



nel

oil & gas services



8th International South East Asia Hydrocarbon Flow Measurement Workshop

4 - 6 March 2009

Wet Gas Metering Training Course

2 March 2009

Measurement Uncertainty Training Course

3 March 2009

Sheraton Imperial Kuala Lumpur, Malaysia

Organised by

TUV NEL Ltd, EAST KILBRIDE, GLASGOW, UK

BOOKING HOTLINE: +44 (0) 1355 272858

ONLINE BOOKING: www.tuvel.com/events.aspx

Sole Official Publication:



Committee Contributions from:

- BAKER HUGHES ProductionQuest
- BP
- BPMIGAS
- Chevron
- ExxonMobil Australia P/L
- PETRONAS Carigali Sdn Bhd
- PMU PETRONAS
- Roxar
- Sakhalin Energy Investment Company (SEIC)
- Saudi Aramco
- Sarawak Shell Berhad
- Schlumberger
- Shell E+P Russia
- TUV NEL

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Introduction

Appropriate flow measurement is of great importance in the production of oil and gas, allowing improvements in recoveries to be made and ensuring the accuracy of custody transfer. For everyone involved in hydrocarbon flow measurement, it is important to share the available knowledge to maximise the benefits that measurement can bring.

Workshop Background

The South East Asia Hydrocarbon Flow Measurement Workshop was established in 2001 to provide a forum for the exchange of flow measurement experience in the region and to draw on knowledge from oil/gas producing areas around the world. Over the years, the workshop has brought together operators, regulators, equipment suppliers, engineering contractors, service companies and researchers to share information and experience. It is the only major forum to address the changes in flow measurement practice and technology which affect this region.

The previous seven events have been highly successful, receiving positive feedback from all participants. The 2008 workshop attracted more than 120 industry experts which included representation from the major operators within the region. Here is what some of the previous delegates have said about the workshop:

“Event is a good platform where the experts from the industry can share their experiences and ideas with others and provide us, the young engineer with a larger picture of the industry.”

“This was one of the most informative and useful workshops I have attended. It was very interesting to meet, interact and network with people around the world working in this field and attend the very informative talks.”

“The workshop provided a good spread of papers which covered the basics of the subject discussed, before moving to methods and ending with more advanced details.”

Technical Content

Highlights for the eighth South East Asia Hydrocarbon Flow Measurement Workshop programme will include:

- PETRONAS Research Sdn Bhd discussing multiphase flow meter experience
- Petroleum Development Oman (PDO) experience in well testing at high GVF and high pressure conditions
- PETRONAS Research Sdn Bhd experience on laser doppler velocimetry for multiphase flow meter application

Format

The technical papers which are presented during the workshop are all supported by full written papers which form invaluable reference material for future use.

Abstracts of papers to be presented at the eighth workshop are available to view at www.tuwnel.com/seafmw.aspx

Networking plays an important part of the workshop so suitable time and environments have been set aside to do this.

A supporting exhibition will run during the main event to allow equipment

suppliers and service companies to discuss developments in their products and services.

Workshop Fee

Two types of delegate attendance, split to suit those with local commitments and those traveling from further afield, are on offer.

Selected Day Attendance Only – This newly introduced option allows delegates to choose which days they wish to attend. Each day attendance includes access to the technical sessions, printed proceedings, lunch and refreshments. This delegate registration fee varies from £450 for one day to £950 for the full workshop – fee details can be found on the booking form.

Inclusive – This fully inclusive package includes attendance at all technical sessions, printed proceedings, accommodation at the Sheraton Imperial Kuala Lumpur on the nights of 3rd, 4th & 5th March, all meals, refreshments, and attendance at the gala dinner on 5th March. This delegate registration fee is £1350.

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

Training Courses

The workshop will be preceded by two optional training courses. The Wet Gas Metering Training Course on 2nd March and the Measurement Uncertainty Training Course on 3rd March.

