

Industrial Valve Technology and Application Training Course

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Overview

Industrial Valve Technology and Application Training Course is a one-week intermediate programme for mechanical, piping, maintenance, inspection, operations, and project personnel who leave with an Industrial Valve Application Pack. Participants connect valve functions, gate, globe, ball, butterfly and check-valve construction, materials and trims, pressure-temperature ratings, end connections, actuation interfaces, leakage, fugitive emissions, inspection, maintenance, and failure evidence with traceable application decisions. The course remains distinct from control-loop tuning and does not replace manufacturer design, code authority, or competent field work. Agile Leaders Training Center delivers this industrial valve lifecycle course.

Who Should Attend

- Mechanical and piping engineers who specify or review industrial valves
- Maintenance and reliability personnel responsible for valve performance
- Inspection and quality staff who assess valve condition and records
- Operations personnel who monitor isolation, direction, leakage, and operability
- Project and procurement staff who coordinate valve packages and documentation

Participants should understand basic piping terminology and workplace safety. The course does not authorize pressure-boundary design, code interpretation for approval, intrusive maintenance, emissions qualification, or changes outside approved procedures.

Departments and Industries

The course supports oil and gas, petrochemicals, chemicals, power, utilities, water, manufacturing, and process facilities.

- Mechanical, piping, and materials engineering
- Maintenance, reliability, and asset integrity
- Inspection, quality, and technical assurance
- Operations and production support
- Projects, procurement, and vendor coordination

Learning Objectives

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

- Distinguish valve functions, construction types, and application limits
- Review pressure-temperature class, materials, trim, and end connections
- Compare gate, globe, ball, butterfly, and check-valve behaviour
- Evaluate manual, gear, pneumatic, hydraulic, and electric actuation interfaces
- Interpret inspection, test, leakage, emissions, and failure evidence
- Build a documented valve application and lifecycle review

Course Agenda

Day 1: Valve Functions and Application Basis

- Isolation, Throttling, Direction, and Non-Return Function Map
- Process Fluid, Pressure, Temperature, Flow, and Hazard Register
- Valve Size, Class, End Connection, and Installation Constraint Checklist
- Flow Direction, Orientation, Accessibility, and Operability Review
- Application Responsibility and Competence-Boundary Matrix

Day 2: Valve Types and Internal Construction

- Gate and Globe Valve Construction Comparison
- Ball and Plug Valve Bore, Seat, and Closure Review
- Butterfly Valve Disc, Seat, Offset, and Shaft Map
- Swing, Lift, Dual-Plate, and Axial Check-Valve Behaviour
- Body, Bonnet, Disc, Closure, Stem, Seat, and Packing Interface Diagram

Day 3: Materials, Ratings, Sealing, and Actuation

- Body, Bonnet, Trim, Soft-Seat, and Packing Material Matrix
- Pressure-Temperature Rating and Material-Group Review
- Flanged, Threaded, Socket-Weld, Butt-Weld, and Wafer End Comparison
- Handwheel, Gearbox, Pneumatic, Hydraulic, and Electric Actuation Interface
- Seat Leakage, Stem Leakage, Body-Joint Leakage, and Emissions Evidence

Day 4: Inspection, Testing, and Maintenance Evidence

- Identification, Marking, Certification, and Data-Sheet Checklist
- Visual, Dimensional, Material, and Nondestructive Examination Record Review
- Shell, Seat, Closure, and Operational Test Evidence
- Packing Adjustment, Lubrication, Fastener, and Operator Check
- Storage, Preservation, Installation, and Commissioning Readiness

Day 5: Failure Review and Lifecycle Decisions

- Internal Leakage, External Leakage, Seizure, and Excess Torque Matrix
- Erosion, Corrosion, Cavitation, Wear, and Deposit Evidence
- Stem, Seat, Packing, Gasket, Body, and Actuator Failure Map
- Repair, Replacement, Re-Rating, and Escalation Decision Boundary
- Capstone Exercise: Industrial Valve Application Pack

Practical Exercises

Guided exercises convert service and inspection evidence into documented valve decisions.

- Build a valve service and application register
- Compare candidate valve types for stated duties
- Review a pressure-temperature rating and material selection
- Interpret leakage, test, inspection, and emissions records
- Prepare a lifecycle recommendation and escalation note

FAQs

How is this course different from control-valve training?

This course focuses on industrial isolation, throttling, and check-valve technology across the lifecycle. It does not teach control-loop sizing, tuning, or process-control strategy.

Which valve types are covered?

Gate, globe, ball, plug, butterfly, and common check-valve constructions are compared through their functions, internals, limits, and service evidence.

Does the course cover fugitive emissions?

Yes. It explains where external leakage can occur, what qualification and field evidence mean, and when to escalate, without conducting formal qualification testing.

Does the course teach valve repair?

It reviews maintenance and failure evidence and the boundaries between adjustment, repair, replacement, engineering review, and vendor involvement. It does not authorize workshop repair.

What will participants take back to work?

An Industrial Valve Application Pack containing service data, type comparisons, rating and material checks, inspection evidence, failure maps, and a lifecycle recommendation.

Conclusion

Participants return able to review industrial valve applications, question documentation, interpret operating and failure evidence, and coordinate safely across engineering, operations, maintenance, inspection, and vendors.

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