

# PLANT PIPING SYSTEMS: OPERATIONS, MAINTENANCE & REPAIRS



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## **TRAINING TITLE**

PLANT PIPING SYSTEMS: OPERATIONS, MAINTENANCE & REPAIRS

## **VENUE**

Dubai, UAE

## **DURATION**

5 Days

## **DATES**

10 - 14 October 2021

## **PRICE**

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

## **TRAINING INTRODUCTION**

Piping calculations, Control valves, actuators and pumps find extensive use in petrochemical process plants, water circulation systems, cooling and heating systems, and many other applications.

Keeping these equipment and machines running with least troubles and shutdown decreases the downtime of the whole system. Right control unit and machine selection appropriate to the right application, right machine operation and control, effective maintenance programs, reliable monitoring system, and skilled personnel capable of doing the right trouble shooting are essential requirements for prolong machine life. All the above can be achieved via deeper understanding of the process piping ,control valves and pumps construction and tolerances, the limits and constrains on their operation, and the more effective flow controlling methods.

This course will offer the opportunity to learn more about piping flow, control valves, actuators and pumps, their construction, operation, performance curves, control and troubleshooting. During the course participant's discussion, comments, bringing up their own problems are welcomed and encouraged. Short tests on the course material will be performed to examine the degree of delivering the right and quality of the presented material.

## **TRAINING OBJECTIVES**

- Familiarize the Attendees with different types of piping for process in Power systems
- Upgrading the knowledge of problems and solutions for piping flow and pumps
- Exercising examples of troubleshooting methods
- Exercising examples of control valves and piping
- Highlight the importance of pumps and fluid drives
- Highlight the importance of heat transfer in process piping

## **BY ATTENDING THIS COURSE YOU WILL:**

- Understand the characteristics of flow in process pipes
- Understand the characteristics of various control valves and actuator
- Learn how to choose the right control and pumps
- Learn how to read the performance curves of systems including pipes, valves and pumps
- Understand the limits on the pumps operation
- Learn the related standards

## **AFTER ATTENDING THIS COURSE YOU WILL:**

- Be more familiar with the different types of pipe flow
- Water Hammer in pipes
- Pipe lines support and insulation
- Be more familiar with the different types of control valves and actuators
- Be able to understand reasons behind choosing different types for different applications
- Be able to troubleshoot the problems and faults concerning these machines
- Be able to read and use the related international standards

## **BENEFITS OF ATTENDING THIS COURSE:**

- Deepening your knowledge of process pipe flow, pumps and control valves
- Learns more about the problems and solutions for pumps
- Gain knowledge of parameters affecting pumps and control valves operations
- Learn methods of troubleshooting these pipelines, valves and pumps
- Learn methods of controlling these pumps

## **TRAINING AUDIENCE**

- Process and Mechanical engineers who are involved with troubleshooting, selection, operation, and maintenance of large process machinery.
- Entry level engineers all the way to senior engineers will benefit because of the course structure, the course targets engineers in the petrochemical, chemical, refining and power industries.

## **TRAINING OUTLINE**

- Flow in pipes
- Pressure drop and pipe fittings
- Material selection
- Velocity and heat transfer
- Thermal Insulation of pipes
- Pumping methods
- Centrifugal pumps
- Reciprocating pumps
- Rotary pumps
- Pumps performance curves
- Process Piping Design operating conditions
- Parameters affecting the pump performance
- The intersection of pump and system curves, operating point and Capacity control
- Specifications
  - Hydraulic Institute Standard
  - API standard
  - How to use standards for pumps selection
  - How standards differ from each other
  - How to use standards to write the right specification for pumps

- Properties of liquids being pumped
- Material selection ,Special applications ,Manufacturer data and curves
- Control Valves and actuators
- Valve Sizing and Selection
- Troubleshooting and Maintenance
- Cavitation in pumps
- Valves Problems, Noise Attenuation Improving Valve Life and Operating Efficiency

### **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.