MERCURY

Pipes and Piping Systems Optimization Training Conference

1 – 5 February 2027
Johannesburg (South Africa)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

Pipes and Piping Systems Optimization Training Conference

Ref: 8126_1059688 **Date:** 1 – 5 February 2027 **Location:** Johannesburg (South Africa) **Fees:** 5300 Euro

Introduction

The present state-of-the-art design of piping systems is based on the close interaction and collaboration between system designers and operators. The operator's experience running complex piping systems for long periods is important in improving the design. The most delicate design problems are encountered during the expansion of systems when they are made larger or more complex. For a piping system to operate problem-free, the design and installation of a piping system requires attention to multiple factors.

Over the past few decades, pipeline systems and technologies have progressed quickly in all design, operation, and automatic control aspects, growing in size and intricacy. Today's industry trends aim to enlarge the flow rates, pipe diameters, and working pressures for handling a wide variety of fluids, including very complex and difficult ones. These factors impose strong requirements on careful design, precise operation, and complex control.

Pipeline operation engineers and managers have to be sufficiently familiar with the details of fluid flow in piping systems and with modern technologies to make informed decisions on various technical aspects of the designed system and its future operation. There is a need for detailed monitoring of everyday operations and computer-based centralized automatic control of the operation of large systems. At the same time, environmental concerns and safety issues require highly sophisticated monitoring and control systems.

Quality Piping Systems and Optimization Techniques

When we discuss quality piping systems alongside piping optimization, the piping systems optimization and engineering conference is imperative to explore the latest techniques for enhancing the efficiency of both process piping and piping systems in the oil and gas industry.

Throughout this piping systems optimization and engineering conference, participants will gain substantial knowledge on achieving a well-designed, high-quality piping system through carefully considering materials, design standards, and cutting-edge optimization methods.

While addressing the specifics of piping engineering, we will delve into the practicalities of piping system fundamentals, ensuring that each professional leaves an enriched understanding of creating quality piping systems that exhibit robust performance and reliability.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

MERCURY

Targeted Groups

- Plant professionals are dealing with operation pipeline systems.
- Engineers responsible for the reliability of operations.
- Engineers and technical staff are in charge of inspection and condition monitoring.
- Technical professionals are involved in technical support maintenance and repair.
- Engineers are in charge of planning new pipelines and retrofitting old ones.

Conference Objectives

At the end of this piping systems optimization and engineering conference, the participants will be able to:

- Understand the requirements of industry standards for pipeline inspection.
- Appreciate the technical characteristics of piping systems and their applications in the process and chemical industry.
- Know the hydraulic and mechanical design methods of piping systems according to existing world standards and codes.
- Learn the procedures for selecting the best piping systems based on the optimization technique, which results in pipe diameter and material cost.
- Use the methods of diagnosing and estimating the degree of deterioration of pipelines.
- Recognize the guidelines for improving the efficiency of the overall piping system.

Targeted Competencies

Upon the end of this piping systems optimization and engineering conference, the target competencies will be able to:

- The most updated approach to the design, implementation, operation, and maintenance of piping systems and pipelines
- Better understanding of principles that are the basis for proper selection and sizing of the pipes and piping systems and the corresponding accessories
- Fluid movers: pumps and compressors will be explained in detail, with important aspects of their interaction with the piping systems
- The transport of complex fluids will be discussed, as well as piping systems of complex geometry pipe branching, piping network, transients in operation.
- The system for monitoring and automation control will be discussed.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

MERCURY

Conference Content

Unit 1: Overview of Piping Systems

- Know the main features of various types of piping systems.
- Understand the classification of piping systems based on the design and application.
- World standards and codes on design properties of pipes.
- Learn the main steps in the design and construction of piping systems.
- Learn fluids' physical and transport properties: density, viscosity, and particle contents.
- Know the basics of flow analysis in pipes - laminar and turbulent flow regimes.

Unit 2: Calculation of Pressure and Velocity Distribution in Piping Systems

- Know the calculation of pressure losses and horsepower required for fluid transportation.
- Understand the selection and sizing of pipes for different applications: liquids, gasses, and slurries.
- Learn the calculation of minor losses in the piping system.
- Basics of mechanical design: selection of pressure class of pipe and stress ratios.
- Hydrostatic testing: allowable operating pressure and hydrostatic test pressure.
- Pipe construction: pipes above-ground and pipes buried.

Unit 3: Pumps and Compressors Used in Pipelines

- Pump interaction with the system, cavitations: work in series and parallel.
- Multi-pump stations and tanks.
- Pump calculation and selection.
- Compressor interaction with the system, avoiding surge, stall, and choking.
- Understand multi-compressor stations and gas holders.
- Compressor calculation and selection.
- Pipe networks and pipe branching: problems with transients and their control.

Unit 4: Control Valves in Pipelines

- Control valves: selection, sizing, and cavitation issues.
- Know flow measurements and monitoring instrumentation.
- Pipeline system automation control.
- Learn guidelines for pipeline installation, operation, and maintenance.
- Understand inspection, examination, and testing of pipelines.
- Overview of vibration of pipes and pipelines and their mechanical support and anchorage.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

Unit 5: Operation and Maintenance of Piping Systems

- Leak Detection and Prevention and Failure Risk Analysis.
- Pipeline protection for prevention of corrosion and erosion.
- Environmental Concerns: Impact of Above-Ground and Buried Pipelines.
- Off-Shore Pipelines: Design and Operation.
- Special Consideration for Safety and Supervision.
- Pipeline feasibility study and economic analysis: capital and operation costs.