



*Training Course:
Fluid Flow Control in the Process Industry*

*9 - 13 February 2025
Amman (Jordan)
Chemistry*

Training Course: Fluid Flow Control in the Process Industry

Training Course code: EN6047 From: 9 - 13 February 2025 Venue: Amman (Jordan) - Chemistry Training Course Fees: 4200 € Euro

Introduction

Modern fluid flow control techniques in fluid systems that are encountered in the process and chemical industry, involve the control of flow rate; measurements of pressure and temperature; and, other quantities at upstream and downstream locations. They also involve a means for enabling the passing of maximum flow rate in case of emergency situations. Fluid movers such as pumps and compressors of various designs have their own flow control devices for regulating flow rates, pressures and in some cases, motor loads variable speed motors or variable speed couplings. Control valves play a major role in fluid flow control. They are used for pressure reduction, control of delivery flow rates, back pressure control, pressure relief, etc.

Fluid flow measurement is the most important process variable in the operation and control of fluid transport in piping systems and pipelines. Flow control data are monitored and computerized; and line flow balances are used to check for discrepancies on hourly, daily or weekly bases. Flow measurements are done by means of some suitable flow meters: differential pressure meters, volumetric flow meters or mass flow meters. The course will cover all practical aspects of industrial fluid flow measurements, analysis of results and relevant aspects of accuracy.

Highlights of the course include:

- Principles of selecting the most appropriate fluid flow measurement for the given industrial application
- Guidance for optimum setup of measurements and obtaining accurate results
- Practical real-life examples of the application of the most effective instruments for flow measurements of gases and liquids and multi-phase mixtures
- Influence of fluid properties on the final results of flow measurements
- Economical issues: cost and benefit analysis in the light of monitoring a system

Outlines

This course will enable the participants to achieve the following:

- Proficiency in physical characteristics of fluids that are to be measured by one of the flow measuring techniques
- Familiarity with flow measuring techniques and their capabilities and limitations
- Understanding of principles of existing world standards and codes related to fluid flow measurement
- Skill in selecting the right measurement techniques: an estimate of the accuracy and uncertainty of results

- Recommended guidelines for diagnosing the problems in the operation of the entire system on the basis of flow monitoring

Benefits

This course will benefit the delegates through:

- Expertise with the main characteristics of measuring techniques and their correct implementation
- Understanding how to make the best selection of measuring method for the given engineering application with regard to the type of fluid and range of operating conditions
- Enhanced knowledge on how to make sound estimates on the accuracy of the results they are obtaining and to look for the ways of the overall improvement
- Acceptance of guidelines for adequate installation of measuring instruments
- Clear vision about the best practices for the application of control valves

Outlines

Day 1:

Fluid Flow Control in the Process Industry

- Importance of fluid flow control in the process industry
- Classification of fluid flow measurement techniques
- Types of fluid flow measurements
- World standards related to fluid flow measurement
- Physical properties of liquids, gases, and multiphase fluids
- Gas laws and expansion of liquids

Day 2:

Basic Principles of Fluid Flow in Pipes and Other Geometries

- Relationship between pressure and velocity
- Complexities of the flow of two-phase fluids
- Specifics related to measurements of velocity, pressure
- Flow-meters based on differential pressure

- Volumetric flowmeters
- Mass flow-meters, probes and tracers

Day 3:

Other Issues Related to Measurements

- Probes and tracers
- Readouts and related devices
- Proving systems
- Fluid balance study
- Auditing

Day 4:

Installation of Instruments

- Effect of instrument installation on the accuracy of results
- Accuracy requirements and related issues
- Uncertainty and statistics
- Calibration of measuring instruments
- Maintenance of meter equipment
- Recent developments and likely future trends

Day 5:

Flow Control of Pumps, Compressors, and Fans

- Control valve application
- A flow control system in pumps stations
- A flow control system in compressor stations
- Flow control in pipelines
- Pipeline monitoring systems

Registration form on the Training Course: Fluid Flow Control in the Process Industry

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