

Course Overview:

This course will provide the attendee with the knowledge necessary to understand and enhance their mechanical aptitude in the area of valve maintenance and repair. The purpose of this course will be to develop in participants a working knowledge of various valves, as well as the different procedures and regulations associated with their maintenance and installation

Course Objective:

- The purpose of this course will be to develop in participants a working knowledge of various valves, as well as the different procedures and regulations associated with their maintenance and installation.
- With the completion of this course the participants will be equipped with the basic knowledge required to identify valves, the construction of valves, and the repair of valves and associated components.
- Technicians that participate in this training will be better equipped to repair and maintain these components, as well as increase the knowledge within a maintenance team. This will increase the safe and efficient productivity of the mechanical systems.
- With further on-job training and experience, each technician will be able to attend more advanced training, therefore enhancing their maintenance team's capabilities and knowledge.

Course Outline:

- Valve Actuation:
 - Valve Types, e.g., manual, electric, pneumatic, hydraulic
 - Motion required
 - Rotary, e.g., quarter-turn, multi-turn
 - Linear
 - Mode of operation
 - Double acting
 - Spring return: spring-to-closed, spring-to-open
 - Required valve operating thruster torque
 - Power supply, e.g., voltage, available air supply
 - On/off, throttling, or proportional control
 - Corrosive resistance: materials, coating, tubing
 - Speed of operation
 - Frequency of operation
 - Special requirements, e.g., toggling, testing
 - Accessories, e.g., limit switches, positioner, solenoid valve, transducers, manual override
- Application
- Media being handled, e.g., liquid, gas, slurry, or solid
 - Corrosiveness of media, e.g., pH, concentration
 - Corrosiveness of atmosphere

Training Language:

Eng/Ar

Training Methodology:

- Presentation & Slides
- Audio Visual Aids
- Interactive Discussion
- Participatory Exercise
- Action Learning
- Class Activities
- Case Studies
- Workshops
- Simulation

- Flow (velocity, capacity, Cv, direction)
- Pipe size
- Media temperature (maximum to minimum)
- Pressure: maximum operating pressure; maximum differential pressure
- Operation: e.g., manual/automatic, on-off throttling
- Installation constraints
- Envelope dimensions
- Weight
- Accessibility
- Conformance to appropriate standards, e.g., API, AWWA, ANSI, FM,
- UL, OSHA, etc.
- Tightness of shutoff required

VALVE REQUIREMENTS

- Type of valve, e.g., ball, butterfly, gate, check, control, globe, plug, relief, regulator, pinch, diaphragm, etc.
- Valve size
- End connections, e.g., screwed, ranged/lugged, wafer, butt-weld, mechanical joint, etc.
- Materials of construction, e.g., carbon steel, resins, steel or other alloys, cast iron, etc.
- Body
- Trim
- Seats
- Bolting
- Frequency of operation
- Packing
- Special requirements, e.g., testing, tagging, coating
- Accessories, e.g., stem/shaft extensions, locking device, position indicator, jacketing

SERVICE REQUIREMENTS

- Testing
- Source inspection
- Availability of replacement valves, actuators, or parts
- Documentation, e.g., certified prints, dimension drawings

Who Should Attend:

This advanced course is for experienced valve mechanics and maintenance personnel, instrument technicians, and others who will benefit from a broadened perspective of control valve performance and maintenance issues. It is also for those responsible for the selection, application, and operation of regulators.