



**9th International South East Asia
Hydrocarbon Flow Measurement Workshop**
2 - 4 March 2010

Measurement Uncertainty Training Course
1 March 2010

Multiphase Metering Training Course
5 March 2010

Sheraton Imperial Kuala Lumpur, Malaysia

Organised by

TUV NEL Ltd, EAST KILBRIDE, GLASGOW, UK
BOOKING HOTLINE: +44 (0) 1355 272858
ONLINE BOOKING: www.tuvnel.com/events.aspx

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Committee Contributions from:

- BAKER HUGHES ProductionQuest
- BPMIGAS
- Chevron ETC
- ExxonMobil Australia P/L
- PETRONAS Carigali Sdn Bhd
- PMU PETRONAS
- Roxar
- Saudi Aramco
- Sarawak Shell Berhad
- Schlumberger
- TUV NEL

In Association With:

**National
Measurement
System**

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Introduction

During these challenging times, it is important to stay ahead of developments in technology, regulation and practice. This is particularly true in the field of hydrocarbon flow measurement, where the measurements made have a high economic and environmental impact.

Track Record

The South East Asia Hydrocarbon Flow Measurement Workshop was established almost 10 years ago. In that time it has brought together operators, regulators, equipment suppliers, engineering contractors, service companies and researchers to examine the flow measurement challenges that the oil & gas industry faces, and to share knowledge and experience.

Previous events have been highly successful, receiving positive feedback from participants from across the globe. The 2009 Workshop attracted more than 100 industry experts, which included representation from the major operators within the region.

2010 Workshop

This Workshop is the only major forum dedicated to addressing the changes in flow measurement practice and technology affecting this region and the 2010 Workshop will continue this legacy.

Workshop Fee

Three types of delegate attendance options are available to suit those with local commitments and those travelling from further afield:

Selected Day Attendance Only – This option allows delegates to pick and choose which days they wish to attend. Each day attendance includes access to the technical sessions, printed Workshop proceedings, lunch and refreshments.

Three Day Attendance – This option allows delegates to attend on all three days and will include access to technical sessions, printed Workshop proceedings, lunch and refreshments.

Inclusive – This fully inclusive package includes attendance at all technical sessions, printed Workshop proceedings, accommodation at the Sheraton Imperial on the nights of 2, 3 & 4 March, all meals, refreshments, and attendance at the Workshop Dinner at the British High Commissioner's Residence in Kuala Lumpur on 4 March.

We expect the Workshop and accommodation to be oversubscribed so places will be allocated on a first-come first-served basis.

Why Should I Attend This Event?

- Technical presentations by industry experts will help improve your knowledge and understanding, making you better equipped to meet the challenges faced by the industry, now and in the future.
- Discussion on the latest topics and issues in the industry today means you can make informed decisions within your business quicker and more efficiently.
- Strong support from local companies and operators in the oil & gas sector means you can develop your own business interests in the region by making new contacts through networking at this event.
- Manufacturers from around the world will be exhibiting the latest in cutting edge technology, helping you to make informed choices on equipment and service requirements, faster and more effectively.

Who should attend:

- Metering and instrumentation engineers
- Production and reservoir engineers
- Project managers
- Product suppliers
- R&D managers
- Government regulators
- Quality managers
- Asset managers
- Flow assurance specialists

Training Courses

The Workshop will be accompanied by two optional training courses: Measurement Uncertainty Training Course on Monday 1 March and Multiphase Metering Training Course on Friday 5 March.

Registration, Enquiries & Administration

Bookings can be made online at www.tuvnel.com/events.aspx or alternatively, complete and return the booking form to the Events Team either by fax or email. Full address details can be found at the back of this flyer.

Payment is required to be made by credit card only.

Exhibition and Sponsorship Opportunities

Suppliers of equipment and services are invited to sponsor and exhibit at the Workshop. This will give your company a profile in the final programme, in addition to a stand at the exhibition. Please contact the address on the back page for further details.

Prayer Times

The organisers have taken every opportunity to accommodate prayer times within the programme but hope that delegates will feel free to enter and leave the Workshop as appropriate.

Members of the Technical Committee

The Committee have input to the content and direction of the Workshop. Papers selected by the Committee are based on their relevance to industry and the quality of content.

