessions are always engaging and a great way to interact with the authors of these technical papers.

Time	Paper #	Presentation
1000	204509	<b>CFD Investigation of Downhole Natural Gas Separation Efficiency in the Churn Flow Regime</b> C. Okafor, P. Verdin, P. Hart, Cranfield University

**10 ESP Permanent Magnet Motors – Part II**

**1045-1145 | Waterway 4-5**

**Session Chairpersons:** Wilfried Manfoumbi, Baker Hughes; Sergey Belyaev, Schlumberger

Are our beloved and robust squirrel-cage induction motors on their way to become relics of the past? Are Permanent Magnet Motors (PMM) here to stay? What real benefits and value will High Speed ESP systems bring to the table? This session will cover power savings, lifting efficiency and reliability, as well as safety aspects of PMM and High Speed ESP Systems.

Time	Paper #	Presentation
1045	204485	<b>Permanent Magnet Motors: The Future of ESP Applications?</b> J.L. Villalobos, F. Ruales, J.S. Miranda Fernandez, G. Francisco, E. Velasquez, D. Shirikov, Schlumberger; O. Anaya, N. Forero, Ecopetrol; D. Estupiñan, L. Peña, L. Gonzalez, Frontera
1115	204492	<b>Challenges and Results of the First Ultra-High-Speed ESP Rental Project—A Case Study: Hyper Speed ESP (15,000 RPM) as the Next Step to the Future</b> Y. Alexeev, A. Shakirov, Lex; R.R. Yamilov, Slavneft-Megionneftegas

**Thursday, 7 October**

**P06 Thursday PM ePoster Session**

**1145–1200 | Towncenter Alcove**

**Session Chairperson:** Wayne Klaczek, C-FER Technologies

Join authors for ePoster presentations covering various ESP related topics. These ePoster sessions are always engaging and a great way to interact with the authors of these technical papers.

Time	Paper #	Presentation
1145	204515	<b>First Application of Rigless Electrical Submersible Pump Technology in the Gulf of Mexico</b> S. Khade, Schlumberger; R. Givens, C. Ware, Talos Energy; P. Hobbs, Schlumberger; N. Van Der Stad, Sensia; E. Bepalov, A. Fastovets, Schlumberger

**11 ESP Surveillance – Part II and Reliability – Part III**

**1245–1415 | Waterway 4–5**

**Session Chairpersons:** Song Shang, Schlumberger; Alexander Gorlov, Shell

The ESP surveillance and reliability session will explore new ideas around data analytics and field modeling; to improve the reliability of equipment as well forecast prediction in an ESP well. The use of surveillance and diagnostics has evolved worldwide, new methods and ideas are developed to effectively manage ESP performance and ultimately prolong system run-life.

Time	Paper #	Presentation
1245–1315	204498	<b>Perdido GoM Total Field ESP Integrated Full-Field Modeling for Surveillance and Forecast Prediction</b> L.J. Barrios, V. Pydah, Shell
1315–1345	204522	<b>Motor Intelligence Versus Vibration Analysis for Early-Stage Diagnosis of Electric Submersible Pumps</b> A. Badkoubeh, F.E. Trevisan, Cognitive Systems Inc
1345–1415	204497	<b>Lessons Learned from Analyzing the Runlife Statistics of ESPs using Kaplan Meier Analysis for North American Unconventional Plays</b> C. Bryan, E.A. Nasir, Baker Hughes Company

**Closing Reception**

**1500–1700 | Town Center**

**AccessESP ..... 17, 18, 19**

13215 North Promenade Blvd  
Stafford, TX 77477

**accessesp.com**

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**Ace Downhole ..... 28**

3996 Wright Road  
Bartlesville, OK 74006

**acedownhole.com**

Contact: Roman Molotkov

**P:** 346-224-6756

**Artificial Lift Performance ..... 11**

23 Ravelston Dykes  
Edinburgh, Midlothian, UK

**www.alperform.com**

Contact: Sandy Williams

**P:** 713-410-1069

**Baker Hughes .....38, 39, 40**

14990 Yorktown Plaza  
Houston, TX 77040

**bakerhughes.com**

Contact: Rachel Verbit

**BIW Connector Systems ..... 5, 6, 7**

500 Tesconi Circle  
Santa Rosa, CA 95401

**ittbiw.com**

Contact: Eckhard Konkel

**P:** 707-523-2300

**Borets ..... 8, 9**

820 Gessner Road, Suite 1075  
Houston, TX 77024

**borets.com**

Contact: Lorne Simmons

**P:** 713-980-4530

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19425 East 54th Street  
Broken Arrow, OK 74014