Full details on these courses can be found in this flyer.

Who should attend:

- Metering and instrumentation engineers
- Production and reservoir engineers
- Hydrocarbon accountants
- Product suppliers
- Metering system vendors
- Government regulators
- Researchers



Mentor and Student Package

To assist with career development and encourage the participation of less experienced measurement staff, we have introduced a limited number of 'Mentor and Student' packages. If a senior staff member wishes to mentor a student or junior staff member during the workshop, then the student may be eligible for a discount of £620 off the full delegate fee, when accompanied to the workshop by a delegate who is attending the whole event.

The discount is awarded to companies who recognise the value of staff development and as such, each application should be accompanied by a brief (max 250 word) note from the student explaining why attendance would be beneficial. This note should be countersigned by the mentor and both workshop applications submitted at the same time.

Each application will be assessed by TUV NEL and is only available to students attending the full workshop.

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 by either 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.

Partners Programme

It is hoped that delegates will use this opportunity to invite their partners or spouses to share in the experience of Kuala Lumpur. For a fee of £250 delegates who are staying at the Sheraton Imperial can share a twin/double room and their partner can participate in all meals as well as participating in the organised partners programme of events.

Prayer Times

The organisers apologise that it has not been possible to fully accommodate prayer times within the programme but hope that delegates will feel free to enter and leave the workshop as appropriate.

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 in order to reduce production costs and increase profitability, whilst maintaining safety. We provide consulting, training, R&D and laboratory testing services in the following areas:

- Flow Measurement (oil, gas, water, wet gas, multiphase & heavy oil)
- Produced Water Systems
- Computation Fluid Dynamics Modelling and Interpretation
- Environmental (produced water, emissions and oil-in-water)
- Erosion Assessment and Validation
- Umbilical Acceleration Life Testing
- Calibration of Metering Systems

TUV NEL is part of the TUV SÜD Group, the leading international service organisation. With over 13,000 employees, it is represented worldwide at more than 600 locations. For further details on how TUV NEL can help your business, please visit our website www.tuvnel.com or contact us directly.

Members of the Technical Committee

The committee have input to the content and direction of the workshop. They have selected papers based on their relevance to industry and the quality of content.

- Dr Gary Miller (Chairman), TUV NEL, [gmiller@tuvnel.com](mailto:gmillier@tuvnel.com)
- Mr Steve Baldwin, Chevron ETC
- Mr Haridas Bhaskaran, Sakhalin Energy Investment Company (SEIC)
- Mr Richard Britton, Saudi Aramco
- Mr Zainal Din, PMU PETRONAS
- Ir Hj Ahmad Khairiri Hj Abdul Ghani, PETRONAS Carigali Sdn. Bhd.
- Dr Andrew Hall, BP
- Mr Adrian Korybutiak, ExxonMobil Australia P/L
- Mr Jim Marshall, Shell E+P Russia
- Mr Richard Ngau, Sarawak Shell Berhad / EP Asia Pacific
- Mr Kenneth Olsvik, Roxar
- Dr Tim Ong, BAKER HUGHES ProductionQuest
- Dr Bruno Pinguet, Schlumberger
- Miss Susan Tough, TUV NEL
- Mr Edi Wahyudi, BPMIGAS
- Mr Wan Hassan Wan Mamat, PETRONAS Carigali Sdn. Bhd.



