

38TH NORTH SEA FLOW MEASUREMENT WORKSHOP - PROGRAMME

Day 1: The Future of Flow Measurement: Users Perspective

MONDAY 26TH OCTOBER

09:00 - 09:15 **Chairman introduction of the 38th North Sea Flow Measurement Workshop**
Chair: Dr Bruno Pinguet - TÜV SÜD National Engineering Laboratory

09:20 - 09:35 **Keynote speaker**
Mike Tholen - OGUK
Session 1 Chair: Dr Jean-Paul Couput, TOTAL

09:40 - 10:00 **Assessment of measurement error due to phase contamination in turbine and coriolis meters**
Authors: Saravanakumar Veerasingham - PTTEP & Dennis van Putten - DNV GL
Speaker: Dennis van Putten - DNV GL

10:05 - 10:25 **How Shell is tackling hydrate/scale formation and optimizing well allocation and production on the ormen lange subsea field development**
Authors: Aslak Hellestø & Biljana Djoric - Norske Shell | Gabriel Farah, Svein Eirik Monge, Lars Anders Ruden & Erik Undheim - Emerson Automation Solutions
Speaker: Erik Undheim - Emerson Automation Solutions

10:30 - 10:50 **How to improve water cut measurements in MPFM using a sensor fusion and machine learning-based approach**
Authors: Silvia Galvanin, Diego Tescaro & Enrico Feltresi – Pietro Fiorentini S.p.A. | Tommaso Barbariol & Gian Antonio Susto – University of Padova
Speaker: Silvia Galvanin - Pietro Fiorentini S.p.A.

10:55 - 11:25 **Question and answer session**

11:25 - 11:35 **Break**

Session 2 Chair: Dr Bruno Pinguet - TÜV SÜD National Engineering Laboratory

11:45 - 12:05 **A mystery of the difference between duty streams and master meter in export gas metering system**
Authors: Nadezhda Pashnina - Emerson | Graeme Birks - TOTAL | Aleksandr Terekhin - South Ural State University
Speakers: Graeme Birks - TOTAL | Nadezhda Pashnina - Emerson

12:10 - 12:30 **Multiport profile proving for automatic pipeline sampling**
Authors: Dr Wes Maru & Dr Susithra Lakshmanan - Oil & Gas Measurement (OGM) Limited
Speaker: Dr Wes Maru - Oil & Gas Measurement (OGM) Limited

12:35 - 12:55 **Question and answer session**

13:00 - 14:00 **Live Q&A with oil operators - Innovation in flow measurement from an end user's perspective:**
Total | Equinor | BP | Saudi Aramco | Spirit Energy

14:00 - 00:00 **End of technical sessions. Exhibition and Networking remain open.**

38TH NORTH SEA FLOW MEASUREMENT WORKSHOP - PROGRAMME

Day 2: Flow Measurement Innovation

TUESDAY 27TH OCTOBER

09:00 - 09:15 **2nd Day of the 38th North Sea Flow Measurement Workshop**
Session Chair: Imed Benlizidia - Saudi Aramco

09:20 - 09:40 **Updated experiences of an adjustable dp cone meter**
Authors: Gavin Munro - GM Flow Measurement Services Ltd
Speaker: Gavin Munro - GM Flow Measurement Services Ltd

09:45 - 10:05 **Fluxus natural gas engine**
Authors: G. Hoheisel, P. Chirivas, I. Rivera, E. Schwede, D. Ulbrich & C. Stopkoski - FLEXIM | P. Batch - ESCO
Speaker: Carolina Stopkoski - FLEXIM

10:10 - 10:30 **Accurate Density-based Watercut using a Speed-of-Sound Augmented Coriolis Meter on Liquid Outlet of a Compact, Gas/Liquid Separator with Variable Gas Carry-Under**
Authors: Daniel Gysling & Gabriel Dragnea - Expro Meters, Inc
Speaker: Daniel Gysling - Expro Meters, Inc.

10:35 - 11:05 **Question and answer session**

11:05 - 11:15 **Break**

11:25 - 11:45 **Multiphase Metering Using a Coriolis Mass Flow Meter**
Authors: Sakethraman Mahalingam - Aramco Overseas Company | Bu Yi & Nonso Okeke - Cranfield University | Peter Weidemann - Yokogawa GmBH
Lao Liyun - Cranfield University
Speaker: Dr Sakethraman Mahalingam - Aramco Overseas Company

11:50 - 12:10 **Wet gas performance of coriolis meters: continuation of laboratory and field evaluation**
Authors: Justin Hollingsworth, David Morett & James Deacy - Emerson Automation Solutions
Speaker: David Morett & James Deacy - Emerson Automation Solutions

12:15 - 12:35 **Time series forecasting to detect anomalous behaviours in MPFM**
Authors: Tommaso Barbariol & Gian Antonio Susto – University of Padova | Davide Masiero & Enrico Feltresi - Pietro Fiorentini S.p.A.
Speaker: Tommaso Barbariol - University of Padova

12:40 - 13:10 **Question and answer session**

13:10 - 00:00 **End of technical sessions. Exhibition and Networking remain open.**

38TH NORTH SEA FLOW MEASUREMENT WORKSHOP - PROGRAMME

Day 3: Flow Measurement Innovation within the Energy Transition



WEDNESDAY 28TH OCTOBER

09:00 - 09:15 **3rd Day of the 38th North Sea Flow Measurement Workshop**
Session 1 Chair: Dr Angus Laurie, Repsol Sinopec Resources

