

Course No. 1144

Industrial Valves Training Course

MECHANICAL ENGINEERING
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Industrial Valves Training Course is a comprehensive professional development program designed to equip engineers, maintenance professionals, operations personnel, technical specialists, and engineering managers with the knowledge and practical skills required to select, operate, inspect, maintain, troubleshoot, and optimize industrial valves across a wide range of process industries. Industrial valves are essential components in fluid handling systems, playing a critical role in controlling the flow, pressure, temperature, and direction of liquids, gases, steam, and other process media. Their reliability directly impacts operational safety, production efficiency, equipment integrity, and overall plant performance.

Industrial facilities in the oil and gas, petrochemical, power generation, water treatment, manufacturing, mining, pharmaceutical, marine, and utility sectors depend on properly selected and maintained valves to ensure safe and continuous operations. Incorrect valve selection, improper installation, inadequate maintenance, or operational failures can lead to production losses, safety incidents, environmental risks, equipment damage, and increased maintenance costs. This course provides participants with internationally recognized engineering principles and industry best practices for effective valve management throughout the equipment lifecycle.

Throughout the program, participants will develop a comprehensive understanding of industrial valve technologies, including gate valves, globe valves, ball valves, butterfly valves, check valves, plug valves, diaphragm valves, control valves, pressure relief valves, actuators, valve automation systems, sealing technologies, valve materials, pressure ratings, valve sizing, installation procedures, inspection techniques, preventive and predictive maintenance, failure analysis, condition monitoring, and performance optimization. Practical engineering exercises and real industrial case studies enable participants to apply technical knowledge to real operational environments.

The Industrial Valves Training Course also demonstrates how valve engineering integrates with piping systems, process control, maintenance management, reliability engineering, asset management, operational excellence, engineering safety, and regulatory compliance. By completing this course, participants will be prepared to improve valve reliability, reduce maintenance costs, optimize system performance, strengthen engineering decision-making, enhance plant safety, and support sustainable engineering operations across government entities, ministries, public sector organizations, financial institutions managing engineering infrastructure, oil and gas companies, power generation facilities, petrochemical industries, manufacturing organizations, utilities, and

multinational corporations.

Objectives

- Analyze the engineering principles governing industrial valve operation and fluid control systems.
- Develop practical knowledge for selecting industrial valves based on process requirements and operating conditions.
- Evaluate valve performance using engineering specifications, pressure ratings, and operational data.
- Apply fluid mechanics principles to improve valve performance and system efficiency.
- Design valve selection strategies that optimize process reliability and operational safety.
- Improve valve operation through effective installation, commissioning, inspection, and maintenance practices.
- Strengthen troubleshooting capabilities by identifying common valve failures and conducting root cause analysis.
- Implement preventive, predictive, and reliability-centered maintenance strategies for industrial valves.
- Assess valve performance, leakage, wear mechanisms, and opportunities for operational optimization.
- Align industrial valve management practices with organizational objectives for safety, reliability, asset management, regulatory compliance, and operational excellence.

Who Should Attend

This course is designed for mechanical engineers, maintenance engineers, operations engineers, piping engineers, process engineers, reliability engineers, plant engineers, utility engineers, project engineers, inspection engineers, valve specialists, maintenance supervisors, operations supervisors, engineering technicians, maintenance planners, equipment inspectors, commissioning engineers, engineering consultants, and technical professionals responsible for industrial valve systems.

The program is equally valuable for engineering managers, maintenance managers, operations managers, plant managers, facility managers, project managers, procurement engineers, asset management professionals, HSE specialists, quality professionals, technical advisors, executive

managers, and decision makers responsible for process equipment reliability, maintenance planning, engineering operations, and industrial asset performance.

Professionals working within government entities, ministries, public sector organizations, financial institutions managing engineering infrastructure, oil and gas companies, refineries, petrochemical industries, power generation facilities, manufacturing plants, water treatment facilities, mining organizations, utility providers, marine industries, infrastructure developers, and multinational engineering organizations will benefit significantly from the practical engineering methodologies and internationally recognized industrial valve management practices presented throughout the course.

Learning Outcomes

- By the end of this course, participants will be able to:
- Explain the operating principles, classifications, and industrial applications of industrial valves.
- Select appropriate valve types based on pressure, temperature, flow characteristics, and process requirements.
- Interpret valve specifications, pressure ratings, standards, and engineering documentation.
- Apply fluid mechanics principles to optimize valve operation and system performance.
- Identify common valve failures, leakage mechanisms, wear patterns, and perform root cause analysis.
- Develop preventive and predictive maintenance programs for industrial valves.
- Apply inspection techniques and condition monitoring methods to improve valve reliability.
- Evaluate valve actuators, automation systems, and control valve performance.
- Apply engineering safety practices during valve installation, operation, maintenance, testing, and isolation procedures.
- Support operational excellence and asset reliability through effective industrial valve engineering and lifecycle management.

Course Outline

DAY 01

Fundamentals of Industrial Valves

- Principles of fluid flow and valve operation
- Types of industrial valves and their applications
- Valve construction, components, and materials
- Pressure ratings, standards, and engineering specifications

PRACTICAL

Practical workshop on valve identification and interpretation of engineering drawings and technical documentation

DAY 02

Valve Selection and Performance Analysis

- Valve selection criteria for different industrial applications
- Valve sizing and flow characteristics
- Control valves, actuators, and automation systems
- Pressure drop analysis and system optimization

PRACTICAL EXERCISE

Practical exercise on valve selection and performance evaluation

DAY 03

Valve Installation, Operation, and Maintenance

- Installation, commissioning, and operational procedures
- Preventive, predictive, and reliability-centered maintenance strategies
- Inspection techniques and valve testing procedures
- Valve sealing systems, lubrication, and maintenance planning

DAY 03 — CONTINUED

PRACTICAL

Practical workshop on valve inspection and maintenance program development

DAY 04**Troubleshooting, Reliability, and Safety**

- Common valve failures and root cause analysis
- Leakage prevention and valve performance improvement
- Condition monitoring and reliability enhancement techniques
- Valve isolation procedures and engineering safety practices

PRACTICAL APPLICATION

Practical application involving valve failure investigation and reliability improvement planning

DAY 05**Advanced Valve Management and Operational Excellence**

- Industrial valve asset lifecycle management
- Risk management and regulatory compliance
- Performance measurement and engineering best practices
- Continuous improvement strategies for valve systems

FINAL WORKSHOP

Final workshop involving the development of a comprehensive Industrial Valves management plan integrating valve selection, performance analysis, inspection, maintenance planning, reliability improvement, condition monitoring, safety management, and continuous improvement to maximize equipment reliability, operational efficiency, and engineering excellence.



Register or Request More Information

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