



## Pump & Valve Technology

22 - 26 Jul 2024  
Madrid (Spain)



# Pump & Valve Technology

**Ref.:** 15393\_306440 **Date:** 22 - 26 Jul 2024 **Location:** Madrid (Spain) **Fees:** 5500 **Euro**

## Introduction:

This Pumps & Valves Technical Training Seminar will introduce you to the different types of pumps and valves and related terminology. Centrifugal pumps, positive displacement pumps, packings, mechanical seals, sealing systems, bearings, and couplings will be discussed. Isolation valves and control valves will also be covered.

The different types of pumps and valve applications and their suitability for various operating duties will be discussed. Operation, troubleshooting, and maintenance will also be discussed in detail.

## Targeted Groups:

- Supervisors.
- Team Leaders.
- Technicians.

## Course Objectives:

### At the end of this course the participants will be able to:

- Have an understanding of the different types of pumps and their associated terminology
- Have an understanding of Centrifugal and positive displacement pumps, packing, mechanical seals and sealing systems, bearings and couplings
- Have an understanding of different parameters affecting the operation of valves
- Have the ability to select the right valve for the particular application and to perform the necessary calculation for valve sizing
- Have the ability to perform troubleshooting of systems involving valves
- Have the ability to decide on the right maintenance plan concerning different types of valves

## Targeted Competencies:

- Pumping Systems
- Pump Types
- Achieving Pump Reliability
- Valves Technology
- Valves Troubleshooting & Maintenance

## **Course Content:**

### **Unit 1: Pumping Systems:**

- Introduction
- Pump Types and Terminology
- Pump Performance Centrifugal and Positive Displacement
- Understanding Head
- Types of Head: Friction, Pressure, Static & Velocity
- Friction in Valves, Piping & Fittings
- Calculating Actual Head in a System
- Cavitation in Pumps and Valves
- Net Positive Suction Head NPSH
- Vapour and Gas Cavitation
- Flashing vs. Cavitation

### **Unit 2: Pump Types:**

- Positive Displacement Pumps
- Reciprocating Pumps
- Reciprocating Pump Valves
- Rotary Pumps - scroll and gear types
- Failure Mechanisms - identification and monitoring
- Centrifugal Pumps
- Centrifugal Pump Theory
- Pump Components
- Matching Pumps with Drivers
- Performance Analysis
- Failure Mechanisms - identification and monitoring

### **Unit 3: Achieving Pump Reliability:**

- Sealing Systems
- Conventional Packing Glands, Mechanical Seals & Flush Plans
- Seal Failure Mechanisms
- Maintenance and Repair of Mechanical Seals
- Bearings - failure modes and how to extend life
- Lubrication
- Plain Bearings
- Anti-Friction Bearings
- Couplings & Alignment
- Couplings
- Alignment & Balancing
- Foundations & Bedplates

## **Unit 4: Valves Technology:**

- Types of Valves globe, gate, ball, plug, check
- Flow Characteristics
- Flow through Valves
- Valve Flow Characteristics
- Linear, Quick Opening & Equal %
- Valve Sizing
- Calculating the Correct Cv Value
- Selecting Valve Size Using Valve Coefficient
- Calculations for Correct Valve Selection
- Sealing Performance
- Leakage Classifications
- Sealing Mechanisms
- Valve Stem Seals

## **Unit 5: Valves Troubleshooting & Maintenance:**

- High-Pressure Drop
- Pressure Recovery Characteristics
- Flow Choking
- High Velocities
- Water Hammer
- What causes water hammer?
- Solutions for Water Hammer
- Troubleshooting the Control & Isolation Valves
- Review of Common Faults
- Developing a Preventive Maintenance Plan
- Review of the Week & Wrap-Up



**Registration form on the :  
Pump & Valve Technology**

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