MAWA EVENTS

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

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VALVES, ACTUATORS & REGULATORS TECHNOLOGY & TROUBLESHOOTING

""Ensuring Safe, Reliable, and Efficient Flow Control through Practical Valve Management""

Schedule

Date	Venue	Fees (Face-to-Face)
08 – 12 Feb 2026	Manama, Bahrain	USD 3495 per delegate
01 – 05 Mar 2026	Doha, Qatar	USD 3495 per delegate
09 – 13 Aug 2026	Riyadh, KSA	USD 3495 per delegate
07 – 11 Sep 2026	Dubai, UAE	USD 3495 per delegate
11 – 15 Oct 2026	Riyadh, KSA	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Valves, actuators, and regulators are critical components in any fluid handling system. Their proper selection, operation, and maintenance directly influence plant safety, efficiency, and reliability. Malfunctioning or poorly configured valve systems can lead to product losses, energy inefficiency, and costly unplanned shutdowns.

This comprehensive five-day training course delivers practical knowledge and hands-on troubleshooting strategies for industrial valve systems. Participants will gain an in-depth understanding of valve types, actuation methods, regulator design, failure modes, and maintenance best practices. The course includes case studies, group diagnostics, and field-based examples to bridge theory with practical application.

Objectives

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

- Identify and differentiate various valve types and their operating principles
- Understand actuator technologies and control systems for valve operation
- Diagnose common valve, actuator, and regulator problems using practical tools
- Apply inspection, testing, and maintenance procedures effectively
- Ensure safe and compliant operation of flow control equipment

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Why Attend

- Reduce flow-related failures and energy losses through proper valve management
- Learn troubleshooting techniques that save time and prevent costly downtime
- Improve equipment reliability with correct valve and actuator selection
- Gain confidence in handling control valve automation and feedback loops
- Enhance communication with vendors and technical teams on valve-related issues

Target Audience

This program is designed for:

- Maintenance and mechanical engineers
- Instrumentation and control technicians
- Process engineers and utility plant personnel
- Inspection and reliability professionals
- Anyone involved in the selection, operation, or maintenance of valve systems

Individual Benefits

Key competencies that will be developed include:

- Technical knowledge of valve configurations and functions
- Diagnostic skills for valve, actuator, and regulator faults
- Preventive and corrective maintenance techniques
- Understanding control and safety integration
- Hands-on application of inspection and performance tools

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Increased reliability of valves and flow control systems
- Improved plant safety through better valve operation and isolation practices
- Reduced operational downtime due to proactive fault management
- Enhanced performance in regulated and automated environments
- Stronger compliance with international engineering standards

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Design principles and performance parameters of valve systems
- Case Studies – Real-world failures and best practice troubleshooting
- Workshops – Seal leakage diagnosis, actuator alignment, and control valve setup
- Peer Exchange – Group exercises on typical maintenance challenges
- Tools – Templates for inspection, torque testing, and valve sizing calculations

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Course Outline

Detailed 5-Day Course Outline | Delivery Format: In-Person or Online (Live) | Platform: Zoom, WebEx or Microsoft Teams

Training Hours: 07:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet (in-person): 01:00 – 02:00

Day 1: Introduction to Valve Systems

- Module 1: Classification and Selection of Valves (07:30 – 09:30) • Overview of valve types: gate, globe, ball, butterfly, plug, check • Pressure and temperature ratings (ANSI/API/ASME standards) • Application criteria: media, control requirements, safety
- Module 2: Valve Components and Operation (09:45 – 11:15) • Bonnet, body, stem, packing, seat, and trim designs • Pressure drop and flow coefficients • Valve body materials and corrosion resistance
- Module 3: Valve Failures and Wear Mechanisms (11:30 – 01:00) • Leakage, erosion, cavitation, and galling • Seat damage and stem misalignment • Troubleshooting tools and inspection guidelines
- Module 4: Workshop – Valve Selection and Specification (02:00 – 03:30) • Exercise using sample system specs to choose suitable valves

Day 2: Actuator Technologies and Controls

- Module 1: Types of Actuators (07:30 – 09:30) • Pneumatic, hydraulic, electric, and electro-hydraulic actuators • Torque, response time, and fail-safe features • Selecting actuator types based on service conditions
- Module 2: Control Valves and Positioners (09:45 – 11:15) • Control valve function and flow regulation • I/P converters, positioners, and feedback loops • Control signal types and calibration
- Module 3: Troubleshooting Valve Actuators (11:30 – 01:00) • Actuator drift, hysteresis, stiction • Electrical and pneumatic fault identification • Performance testing and recalibration
- Module 4: Workshop – Actuator Diagnosis (02:00 – 03:30) • Troubleshooting real actuator issues from field examples

Day 3: Regulators, Relief Devices & Safety Controls

- Module 1: Introduction to Regulators and Relief Valves (07:30 – 09:30) • Self-operated vs pilot-operated regulators • Pressure reducing and backpressure regulators • Overpressure protection and safety relief valves
- Module 2: Performance Challenges in Pressure Control (09:45 – 11:15) • Hunting, seat leakage, chattering • Regulator flow sizing and Cv calculations • Materials compatibility and spring selection
- Module 3: Workshop – Troubleshooting Regulators (11:30 – 01:00) • Diagnosing poor performance and misapplication • Hands-on fault isolation exercise
- Module 4: Case Study – Relief Valve Misapplication (02:00 – 03:30) • Incident analysis and lessons learned

Day 4: Maintenance, Testing & Reliability

- Module 1: Valve Maintenance Planning (07:30 – 09:30) • Inspection intervals and procedures • Packing replacement and seat lapping • Maintenance tools and best practices
- Module 2: Testing and Performance Verification (09:45 – 11:15) • Pressure testing: hydrostatic and seat leak tests • Stroke testing, torque checks, and actuator signal response • Documentation and tagging
- Module 3: Seal Leakage and Emission Control (11:30 – 01:00) • Emission standards and packing upgrades (API 622/624) • Live loading and stem seal enhancement • Online leak detection and control
- Module 4: Workshop – Valve Failure Analysis (02:00 – 03:30) • Hands-on review of failure samples and reports

Day 5: System Integration & Course Wrap-Up

- Module 1: Valve Automation and Digitalization (07:30 – 09:30) • Smart positioners, HART and FOUNDATION Fieldbus • Integration with DCS/PLC systems • Diagnostics, alerts, and data logging
- Module 2: System-Level Troubleshooting (09:45 – 11:15) • Pressure, flow, and valve coordination issues • Water hammer, surge, and transient response • Root cause analysis techniques

- Module 3: Final Review and Action Planning (11:30 – 01:00) • Knowledge consolidation and implementation planning • Participant presentations (optional)
- Module 4: Certification and Close-Out (02:00 – 03:30) • Feedback session and Q&A • Certificate distribution

Certification

Participants will receive a Certificate of Completion in Valves, Actuators & Regulators Technology & Troubleshooting, validating their technical knowledge and hands-on capability in diagnosing and maintaining flow control systems across industrial applications.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

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