

# Valve Maintenance and Piping System Protection

## Course 347: Valve Maintenance and Piping System Protection

Covers maintenance and operation of gate, globe, ball, plug, check, and special-purpose valves. Details actuators and various accessories. Explains valve selection based on application. Describes methods of protecting piping systems.

TPC Training is accredited by IACET to offer **0.5 CEU** for this program.



### Lesson 1: Valve Maintenance

#### Topics

Valve Materials; Threaded Connections; Welded and Brazed Connections; Flanged Connections; Valve Installation; Repairing Gate Valves; Repairing Globe and Angle Valves; Repairing Ball Valves; Maintaining Plug Valves; Maintaining Check Valves; General Maintenance

#### Objectives

- Discuss the factors that affect the selection of valve materials.
- Describe the various methods of connecting valves to piping.
- Identify the various types of common valves and the operating characteristics of each.
- Explain general maintenance and repair procedures for different types of valves.

### Lesson 2: Special Valves

#### Topics

Special Valves; Butterfly Valves; Butterfly Valve Installation; Butterfly Valve Repair; Diaphragm Valves; Diaphragm Valve Installation; Diaphragm Valve Repair; Pop Safety Valves; Pop Safety Valve Installation; Pop Safety Valve Repair; Relief Valves; Safety Relief Valves; Safety Relief Valve Installation; Safety Relief Valve Repair; Pressure-Reducing and Regulating Valves; Installation and Repair; Quick-Opening Valves

#### Objectives

- Identify several types of special valves and the operating characteristics of each.
- Discuss the installation, maintenance, and repair of special valves.

### Lesson 3: Actuators and Accessories

#### Topics

Valve Actuators; Diaphragm Actuators; Piston Actuators; Electric Actuators; Actuator Installation; Actuator Maintenance and Repair; Bourdon Tube; Bimetallic Gauge; Bellows Gauge; Flowmeters; Rotating Unions; Accumulators; Air Receivers

#### Objectives

- Explain the function and operation of a valve actuator.
- Identify various types of valve actuators and describe the installation, maintenance, and repair of each.
- Discuss the operating characteristics of various accessories, including gauges, meters, accumulators, and air receivers.

### Lesson 4: Valve Selection

#### Topics

Application Considerations; Studying the Total System; Valve Applications; Valve Materials; Valve Identification; Soldered Valve Connections; Threaded Valve Connections; Flanged Valve Connections; Tool Selection; Valve Location; Positioning the Valve

#### Objectives

- Name the five major uses of valves in piping systems and identify the types of valves best suited for each.
- Identify and explain the factors that determine the selection of a valve for a given application.
- Identify various valve markings and symbols.
- Describe several types of valve-to-pipe connections.
- Discuss the selection and proper use of tools in valve installations.
- Explain the importance of the correct installation of valves in well-chosen locations.

### Lesson 5: Piping System Protection

#### Topics

Protecting Hot Pipelines; Heat Conduction; Heat Convection; Heat Radiation; Installing Insulation; Maintaining Insulation; Tracing; Installing Steam Tracers; Electric Tracing; Tracing Valves and Fittings; Protection from Freezing; Protection from Corrosives; Active Protection; Passive Protection; Inspection of Piping Protection; Hangers and Supports

#### Objectives

- Describe the methods by which heat transfer occurs.
- Discuss the methods of tracing process lines.
- Explain the various methods of protecting piping systems from heat, cold, and corrosion.
- Discuss the installation, inspection, and maintenance of insulation and other forms of piping system protection.