In the new world of maximizing recovery while continuing to lower operational costs, operators need reliable digital technology. Flow rate measurements are the backbone to reservoir management and to maximize recovery. Multiphase and wet gas flow metering technologies are critical tools to meet the new market-driven demands. While these technologies have been commercially available for a couple of decades, the changing operational environments and evolving digital paradigms necessitate a fresh look and renewed discussion on its applications. Traditional separators provide dual functionality of gravitational phase separation and then measurement of separated single-phase flow. Multiphase flow measurement devices eliminate the need for phase separation to measure flow rate, thus expanding the options available to the operator to optimize OPEX while maximizing recovery via high frequency measurements. Multiphase and wet gas meters, as well as virtual meters, have been used for reservoir and process management, regulatory reporting, allocation, and custody transfer. These devices are compact, convenient to deploy, provide real-time measurement, and are relatively low maintenance.

Multiphase and wet gas metering hardware and associated flow interpretation readily integrates with, and form underpinnings of, progressive digital oilfield architectures. The meters provide real-time measurement that meshes well with surface and downhole streams of pressure, temperature, vibrations, etc. Data analytics efforts are enhanced with increased test frequency and MPFM offer the potential for shorter and more frequent unmanned well tests. For oil and gas wells producing from unconventional and tight reservoirs that exhibit significant transient flowing behavior and rapid production declines, increased test frequency along with real time measurement serve as important tools for optimizing production.

Successful use of technology requires deeper understanding of challenges and methods to overcome them. Also, aspects such as costs, regulatory requirements, accuracy, repeatability, maintenance-needs, fluid characterization, and algorithm improvements need to be discussed. This workshop, which encompasses diverse participation from operators, service companies, research groups, and academia, will promote such discussions and exchange of ideas to harness multiphase flow measurement technology to fulfill the goal to maximize recovery while lowering operational costs.
Tuesday, 28 January

0700–0800  Grand Ballroom Lobby
Registration Check-In

0700–0800  Grand Ballroom Lobby
Continental Breakfast

0800–1000  Grand Ballroom AB
Session 1: Keynote and Opening Session

Session Chairpersons:
Rajan Chokshi, Accutant Solutions
Nikhil Joshi, Moulinex Energy

This session will cover what originally caused multiphase and wet gas measurement to be a necessity in the oil and gas business; the history of the technology; the stakeholders and performance owners; and looks towards the future by posing the question of “What and Where Next”.

• Past, Present, and Future of MPFM in the Oil and Gas Sector
Bob Webb, RA Webb Consulting

1000–1030  Grand Ballroom Lobby
Coffee Break and Posters

1030–1200  Grand Ballroom AB
Session 2: MPFM/WGFM Integration and Use Within Digital Oilfield Architectures

Session Chairpersons:
Amin Amin, Belsim Engineering;
Neeraj Zambare, Kongsberg

MPFM/WGFM integration and use within digital oilfield architectures and strategy examines how multiphase measurement technology is deployed within integrated systems/digital twin applications and used to leverage enhanced production opportunities. This session also includes virtual and physical meter discussion and stand-alone flow sensing.

The session discussions are meant to touch at any type or scale of data integration involving the use of MPFM/WGFM, or their underlying measurements. This of course would depend on the sought benefit and the application. A short but not limited list of such applications could be:

- Way to integrate MPFM with surface facilities: well testing or continuous well rate determination
- Handling MPFM measurement consistency between subsea and topside installations, especially in the presence of different MPFM measuring technologies
- Use of MPFM dynamic response in transient flow assurance applications
- Production configuration scenarios: individual wells, commingled wells/streams, test headers/manifolds
- Integration of MPFM with well testing operations; pressure drop (back pressure), test frequency, dynamic response, transient test analysis (rate-pressure convolution)
- Data integration from different sources: modeling techniques, measures of improvement (KPIs)
- Similarity and dissimilarity of MPFM and VFM - measurement and modeling, common modes or not so common, complementing roles/backups
- MPFM use with VFM: physical flowrate measurement for VFM tuning, or as an integral part of the VFM model

1200–1330  Grand Ballroom CD
Lunch

1330–1500  Grand Ballroom AB
Session 3: Multiphase and Wet Gas Flow Meter Performance Surveillance and Validation

Session Chairpersons:
Matt Zimmerman, BP;
Alex Vera, Pietro Fiorentini USA

Examines the techniques used to perform measurement performance surveillance and validation of multiphase flow measurement technologies in the field. Techniques include the use of meter diagnostics, process monitoring, material balances, fluid sampling and analysis, and comparison to reference measurement systems.

