



Valve Technology - Selection,
Operation, Maintenance and
Troubleshooting



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Introduction:

Different types of valves are used in power plants and other petrochemical industries. All piping systems are fitted with valves for control purposes or for safety requirements. Understanding the function of each valve has an important impact on the quality of the process, the reliability of the equipment and plant, and the overall economics of the activity. Different applications require the selection of the appropriate valve type for specific flow characteristics. Valve behavior also affects systems and processes. Understanding the problems associated with valves is essential for diagnosis and troubleshooting, as well as the maintenance required for a particular type of valve.

Targeted Groups:

Engineers and Technicians of mechanical, electrical and chemical engineering will benefit largely from this training course. Maintenance, Operation, and People in R and D department are recommended to attend this course.

Course Objectives:

At the end of this course the participants will be able to:

- An understanding of valve characteristics and different parameters affecting the operation of valves
- Knowledge of the main types of valves and the ability to select the right valve for the particular application including Control Valves, Non-Return Valves and Safety Valves
- The ability to perform the necessary calculation for valve sizing
- Knowledge of valve control systems including actuators and positioners
- An understanding of the problems associated with valves like flashing, slamming and water hammer
- The ability to perform troubleshooting of systems involving valves and making decisions on the right maintenance plan concerning different types of valves

Targeted Competencies:

- Basics of the Valve Technology and Sizing
- Control Valves
- Check Non-Return Valves
- Relief and Safety Valves: Function and Operation
- Valves Actuators and Troubleshooting

Course Content:

Unit 1: Basics of the Valve Technology and Sizing:

- Types of Valves
- Valve Parts and Valves characteristics
- Flow characteristics, Linear, quick opening & equal percentage, etc.
- Valve-sizing and Selection criteria
- Different valves characteristics
- Examples

Unit 2: Control Valves:

- Functions of valves
- Methods of regulation
- Control Valve Types
- Valve end connections
- Valves seating
- Valve Control

Unit 3: Check Non-Return Valves:

- Applications
- Types of Check Valves
- Check Valves Operation
- Selection of Check Valves
- Applications

Unit 4: Relief and Safety Valves: Function and Operation:

- Relief Valves Types
- Relief Valve Parts
- Direct Acting and Pilot Control
- Applications
- Relief valves problems
- Applications of Rupture Discs

Unit 5: Valves Actuators ad Troubleshooting:

- Control Valves Types, Linear Valve Features and Rotary Valve Features
- Actuation systems and Types of actuators
- Valve Positioners
- Pressure Recovery Characteristics
- Cavitation in Valves and Water Hammer
- Noise problems