Monday 2 March

- 08:30 - 09:00 Training Course Registration
- 09:00 - 16:30 Wet Gas Metering Training Course

Tuesday 3 March

- 08:00 - 09:00 Training Course Registration
- 09:00 - 16:30 Measurement Uncertainty Training Course
- 19:00 - 21:00 WORKSHOP DELEGATE
REGISTRATION & WELCOME DINNER

Wednesday 4 March

- 09:00 - 09:30 DELEGATE REGISTRATION & COFFEE
- 09:30 - 09:40 Welcome Address
Chairman of Event
Gary Miller, TUV NEL – UK
- 09:40 - 10:00 Keynote Speech

Session 1 Multiphase Metering

- 10:00 - 10:30 Multiphase Flow Meter Experience in
PETRONAS
Maung Maung Myo Thant, Duhita Sharma
and Aida Azni Zulkifli, PETRONAS
Research Sdn Bhd – Malaysia
- 10:30 - 11:00 COFFEE
- 11:00 - 11:30 An Investigation into Multiphase Flow
Streams Containing a Viscous Oil
Component
Christopher Mills, Gary Miller and Neil
Barton, TUV NEL – UK
Andrew Parry and Cheng-Gang Xie,
Schlumberger – UK
Bruno Pinguet, Schlumberger – France
- 11:30 - 12:00 Laser Doppler Velocimetry for Multiphase
Flow Meter Application
Melissa Semanis, PETRONAS Research
Sdn Bhd – Malaysia
Maung Maung Myo Thant and M Shahrul
Amir Zamberi, PETRONAS Research Sdn
Bhd – Malaysia
- 12:00 - 13:30 LUNCH & NETWORKING

Session 2 Gas Ultrasonics

- 13:30 - 14:00 Diagnostic Capabilities of Ultrasonic
Clamp-on Flow Meters
Mathias Panicke, FLEXIM GmbH –
Germany
- 14:00 - 14:30 The Benefits of a Fully Self Diagnosing
Gas Ultrasonic Meter
Koos van Helden and Volker Herrmann,
SICK Engineering GmbH – Germany
John Lansing, SICK MAIHAK Inc. – USA
- 14:30 - 15:00 COFFEE
- 15:00 - 15:30 Maintaining Measurement Accuracy Using
Gas Ultrasonic Flow Meter Diagnostics
Daniel Hackett, Emerson Process
Management – Daniel Measurement &
Control Division – USA
- 15:30 - 16:00 Examination of Ultrasonic Flow Meter in
CO₂-rich Applications
Peter Tan, SICK Optic-Electronic Pte Ltd
– Singapore
Andreas Ehrlich and Toralf Dietz, SICK
Engineering GmbH – Germany

Session 3 Field Experience

- 16:00 - 16:30 The Challenge of Well Testing on Old Test
Separators with Reference to
Manufacturing Locally in South East Asia
Vijay Kumar, PETRONAS Carigali –
Malaysia
Jason Yew, KROHNE Oil & Gas –
The Netherlands
- 16:30 - 17:00 Petroleum Development Oman (PDO)
Experience in Well Testing at High GVF
and High Pressure Conditions
Abdullah Nasser Al-Obaidani and Salim
Khalfan Al-Sibani, Petroleum Development
Oman – Oman
- 19:30 DINNER

Thursday 5 March

Session 4 Wet Gas

- 09:00 - 09:30 Tomography Powered 3-Phase Flow
Metering in the Wet Gas Regime
Øystein Lund Bø, Arnstein Wee and Hans
Olav Hide, Multi Phase Meters AS –
Norway
- 09:30 - 10:00 Cone Differential Pressure Meter
Horizontally Installed Wet Gas Flow
Performance
Richard Steven, CEESI – USA
- 10:00 - 10:30 COFFEE



Session 5 New Measurement Challenges

- 10:30 - 11:00 Combination of Venturi and Multi Energy Gamma Ray Breaks the Extra Heavy Oil Paradigm Beyond 20 Pa.s at Line Conditions
Bruno Pinguet and Onerazan Bornia, Schlumberger – France
Ana Marin, PDVSA – Venezuela
- 11:00 - 11:30 New Flow Computing Technology – Virtual Flow Computer
Bart van der Stap, KROHNE Oil & Gas – The Netherlands
- 11:30 - 12:00 Calibration of a Five Beam Ultrasonic Flowmeter for LNG at Cryogenic Temperatures
Asaad Kenbar, TUV NEL – UK
Peter van Brackel and Jeroen van Klooster, KROHNE Altometer – The Netherlands
- 12:00 - 13:30 LUNCH & NETWORKING

