Oil & Gas Processing Flow Measurement: Precision Training

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Orlando, Florida (USA)



Oil & Gas Processing Flow Measurement: Precision Training

Ref: 20225_137834 Duration: 1 Week Location: Orlando, Florida (USA) Fees: 6600 GBP

Why This Course

Accurate flow measurement is essential for efficiency, safety, and profitability across the oil and gas value chain. From production and transportation to refining and custody transfer, reliable flow data ensures process optimization, regulatory compliance, and revenue integrity.

The Flow Measurement in Oil & Gas Processing course is an intensive 1-week technical program designed for engineers, technicians, and operations professionals involved in flow metering and measurement systems. Participants will gain deep knowledge of flow measurement principles, device operation, calibration, and troubleshooting — with a strong focus on real-world applications and industry standards.

Through a blend of theory, practical exercises, and case studies, this course provides the expertise needed to achieve measurement accuracy, system reliability, and operational excellence in oil and gas processing environments.

What You'll Learn and Practice

By joining this program, you will:

- Understand the scientific principles and flow dynamics that govern measurement accuracy.
- Master the operation, selection, and maintenance of various flow measurement devices.
- Apply calibration techniques and perform uncertainty analyses to improve measurement precision.
- Develop troubleshooting and optimization strategies for flow measurement systems.
- Gain in-depth knowledge of global industry standards, traceability, and best practices.

The Program Flow

Day 1: Fundamentals of Flow Measurement

- Core principles of flow measurement and metering theory.
- Classification of flow types in oil and gas operations laminar, turbulent, multiphase.
- Units, conversions, and standard flow equations.
- Fluid properties and their impact on measurement accuracy.
- Workshop: Understanding flow profiles and Reynolds number calculations.



Day 2: Flow Measurement Devices

- Differential pressure DP flow meters: orifice, venturi, and nozzle types.
- Positive displacement meters and their applications in custody transfer.
- Turbine and vortex flow meters: operating principles and performance characteristics.
- Advanced technologies: ultrasonic and Coriolis flow meters.
- Comparative analysis of metering technologies for oil and gas processes.

Day 3: Calibration and Uncertainty Analysis

- Calibration principles, standards, and field procedures.
- Traceability requirements and calibration hierarchy.
- Uncertainty analysis in flow measurement and error quantification.
- Meter proving systems, correction factors, and meter factor determination.
- Practical session: Performing uncertainty calculations and calibration record analysis.

Day 4: Advanced Measurement Techniques

- Multiphase flow measurement technologies and challenges.
- Custody transfer and fiscal metering best practices.
- Flow computer systems: configuration, verification, and data management.
- Leak detection, mass balance, and pipeline monitoring systems.
- Case study: Custody transfer system validation and dispute resolution.

Day 5: Troubleshooting and Optimization

- Common causes of flow measurement errors and deviations.
- Diagnostic tools and field verification techniques.
- System optimization and maintenance planning for sustained accuracy.
- Integrating digitalization and smart metering solutions.
- Industry best practices and real-world troubleshooting case studies.

Individual Impact

- Gain technical mastery in flow measurement principles and technologies.
- Improve confidence in calibration, verification, and data accuracy.
- Enhance diagnostic and problem-solving capabilities.
- Strengthen professional competence in oil and gas measurement systems.

Organizational Impact

- Improve measurement accuracy and reduce operational losses.
- Strengthen compliance with international metering and calibration standards.
- Enhance the reliability of custody transfer and fiscal measurement systems.
- Optimize maintenance planning and reduce downtime in metering operations.



Training Methodology

This course applies an interactive and practical learning approach, blending engineering theory with real-world applications through:

- Instructor-led technical lectures and demonstrations.
- Hands-on calibration and uncertainty calculation exercises.
- Case studies from upstream, midstream, and downstream operations.
- Group problem-solving and diagnostic workshops.
- Discussion of international standards API, ISO, AGA, OIML.

Beyond the Course

Upon completion, participants will be equipped with the technical expertise and analytical tools needed to ensure measurement integrity across oil and gas operations. Graduates will be able to implement best practices for flow system design, calibration, and performance optimization — ensuring compliance, accuracy, and operational excellence.