- Dr Brian Millington (Chairman), TUV NEL, bmillington@tuvnel.com
- Mr Arumugam Amawoty, Sarawak Shell Berhad
- Mr Steve Baldwin, Chevron ETC
- Mr Richard Britton, Saudi Aramco
- Mr Zainal Din, PMU PETRONAS
- Mr Ahmad Khairiri Abdul Ghani, PETRONAS Carigali Sdn Bhd
- Mr Adrian Korybutiak, ExxonMobil Australia P/L
- Mr Kenneth Olsvik, Roxar
- Dr Tim Ong, BAKER HUGHES ProductionQuest
- Dr Bruno Pinguet, Schlumberger
- Miss Susan Tough, TUV NEL
- Mr Edi Wahyudi, BPMIGAS

TUV NEL

TUV NEL is a leading provider of pipeline fluid management services to the global petroleum industry. We have an impressive track record in the development, design and application of leading-edge technology. We provide consulting, training, R&D and laboratory testing services in the following areas:

- Flow Measurement (oils up to 1500 cSt, gas, water, wet gas, multiphase & fluids)
- Consultancy in all key flow areas
- Thermal Engineering & Heat Transfer
- Erosion Assessment and Validation
- Flow Calibrations in the UK National Test Facility
- Environmental (produced water, oil-in-water, emissions and carbon capture & storage)

TUV NEL is part of the TÜV SÜD Group, a leading international service organisation. Around 14,000 employees are represented at more than 600 locations throughout the world.

For further details on how TUV NEL can help your business, please visit our website: www.tuvnel.com or contact us directly.

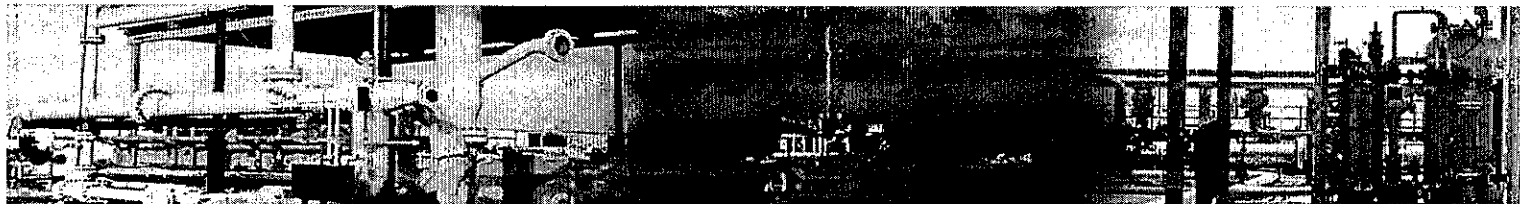


Tuesday 2 March

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| <p>08:00 - 11:30 Workshop Exhibition Set-Up</p> <p>12:00 - 14:00 REGISTRATION & LUNCH</p> <p>14:00 - 14:10 Welcome Address
Chairman of Event
Brian Millington, TUV NEL – UK</p> <p>14:10 - 14:30 Keynote Address</p> | <p>09:30 - 10:00 OIML R 137-1 and the First Ultrasonic Meter to be Fully Tested to Accuracy Class 0.5
Skule E. Smørgrav and Atle K. Abrahamsen, FMC Measurement Solutions – Norway</p> <p>10:00 - 10:30 Ultrasonic Flow Measurement for High Speed Flares Using Advanced Probe Design
Peter Tan Hock Lee, SICK Optic-Electronic Pte. Ltd – Singapore
Gerard Klooster, Ekkehard Riedel, Toralf Dietz and Volker Herrmann, SICK AG – Germany</p> <p>10:30 - 11:00 COFFEE</p> |
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- Session 1 New Technologies**
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| <p>14:30 - 15:00 Study of Positive Displacement Performance in Truck Loading Application
Yousif A. AlJumah and Sulaiman H. AlRoumi – Saudi Arabian Oil Company (Saudi Aramco) – Saudi Arabia</p> <p>15:00 - 15:30 Offsite Proving of High Accuracy Petroleum Meters
Raymond Kalivoda, FMC Technologies – USA</p> <p>15:30 - 16:00 COFFEE</p> <p>16:00 - 16:30 Calibration of Liquid Ultrasonic Meters Using Small Volume Provers
Gregor Brown, Caldon Ultrasonics, Cameron Measurement Systems – UK
Terry Cousins, Don R. Augenstein and Bobbie Griffiths, Caldon Ultrasonics, Cameron Measurement Systems – USA</p> <p>16:30 - 17:00 Development of a Tracer Method to Check Flowmeters
Henk Riezebos and Gert J. van Essen, KEMA – The Netherlands</p> <p>19:30 DINNER</p> | <p>Session 3 Diagnostic Technology Developments - 1</p> <p>11:00 - 11:30 Ormen Lange Real Time Flow Assurance System, the Advantage in Monitoring and Operation of the Field
Randi Moe, FMC Technologies – Singapore
Glenn Gahr Lunde and Yee Ling Siow, FMC Technologies – Singapore</p> <p>11:30 - 12:00 Use of Dual-Modality Tomography for Complex Flow Visualisation
Amy Ross and Norman Glen, TUV NEL – UK
Gary Bolton and Changhua Qiu, ITS Manchester – UK</p> <p>12:00 - 12:30 Development of a New Mass Flow Meter Concept with Diagnostic Capabilities
Jim Storer and Edgar Schroeder, VorTek Instruments, LLC – USA
Richard Steven, DP Diagnostics Inc. – USA</p> <p>12:30 - 14:00 LUNCH</p> |
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Wednesday 3 March

