Pump & Valve Technology & Fitness For Service Of Pressure Vessels & Tanks

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. The candidates will learn how different system operate, their limit of performance and the best operating condition with least troubles and least failure. The candidates in this integrated and comprehensive course will learn to apply the rules of the API/ASME 579 standard “Fitness-for-Service” to evaluate the integrity and remaining life of pressure vessels, storage tanks and piping systems, to make cost effective run-repair-replace decisions, and select the appropriate repair options.

Who Should Attend?

Maintenance, Mechanical Engineers, Foremen, Supervisors and Technicians, Production Supervisors and Engineers who require an understanding of the Fitness for Service standard, Design and System Engineers, Inspectors, Project and Maintenance Engineers who are personally responsible for the reliable design, operation, maintenance and repair of

equipment, systems, tanks, vessels, piping and pipelines, Heads of Maintenance and Operation, Chemical Engineers, Equipment Specialists, Technical Engineers, Operation Engineers, Planning Engineers, Engineers involved with control and safety valves and pumps of different types

Course Objectives:

By the end of this course delegates will be able to:

- Gain deeper understanding of the control valves and safety relief valves used in different industrial applications.
- Learn more about different types of hydraulic as well as dynamic pumps, their performance, operation, control and troubles shooting
- Be able to select the appropriate type of valves and pumps for the application
- Be familiar with the latest techniques to determine the fitness-for-service of operating tanks, vessels, piping systems and pipelines
- Make cost-effective run-or-repair decisions based on the principles of API recommended practice 579 “Fitness-for-Service”

Course Outline:

PART1: Valves

- Control Valves
- Valves Performance
- Valves Design
- Valves Actuators
- Hydraulic Actuators
- Pneumatic Actuators
- Valves Positioners
- Safety and Relief Valves

- Valves Design
- Spring Loaded Pressure Relief valves
- Balanced Relief Valves
- Valves Characteristics
- Design Pressure
- Valve Installation
- Valves Sizing and Selection
- Valve Sizing Simplified Method
- Valves Troubleshooting
- Common Valve Problems

PART2: Pumps

- Hydraulic Pumps
- Types and Designs
- Operation
- Cavitation
- Foam and Bubbles
- Overheating
- Capacity Control
- Dynamic Pumps
- Centrifugal Pumps
- Axial Flow Pumps
- Performance & Operation
- Multistage Pumps
- Balancing Systems
- Cavitation Problem
- Sealing Systems
- Mechanical seals
- Bearings and Lubrication
- Troubleshooting

PART3: Foundations of Fitness-For-Service Assessment

- Introduction
- Overview of the American Petroleum Institute (API) codes and standards
- Overview of the American Society of Mechanical Engineers codes and standards
- Fitness For Service
- Overview of API 579 contents, objectives and applications
- How to apply API 579 for cost-effective run-or-repair decisions
- Fitness-for-Service assessment procedure
- An overview of what is new in the latest release
- The FFS Assessment
- Structure if the Standard
- The FFS procedure