



**National Engineering Laboratory
North Sea Flow Measurement Workshop 2002**

Click on the lecture title to open up the PDF file:

Session 1

Paper 1.1 : Determination of Measurement Uncertainty for the Purpose of Wet Gas Hydrocarbon Allocation	Paper 1.2 : Production Measurement Management
Paper 1.3 : Determination of Measurement Uncertainty for the Purpose of Wet Gas Hydrocarbon Allocation	Paper 1.4 : Benefits Derived from the Application of Virtual Metering Production Simulation Software (VMSS3)
Paper 1.5 : Numerical Techniques for Uncertainty Modelling	



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Session 2

Paper 2.1 : Qualification of Ultrasonic Flow Meters for Custody Transfer of Natural Gas Using Atmospheric Air Calibration Facilities	Paper 2.2 : Operation of Ultrasonic Flow Meters at Conditions Different Than Their Calibration
Paper 2.3 : Proving of Multi-Path Liquid Ultrasonic Flowmeters	Paper 2.4 : Analysis and Elimination of Disturbing Flowrates Deviations Between A 24" ANSI 600 Ultrasonic Meter and Vortex Meter in a Natural Gas Meter Station



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Click on the lecture title to open up the PDF file:

Session 3

Paper 3.1 : Evaluation of Clamp-on Ultrasonic Gas Transit Time Flowmeters for Natural Gas Applications	Paper 3.2 : A New Ultrasonic Gas Flow Meter As A Base For A Natural Gas Energy System
Paper 3.3 : Energy Flow and Wobbe Metering Based on Velocity of Sound Measurements and Using a Corrective Technique	Paper 3.4 : Recent Developments in Ultrasonic Metering



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Session 4

Paper 4.1 : New Compact Wet Gas Meter Based on a Microwave Water Detection Technique and Differential Pressure Flow Measurement	Paper 4.2 : Wet Gas Metering with V-Cone Meters
Paper 4.3 : Field Installation of Smartvent Wet Gas Flow Meters at Bintang, Malaysia	



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Session 5

Paper 5.1 : Multiphase “Measurement”	Paper 5.2 : Multiphase Flow Metering Per Well – Can It Be Justified?
Paper 5.3 : Background and Operational Experience of Multiphase Metering in the Safaniya Field- Offshore Saudi Arabia	Paper 5.4 : Kerr-McGee North Sea (UK) Limited – Gryphon Alpha FPSO Monetary Application for Multiphase Meters
Paper 5.5 : Use of Multiphase Meters in Process Control for Oil Field Well Testing: Novel Level Controls and Resulting Performance Enhancement	



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Session 6

Paper 6.1 : Transit Time Simulations in a Turbulent-like Fully Developed Velocity Profile Using Ray- Tracing	Paper 6.2 : The Effect of Varying Reynolds Number on a Zanker Flow Conditioner
Paper 6.3 : CFD Analyses of the Influence of Flow Conditioners on Liquid Ultrasonic Flow Metering. Oseberg Sor – A Case Study	Paper 6.4 : Investigation of the Installation Effects on Ultrasonic Flowmeters and Evaluation of Computational Fluid Dynamics Prediction Methods



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Session 7

Paper 7.1 : An In Depth Analysis on the Selection Criteria for 4 Gas Metering Technologies: Orifice, Turbine, Ultrasonic, Coriolis	Paper 7.2 : Development of a Diagnostics Tool for Gas Turbine Meters: the "Acculert G – II"
Paper 7.3 : Venturi Tubes: Improved Shape	Paper 7.4 : Recent Developments in the UK Regulatory Regime