

**Training Title:**

**MAINTENANCE OF ON/OFF & CONTROL VALVES**

**Training Duration**

5 days

**Training Date**

REF	Maintenance of on/off & Control		12-16 August	\$6,500	London, UK
ME018	Valves	5	2024		

In any of the 4 or 5-star hotels. The exact venue will be informed later.

**Training Fees**

- \$6,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

**Training Certificate**

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

**TRAINING OVERVIEW**

**TRAINING DESCRIPTION**

A valve is a device that regulates, directs, or controls the flow of a fluid (gases, liquids, fluidized solids, or slurries) by opening, closing, or partially obstructing various passageways. Valves are technically valving fittings but are usually discussed as a separate category. In an open valve, fluid flows in a direction from higher pressure to lower pressure. This course presents a practical approach to valve selection for the function, Servicing, sizing, installation, repair, and maintenance. Valves usually appear to be simple in form and operation, such as those of a manual Off-On Valve, Check Valve, or the Fixed Valve type such as an Orifice, Blind, etc. You will discover that even these components are frequently installed improperly throughout the industry. This course will go through the following:

- Valves types
- Valve operation and control
- Valve selection and sizing
- Valve maintenance and troubleshooting

**TRAINING OBJECTIVES**

This course has been structured to show how different basic types of Valves operate and how they are configured for their many applications. This short course will present many accessories such as actuators and how they are made available and selected. Other amenities such as proportional controllers, solenoids, positioners, and indicators will also be presented. In light of the many liability cases held throughout the world, selecting the proper valve can have major consequences for a company's safety, economy, and viability.

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**WHO SHOULD ATTEND?**

This course is intended for Maintenance and control Engineers, control and instrument supervisors, Application Engineers, Inspection Engineers, Elect/Electronics Engineers, Control Systems and Instrumentation Engineers, Production Engineers, and new Valve Designers.

**TRAINING METHODOLOGY:**

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your questions and to share in the development of the right answers using your analysis and experiences. Tests of multiple-choice type will be made available daily to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% of Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions



**COURSE OUTLINE:**

**DAILY OUTLINE –**

**Part 1**

**- Basics of the Valve Technology**

**Valves Technology**

- ☐ Types of Valves
- ☐ Valves characteristics
- ☐ Sealing performance
  - o Leakage Criterion
  - o Leakage Classifications
  - o Sealing Mechanisms
  - o Valve stem seals
- ☐ Flow characteristics
  - o Flow through valves
  - o Valve flow characteristics
    - ☐ Linear & equal %



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**On / Off versus Automatic Valves**

**On/Off Valves**

- Functions of manual valves
- Methods of regulation
- Valve Types:
  - o Stopping/starting valves
  - o Control valves
- Valve end connections

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- • Valves rating
- • Valves seating
- • Types of manual valves
  - Gate Valves
  - Plug Valves
  - Ball Valves
  - Butterfly Valves
  - Pinch Valves
  - Diaphragm Valves
  - Check Valves
    - Applications
    - Types of Check Valves
      - Lift check valves
      - Swing check valves
      - Tilting-disc check valves
      - Diaphragm check valves
    - Check Valves Operation
    - Selection of Check Valves

## Part 2 Valves Troubleshooting and maintenance

### Valves Problems, and Troubleshooting

- ☐ High-Pressure Drop
  - Pressure Recovery Characteristics
- ☐ Cavitation in Valves
  - Incipient and choked cavitation
  - Flow curve cavitation index
  - Cavitation-elimination devices
- ☐ Flashing versus Cavitation
- ☐ Flow Choking
- ☐ High Velocities
- ☐ Water Hammer
  - What causes water hammer?
  - Water Hammer Calculations
  - Solutions for water hammer
- ☐ Surge Protection
- ☐ Check valve slamming
- ☐ Noise problems
- ☐ Clean air standards
- ☐ Life loading
- ☐ Packing for fugitive-emission control
- ☐ Troubleshooting the Control Valves

### Control Valves & Actuators

- ☐ Control Valves Types
- ☐ Linear Valve Features

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- ☐ Rotary Valve Features
- ☐ Control Valve Flow Characteristics
- ☐ Operation of Positioners

**Valve maintenance**

- Assembly and disassembly valves
- Repair seat and disc/gate
- Lapping valves
- Gasket and packing replacement
- Hydraulic test and inspection

**TRAINING OUTCOME**

- Understanding of valve characteristics and main types of valves and the ability to select the right valve for the particular application.
- Knowledge of valve control systems including actuators and positioners
- An understanding of problems associated with valves
- The ability to perform the right maintenance and troubleshooting of valves.

**NOTE:**

**Pre & Post Tests will be conducted**

**Case Studies, Group Exercises, Group Discussions, Last Day Reviews & Assessments will be carried out.**



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