

# PRACTICAL PUMP & VALVE TECHNOLOGY



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**TRAINING TITLE**

PRACTICAL PUMP & VALVE TECHNOLOGY

**VENUE**

Dubai, UAE

**DURATION**

5 Days

**DATES**

04 - 08 December 2022

**PRICE**

US\$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet.

**TRAINING INTRODUCTION**

The course will cover topics concerning different types of industrial valves, the control valves and the safety relief valves. Hydraulic pumps, the dynamic and the positive displacement types will be addressed in this course. The sealing and flushing systems plus bearing and lubrication loops are also covered.

The selection and troubleshoot of such systems will also be addressed in detail. Delegates will learn how different system operate, their limit of performance and the best operating condition with least troubles and least failure.

**TRAINING OBJECTIVES**

The participant will gain deeper understanding of the control valves and safety relief valves used in different industrial applications. The delegates will learn more about different types of hydraulic as well as dynamic pumps, their performance, operation, control and troubles shooting. The delegate will be able to select the appropriate type of valves and pumps for the application.

**TRAINING AUDIENCE**

Heads of Maintenance and Operation, Mechanical and Chemical Engineers, Equipment Specialists, Technical Engineers, Operation Engineers, Planning Engineers, Engineers involved with control and safety valves and pumps of different types.

## **TRAINING OUTLINE**

### **Chapter 1**

#### Control Valves

##### Valves Performance

Tightness Criterion

Flow Characteristics

Dead time

Time Constant

##### Valves Design

Linear Type

Rotary Type

#### Valves actuators

Hydraulic actuators

Pneumatic actuators

##### Valves Positioners

### **Chapter 2**

#### Safety and Relief Valves

##### Valves Design

Spring-loaded pressure relief valves

#### Balanced Relief Valves

Pilot Operated PRV

##### Valves characteristics

Design pressure

Superimposed back pressure (degree of fluctuation)

Built-up back pressure during operation

- Valve Installation
- Valves Sizing and Selection
- Calculation of Relieving Area
  - Constant backpressure
  - Variable Backpressure
- Capacity Requirement for External Fire
- Valve Sizing Simplified Method

### **Chapter 3**

Valves Troubleshooting

- Common-Valve Problems

- Cavitation
  - Flashing
  - Choked Flow
  - High Velocities
  - Water-Hammer
  - High Noise Level

Fugitive Emission

Installation Faults

- Inlet and outlet pipe size
  - Backpressure effects
  - Piping supports
  - Reaction forces
  - Parallel and series RV installation

## **Chapter 4**

### Hydraulic Pumps

- Types and Designs

  - Gear Pumps

  - Vanes Pumps

  - Swash piston pumps

### Performance Curves

- Operation

  - Cavitation

  - Foam and bubbles

  - Overheating

- Capacity Control

## **Chapter 5**

### Dynamic Pumps

- Centrifugal Pumps

- Axial Flow pumps

- Performance

- Operation

- Capacity Control

- Multistage Pumps

- Balancing Systems

- Cavitation Problem

  - NPSH required

  - Suction Energy

- Sealing Systems

Mechanical seals

Flushing Systems

Bearings and Lubrication

Troubleshooting

## **TRAINING CERTIFICATE**

**MAESTRO CONSULTANTS** Certificate of Completion for delegates who attend and complete the training course

## **METHODOLOGY**

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of “real life” issues in their organizations.

The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.