• MPFM Performance Surveillance and Validation: A Look at the Impact of Small Things on the Big Picture
Brandon Buquet, Anadarko

• Detailed Multiphase Meter Validation Process—Beyond Standard Volumes
Robbie Lansangan, TechnipFMC

1500–1530  Grand Ballroom Lobby
Coffee Break and Posters

1530–1700  Grand Ballroom AB
Session 4: MPFM/WGFM Input Fluid Parameter Characterization

Session Chairpersons:
John Lievois, Weatherford;
Dilhan Goonesekera, OneSubsea

Fluid property characterization is important for any type of production well testing and is especially important for successful use of multiphase or wet gas flow meters. This session will focus on the fluid property data required to maintain an accurate and reliable measurement throughout the life of the field. The session will also explore the impact of subsea water characterization for offshore gas wells.

• Challenges and Considerations for MPFM/WGFM Fluid Property Configuration—An Operator’s Perspective
Matt Zimmerman, BP

• The Impacts of Measurement: How Measurement is Used Beyond Allocation
Eric Grzelak, OneSubsea

• Practical Challenges in Generating and Deploying Consistent PVT Data
Daniel Rodriguez, Weatherford

1700–1830  Pool Deck
Networking Reception

Agenda as of 15 January 2020.
Wednesday, 29 January

0700–0800 Grand Ballroom Lobby
Continental Breakfast

0800–0930 Grand Ballroom AB
Session 5: MPFM in Tight Reservoir Applications
Session Chairperson:
Flavia Viana, Chevron ETC

This session will cover current practices and trends in the use of MPFMs for production measurement in tight reservoirs. A panel session will be facilitated to explore the use of MPFMs as an alternative to traditional well testing, associated challenges and added benefits, and the potential for expanded deployment to sustain larger production of MPFMs at much lower capital cost.

- Benefits of Using MPFM: Offshore and Conventional Reservoir Perspectives on Land Unconventional Applications
  Imed Benlizidia, Saudi Aramco; Brandon Buquet, Anadarko
- Range of Operating Conditions and Challenges in Shale Applications
  Ramiro Cardenas, Verdun Oil; Liviu Husoschi, Schlumberger
- Lease Ownership and Production Allocation in Shale Applications
  Nikhil Joshi, Moulinex Consulting
- Vendor Deployment Survey
  Brian Thippen, Chevron; Flavia Viana, Chevron ETC

0930–1000 Grand Ballroom Lobby
Coffee Break and Posters

1000–1130 Grand Ballroom AB
Session 6: MPFM/WGFM Specification, Testing, and Life of Field Design
Session Chairpersons:
Lars Farestvedt, TechnipFMC; Sharon McCurdy, Emerson Automation Solutions

Examines the mechanical and measurement specifications of subsea, offshore and onshore MPFM/WGFM applications, including meter life expectancy. Reviews testing/calibration/maintenance requirements prior to, during, and after meter start-up in the field, and how to optimize performance through life of field.

- Sources of and Determination of Non-Metering Uncertainties in Multiphase Meter Performance Evaluation
  Robbie Lansangan, TechnipFMC
- Testing Life of Field Integration Options for MPFM’s in Pad-Based Unconventional Operations
  Stuart Scott, ConocoPhillips
- Multiphase Meter Placement in Deepwater
  Nikhil Joshi, Moulinex Energy

1130–1300 Grand Ballroom CD
Lunch

1300–1500 Grand Ballroom AB
Session 7: What is the Opportunity for Multiphase Flow Metering with the Significant Change Over the Last 5 Years: Oil Crisis, LNG & Shale Growth, Digitalization...?
Session Chairpersons:
Rajan Chokshi, Accutant Solutions
Nikhil Joshi, Moulinex Energy
Bruno Pinguet, TUV SUD National Engineering Laboratory

Over the last 30 years, barely 10,000 Multiphase meters have been sold worldwide. The trend of acceptance, if slightly higher with time, is not reaching an outstanding sales level. Meanwhile, newcomers are present; this means that some of the work and knowledge established over the years were right and some wrong. Multiphase flow is at the core of oil and gas production, how can we gain from the MPFM and WGFM? Through 2 hours of discussion, we expect to address at least 5 topics used as a milestone.