**championx.com**

Contact: Kathy Shirley

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**DASCO ESP, INC. .... 58**

Leduc, Alberta, Canada T93 0W1

**dascoesp.com**

Contact: Dale Serafinchan

**P:** 780-720-5992

**Endurance Lift ..... 12**

6308 W. Interstate 20  
Midland, TX 79706

**endurancelift.com**

Contact: Michael Cast

**P:** 432-681-7700

**Extract Production Services ..... 20, 21**

12502 East 55th Street  
Tulsa, OK 74146

**extractproduction.com**

Contact: Bryan Holleyman

**P:** 918-938-6828

**F-E-T/Multilift Solutions ..... 3, 4**

10344 Sam Houston Park Drive, Suite 300  
Houston, TX 77064

**f-e-t.com**

Contact: Merideth Zarcone

**P:** 713-351-7900

**Innovex Downhole Solutions..... 1, 2**

4310 North Sam Houston Parkway East  
Houston, TX 77032

**innovex-inc.com**

Contact: Elizabeth Johnson

**P:** 281-602-7815

## Magney Grande ..... 15, 16

4323 County Road 502  
 Bayfield, CO 8112  
**magneygrande.com**  
 Contact: Carol Grande/Amy Coombs  
**P:** 970-884-0508

## Marmon Electrical ..... 50

20 Bradley Park Road  
 East Granby, CT 06026  
**r-scc.com**  
 Contact: Shawn Brown  
**P:** 860-653-8300

## Mingo Manufacturing ..... 53

8091 North 115th East Avenue  
 Owasso, OK 74055  
**mingomanufacturing.com**  
 Contact: Gabriel Cochran  
**P:** 918-272-1511

## Mirus International ..... 25

31 Sun Pac Boulevard, Brampton  
 Ontario, Canada L6S5P6  
**mirusinternational.com**  
 Contact: Michael McGraw  
**P:** 888-866-4787

## MTE Corporation ..... 52

N83 W 13330 Leon Road  
 Menomonee Falls, WI 53051  
 Contact: Marc Majewski  
**P:** 262-946-2815

## NM Cables ..... 34

Office 1510, Entrace 3552, Road 2849  
 Al Seef, Bahrain 0428  
 Contact: Alan Radcliffe  
**P:** 973-3725-5670

## Novomet ..... 13, 14

23567 Clay Road, Grand Industrial Parkway  
 Katy, TX 77493  
**novometgroup.com**  
 Contact: Lee French  
**P:** 832-437-5998

## Odessa Separator ..... 10

1001 East Pearl Street  
 Odessa, TX 79761  
**odessaseparator.com**  
 Contact: Shivani Vyas  
**P:** 432-208-7111

## Oil Tool Solutions ..... 29

4065 South Eliot Street  
 Englewood, CO 80110  
**oiltoolsolutions.com**  
 Contact: Jordan Perez-Majul  
**P:** 307-699-3198

## PFT ..... 36, 37

212 Deerwood Glen Court  
 Deer Park, TX 77536  
**pftsys.com**  
 Contact: Michael Colescott  
**P:** 281-476-9100

## Power Sentry ..... 32

1406 North Sam Houston Parkway West  
 Houston, TX 77038  
**powersentry.com**  
 Contact: Mike Hartsell  
**P:** 832-792-5894

## Reynolds Lift Technologies ..... 41

14043 South Gessner Road  
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**reynoldslift.com**  
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The INSTRUCT ESP lift control systems portfolio is unifying, drive, controllers, measurement, and communications. All backed by Sensia's exceptional build quality, engineering, service support and domain expertise.

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Find more about the intelligent action Sensia brings to lift control at <https://www.sensia-global.com/instruct>



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**rmspumptools.com**

Contact: Neil Thompson  
**P:** 44-1651-874999

## **Schlumberger ..... 22, 23, 24**

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Houston, TX 77042

**slb.com**

Contact: Paula Aguas/Burke Wadsworth  
**P:** 832-492-9613

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**sensiaglobal.com**

Contact: Luis Gamboa  
**P:** 866-773-6742

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**sercel-grc.com**

Contact: Tom Millar  
**P:** 918-834-9600

## **Summit ESP, A Halliburton Service... 42, 43**

3000 North Sam Houston Parkway East  
Houston, TX 77032

**halliburton.com/summitesp**

Contact: Christine Howe  
**P:** 281-871-4000

## **Taurus Engineering ..... 44, 45 and 46**

1335 West Cowles Street  
Long Beach, CA 90813

**taurusengineering.com**

Contact: Ketan Dhawan/Cody Meyerhoff  
**P:** 562-437-4550

## **TCI and TEC Sales.....26**

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Germantown, WI 53022

**www.transcoil.com**

Contact: Chad Burks  
**P:** 800-824-8282

## **TEES ..... 57**

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College Station, TX 77845

**Texas A&M Turbomachinery Laboratory**

Contact: Greg Gammon  
**P:** 979-862-7113

## **Upwing Energy ..... 35**

16323 Shoemaker Avenue  
Cerritos, CA 90703

**upwingenergy.com**

Contact: Laurie Jimenez  
**P:** 562-293-1660

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Orangeburg, SC 29118

**zeusinc.com**

Contact: Billy Williams  
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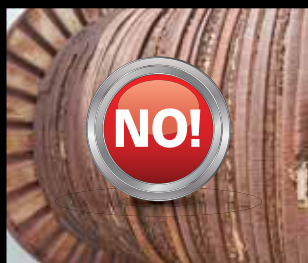
**Wipe out** heavy workovers