Session 6 Liquid Metering

- 13:30 - 14:00 Meter Proving with Small Volume Prover
Darren Heath and Roy Koh, Honeywell Enraf – UK
- 14:00 - 14:30 The Effect of Viscosity on Hydrocarbon Liquid Measurements
Thomas Kegel, CEESI – USA
Gordon Stobie, ConocoPhillips – USA
- 14:30 - 15:00 Traceable Calibration of Liquid Densitometers
Norman Glen, TUV NEL – UK
Douglas Griffin, Department of Energy and Climate Change – UK
- 15:00 - 15:30 COFFEE

Session 7 Gas Metering

- 15:30 - 16:00 Measurement of Forward and Reverse Natural Gas Flows in Closed Conduits by Differential Pressure Cone Flow Meters and Ultrasonic Meters
Philip Lawrence, Cameron Measurement Systems Inc – USA
Larry Whitaker, Enstor (Natural Gas Storage) Inc – USA
- 16:00 - 16:30 Ultrasonic Meter Recalibration
Gordon Stobie and Angela Floyd, ConocoPhillips – USA
- 19:30 PRE-DINNER NETWORKING RECEPTION
- 20:00 GALA DINNER

Friday 6 March

Session 8 Allocation & Accuracy

- 09:00 - 09:30 Features of Allocation Systems Incorporating Long Pipelines: How Apparently Simple Allocation Equations Can Lead to Bias in the Allocation System
Phillip Stockton, Smith Rea Energy Limited – UK
- 09:30 - 10:00 What Does Accuracy Mean to You?
Raymond Kalivoda, FMC Technology, Measurement Solutions – USA
- 10:00 - 10:30 COFFEE

Session 9 Liquid Ultrasonics

- 10:30 - 11:00 The Effects of High Viscosity/Low Reynolds Number Flow Conditions on Multipath Ultrasonic Flow Meters
Gregor Brown, Cameron – UK
Terry Cousins, Donald Augenstein and Herb Estrada, Cameron – USA
- 11:00 - 11:30 Fiscal and Allocation Measurement Philosophy for an Ultra Large Refinery in Asia using Over Eighty Liquid Ultrasonic Meters – A Case Study
Trilochan Gupta, Emerson Process Management Asia Pacific Private Ltd – Singapore
- 11:30 CLOSING COMMENTS AND LUNCH

Optional Training Courses

Wet Gas Metering Training Course

Monday 2 March
09:00 - 16:30

Introduction & Objectives

The requirement or desire to measure wet gas flows is becoming increasingly common in the oil and gas industry world-wide, including North Sea, Middle East, South East Asia and the Gulf of Mexico. Wet gas meters are being used or planned for many applications including well management, allocation metering and even fiscal metering. Consequently, the development of wet gas meters is currently a major focus for the industry.

The driving force behind much of this activity is significant cost reduction for marginal fields, with wells being metered prior to processing, enabling several fields to share common processing facilities.

Despite this recent increase in activity, wet gas flow measurement is still an uncertain area for many. This one-day training course offers an introduction to wet gas flow metering, wet gas meter technology and evaluation of wet gas meter performance. Delegates will enhance their understanding of the issues involved in wet gas measurement and the technologies available to achieve such measurement.

Who Should Attend?

- Metering engineers
- Pipeline engineers
- Production engineers
- Research and development engineers
- Instrumentation engineers
- Quality managers
- Technical managers

Course Director

Gary Miller is a senior oil and gas consultant at TUV NEL specialising in multiphase and wet gas metering. Gary has extensive experience in the flow measurement field, and for seven years was a senior development engineer (multiphase) for a leading flow meter manufacturer. He holds a PhD in experimental physics and instrumentation, and has a research background spanning more than 10 years at a variety European laboratories.