- Session 2 Gas Ultrasonic**
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|---|---|
| <p>09:00 - 09:30 Optimized Parameter Control in Ultrasonic Gas Flow Meter Manufacturing to Ensure Reliable Out of the Box Performance
Koos van Helden, Toralf Dietz and Volker Herrmann, SICK AG – Germany
Peter Tan Hock Lee, SICK Optic-Electronic Pte. Ltd – Singapore</p> | <p>Session 4 Standards</p> <p>14:00 - 14:30 Venturi Tubes in Wet Gas - Improved Models for the Over-Reading and the Pressure-Loss Ratio Method
Emmelyn Graham and Michael Reader-Harris, TUV NEL – UK</p> <p>14:30 - 15:00 The Impact of ISO 17089 for Manufacturers of Gas Flow Metering Equipment
Hilko den Hollander, KROHNE Oil & Gas – The Netherlands</p> <p>15:00 - 15:30 COFFEE</p> |
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Session 5 Diagnostic Technology Developments - 2

- 15:30 - 16:00 The Measurement of 4 Phases in Diluent Environmental with Only the Use of a Venturi and Multi-Energy Gamma Ray Combination
Onerazan Bornia and Bruno Pinguet, Schlumberger – Venezuela
Jose Caldera, PDVSA San Tomé – Venezuela
- 16:00 - 16:30 A New Wireless Sensor-based Tomographic Device to Determine the Liquid Saturation in a Multiphase Flow
Mahmoud Meribout and Mohammed Chaklab, Petroleum Institute – United Arab Emirates
- 19:30 DINNER

Thursday 4 March

Session 6 Coriolis Developments

- 09:00 - 09:30 An Evaluation Study of a High Capacity Straight-Tube Coriolis Mass Flowmeter
Tao Wang and Yousif Hussain, KROHNE Ltd – UK
- 09:30 - 10:00 Methods for Verification of Coriolis Meter
Karl Stappert and Naimish Raval, Micro Motion, Inc. – USA
- 10:00 - 10:30 Influence and Compensation of Process Parameters on Coriolis Meters with a View to Custody Transfer of Hydrocarbon Products
Peter Tschabold, Vivek Kumar and Martin Anklin, Endress + Hauser Flowtec AG – Switzerland
- 10:30 - 11:00 COFFEE

Session 7 Multiphase Meter Technology Advancement

- 11:00 - 11:30 Emulsion and Impact on Multiphase Flow Meter Technologies
Cheng-Gang Xie, Schlumberger Research Centre – UK
Bruno Pinguet, Schlumberger – France
- 11:30 - 12:00 Improving Measurement Quality and Meeting Changing Operator Challenges with the Multiphase Meter
Lars Anders Ruden and Morten Brandt, Roxar Flow Measurement AS – Norway

- 12:00 - 12:30 Three Phase Wet Gas Meter Response in Extremely High GVF Flowing Conditions
Sébastien Cadalen, Geoservices – France
- 12:30 - 13:00 Thermal In Situ Production of Extra Heavy Oil: Improvement with a Commercial Nucleonic Multiphase Flow Meter of the Conventional Metering Issues
Bruno Pinguet, Jean Luc Roudil and Philippe Pechard, Schlumberger – France
Vincent Arendo and Fabrice Dang, TOTAL – France
- 13:00 - 14:30 LUNCH