**GoRigless**



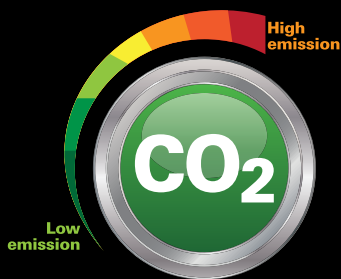
**Run** the cable that outlasts the tubing

**UpCable**

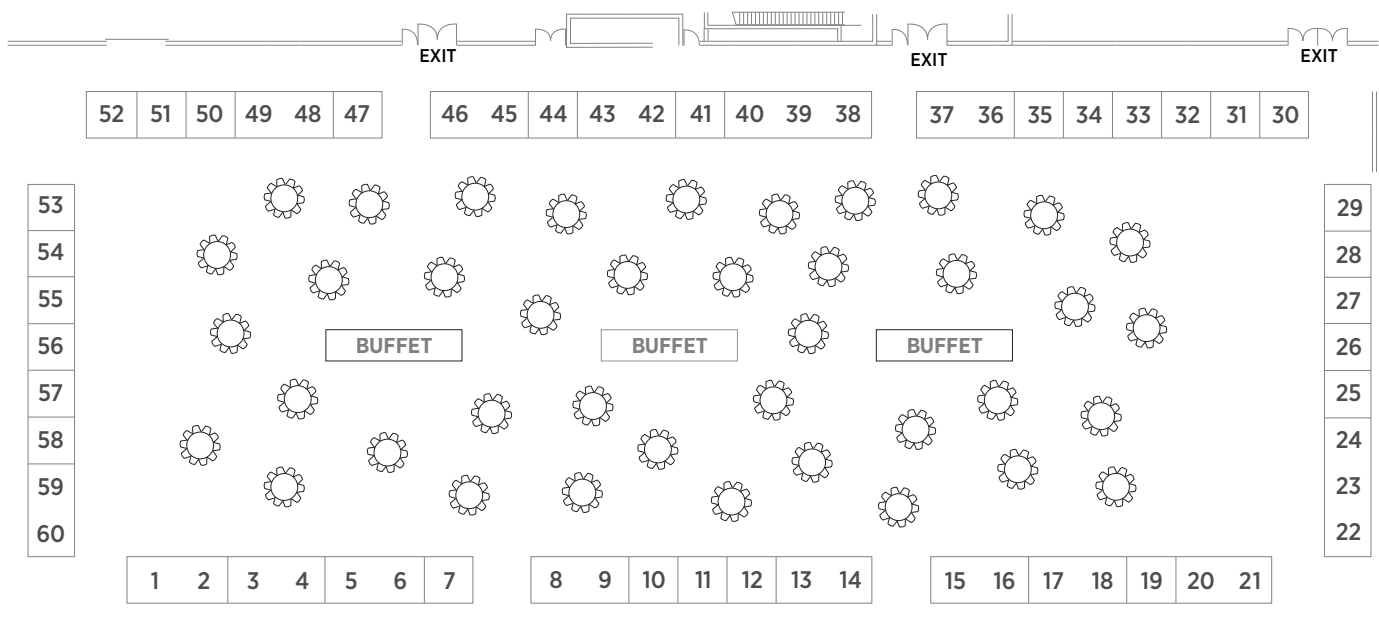


**Eliminate** tubing-deployed ESPs and gas lift that generate higher CO<sub>2</sub> emissions

**GoGreen**



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## Booth Assignments

Booth(s)	Exhibitor
1-2	Innovex
3-4	F-E-T/Multilift Solutions
5-7	ITT-BIW
8-9	Borets
10	Odessa Separator
11	Artificial Lift Performance
12	Endurance Lift
13-14	Novomet
15-16	Magney Grande
17-19	Access ESP
20-21	Extract Production Services
22-24	Schlumberger
25	Mirus
26	TCI and TEC Sales
28	Ace Downhole
29	Oil Tool Solutions
32	Power Sentry

Booth(s)	Exhibitor
33	Zeus
34	NM Cables
35	Upwing Energy
36-37	PFT
38-40	Baker Hughes
41	Reynolds Lift
42-43	Halliburton-Summit
44-46	Taurus Engineering
47	Sercel-GRC
48-49	Champion X/Apergy
50	Marmon/Keyrite
52	MTE
53	Mingo
56	Sensia
57	TEES
58	Dasco
59-60	RMSpumptools