



MU073: Practical Valve Technology

Training Description:

The valve industry has become increasing digital during the last ten years. Even a casual examination of available smart or intelligent positioners reveals significant differences in design philosophies, onboard intelligence, and application options being employed by manufacturers.

This course will focus on the applications for smart valve technology. The course offers quick coverage of the operation, application, and pros and cons of today's newest smart valves with digital positioners and actuators including updates on HART and Fieldbus valve technology.

The course will cover the latest spectrum of available valves from gate, plug, butterfly, check, pressure-relief, globe valves to control valves equipped with microprocessors, which provide single-loop control of the process. Further, the course will cover valve materials: steel, iron, plastic, brass, bronze, and a number of special alloys.

This course encourages attendees to advance from basic installation and maintenance to selection, upgrading and troubleshooting of valve failures. It includes modern technology of new materials that have been made available recently.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Apply proven techniques in the selection, installation, sizing, inspection, maintenance and troubleshooting of valves
- ✓ Apply knowledge on control valve theory including cavitation, flashing, choked flow and sizing and identify the various types, features and functions of control valves
- ✓ Determine the characteristics of valves and recognize the concept of trims including low noise trim, diffusers & trim selection
- ✓ Classify manual valves and identify its components and functions
- ✓ Recognize the process considerations for valve technology including pressure classes, materials selection, leakage rates and international standards
- ✓ Implement the process of actuator selection by considering the various types and accessories used in valve technology and apply the principle of field communication as applied in valve technology
- ✓ Develop knowledge on Smart valves and positioners as well as the Smart partial valve stroke test devices used in valves
- ✓ List the common valve problems that are encountered including water hammer effects, high noise levels, noise attenuation & fugitive emissions and determine how to prevent valve failures, installation issues, practical problems and maintenance considerations

Training Designed for:

This course is intended for those who are involved in the selection, installation, applications, sizing, inspection, maintenance and troubleshooting of such equipment. This includes Maintenance, Application, Inspection, Electrical, Mechanical, Control and Instrumentation Engineers, Designers and other technical staff. Likewise, it is beneficial for users, distributors, purchasers or buyers of this equipment for them to understand the manufacturing principles that dictates faster delivery of safer quality product.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Practical sessions will be organized during the course for participants to practice the theory learnt. Participants will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators “Valve Sizing Simulator”, “Valve Simulator 3.0”, “Valvestar 7.2 Simulator” and “PRV2SIZE Simulator.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ PRE-TEST
- ❖ Control Valve Theory
 - Introduction, Definition of a Control Valve, Types of Energy, What is Happening Inside a Control Valve, Cavitation, Flashing, Choked Flow, Control Valve Sizing, Turndown vs. Range ability
- ❖ Video Presentation
 - Cavitation
- ❖ Control Valve Types
 - Rotary Valves, Linear Valves, Valve Selection, How to Choose the Right Valve, Selection Guidelines, Application Comparisons

DAY TWO:

- ❖ Video Presentation
 - Control Valve Body Assembly
- ❖ Characteristics & Trims
 - Valve Characteristics, Application Examples, Cavitation Control, Anti-Cavitation Trim, High Pressure Drop-Applications, Low Noise Trim, Diffusers, Trim Selection
- ❖ Manual Valves
 - Classification of Manual Valves, Rotating Manual Valves, Stopper Valves, Sliding Valves, Flexible Valves

DAY THREE:

- ❖ Process Considerations
 - End Connections, Pressure Classes, Face to Face Criteria, Materials Selection, Modes of Failure, Leakage Rates, International Standards
- ❖ Actuator Selection
 - Types of Actuators, Linear Actuators, Rotary Actuators, Actuator Forces, Positioners, Fail Safe Systems, Auxiliary Hand wheels, Valve Accessories
- ❖ Video Presentation
 - Actuator Assembly

DAY FOUR:

- ❖ **Field Communications**
 - Analogue Signals, Digital Communications, Fieldbus Technologies
- ❖ **Video Presentation**
 - HART Protocol
- ❖ **Smart Valves and Positioners**
 - Introduction, Development, Digital Valve Controllers, Future Development
- ❖ **Simulator (Hands-on Practical Sessions)**
 - Practical sessions will be organized during the course for participants to practice the theory learnt. Participants will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators "Valve Sizing Simulator", "Valve Simulator 3.0", "Valvestar 7.2 Simulator" and "PRV2SIZE Simulator."

DAY FIVE:

- ❖ **Smart Partial Valve Stroke Test Devices**
 - Overview
- ❖ **Common Valve Problems**
 - Water Hammer Effects, High Noise Levels, Noise Attenuation, Fugitive Emissions, How to Prevent Valve Failures, Installation Issues, Practical Problems, Maintenance Considerations
- ❖ **Course Conclusion**
- ❖ **POST-ASSESSMENT and EVALUATION**

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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