MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

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INTRODUCTION, CLASSIFICATION OF VALVES - VALVE MAINTENANCE, OPERATION & REPAIR

""Mastering Industrial Valve Types, Functions, Maintenance Techniques, and Safe Operation for System Integrity""

Schedule

Date	Venue	Fees (Face-to-Face)
02 – 06 Mar 2026	Dubai, UAE	USD 3495 per delegate

Introduction

Valves are critical components in industrial systems, responsible for controlling the flow of liquids, gases, and slurries. Failure of valves due to incorrect selection, poor maintenance, or operational errors can lead to serious safety risks, equipment damage, and costly downtime.

This comprehensive 5-day course is designed to give participants a complete understanding of valve types, functionality, classification, operation, and maintenance practices. Participants will explore hands-on techniques for valve inspection, repair, and troubleshooting—ensuring reliability, compliance, and safe plant performance across industries including oil & gas, power, manufacturing, and water treatment.

Objectives

By the end of this course, participants will be able to:

- Understand the classification and application of industrial valves
- Identify different valve types and their working principles
- Perform inspection, preventive maintenance, and repairs on valves
- Interpret valve specifications, materials, and selection criteria
- Apply safe operation and troubleshooting techniques
- Enhance plant reliability through valve performance optimization

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Why Attend

- Reduce failures and extend the life of valves in your systems
- Improve operational safety and reduce leak-related incidents
- Learn practical maintenance and testing techniques used in the field
- Ensure better compliance with industry codes and technical standards
- Minimize unnecessary replacements through effective diagnostics

Target Audience

This program is designed for:

- Maintenance technicians and engineers
- Mechanical and piping engineers
- Operations and plant supervisors
- Inspection, QA/QC, and reliability professionals
- Technical staff responsible for valve procurement or overhaul

Individual Benefits

Key competencies that will be developed include:

- Valve function recognition and specification reading
- Valve inspection and maintenance scheduling
- Fault diagnosis and repair planning
- Practical application of valve standards and safety protocols
- Improved mechanical understanding of piping systems

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Reduced valve-related downtime and replacement costs
- Improved system performance and leak control
- Enhanced asset integrity and lifecycle management
- Safer operations with qualified valve handling personnel
- Better procurement and technical documentation practices

Instructional Methodology

- Strategy Briefings – Supplier evaluation frameworks, qualification models, and vendor risk assessment strategies
- Hands-On Exercises – Developing supplier qualification templates, scorecards, and audit evaluation forms
- Case Studies – Analysis of real-world examples of supplier success, failure, and recovery strategies
- Workshops – Designing end-to-end supplier qualification workflows, approval processes, and defining cross-functional responsibilities
- Peer Exchange – Live discussion, knowledge sharing, and participant feedback on current qualification practices
- Tools – Customizable vendor checklists, due diligence trackers, risk heatmaps, supplier tiering grids, and audit scripts

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Course Outline

Detailed 5-Day Course Outline

Training Hours: 7:30 AM – 3:30 PM Daily Format: 2–3 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1 – Introduction & Classification of Valves

- **Module 1: Basics of Flow Control and Valve Function (07:30 – 09:30)**
- What is a valve? Role in piping systems
- Flow control concepts and pressure management
- Common valve operating methods
- **Module 2: Valve Classification Overview (09:45 – 11:15)**
- Isolation, regulation, safety, and special-purpose valves
- Linear vs. rotary motion valves
- API/ANSI valve classification standards
- **Module 3: Key Valve Types and Characteristics (11:30 – 01:00)**
- Gate, globe, ball, butterfly, plug, check, diaphragm, needle valves
- Comparison chart: application, advantages, limitations
- Valve body materials, ratings, and trim design
- **Module 4: Group Workshop – Valve Identification and Selection (02:00 – 03:30)**
- Hands-on activity using images/spec sheets to match valves to use cases

Day 2 – Valve Operation and Application

- **Module 5: Actuation and Valve Controls (07:30 – 09:30)**
- Manual vs. automated actuation (electric, pneumatic, hydraulic)
- Position indicators, limit switches, fail-safe design
- Control valve characteristics and sizing
- **Module 6: Valve Selection and Sizing (09:45 – 11:15)**
- Selection criteria based on flow rate, temperature, pressure, and medium
- Sizing calculations and Cv value
- Industry examples: water, gas, steam, chemical
- **Module 7: Installation Guidelines and Best Practices (11:30 – 01:00)**
- Valve orientation, support, and clearance
- Flange vs. threaded vs. welded connections
- Storage, handling, and commissioning
- **Module 8: Practical Demo – Valve Operation Simulation (02:00 – 03:30)**
- Video walkthrough of valve operation and actuator response

Day 3 – Maintenance Planning & Inspection Techniques

- **Module 9: Preventive and Predictive Valve Maintenance (07:30 – 09:30)**
- Maintenance frequency and scheduling
- Lubrication, cleaning, and stem care
- Valve tagging and inventory control
- **Module 10: Valve Failure Modes and Root Causes (09:45 – 11:15)**
- Common issues: leakage, seat erosion, stem wear, vibration
- Diagnosing internal vs. external problems
- Case study: major valve failure investigation
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Module 11: Inspection Procedures and Records (11:30 – 01:00)

- Visual checks, leak detection, and stroke testing
- Use of borescopes, ultrasonic, and other inspection tools
- Documentation templates and checklists
- **Module 12: Workshop – Maintenance Record Exercise (02:00 – 03:30)**
- Participants complete a mock inspection record and planning schedule

Day 4 – Valve Repair and Overhaul Techniques

- **Module 13: Disassembly and Internal Component Repair (07:30 – 09:30)**
- Valve teardown sequence and tools
- Seat, disc, and stem replacement
- Gasket selection and torqueing methods
- **Module 14: Lapping, Refacing, and Reassembly (09:45 – 11:15)**
- Lapping paste selection and surface preparation
- Leak testing and pressure tests
- Reassembly and functional testing
- **Module 15: Outsourcing, OEM Parts, and Workshop Practices (11:30 – 01:00)**
- When to repair in-house vs. send to workshop
- Selecting vendors and evaluating performance
- Safety and QA/QC during repairs
- **Module 16: Simulation – Valve Overhaul Walkthrough (02:00 – 03:30)**
- Video case study with step-by-step analysis and group discussion

Day 5 – Troubleshooting, Safety & Certification Wrap-Up

- **Module 17: Troubleshooting Valves in Operation (07:30 – 09:30)**
- Diagnosing noisy, stuck, or slow-response valves
- Valve-position feedback and actuator faults
- Emergency shut-off valves and isolation systems
- **Module 18: Safety Practices and Lockout/Tagout (09:45 – 11:15)**
- Isolation procedures and pressure release
- Valve handling safety and PPE
- Confined space and high-pressure environments
- **Module 19: Final Review and Case Study Analysis (11:30 – 01:00)**
- Cross-industry valve failure cases
- Best practices for sustainable valve maintenance
- **Module 20: Final Workshop – Valve Reliability Action Plan (02:00 – 03:30)**
- Teams create improvement plans for valve reliability in their organization
- Group presentations and certification closing

Certification

Participants who complete the course will receive a **Certificate of Completion in Valve Maintenance, Operation & Repair**, validating their technical skills in selecting, maintaining, and troubleshooting industrial valves for safe and reliable system performance.

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Why Choose MAWA Events

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