

Training
Course

Mechanical Equipment Compressors, Pumps, Seals, Motors & Variable-Speed Drives

Course Plan

Introduction

Mechanical equipment such as compressors, pumps, seals, motors, and variable-speed drives form the backbone of industrial operations across sectors like oil & gas, petrochemicals, power generation, and manufacturing. Efficient operation and maintenance of this equipment is essential for plant reliability, safety, and energy optimization.

This training course offers in-depth knowledge and practical insights into the principles, operation, selection, and maintenance of mechanical equipment. The program also covers troubleshooting techniques and best practices for increasing equipment lifespan and reducing downtime.

Course Objectives:

- ✓ Understand the working principles of compressors, pumps, motors, seals, and VSDs.
- ✓ Identify the different types and applications of each equipment type.
- ✓ Operate and maintain mechanical equipment for optimal performance.
- ✓ Recognize failure modes and perform effective troubleshooting.
- ✓ Select appropriate seals and drives based on application requirements.
- ✓ Analyze performance data and identify inefficiencies.
- ✓ Apply energy-saving strategies using variable-speed drives.
- ✓ Implement preventive and predictive maintenance programs.
- ✓ Improve equipment reliability and reduce operating costs.
- ✓ Follow safety procedures during installation, maintenance, and operation.

Who Should Attend?

- Mechanical and maintenance engineers
- Rotating equipment technicians
- Plant operators and mechanical supervisors
- Reliability and asset management professionals
- Maintenance planners and inspectors
- Electrical technicians involved with motor/VSD systems
- Engineering students and recent technical graduates
- Professionals in oil & gas, power, petrochemical, and process industries

Training Methods:

- ✓ Online Video material.
- ✓ Presentation.
- ✓ Live Interactive sessions.
- ✓ Course presenter will make extensive use of all tools that will be needed for the virtual environment.
- ✓ Questions & Answers

Course Outline:

Day One

- Introduction to Mechanical Equipment in Industry
- Overview of Pumps: Types, Applications, and Selection
- Centrifugal vs. Positive Displacement Pumps
- Pump Performance Curves and System Integration
- Compressors: Types (Centrifugal, Reciprocating, Screw) and Uses

Day Two

- Compressor Efficiency and Operating Parameters
- Motors: Construction, Operation, and Types (AC/DC)
- Motor Starting Methods and Protection Systems
- Variable-Speed Drives (VSDs): Functions and Benefits
- VSD Applications for Energy Optimization

Day Three

- Common Motor and VSD Troubleshooting Techniques
- Mechanical Seals: Types and Working Principles
- Seal Installation, Alignment, and Failure Prevention
- Bearings and Lubrication Systems
- Vibration Analysis for Equipment Diagnostics

Day Four

- Alignment and Balancing of Rotating Equipment
- Condition Monitoring Techniques (Thermal, Acoustic, Vibration)
- Root Cause Analysis of Mechanical Failures
- Spare Parts Management for Rotating Equipment
- Installation and Commissioning of Pumps and Compressors

Day Five

- Preventive and Predictive Maintenance Planning
- Shutdown and Start-Up Procedures for Mechanical Systems
- Operational Safety for Mechanical Equipment
- Energy Efficiency Opportunities in Mechanical Systems
- Case Studies and Best Practices in Industrial Maintenance

Training Details

Course Duration	5 Days
Pre-Schedule	1 – 5 Dec 2025
Venue	London – Double Tree by Hilton Kinsigton
Training Fees Per Person	KWD 1800 (One Thousand Eight Hundred Only)
Course Fees Include	<ul style="list-style-type: none"> ✓ Tuition documentation ✓ Curriculum and Training Handout ✓ Five star Lunch ✓ Completion Certificates ✓ Lunch Included