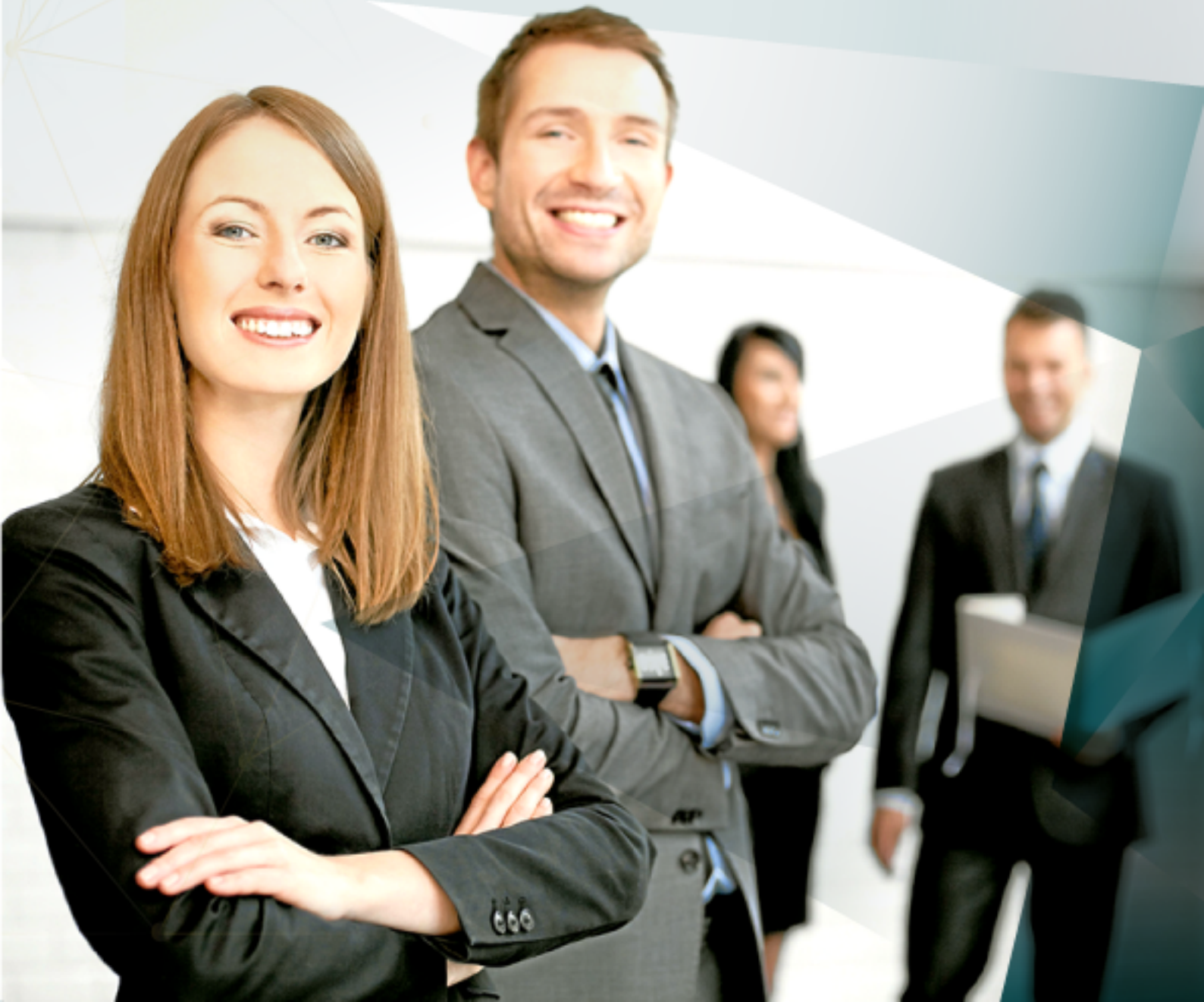
MERCURY

Piping Design & Stress Analysis

20 - 24 Oct 2024
Amman (Jordan)



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Ref.: 15241_281759 **Date:** 20 - 24 Oct 2024 **Location:** Amman (Jordan) **Fees:** 3200 **Euro**

Introduction:

This class course has the following topics: piping design, the effects on overall configuration on preliminary piping design, initial layout, the total system, introduction to pipe stress analysis, detailed piping design, and how all of this influences pipe support and pipe hanger design.

