

MAINTENANCE OF ON OFF & CONTROL VALVES



MUE202
Mechanical &
Utility
Engineering

COURSE TITLE

MAINTENANCE OF ON OFF & CONTROL VALVES

COURSE DATE/ VENUE

18 – 22 January, 2021

London, UK

COURSE REFERENCE

MUE202

COURSE DURATION

05 Days

DISCIPLINE

Mechanical & Utility Engineering



COURSE INTRODUCTION

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 valves 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

COURSE OBJECTIVE

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.

COURSE AUDIENCE

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

COURSE CONTENT

Part 1

- Basics of the Valve Technology

Valves Technology

- ▣ Types of Valves
- ▣ Valves characteristics
- ▣ Sealing performance
 - Leakage Criterion
 - Leakage Classifications
 - Sealing Mechanisms
 - Valve stem seals
- ▣ Flow characteristics
 - Flow through valves

- o Valve flow characteristics
- ▣ Linear & equal %

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
- Valves rating
- Valves seating
- Types of manual valves
 - o Gate Valves
 - o Plug Valves
 - o Ball Valves
 - o Butterfly Valves
 - o Pinch Valves
 - o Diaphragm Valves
 - o 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
- ▣ 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

COURSE CERTIFICATE

TRAINIT ACADEMY will award an internationally recognized certificate(s) for each delegate on completion of training.

COURSE FEES

\$6,150 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions