BLACKBIRD FOR TRAINING

Oil & Gas Processing Flow Measurement

3 – 7 May 2027
Toronto (Canada)



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Introduction

Accurate flow measurement is crucial to the success of oil and gas operations. Whether in oil drilling, gas development, or oil and gas processing facilities, precise flow measurement ensures operational efficiency and safety. This course is designed to provide essential knowledge and hands-on training to facility operators, technicians, and engineers involved in flow measurement processes. Participants will not only learn theoretical concepts but also practical applications to improve oil flow measurement and gas flow measurement in real-world scenarios. The training emphasizes ongoing support, encouraging attendees to bring questions and challenges from their operational environments, even after the course concludes.

Course Objectives

- Understand Legal and Commercial Metering Requirements: Learn about the legal requirements and commercial aspects of flow measurement in the oil and gas industry, including fiscal metering.
- Appreciate Design Criteria and the Importance of Accuracy: Recognize the importance of accurate flow measurement and understand the key design considerations for flow metering systems.
- Understand Measurement Concepts and Types of Error: Learn about common measurement errors and how they impact the flow data in oil and gas processing.
- Comprehend Basic Concepts of Gas and Liquid Metering: Gain an understanding of the principles of operation for gas metering, liquid metering, and the associated proving and sampling equipment.
- Learn Flow Computer and Supervisory Systems: Understand the hardware and software components used in flow computers, prover control micro-computers, and supervisory systems.
- Evaluate Turbine Meter Calibration: Learn to analyze calibration results for turbine meters and assess their validity through control charts.



Course Outlines

Day 1: Gas System Overview

- Overview of Typical Gas Systems: Understanding gas pipeline systems, the role of operators, and how flow measurement fits within gas sales contracts.
- Introduction to Fiscal Metering: Basics of fiscal metering and its role in ensuring the accuracy of measurement for commercial transactions.
- Flow Measurement Techniques: Study primary flow measurement devices such as orifice meters, venturi meters, and flow nozzles, along with secondary instrumentation like pressure, temperature, and density measurements.
- Flow Measurement Accuracy and Calibration: Learn how to calculate uncertainty in flow measurements and how to use calibration procedures to ensure accurate flow data.

Day 2: Gas Quality and Measurement Systems

- Gas Quality Measurement: Dive into gas quality analysis and the tools needed, including gas chromatographs, relative density analyzers, and moisture analyzers.
- Gas Chromatography: An introduction to gas chromatography and its role in gas quality measurement.
- Computer Systems in Flow Measurement: Overview of the hardware and software used in flow measurement systems, focusing on operator interfaces, display formats, and alarm handling.

Day 3: Primary Flow Measurement Devices

- Differential Pressure Flow Meters: Introduction to differential pressure measurement techniques and devices, such as orifice meters, venturi meters, and flow nozzles.
- Displacement Flow Meters: Study displacement flowmeters for liquids and gases, focusing on their advantages, disadvantages, and applications.
- Rotary Inferential Meters: Learn about turbine meters and their role in flow measurement, including their operation and applications.

Day 4: Advanced Flow Measurement Devices

- Oscillatory Flow Meters: Study the principle of vortex shedding and how vortex flow meters work in measuring flow.
- Electromagnetic Flow Meters: Learn the operation of electromagnetic flowmeters, including AC and pulsed DC types, and their applications.
- Variable Area Flow Meters: Understand how variable area meters are used to measure flow rates in different industrial settings.



Day 5: Ultrasonic and Mass Flow Measurement Devices

- Ultrasonic Flow Meters: Study the operation of ultrasonic flow meters, including Doppler type, time-of-flight type, and clamp-on types.
- Mass Flow Measurement Devices: Learn about mass flow measurement technologies such as Coriolis flowmeters, thermal meters, and their advantages and disadvantages.
- Miscellaneous Flow Measurement Devices: Explore other flow measurement techniques, including cross-correlation, tracer methods, and laser-based systems.

Why Attend This Course: Wins & Losses!

- Increased Efficiency and Accuracy: By mastering the latest flow measurement techniques, participants will improve measurement accuracy and operational efficiency in oil and gas processing.
- Hands-on Experience: This course provides practical knowledge that can be directly applied to real-world oil and gas measurement systems, improving operational performance and cost-effectiveness.
- Industry-Recognized Expertise: Participants will gain a comprehensive understanding of various flow measurement technologies and best practices, enhancing their professional credibility in the oil and gas industry.
- Compliance and Best Practices: Learn how to ensure compliance with industry standards and optimize oil flow measurement and gas flow measurement processes to meet both legal and commercial requirements.

Conclusion

This Oil and Gas Processing Flow Measurement course is an essential investment for anyone involved in oil and gas drilling, oil and gas development, or flow measurement in oil and gas facilities. Whether you're a technician, engineer, or operator, mastering flow measurement technologies will enhance your ability to manage accurate and efficient operations. With hands-on training and a deep dive into the latest measurement devices and techniques, this course will equip you with the skills necessary to optimize processes and ensure accurate flow measurement across a wide range of oil and gas applications.

