Control Valves & Actuators

Date	Venues	($)Fees	Book your seat
22 Dec -26 Dec 2024	Istanbul	3300	Register Now

Introduction

This highly interactive 5-day training seminar highlights the most important features and characteristics of control valves and actuators. Combinations of valves and actuators are used in just about every process around the world, and the proper understanding and utilization of them is crucial to efficient operations and control. This seminar has been designed in such a way as to empower delegates to think practically about valve and actuator installations, in a manner that allows them to consider, select and install the best piece of equipment for the application at hand.

The seminar emphasizes the important aspects of valves and actuators, and lead to a greater understanding of flow aspects pertinent to these devices. In some cases, the differences between certain valves and actuators can be quite large, whilst in others, the variations are very subtle. Delegates are taught to focus and differentiate between the various devices that are available, and how they fit into the greater scheme of things. This exposure, most certainly, will promote greater confidence in the ability of delegates to make informed decisions, as well as to assist in decisions that are made at a higher level.

This course will feature:

- Different types of valves, and their suitability to a variety of applications
- Actuators, valve positioners, filters, regulators, I/Ps, and other associated hardware
- Understanding the valve coefficient and determining the correct valve size and type
- Valves in P&IDs, installation and maintenance considerations, and cavitation and noise control
- Optimizing the use of control valves, using digital controllers

Objectives

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

- Comprehend the inner operation of most commonly utilized valve types
- Decide on the best valve to use, for specific applications
- Determine the most cost effective valve size
- Determine the best device to drive and operate an assortment of valves
- Get control valves to operate optimally in the field, using an assortment of techniques

Training Methodology

A variety of adult learning techniques, that have proven successful or popular with adult learning, will be utilized. Every section is covered theoretically, followed by a practical exercise or discussion, where applicable. The focus is on enhancing understanding, comprehension and the retention of vital information. Every day starts off with reference to the previous day's work, as well as an opportunity to ask further questions. Exercises are either conducted individually

or in groups, depending on how the greatest benefit can be obtained. Computers are utilized, and exercises may range from Excel spreadsheets through to complex simulators. During the practical sessions, the instructor ensures that he is available to anyone that has a question to ask, or has encountered a problem.

Delegates are encouraged to think of applications and problems that they have encountered in the own working environment, and to put these forward for classroom participation, discussion and debate, in order to provide the delegate with better options and possible improved solutions to work-related problems. Delegates are encouraged to keep an open mind.

Special Feature - Software Simulation

A software simulator, which has a 21-day limitation, will be provided. Delegates are encouraged to bring their own (non-Apple) laptops (but, please arrange this, in advance with your IT Department, as the software will need to be loaded onto these machines, and Administrator rights may have to be given). Those delegates that are comfortable enough to work on their own will be encouraged to do so. Delegates that prefer to work in groups (which stimulates participant discussion) are allowed to do so, as this does complement knowledge retention.

Organizational Impact

Delegates who complete the seminar will have a thorough knowledge and understanding of Control Valves and Actuators. Knowledge of the delegates will impact their organisations in the following way:

- The delegates will have a thorough foundation regarding the fundamentals of control valves and actuators, as well as the characteristics of the products and medium that will pass through them
- All aspects pertaining to valve & actuator selection will be covered
- Delegates will be able to make a contribution towards selecting the right equipment for the right application
- Additional equipment (used in conjunction with valves and actuators) will be understood, and
- Delegates will understand and be able to apply the intricacies of sizing the equipment correctly, for specific applications

Personal Impact

On a personal level, delegates will benefit in the following way:

- They will gain knowledge as well as specialised skills pertaining to the most common types of valves, and the actuators associated with them
- They will enhance the confidence levels in their own abilities to evaluate each application on merit, and to make the proper recommendations for the application
- When it comes to understanding what happens around a valve, delegates will attain enhanced insight and technical ability
- They will positioned themselves as respected members of the working environment, able to make a valuable contribution, and
- They will have confidence in knowing that they are able to make important decisions on their own, as long as they have all the right information to justify these decisions

Who Should Attend?

This training course is suitable for a wide range of professionals, but would greatly benefit:

- Key instrumentation personnel involved in valve maintenance
- Senior management and staff responsible for valve and actuator selection
- Mechanical and electrical staff that come into contact with valves
- Process control engineers requiring a high plant availability, often affected by valves
- Designers, industrial engineers and staff responsible for plant safety
- All personnel with a vested interest in applications that require / utilize valves

SEMINAR OUTLINE

DAY 1

Valve Principals, Purposes, Types, Control Signals and Flow Conditions

- Valve principles, valve purposes, and control signals used with valves
- Flow conditions in and around valves
- Reynolds numbers
- Cavitation and flashing, and how this influences valve selection
- Associated equipment, pertinent to valves
- Definitions, and principles of operation of the major types of valves

DAY 2

Valve in P&IDs, Leakage, Valve Characteristics and Valve Size Calculations

- Continuation of the definitions, and principles of operation of more major types of valves
- Additional associated equipment, pertinent with valves
- P&ID diagrams associated with valves
- Valve leakage, and valve leakage rate calculation
- Valve inherent characteristics, and their importance once installed
- Performing manual calculations, for valve sizing

DAY 3

Valve Software, Actuators, Positioners, Cavitation & Noise Control & SIS

- Software used to size control valves
- Assorted actuators, and their properties and characteristics
- Valve positioners
- Cavitation and noise control, in and around valves
- Valves, and how they fit into pressure relief and Safety Instrumented Systems (SIS)
- Using digital controllers, with valves

DAY 4

3-term Controllers and Loop-tuning for Processes containing Control Valves

- Understanding and implementing the right controller action, for fail-safe valves
- Understanding all of the variables, associated with three-term control
- Open loop tuning, for controllers that act on control valve loops
- Closed loop tuning, for controllers that act on control valve loops
- Trial and error tuning, to optimize control valve performance

DAY 5

Using Valves in Cascade, Ratio, Dead-Time Dominant, Non-Linear and PLC-Controlled Processes

- Setting up a cascade loop, using a single valve and multiple controllers
- Setting up a ratio loop, using a single valve and multiple process variables (PVs)
- Dead time dominant loops, how this affects the valve performance, and how this is corrected
- Using a control valve in a process that exhibits different responses in different zones

- Combining PLCs, for valve control

00201126467555
info@bptcenter.com
www.bptcenter.com