The course will provide a valuable outline of wet gas 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

Measurement Uncertainty Training Course

Tuesday 3 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.

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 which 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 in measurement and to estimate the magnitude of the inaccuracy. By the end of the course, delegates will be able to identify which sources of inaccuracy to target to improve the overall measurement system.

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 – Daily Attendance Options

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

- | | | |
|--------------------------|--|-------|
| <input type="checkbox"/> | Day Attendance – Hydrocarbon Flow Measurement Workshop – 4 March Only | £ 450 |
| <input type="checkbox"/> | Day Attendance – Hydrocarbon Flow Measurement Workshop – 5 March Only | £ 450 |
| <input type="checkbox"/> | Day Attendance – Hydrocarbon Flow Measurement Workshop – 6 March Only | £ 260 |
| <input type="checkbox"/> | Full Day Attendance – Hydrocarbon Flow Measurement Workshop – 4, 5 & 6 March | £ 950 |
| <input type="checkbox"/> | I would like to attend the Workshop Gala Dinner on 5 March | £ 75 |

Workshop – Inclusive Option

- | | | |
|--------------------------|--|--------|
| <input type="checkbox"/> | Inclusive of Dinners and Accommodation – Hydrocarbon Flow Measurement Workshop (4-6 March) | £ 1350 |
| <input type="checkbox"/> | I will be accompanied by a spouse/partner (who does not attend the technical sessions) | £ 250 |

His / her name is

Additional Accommodation

Inclusive workshop delegates have accommodation booked for 3, 4 and 5 March. If you require additional bed & breakfast accommodation out with the above dates please contact the hotel directly.

Training Courses

- | | | |
|--------------------------|---|-------|
| <input type="checkbox"/> | Wet Gas Delegate (2 March – accommodation NOT included) | £ 450 |
| <input type="checkbox"/> | Measurement Uncertainty Delegate (3 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 |
| <input type="checkbox"/> | Discount for mentored student | less | £ 620 |
- (applicable to Inclusive and Full Day Attendance options only)

INVOICE TOTAL

£



Booking Form

8th International South East Asia Hydrocarbon Flow Measurement Workshop 4 - 6 March 2009

Full Name (inc. title) _____	
Preferred Name for Badge _____	
Job Title _____	
Company _____	
Address _____ _____ _____	
Postcode _____	Country _____
Telephone _____	
E-mail _____	
<p>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.</p>	

Method of Payment (Payment Must Be Made By Credit Card)	
<input type="checkbox"/> Visa <input type="checkbox"/> Mastercard <input type="checkbox"/> Amex <input type="checkbox"/> Diners Card	Start Date _____ Expiry Date _____
Card No _____	Security Code _____ (3 digits on back of card)
Card Holder's Name _____	
Signature _____	
Invoicing address (if different from above) _____ _____ _____	
Company VAT number (EC member states only - COMPULSORY) _____	

Where did you hear about this event? _____

<p>Cancellation Policy Any cancellations must be received in writing at least 14 days prior to the commencement of the event. A cancellation fee of 25% will be incurred. Once within this period the booking cannot be cancelled or any fees refunded, but a substitute delegate can be named at any time before the programme begins, provided that TUV NEL Ltd is notified in advance. 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.</p> <p>Venue Details Sheraton Imperial Kuala Lumpur, Jalan Sultan Ismail, Kuala Lumpur 50250, Malaysia Tel: +603 2717 9900 www.starwoodhotels.com/kualalumpur</p>	<p>Please complete and return this form to the Events Team, Fax back on: +44 (0) 1355 272999</p> <p>TUV NEL Ltd East Kilbride, Glasgow G75 0QF, UK</p> <p>Booking Hotline: +44 (0) 1355 272858 Email: events@tuvnel.com Online Booking: www.tuvnel.com/events.aspx</p>
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Signed: _____ Date: _____