Session 8 Ultrasonic Technology

- 14:30 - 15:00 Ultrasonic Gas Flow Measurement at an LNG Plant
Bernhard Funck, Flexim GmbH – Germany
- 15:00 - 15:30 An Ultrasonic Flow Meter for Custody Transfer Measurement of LNG
Herman Hofstede, Jankees Hogendoorn and André Boer, KROHNE Oil & Gas – The Netherlands
- 15:30 - 16:00 COFFEE
- 16:00 - 16:30 Testing the Performance of an Ultrasonic Clamp-on Flow Meter
Gert J. van Essen and Henk J. Riezebos, KEMA – The Netherlands
- 16:30 - 17:00 Fiscal Measurement Philosophy for a Ultra Large Gas Block and 1400 km Transmission Cross Country Pipeline in Asia Using Over Forty Gas Ultrasonic Measurement Systems - A Case Study
Trilochan Gupta, Emerson Process Management Asia Pacific Pvt Ltd. – Singapore
- 17:00 CLOSING SPEECH
- 19:30 PRE-DINNER RECEPTION & WORKSHOP DINNER
British High Commissioner's Residence, Kuala Lumpur

Optional Training Courses

Measurement Uncertainty

Monday 1 March
09:00 - 16:30

Introduction & Objectives

Measurement is fundamental to the control of quality, efficiency and safety. It is vital that all those using industrial measurement recognise that measurement is not an exact science. Understanding the magnitude of the uncertainty associated with any measurement is the first step to improving accuracy. An ability to identify the key issues affecting accuracy is the crucial step in ensuring that limited resources are correctly targeted in any drive to improve accuracy.

This course will introduce delegates to the techniques required to identify what affects measurements and by how much. By ranking the effects, delegates will be able to guard against invalid conclusions and ensure that the key measurements are targeted for investment in new instrumentation.

The course is designed to impart an understanding of measurement uncertainty. Using examples tailored to the oil and gas sector, delegates will learn the appreciation of the impact of measurement uncertainty on the oil and gas industry, identify the important sources of uncertainty in measurement systems and receive practical guidance on the design of measurement techniques for improved uncertainty.

Who Should Attend?

- Research and development engineers
- Instrumentation engineers
- Quality managers
- Technical managers

Course Director

Norman Glen has worked on a wide range of projects including heat exchanger fouling, stack emissions monitoring, the application of data reconciliation techniques to flow measurement in pipe networks and the traceable calibration of industrial densitometers. All of these areas require understanding of the key effects of uncertainty of measurement on the results obtained. By drawing on this diverse background, he is able to illustrate key learning points relating to the use of uncertainty for system design and data analysis.

The course will enable delegates to identify the causes of inaccuracy. By the end of the course, delegates will be able to identify which sources of inaccuracy to target in order to improve the overall measurement system.

Course Fee: £450

Multiphase Metering

Friday 5 March
09:00 - 16:30

Introduction & Objectives

The development, evaluation and use of multiphase flow meters, has been a major focus and growth area in the oil and gas industry worldwide in the last 10 years. The technology has now advanced to the point where operators are often considering the installation of multiphase meters as an option in new field developments and tie-backs.

This course offers an introduction to multiphase flow metering, measurement technology and the evaluation of multiphase flow meter performance.

Many operators now realise that they will only be able to exploit marginal fields using this technology for subsea applications. There is also a growing acceptance of the value of multiphase meters for well testing applications. A considerable amount of experience has now been gained and the industry is working closely with the regulator and manufacturers to fully realise the benefits. However, the technologies used in multiphase metering are still unclear to many, and the perceived performance of such meters is often based on anecdotal evidence of poor performance or over ambitious claims of very high performance.

Who Should Attend?

- Metering engineers
- Pipeline engineers
- Production engineers
- R&D managers

Course Director

Amy Ross joined TUV NEL in July 2008. Her first projects have been in the areas of multiphase flow and process tomography. She specialises in characterising complex flows within the UK National Standard Measurement Flow Facilities. In addition, Amy has also carried out work involving oil-in-water monitors. Before commencing her degree at University of the West of Scotland, Amy completed a 12-month internship with Schlumberger Cambridge Research as part of their fluid mechanics department.

The course will provide a valuable outline of multiphase flow metering technology and its use worldwide, giving the metering engineer and manager a sound knowledge on which to base future cost- saving decisions.

Course Fee: £450

Please note that the fee includes participation in the course, lunch, refreshments, certificate of attendance and comprehensive course notes. These notes form useful reference material for delegates to utilise in the future. The fee does not include accommodation.

