

H S E

HEALTH

SAFETY

ENVIRONMENT



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Oil & Gas Measurement & Safety Devices

Duration: 5 Days



Introduction:

This training program presents the principles, design, and applications of flow measurement systems, emphasizing flow meter accuracy, performance, sizing, and specification, selection, and

installation practices. It provides more in-depth on safety devices and gauges and how to work in accordance with international health and safety codes and standards.

Who Should Attend?

MGC Gauges, Operators and Technicians, Process Personnel, Production Engineers & Technologists, Personnel interested in crude oil and gas measurement

Course Objectives:

By the end of this course delegates will be able to:

- Design a system to make practical and precise industrial flow measurements

- Calculate the effects of fluid properties on flow meter performance
- Evaluate flow meter performance statements and compare them with application requirements
- Specify and select the appropriate flow meters for different applications
- Know more about different types and use of pressure gauges
- Identify requirements for flow meter calibration
- Solve typical flow meter problems
- Perform flow meter compensation and totalization calculations
- Understand flow and related phenomena (piping hydraulics, Reynolds number, cavitations, etc.)
- Size flow elements for specific applications
- Know more about oil safety devices
- Know more about flow meters and flow measurement
- Apply health and safety regulations and standards

Course Outline:

Introduction to Flow Measurement

Flow meter Selection

Flow meter Performance

Linearization and Compensation

Totalisation: Differential Pressure Flow meters

Orifice Plate Flow Meters

- Installations
- Sizing and calculation
- Accuracy and rangeability
- Types and selection

- Performance

V-cone Flow Meters

Venturi Tube Flow meters: Velocity Flow Meters

Turbine Flow Meters

- Operation theory, Installation
- Design and construction
- Accuracy, Sizing and selection

Ultrasonic Flow Meters

- Operation theory, The Doppler effect
- The transit time, Design variations
- Application and performance

Magnetic Flow Meters

- Operation theory, Installation, Excitation
- Tubes and liners, Electrodes, Selection and sizing

Vortex Flow Meters

- Operation theory, Installation
- Sizing and accuracy, Limitations, Mass Flow meters

Coriolis Mass Flow Meters

- Operation theory, Installation
- Sizing and accuracy, Limitations

Thermal Flow Meters

Positive Displacement Flow Meters

- Helical Gear, Oval Gear, Piston and Other Technologies

P&ID

Rotating Equipment (Pumps, Compressors, Blowers, Fans)

Trouble Shooting and Isolation Procedure for Process Fluid

Purging and Cleaning for H₂S

Purpose of Safety Devices (Safety Valve, Pressure Switch, Set Point)

Couplings & Shaft Bearings

Safety Standards Isolation Procedure, Tag Out and Lock Out

Pumps, Motors, Compressor, Heat Exchanger Types Maintenance for All Oil Devices (Desalting Vessel, Heaters, Tanks)

Commission Procedure