SCANDINAVIAN ACADEMY
For Training and Development

Course: Pumps, Valves: selection and Maintenance

Code	City	Hotel	Start	End	Price	Language - Hours
509	Bucharest (Romania)	Hotel Meeting Room	2025-03-10	2025-03-14	5450 €	En - 25

OVERVIEW

This course provides you with an understanding of the nature of pumps and valves and how they interact for optimum system performance.

The course discusses the requirements necessary for the selection of pumps and valves. It is structured in a sequence, starting from basics to detailed discussion of various aspects of both pumps and valves. It is designed to help you develop a full understanding of how pumps and valves work, covering selection, installation, operation, maintenance, and trouble shooting.

This course covers topics, such as the flow of fluids (e.g., calculating the flow of fluids and pressure drop), the selection of centrifugal pumps, and the selection of positive displacement pumps. It also discusses types of valves, flow characteristics of valves, and the best practices in installation, measurement of flow rate in closed conduits; calibration methods for Venturi, Orifice, and elbow meters; and operation and maintenance.

During the course you will receive guidance in making cost-effective decisions and tips for avoiding poor system operation. It also discusses how pumps and valves are used in different industries.

You Will Learn To

- Calculate the pressure loss in a pipeline due to friction for circular and noncircular ducts
- Determine the pipe diameter that minimizes first plus operating costs of a piping

system
- Generate a system curve for a pipeline
- Identify the testing methods used to obtain a performance map for a centrifugal pump
- Employ the system curve to select an efficient centrifugal pump
- Explain how to predict when cavitation will occur and identify the necessary steps to avoid it
- Explain how to use dimensional analysis to correlate experimental data for a pump
- Explain how the specific speed is determined
- Apply affinity laws to predict off-design behavior for a pump
- Identify types of positive displacement pumps
- Examine common methods of measuring flow rate in a pipeline
- Identify the types of meters available for flow rate measurement
- Generate calibration curves for venturi, orifice, and elbow meters
- Describe the different types of valves that are commercially available
- Explain how to select the correct valve for a piping system
- Identify and avoid problems by selecting the correct valve
- Explain how to install, operate and maintain valves
- Describe the process of diagnosing and troubleshooting valve problems

Who Should Attend

This course is designed for design engineers, process selection engineers, procurement personnel, project engineers, quality personnel, operation & maintenance engineers, and inspection engineers.

Daily Outlines

Day one

- PUMP BASICS

- Basic pump theory
- General Safety Requirements
- Pump Performance Basic Terms
- Pumping Factors
- Pump Performance Curves
- Pump in series or parallel
- Multistage Pump
- Pump start up and shutdown
- Pump Priming

Day Two

- CLASSIFICATION OF PUMPS
- Dynamic pumps
- Centrifugal pumps
- Positive displacement pumps
- Reciprocating pumps
- Rotary pumps
- Slurry Pumps Pump Glossary
- PUMP MAINTENANCE
- Overview of Maintenance Practice
- Corrective
- Preventive
- Predictive
- Lubrication Overview
- Pump Maintenance Procedure (Daily,weekly,semi annual,Annual)

Day Three

- TROUBLESHOOTING PROCEDURES AND REMEDIAL STEPS
- Pre-repair Investigation
- Onsite Inspection

- Miscellaneous remedial steps
- PUMP TROUBLESHOOTING
- Cavitation
- Check list for Centrifugal Pump Troubles
- Check list for Rotary Pump Troubles
- Check list for Reciprocating
- Pump Troubles

Day Four

- INTRODUCTION TO VALVES
- Principal functions of valves
- Isolation
- Throttling
- Check
- Control
- Gate Valve
- Globe Valve
- Plug Valve
- Ball Valve
- Check Valve
- Needle Valve
- Diaphragm Valve
- Butterfly Valve
- Valve Symbols
- Valve Actuators
- Valve Glossary

Day five

- VALVE MAINTENANCE & TROUBLESHOOTING
- Preventive Maintenance

- Prior to startup
- After startup
- Workshop Overhaul
- Maintenance Tips
- Valve Troubleshooting Guide
- VALVE LEAKAGE
- Leakage in gate valve
- Leakage in globe valve
- Leakage in check valve
- Leakage in ball valve
- Leakage in butterfly valve

The Scandinavian Academy for Training and Development employs modern methods in training and skills development, enhancing the efficiency of human resource development. We follow these practices:

- **Theoretical Lectures:**
  - We deliver knowledge through advanced presentations such as PowerPoint and visual materials, including videos and short films.
- **Scientific Assessment:**
  - We evaluate trainees skills before and after the course to ensure their progress.
- **Brainstorming and Interaction:**
  - We encourage active participation through brainstorming sessions and applying concepts through role play.
- **Practical Cases:**
  - We provide practical cases that align with the scientific content and the participants specific needs.
- **Examinations:**
  - Tests are conducted at the end of the program to assess knowledge retention.
- **Educational Materials:**
  - We provide both printed and digital scientific and practical materials to participants.
- **Attendance and Final Result Reports:**
  - We prepare detailed attendance reports for participants and offer a comprehensive program evaluation.
- **Professionals and Experts:**
  - The programs scientific content is prepared by the best professors and trainers in various fields.
- **Professional Completion Certificate:**
  - Participants receive a professional completion certificate issued by the Scandinavian Academy for Training and Development in the Kingdom of Sweden, with the option for international authentication.
- **Program Timings:**
  - Training programs are held from 10:00 AM to 2:00 PM and include coffee break sessions during lectures.