

Training Title

LIQUID & GAS FLOW METERING

Training Duration

5 days

Training Venue & Dates

Ref: IC030	<u>Liquid & Gas Flow Metering</u>	5	02 – 06 Sept 2018	\$4,250	Dubai
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In any of the 5 star hotels. The exact venue will be informed later.

Training Fees

- 4,250 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees

Language: English

COURSE OVERVIEW

COURSE DESCRIPTION

Flow measurement is vital to many industrial sectors: water supply, oil Production, gas distribution, and much of the process and pharmaceutical industry depend on flow measurement for quality control and custody transfer. To obtain the required level of accuracy at an appropriate price, it is crucial that the right meter is selected for the application and that it is appropriately used. However, the flow meter user is faced with a bewildering array of technologies and conflicting claims from manufacturers.

This foundation-level course is a precursor to our Principles and Practices of Flow Measurement Course and enables delegates to understand the issues surrounding flow measurement. It also provides the delegate with an unbiased view of the various technologies available and the basic knowledge required to make informed choices. Key aspects of flow measurement, all general meter types and their applications will be discussed and explained.

COURSE OBJECTIVE

Upon completion of this course, Participant will gain the following:

- Learn fundamentals of hydrocarbon accounting and sampling techniques and how to accurately report HC measurements.
- Describe principles of operation of different flowmeter technologies
- Calculate the effects of fluid properties on flowmeter performance
- Evaluate flowmeter performance statements and compare them with application requirements
- Specify and select the appropriate flowmeters for different applications
- Create installation detail drawings to obtain flowmeter accuracy and performance
- Identify requirements for flowmeter calibration
- Solve typical flow measurement problems
- Perform flowmeter compensation and totalization calculations
- Plan maintenance activities required by different flowmeter technologies
- Size flow elements for specific applications

TRAINING METHODOLOGY

A highly interactive combination of lecture and discussion sessions will be managed to maximize the amount and quality of information, knowledge and experience transfer. The sessions will start by raising the most relevant questions, and motivate everybody finding the right answers. The attendants will also be encouraged to raise more of their own questions and to share developing the right answers using their own analysis and experience

- All attendees receive a course manual as a reference.
- 30% Lectures
- 30% Workshops & Work Presentations
- 20% Case Studies & Practical Exercises
- 20% Videos & General Discussions

WHO SHOULD ATTEND?

- Personnel with a basic knowledge of the oil & gas business, especially pipeline, refining and production operations
- Measurement operators, technicians, and engineers who would like to get a more firm foundation and/or are new to liquid volume measurement
- Anyone who is new to flow measurement both in a technical and non-technical capacity including technicians, engineers, sales people, administrators and managers. The course is intensive but will make an effective use of delegates' time

COURSE OUTLINE

Day 1

Module 1: Basic Properties of Fluids

- Basic fluid properties
- Velocity profiles
- Reynolds number
- Disturbed flow profiles
- Flow measurement
- Mass flow rate
- Multi-phase flows
- Flow range and rangeability
- Pipe sizes
- International accounting standards
- Accounting principles and rules
- Fundamentals of Quality Management System (QMS)

Day 2

Module 2: Field Instrument and Performance

- Field instrument technologies
- Fiscal quality measurement and methods
- Multiphase measurement
- Appropriate meter selection
- Calibration and methods
- Measurement standards
- Primary, secondary and tertiary measurement equipment
- Sampling

Module 3: Operating Procedures

- Introduction
- Operating principles
- Flow conditions
- Flow conditioners and types
- Startup
- Fault conditions and mis-measurements
- Flow computers/ calculation
- Control charts

Day 3

Module 4: Flow meters

- Positive displacement meters

- Inferential meters
- Oscillatory flow meters
- Differential pressure meters
- Orifice factors (Basic calculation)
- Variable area meters
- Electromagnetic flow meters
- Ultrasonic flow meters
- Mass flow measurement

Day 4

Module 5: Installation, Maintenance and Repairs

- Installation
- Commissioning
- Maintenance
- Fault diagnostics and troubleshooting
- Personal measurement training

Module 6: Meter Proving

- The need to prove
- Meter proving
- Meter Management
- Factors affecting meter performance
- calculations of meter factors
- Repeatability and accuracy
- Pipe provers, Uni-directional Provers and Bi-directional Provers

Day 5

Module 7: Reports/ Documentation

- Daily, monthly and annual fuel energy forecasts and reports
- Analysis and verification of GOR and sampling test results
- Documentation procedure
- Documentation control

Module 8: Typical examples and Exercises

NOTE:

Pre & Post Tests will be conducted

Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.



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