Course Name	**Valve Maintenance and Piping System Protection**
Credit Hours	3 Hours
Instructor(s)	Jerry Durham
Fee	$30.00

Course Description

This course 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. This course has no prerequisites.

Learning Objectives

After completing this course, the licensee will be able to:

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

Equipment Requirements

You must have an active, working internet connection to access this course online, as well as a platform to access the internet, such as a computer, tablet, or phone. All popular web browsers are supported, including Google Chrome, Mozilla Firefox, Safari, and Opera. No specialized software, speaker, microphone, or web camera is required.

Schedule and Location

This course is available online at any time at www.AYPOTech.com. Upon enrolling in the course, students will have access for 365 days or until the agency-issued course expiration date, whichever comes first. After the access expiration date, the student may re-activate their course if the course approval has not expired. If they do not re-activate, the course will be removed from the student's account and any progress in the course will be lost. Before the access expiration date, the student may sign in and out of the course as many times as needed to complete the course.

Student Support

Both general and technical support is available to the student before, during, and after taking the course online. Students have access to general customer support via phone, chat, and email. Students have access to the course instructor via email. All questions, concerns, and comments received will be responded to within one business day.

Participation/Interactivity Verification

Timed Logs - Per our company's record retention policy, each student's every log-in, log-out, and lesson/assessment completion time is tracked and retained as part of the student record.

Review Questions - After each section of text, students must answer a review question. Students cannot progress in the course until the question between sections has been answered correctly.

Global Timer - Students will not get credit until they spend a minimum of 180 active minutes total in the course.

Identity Verification

Unique Username/Password - Each student that wants to complete a training course with us must create and account by registering a unique personal email address and password. The student must enter this unique identifier every time they take a break from the course.

Assessment Details

Review Questions - The student must successfully answer all review questions between sections to get credit for the course. If their first response is incorrect, students will have to try again until they choose the correct answer.

Valve Maintenance and Piping System Protection
Timed Syllabus

Section	Topic	Questions	Minutes
	Valve Maintenance		
1	Valve Materials	1	5
2	Threaded Connections	1	4
3	Welded and Brazed Connections	1	5
4	Flanged Connections	1	2
5	Valve Installation	1	3
6	Repairing Gate Valves	1	5
7	Repairing Globe and Angle Valves	2	8
8	Repairing Ball Valves	1	3
9	Maintaining Plug Valves	1	4
10	Maintaining Check Valves	2	5
11	General Maintenance	1	3
	Special Valves		
12	Special Valves	1	2
13	Butterfly Valves	2	7
14	Diaphragm Valves	1	7
15	Pop Safety Valves	1	6
16	Relief Valves	1	5
17	Safety Relief Valves	2	8
18	Pressure-Reducing and Regulating Valves	2	6
19	Quick-Opening Valves	1	2
	Actuators and Accessories		
20	Valve Actuators	1	6
21	Diaphragm Actuators	1	3
22	Piston Actuators	1	3
23	Electric Actuators	1	3
24	Actuator Installation	1	5
25	Actuator Maintenance and Repair	1	4
26	Bourdon Tube	1	3
27	Bimetallic Gauge	1	3
28	Bellows Gauge	1	2
29	Flowmeters	1	4
30	Rotating Unions	1	2
31	Accumulators	1	6
32	Air Receivers	1	2
	Valve Selection		
33	Application Considerations and Studying the Total System	1	4

34	Valve Applications	**2**	**6**
35	Valve Materials	**1**	**3**
36	Valve Identification	**2**	**7**
37	Soldered Valve Connections	**1**	**3**
38	Threaded Valve Connections	**1**	**3**
39	Flanged Valve Connections	**1**	**3**
40	Tool Selection	**2**	**6**
41	Valve Location	**1**	**2**
42	Positioning the Valve	**1**	**3**
	Piping System Protection		
43	Protecting Hot Pipelines	**1**	**2**
44	Heat Conduction, Convection, and Radiation	**1**	**4**
45	Installing and Maintaining Insulation	**1**	**3**
46	Tracing	**1**	**4**
47	Installing Steam Tracers	**1**	**2**
48	Electric Tracing, Tracing Valves, and Fittings	**1**	**3**
49	Protection From Freezing	**2**	**5**
50	Protection From Corrosives	**1**	**4**
51	Active and Passive Protection	**2**	**4**
52	Inspection of Piping Protection	**1**	**3**
53	Hangers and Supports	**1**	**3**
	Totals:	**63**	**214**
	Student Minimum Time Required:		**180**