09:20 - 09:40 **Where do we stand on flow metering for CO₂ handling and storage?**
Authors: Jan Martin Kocbach, Marie Bueie Holstad, Astrid Marie Skålvik, Kjetil Daae Lohne, Bjørnar Ystad & Kjetil Folgerø - NORCE Norwegian Research Centre AS | Eivind Lyng Soldal - Equinor | Svein-Erik Losnegård & Anfinn Paulsen - Gassco | Gerard Mouton & Leyla Teberikler - Total
Speaker: Jan Martin Kocbach - NORCE Norwegian Research Centre AS

9:45 - 10:05 **Fluid thermophysical properties of CO₂- rich streams in the carbon capture and storage (CCS) processes**
Authors: Dr. Edris Joonaki, Dr. Norman Glen & Marc MacDonald - TÜV SÜD National Engineering Laboratory
Speaker: Dr. Edris Joonaki - TÜV SÜD National Engineering Laboratory

10:10 - 10:30 **Challenges in accurate CO₂ emission reporting for flare**
Authors: Kjell-Eivind Frøysa - Western Norway University of Applied Sciences & NORCE | Eivind Nag Mosland & Astrid Marie Skålvik - NORCE Camilla Sætre - University of Bergen & NORCE
Speaker: Kjell-Eivind Frøysa - Western Norway University of Applied Sciences & NORCE

10:35 - 11:05 **Question and answer session**

11:05 - 11:15 **Break**

11:15 - 11:25 **Session 2 Chair: Nigel Holmes - Scottish Hydrogen & Fuel Cell Association**

11:25 - 11:45 **Produced water measurement challenges**
Authors: Dr Ming Yang - TÜV SÜD National Engineering Laboratory
Speaker: Dr Ming Yang - TÜV SÜD National Engineering Laboratory

11:50 - 12:10 **European metrology network for energy gases: current and future measurement challenges of the energy gases market**
Authors: Marcel Workamp & Annarita Baldan - VSL | David Learmonth - TÜV SÜD National Engineering Laboratory
Speaker: Marcel Workamp - VSL

12:15 - 12:35 **CFD Simulation of Flare Gas System to Reduce Environmental Impact of Flaring and Improve Safety**
Authors: Marc Laing & Sandy Black - TÜV SÜD National Engineering Laboratory
Speaker: Marc Laing - TÜV SÜD National Engineering Laboratory

12:40 - 13:10 **Question and answer session**

13:10 - 00:00 **End of technical sessions. Exhibition and Networking remain open.**

38TH NORTH SEA FLOW MEASUREMENT WORKSHOP - PROGRAMME

Day 4: New Fuel & Flow Measurement Digitalization

THURSDAY 29TH OCTOBER

09:00 - 09:15 **4th Day Of The 38th North Sea Flow Measurement Workshop**
Session 1 Chair: Stuart Broadley - EIC

09:20 - 09:40 **Hydrogen flow calibration facility for domestic gas flow meters**
Authors: Marc MacDonald - TÜV SÜD National Engineering Laboratory
Speaker: Marc MacDonald - TÜV SÜD National Engineering Laboratory

09:45 - 10:05 **Chemical Thermodynamics of Hydrogen Containing Systems**
Authors: Dr Edris Joonaki, Dr Norman Glen & Marc MacDonald - TÜV SÜD National Engineering Laboratory
Speaker: Dr Edris Joonaki - TÜV SÜD National Engineering Laboratory

10:10 - 10:30 **Primary and secondary flow standards for a wide variety of gas compositions – a solid base for reliable traceability facing the energy transition**
Authors: Bodo Mickan & Jos van der Grinten - Physikalisch-Technische Bundesanstalt | Thomas Kappes - EP Ehrler Prüftechnik Engineering GmbH
Speaker: Jos van der Grinten - Physikalisch-Technische Bundesanstalt

10:35 - 10:55 **Real-time networks – an update**
Authors: Sarah Kimpton, David Gower & Hazel Richardson - DNV GL | Angus McIntosh - SGN
Speaker: Sarah Kimpton - DNV GL

10:55 - 11:35 **Question and answer session**

11:35 - 11:45 **Break**

Session 2 Chair: Dr Nishal Ramadas - Honeywell

11:55 - 12:15 **Finding a needle in a haystack – how to control almost everything in a measurement system**
Authors: Augusto Silva & Rosemberg Rocha - Petrobras
Speaker: Augusto Silva - Petrobras

12:20 - 12:40 **Reducing cost of measurement: extending gas metering major validation & embarking on real-time condition based maintenance**
Authors: Huzainy Halim & Rahim, M Asraf - PETRONAS Gas Berhad | Fazliana M Ali - PETRONAS Gas
Speaker: Huzainy Halim - PETRONAS Gas Berhad

12:45 - 13:05 **The introspective orifice meter further uncertainty improvements**
Authors: Phil Stockton & Allan Wilson - Accord | Richard Steven - DP Diagnostics
Speaker: Phil Stockton - Accord

13:10 - 13:30 **Monitoring the performance of flow meters through advanced modelling techniques**
Authors: Dr Yanfeng Liang - TÜV SÜD National Engineering Laboratory
Speaker: Dr Yanfeng Liang - TÜV SÜD National Engineering Laboratory

13:35 - 14:15 **Question and answer session**

14:15 - 14:25 **Closing remarks and 2021 call for abstracts.**
Chairman 2020 Dr Bruno Pinguet & Chairman 2021 George McNally

14:30 - 00:00 **End of technical sessions. Exhibition and Networking remain open.**