

€ TRAINING

Oil and Gas Processing Flow Measurement





Oil and Gas Processing Flow Measurement

Introduction:

This training program offers comprehensive instruction on the principles, methods, and technologies used to measure fluid flow in oil and gas processing operations. It equips participants with the knowledge and expertise needed to ensure precise and reliable flow measurement in the oil and gas industry.

Program Objectives:

At the end of this program, participants will be able to:

- Understand the fundamentals of oil and gas processing flow measurement.
- Identify and describe various types of flow measurement devices used in the oil and gas industry.
- Select appropriate flow measurement devices based on application requirements and operational considerations.
- Install, calibrate, and maintain different types of flow measurement devices effectively.
- Evaluate the accuracy, performance, and reliability of flow measurement systems in oil and gas processing operations.

Targeted Audience:

- Engineers and Technicians of all disciplines.
- Instrumentation Personnel.
- Procurement and Quality Control Personnel.
- Inspection and Maintenance Engineers.

Program Outlines:

Unit 1:

Fundamentals of Oil and Gas Processing:

- Overview of Oil and Gas Processing Operations.
- Role of Flow Measurement in Oil and Gas Industry.
- Introduction to Flow Measurement Devices.

- Importance of Accurate Flow Measurement.
- Basic Principles of Flow Measurement.

Unit 2:

Introduction to Flow Measurement Devices:

- Overview of Different Types of Flow Measurement Devices.
- Principles of Operation for Various Flow Measurement Devices.
- Selection Criteria for Flow Measurement Devices.
- Advantages and Limitations of Different Flow Measurement Devices.

Unit 3:

Differential Pressure Flow Measurement:

- Understanding Differential Pressure Flow Measurement.
- Theory of Orifice Plates, Venturi Tubes, and Flow Nozzles.
- Installation and Maintenance of Differential Pressure Flow Meters.
- Calculation of Flow Rates Using Differential Pressure Devices.
- Accuracy and Performance Characteristics of Differential Pressure Flow Meters.

Unit 4:

Positive Displacement Flow Measurement:

- Principles of Positive Displacement Flow Measurement.
- Types of Positive Displacement Flow Meters e.g., Rotary, Oval Gear, Piston.
- Applications and Limitations of Positive Displacement Flow Meters.
- Installation and Maintenance Considerations for Positive Displacement Flow Meters.
- Accuracy and Performance Evaluation of Positive Displacement Flow Meters.

Unit 5:

Turbine Flow Measurement:

- Theory of Operation for Turbine Flow Meters.
- Design and Construction of Turbine Flow Meters.
- Calibration and Verification Procedures for Turbine Flow Meters.
- Advantages and Limitations of Turbine Flow Meters.

Unit 6:

Ultrasonic Flow Measurement:

- Principles of Ultrasonic Flow Measurement Doppler and Transit-Time.
- Installation and Configuration of Ultrasonic Flow Meters.
- Factors Affecting Accuracy and Performance of Ultrasonic Flow Meters.
- Advantages and Limitations of Ultrasonic Flow Meters.

Unit 7:

Coriolis Flow Measurement:

- Understanding Coriolis Flow Measurement Principles.
- Construction and Operation of Coriolis Flow Meters.
- Advantages and Limitations of Coriolis Flow Meters.
- Installation and Calibration Procedures for Coriolis Flow Meters.

Unit 8:

Vortex Shedding Flow Measurement:

- Theory of Vortex Shedding Flow Measurement.
- Design and Construction of Vortex Shedding Flow Meters.
- Installation and Maintenance Considerations for Vortex Shedding Flow Meters.
- Accuracy and Performance Characteristics of Vortex Shedding Flow Meters.

Unit 9:

Magnetic Flow Measurement:

- Principles of Magnetic Flow Measurement.
- Construction and Operation of Magnetic Flow Meters.
- Calibration and Verification Procedures for Magnetic Flow Meters.
- Advantages and Limitations of Magnetic Flow Meters.

Unit 10:

Thermal Flow Measurement:

- Theory of Thermal Flow Measurement.
- Types of Thermal Flow Meters e.g., Mass Flow Controllers, Thermal Dispersion.
- Installation and Calibration of Thermal Flow Meters.
- Accuracy and Performance Evaluation of Thermal Flow Meters.