XCELERATE TRAINING INSTITUTE

your learning & development partner

MECHANICAL ENGINEERING

Piping Design, System, Operation, Maintenance and Repair in Oil and Gas Plant Training Course

DURATION	LANGUAGE	FORMAT
5 days	English	Classroom / Online

Upcoming dates

Dates	Venue	Format	Fee
12 – 16 Apr 2027	Live online	Online (live)	€1,200
18 – 22 Oct 2027	Live online	Online (live)	€1,200
15 – 19 Nov 2027	London	Classroom	€4,800

Register or ask a question

Online: x8ti.com/course/piping-design-system-operation-maintenance-and-repai…

+491631686678 · info@x8ti.com

Piping Design, System, Operation, Maintenance and Repair in Oil and Gas Plant Training Course

Introduction

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A piping system consists of a network of pipes, fittings, flanges, valves and tanks that perform a specific function, i.e. to transfer fluid from one equipment to another.

Piping systems are the backbone of industries as they connect important processes through the supply of fluids needed for seamless operation. They also account for a significant amount of the total plant cost and investment.

The material to construct the piping system is carefully chosen basis the operation it is going to perform. Material suitability can be adjudged through various standard codes used to denote the quality and material of pipes and other fixtures used. Since these systems operate under various temperatures and pressures, they need to resist any possible damage from these conditions.

This Xcelerate training course will empower you with all the information and knowledge for choosing, setting up and managing piping systems. Given the importance of piping systems and the risks involved, trained experts in this would ensure greater opportunities for career progression.

Furthermore, since piping systems form the core of most operations in most industries, understanding the basics and all necessary information about these systems will ensure that you find ample job opportunities across industries.

Learning Objectives

- detailed understanding and knowledge of plant piping systems, including their design, operation, maintenance and repair
- the required awareness and knowledge of relevant codes and standards to choose the correct piping material
- the experience to understand required operations and decide the best piping systems
- adequate confidence and understanding to consider all challenges (including temperature and pressure) and work on setting up a system that could withhold these conditions
- the knowledge and experience to train other professionals on essential aspects of piping systems
- adequate knowledge and experience to understand what size and fittings are needed as per the intended purpose
- the awareness and confidence to conduct regular inspections to check for maintenance and repair requirements, if any
- understanding of the extent and type of damage and necessary remedial measures to address these
- the skill and capabilities to reduce organizational costs on piping system maintenance and repair, thereby contributing to organizational development as well as worker safety

Training Methodology

Xcelerate Training Institute aims at having a healthy mix of theoretical and practical sessions in their training programs. The theoretical sessions are delivered by experienced professionals from the relevant domain, while group discussions, projects, role-plays and relevant case study discussions form part of the practical sessions.

Trainees also discuss relevant challenges they face in their current roles, which are elaborately discussed by the trainer.

Benefits for Your Organization

- Trained and experienced professionals undertaking responsibilities of choosing and setting up important piping systems
- Regular maintenance and repair of piping systems through audits by trained professionals, thereby reducing maintenance and repair costs
- Better safety to employees as they would work with safe, audited systems
- Adherence to international standards and protocol for piping systems
- Prevention of occupational hazards and huge business losses
- Organizational growth and development because of better equipment and more secure operations
- Greater investments because of increased credibility as a result of safer operations
- Regular training of employees on best practices and understanding of standards and codes for optimal usage
- Appropriate material and fitting selection for piping systems as per the intended use

Benefits for You

- Detailed knowledge and understanding of piping systems, including their designs, operation, maintenance and repair
- Increased confidence and experience to train other professionals on best practices for managing piping systems
- Better comprehension and skill to choose the appropriate piping system as per the intended purpose
- Greater understanding and knowledge of acceptable standards and codes to make the right choice of material and fittings
- Enhanced skill and capabilities to save organizational costs of maintenance and repair through regular audits of piping systems
- Increased understanding and knowledge to ensure that piping systems are as per the standards and safety norms required internationally, thereby contributing to worker safety
- Greater ability to predict challenges and risks and ensure that these are taken care of to avoid occupational hazards
- Enhanced skill, capabilities and perspective to undertake higher roles and responsibilities related to piping systems in any industry, thus increasing avenues for growth and progression

Target Audience

- Senior members of an organization responsible for making critical decisions related to purchases and

costs for piping systems and material
- Piping engineers responsible for ensuring that all systems are running as per optimal levels
- Supervisors and managers responsible for overseeing maintenance, operation and repair of piping systems
- Operations managers who need to manage end-to-end operations of the plant
- Quality auditors and compliance officials responsible for checking maintenance of optimal quality and adherence to standards
- Vendors involved in supply of material and fixtures for piping systems
- Any other professional interested in knowing more about piping systems

Course Outline

Power Plant Piping Material

- Steel
- Cast iron
- Brass and copper

Types of Pipe Fittings

- Elbows
- Nipples
- Couplings
- Unions
- Tees and crosses
- Y-bends
- Return bends
- Plugs and caps
- Bushings
- Reducers

Methods to Connect Pressure Piping

- Screwed connections
- Flange connections
- Welded joints

Ideal Design Procedure

- Determination of the problem
- Determination of preliminary pipe route
- Pipe diameter determination based on allowable head-loss
- Structural analysis
- Support and anchor designing
- Preparation of drawings, specification, design report

Piping System Design Engineering

- Design basis and standard drawings

- Piping material specifications
- Pipe and pump sizing
- Equipment datasheet preparation
- Catalogue creation
- Plot plan
- Fire protection system

Types of Valves in Pipe System Design

- Air-relief valves
- Gate valves
- Small valves
- Altitude valves
- Pressure-regulating valves

Types of Fire Hydrants in Piping Systems

- Flush hydrants
- Wall hydrants
- Post hydrants

Piping Flexibility Analysis

- Stress analysis model
- Analysis-formatted report with recommendation
- Stress isometric
- Load list for support design
- Support design

Maintenance Checklist

- Determine points of inspection
- Develop a schedule for the maintenance team
- Implement a preventative maintenance schedule
- Perform upgrades and rehabilitation tasks

Benefits of Preventative Maintenance

- Better up times
- Fewer repairs and shutdowns
- Increased energy savings
- Lower repair costs

Parameters Guiding Choice of Repair Techniques

- Piping geometric and material
- Operating characteristics
- Configuration and location
- Nature and size of the defect to repair

External Repair Techniques

- Cut out and replace
- Bypass technique
- Grinding
- Weld deposition
- Metallic sleeves
- Composite sleeve

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Registration Form

Piping Design, System, Operation, Maintenance and Repair in Oil and Gas Plant Training Course

Preferred dates: ..... Venue or online: .....

Duration: 5 days Language: .....

Please complete and email this form to us, or register online. We confirm your place and send the invoice within one working day.

Delegate information

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

Official email: ..... Personal email: .....

Company information

Company name: .....

Address: .....

City / country: ..... VAT / tax number: .....

Person responsible for training & development

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

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+491631686678

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