Tuesday, 28 January and Wednesday, 29 January

Knowledge Sharing Poster Sessions Grand Ballroom Lobby
Knowledge Sharing Posters allow one-on-one interactions with presenters and opportunities to study a particular concept at an appropriate level of detail. Subject matter varies, but topics are consistent with the other technical sessions.

- Magnetic Resonance Multiphase Flow Measurement
  Mark van der Zande, KROHNE
- Upstream Production Measurement Integration and Surveillance—Field Case
  Vincent van der Bent, Neptune Energy; Amin Amin, Belsim Engineering
- Advanced Multiphase Facility-AMF: A New Breadth of Testing Multiphase and Wet Gas Flowmeters
  Anna Pieper, TUV SUD National Engineering Laboratory

Workshop Ideas
Have an idea for a new workshop or forum?
Let us know about it by completing this short online form: http://go.spe.org/workshopform

Scan the QR code with your device camera to take a quick 4 question survey after the workshop.

You can also access the survey at: http://go.spe.org/20AGA3AttendeeSurvey
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**Accessibility:** Our events and functions are accessible to all attendees with wheelchairs. If you require special arrangements, please contact our staff at the registration desk.

**Alcohol Policy:** SPE recognizes the legitimate serving of alcoholic beverages in the process of conducting business and social activities. We also recognize that the use and consumption of alcohol carries with it the requirement for all attendees to consume those beverages responsibly.

**Commercialism:** In remaining consistent with workshop objectives and SPE guidelines, commercialism in presentations will not be permitted. Company logos should be used only to indicate the affiliation of the presenter(s).

**Continuing Education Units:** Attendees will receive 1.6 CEUs. One CEU equals 10 contact hours of participation. CEUs will be awarded through SPE Professional Development for participation and completion of an SPE workshop. A permanent record of a participant’s involvement and awarding of CEUs will be maintained by SPE.

**Documentation:** Following the workshop, a URL containing released copies of the workshop presentations will be available to all attendees.

**Electronic Devices:** As a courtesy to the speakers and your fellow registrants, please turn off all electronic devices during presentations.

**Name Badges:** Please wear your badge at all times. It is a courtesy to your fellow registrants, speakers, and sponsors.

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**Workshop Format:** Workshops maximize the exchange of ideas among attendees and presenters through brief technical presentations followed by extended Q&A periods. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices.

Many of the presentations are in the form of case studies, highlighting engineering achievements and lessons learned. In order to stimulate frank discussion, no proceedings are published and members of the press are not invited to attend.

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The Society of Petroleum Engineers (SPE) is a not-for-profit organization. Income from this event will be invested back into SPE to support many other Society programs. When you attend an SPE event, you help provide even more opportunities for industry professionals to enhance their technical and professional competence. Professional awards, scholarships, the Distinguished Lecturer program, OnePetro, JPT and the Competency Management Tool are just a few examples of programs that are supported by SPE.

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### Upcoming North American SPE Events

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<td>SPE Workshop: Smart Integration in Production System Modeling</td>
<td>The Woodlands, Texas</td>
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<td>18–19 March</td>
<td>SPE Canada Unconventional Resources Conference</td>
<td>Calgary, Alberta</td>
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<tr>
<td>19 March</td>
<td>URTeC One-Day Workshop</td>
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<td>14–16 April</td>
<td>SPE Workshop: Rate/Pressure Transient Analysis in Unconventional</td>
<td>Galveston, Texas</td>
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<td>Reservoirs-Solutions for Practical Problems</td>
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<td>20–21 May</td>
<td>SPE Workshop: Subsurface Data Analytics</td>
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