

VALVES (REF:OTSVAV001)

Course Objectives

The purpose of this course is to improve technician performance both in practical terms and in underpinning knowledge.

Course Description

The course will cover the subjects described on the enclosed syllabus. The course will comprise practical and theoretical instruction. The purpose of this course is to improve technician performance both in practical terms and in underpinning knowledge. Each trainee will benefit from the latest technologies, taught both practically and by formal lecture/demonstration.

Assessment will be by practical assignments and simulations. Valve positioners will also be taught along with split-range control systems. Each trainee will carry out the practical tasks of stroke checking a pneumatic valve, mounting a positioner and calibrating a positioner.

Who should attend

This course is aimed at those maintenance technicians that require knowledge of the maintenance aspects of a variety of valve types.

Pre-Requisites

All Attendees should have a sound power generation and electrical background.

Course Outcome

At the end of this course you will be able to maintain valves.

Course Outline

Day 1

Introduction to Valves

Types of valves
Globe valves and piston operated valves
Needle valves
Choke and throttling valves
Solenoid valves
Ball valves
Butterfly valves

Day 2

Types of Valves (operating details)

Globe valves
Cage guided globe valves
Stem and post guided globe valves
Ball valves
V-notch ball segment valves
Eccentric rotary plug valves
Butterfly valves
Eccentric disk butterfly valves

Selection Parameters

Pressure ratings
Pressure drop ratings
Temperature ratings
Material selection
Capacity requirements
Flow characteristics
Shut-off
Cavitation & flashing
Noise considerations
End connections
Cost considerations
Maintenance



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Day 3

Valve Actuators

Identify the parts of an actuator and valve assembly
The actuator data plate

The Single Acting Positioner

Identify the parts of a positioner
Advantages of the positioner
Using the manufacturers manual

Operation of a Pneumatic Diaphragm Valve & Positioner

Direct and indirect operation
Positioner operation
The beam
The bellows & flapper
The cam
The relay unit

Day 4

Practical Task

Mount and stroke a valve actuator.
General maintenance procedure for a valve actuator
Mount a Positioner
Using vendor manual, mount a positioner to the actuator.
Calibrate the positioner
General maintenance procedure for a valve positioner

The Piston Operated Valve

Construction of a piston operated valve
Operation of a piston operated valve
General maintenance procedure for a piston operated valve

Maintenance & Serviceability

Maintenance of globe valves
Maintenance of Rotary valves
Removal from pipeline for servicing a rotary valve
Separating the valve body from the actuator for servicing a globe valve
Other maintenance considerations

Day 5

The needle valve
Safety & relief valves
None return valves
Angle valves
Plug valves
Check valves
Gauge cock valve
Cryogenic valves

Split Range Control

Reasons for using split range control
Furnace fuel control system
Advantages of split range control

Valves & Safety

Fail safe positions
The solenoid valve
Air Fail Open and Air Fail Close valve systems

