MERCURY

Fluid Flow Control System in the Process Industry Conference

14 – 18 February 2027
Manama (Bahrain)



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Introduction

Modern fluid flow control techniques in fluid systems commonly utilized in the process and chemical industry are integral to managing operations such as controlling the flow rate, measuring pressure and temperature, and facilitating other quantities at upstream and downstream locations. They also encompass mechanisms to pass maximum flow rates in case of emergencies.

Fluid movers like pumps and compressors, available in various designs, are equipped with their own fluid flow control devices that regulate flow rates, pressures, and, in some instances, motor loads featuring technologies such as variable speed motors or variable speed couplings. Control valves are pivotal in the fluid flow control process. They serve many functions, including pressure reduction, control of delivery flow rates, back pressure control, pressure relief, and more.

Fluid flow measurement is the cornerstone of operation and control regarding fluid transport in piping systems and pipelines. Fluid flow measurements and control accuracy are critical in oil and gas process solutions, ensuring reliability and efficiency. As such, flow control data are meticulously monitored and computerized, while line flow balances detect discrepancies periodically, ranging from hourly to weekly intervals.

Flow measurements utilize specific flow meters, such as differential pressure, volumetric, or mass flow meters. The fluid flow control system at the process industry conference will delve into all the practical aspects of industrial fluid flow measurements, including analyzing the results and providing a comprehensive discussion on accuracy.

Targeted Groups

- Engineers and technicians are in the oil, gas, chemical, and process industries.
- Process, mechanical, and chemical engineers.
- Engineers and technicians deal with reactors and piping systems.
- Design Engineers and Project Engineers.
- Control, Automation, and Instrumentation Engineers.

Conference Objectives

After this fluid flow control system in the process industry conference, participants will be proficient in the following:

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- Recognize the physical characteristics of fluids applicable for measurement through various flow measuring techniques.
- Gain insights into these measuring techniques along with their capabilities and limitations.
- Comprehend the principles of prevalent world standards and codes related to fluid flow measurement.
- Select the precise measurement techniques by estimating the accuracy and uncertainty of the results.
- Formulate guidelines to diagnose problems in operating the entire system based on fluid flow monitoring and control data.

Targeted Competencies

At this fluid flow control system in the process industry conference, target competencies will be proficient in the following:

- Select the most appropriate fluid flow measurement method for specific industrial applications.
- Understand guidance for the optimal setup of measurements to achieve accurate results.
- Real-life application examples of the most effective flow measurement instruments encompassing gasses, liquids, and multi-phase mixtures.
- Learn the impact of fluid properties on the accuracy of fluid flow measurements.
- Know how to analyze economic issues, focusing on cost-benefit in the context of system monitoring.

Conference Content

Unit 1: Fluid Flow Control in the Process Industry

- Understand the significance of fluid flow control in the process industry.
- Learn the classification of fluid flow measurement techniques within the industry.
- Know types of fluid flow measurements and their applications in fluid flow process engineering.
- World standards that govern fluid flow measurement ensure consistency across the industry.
- Explore the physical properties of liquids, gasses, and multi-phase fluids.
- Understand an examination of gas laws and the expansion properties of liquids.

Unit 2: Basic Principles of Fluid Flow in Pipes and Other Geometries

- The correlation between pressure and velocity in fluid flow operations.
- The complexities associated with the flow of two-phase fluids, particularly in oil and gas.
- Know insights into measurements of velocity and pressure in fluid flow processes.
- Know to look at flowmeters that operate based on differential pressure.
- Overview of volumetric flowmeters and their role in fluid flow measurement.
- Understand mass flowmeters and the use of probes and tracers to measure fluid flow accurately.

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Unit 3: Other Issues Related to Measurements

- Learn the role of probes and tracers in fluid flow measurements.
- Understand readouts and devices associated with measurement.
- Prove systems and their importance in validating fluid flow operation.
- Conduct fluid balance studies to ensure accuracy and efficiency.
- The auditing process confirms the reliability of fluid flow data.

Unit 4: Installation of Instruments

- Learn the impact of instrument installation on the accuracy and reliability of measurement results.
- Tackle accuracy requirements and related issues in fluid flow control systems.
- Know The significance of uncertainty and statistics in fluid flow measurement.
- Understand calibration practices for measuring instruments to maintain high standards.
- Maintenance of meter equipment is necessary to ensure ongoing precision.
- Learn about exploring recent developments and potential future trends in fluid flow control.

Unit 5: Flow Control of Pumps, Compressors, and Fans

- Control valves are applied to the fluid flow control process.
- Implementing flow control systems in pump stations is crucial for maintaining operational integrity.
- Establish flow control systems in compressor stations to ensure optimal performance.
- Flow control methodologies in pipelines, a core aspect of the oil and gas sector.
- Overview of Pipeline monitoring systems and their role in safeguarding flow processes.