Please complete both sides.

Please copy this form for any additional delegates.

Please tick as required

Workshop – Selected Day Attendance Only

(choose which days you wish to attend – does NOT include accommodation or dinners)

- | | | |
|--------------------------|---|-------|
| <input type="checkbox"/> | 2 March Only – Day Attendance – Hydrocarbon Flow Measurement Workshop | £ 260 |
| <input type="checkbox"/> | 3 March Only – Day Attendance – Hydrocarbon Flow Measurement Workshop | £ 450 |
| <input type="checkbox"/> | 4 March Only – Day Attendance – Hydrocarbon Flow Measurement Workshop | £ 450 |

Workshop – Three Day Attendance:

(full three day attendance – does NOT include accommodation or dinners)

- | | | |
|--------------------------|---|-------|
| <input type="checkbox"/> | 2, 3 & 4 March Attendance – Hydrocarbon Flow Measurement Workshop | £ 950 |
| <input type="checkbox"/> | I would like to attend the Workshop Dinner on 4 March
(limited availability – booked on first-come first-served basis) | £ 75 |

Workshop – Inclusive Option

- | | | |
|--------------------------|--|--------|
| <input type="checkbox"/> | 2, 3 & 4 March Attendance – Inclusive of Dinners and Accommodation – Hydrocarbon Flow Measurement Workshop
(includes dinner B&B accommodation and meals on 2, 3 & 4 March – including Workshop Dinner on 4 March) | £ 1350 |
|--------------------------|--|--------|

Additional Accommodation

Inclusive Workshop delegates have accommodation booked for 2, 3 and 4 March. If you require additional bed & breakfast accommodation outwith the above dates please contact the hotel directly.

Training Courses

- | | | |
|--------------------------|---|-------|
| <input type="checkbox"/> | Measurement Uncertainty Delegate (1 March – accommodation NOT included) | £ 450 |
| <input type="checkbox"/> | Multiphase Metering Delegate (5 March – accommodation NOT included) | £ 450 |

Package Booking Reward

- | | | | |
|--------------------------|------------------------------------|------|-------|
| <input type="checkbox"/> | Workshop plus one day of training | less | £ 100 |
| <input type="checkbox"/> | Workshop plus two days of training | less | £ 150 |
| <input type="checkbox"/> | Discount for presenting author | less | £ 465 |

INVOICE TOTAL

£



Delegate Booking Form

9th South East Asia Hydrocarbon Flow Measurement Workshop

2 - 4 March 2010

Full Name (inc. title) _____
Preferred Name for Badge _____
Job Title _____
Company _____
Address _____

Postcode _____ Country _____
Telephone _____
E-mail _____

We expect the event to be heavily subscribed. Places are strictly limited and are allocated on a first-come, first-served basis. Your place will be confirmed upon receipt of a completed booking form. If you do not receive confirmation within five working days please contact TUV NEL.

Method of Payment
(Payment by credit card only)

Visa Mastercard Amex Diners Card Start Date _____ Expiry Date _____

Card No _____ Security Code _____ (3 digits on back of card)

Card Holder's Name _____
Signature _____

Credit card receipt address (if different from above) _____

Company VAT number (EC member states only - COMPULSORY) _____

Where did you hear about this event? _____

Cancellation Policy
In order to receive a partial refund, notice of cancellation must be received in writing by TUV NEL Ltd not later than 14 days prior to the commencement date of the event. All such cancellations are subject to a fee of 25% of payments received by TUV NEL Ltd prior to cancellation. No refund shall be made under any circumstances for any notice of cancellation received after this 14 day period however a substitute delegate may be named, provided that TUV NEL Ltd is notified in writing of such substitution prior to the commencement date of the event. TUV NEL Ltd reserves the right to cancel the event due to unforeseen circumstances. TUV NEL Ltd is not liable for any expenses incurred by the delegate. This programme may be subject to change due to circumstances beyond the control of the organisers.

Venue Details
Sheraton Imperial Kuala Lumpur, Jalan Sultan Ismail, Kuala Lumpur 50250, Malaysia
Tel: +603 2717 9900 www.starwoodhotels.com/kualalumpur

Please complete and return this form to the Events Team,
Fax back on: **+44 (0) 1355 272999**

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East Kilbride, Glasgow G75 0QF, UK

Booking Hotline: +44 (0) 1355 272858
Email: events@tuvnel.com
Online Booking: www.tuvnel.com/events.aspx

Signed: _____ Date: _____