Target Groups:

- Process, Mechanical, and Chemical Engineers.
- Operation and Maintenance Engineers.
- Project Engineers.
- Supervisors and Managers.
- Technical Personnel involved in the inspection.

Course Objectives

At the end of this course the participants will be able to:

- Increase the awareness and understanding of mechanical integrity of process equipment and piping systems depends jointly on the proper design, operation, condition assessment, and maintenance of the equipment, underscoring their vital individual and team roles in managing change.
- Get practical and sound methods and tools to enable them to carry out basic design calculations for pressure equipment following applicable industrial codes, standards, and best practices.
- Get a clear understanding of the degradation mechanisms that process equipment could be subjected to over their operating life, how to identify them, predict and determine their impact, and what appropriate measures can be taken to prevent and control the resultant damage.

Targeted Competencies:

- Understand Pipe Stress Analysis
- Deciding Stress Critical Lines and Preparing Critical Line List.
- Inputs for Piping Stress Analysis.
- Introduction to Pipe Supports
- Pipe Thickness Calculation
- What is Piping isometric drawing?
- Starting with Pump Piping Stress Analysis.
- Creating Load Cases for Pipe Stress Analysis.
- Modeling of Horizontal Vessel for Stress Analysis.
- Flange Leakage Analysis using Pressure Equivalent, NC, and ASME Sec VIII method
- PSV Piping Stress Analysis.
- What is Piping Expansion Loop?
- Generating Stress Analysis Reports for Clients.

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- Storage Tank Piping Stress Analysis.
- Buried piping stress analysis steps.

Course Content:

Unit 1: Introduction - Overview of Piping

- Effects of operating conditions, including flow rate, design pressure, and temperature on piping design
- Impact of internal and external forces on the design
- Influences that the different modes of failure and the applicable codes have on the entire system
- Piping layout, an overview of the general support classifications

Unit 2: Basic Concepts of Stress Analysis - Flexibility Analysis:

- Historical perspective of how earlier analysis techniques were developed in the absence of today's computer technology
- Review how earlier techniques have evolved ultimately leading to today's finite element practices
- The basic concepts of stress analysis will be covered, including failure theories, stress intensification factors, and the overall purpose of stress analysis

Unit 3: Stress Analysis - Design Bases:

- A review of the different phases of project evolution
- The design bases which form the foundation of all our analyses, including physical attributes, loading conditions, and joint design
- Development of a Stress Model
- Rudimentary stress analysis assembly procedure
- How vibration affects the piping system

Unit 4: Influences on Pipe Support Design - Rigid Supports:

- Rigid Pipe Supports
- Support elements ranging from stock catalog items to completely customized parts
- Factors of the piping stress analysis that have an impact on the overall support design and feasibility
- How adjustability can be incorporated into the design to accommodate for on-site discrepancies

Unit 5: Influences on Pipe Support Design - Spring Supports:

- Resilient support elements including variable, constant, and big ton springs
- The operating conditions that define the ideal pipe support per application
- Uses of standard pipe support hardware in conjunction with stock spring components to design entire pipe support assemblies
- Modification of standard spring elements to fit unusual configurations in a piping system

Unit 6: Influences on Pipe Support Design - Restraints:

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- Restraint devices used for transient loading conditions
- Types of components and their particular functions, including hydraulic snubbers, mechanical snubbers, and sway struts
- Design parameters to consider when selecting the most appropriate restraint device
- General guidelines focused on standardization and versatility of pipe supports throughout the piping system

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Registration form on the :
Piping Design & Stress Analysis

code: 15241 **From:** 20 - 24 Oct 2024 **Venue:** Amman (Jordan) **Fees:** 3200 **Euro**

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