

Course Overview:

This training course will provide a comprehensive understanding of equipment operating characteristics. It will introduce delegates to essential types of mechanical equipment, including positive displacement and dynamic pumps and compressors, motors and drives and their associated systems and components. The applications of these equipments will be discussed along with their suitability for different operational duties and selection criteria. In addition, the seminar will focus on associated equipment including packing, mechanical sealing systems, bearings and valves.

This training course will focus on maximising the efficiency, reliability, and longevity of this equipment by providing a thorough understanding of the characteristics, common problems, condition monitoring and maintenance criteria related to machinery and equipment operation.

Course Objective:

By the end of this training course, participants will be able to:

- Identify the different types of pumps & compressors & learn about selection, operation and maintenance strategies
- Operate pumps and compressors as close as possible to the design efficiency and monitor their availability and reliability
- Identify and learn about associated components such as mechanical seals & bearings and identify their failure mechanisms
- Condition, monitor and troubleshoot pump and compressor problems
- Specify, operate and maintain fluid movers (Motors) and drivers (Variable Speed Drives)

Course Outline:

Pumps and Pumping Systems

- Pump categories and selection - Dynamic and positive displacement
- Pump Theory of Operation - Governing fluid laws and performance curves
- Dynamic Pumps - Centrifugal, axial, mixed flow
- General Performance Characteristics - Cavitations, net positive suction head
- Positive Displacement Pumps - Reciprocating, rotary
- Engineering of System Requirements - Fluid type, system head curves

Compressors and Compressor Systems

- Positive Displacement Compressors - Reciprocating and rotary
- Dynamic Compressors - Centrifugal, axial, mixed flow
- Compressor Operation - Gas laws, operation curves
- Compressor Performance Measurement and sizing
- Compressor Equipment
- Surging and Choking

Motors and Variable Speed Drives

- Characteristics and Operation of AC Induction Motors
- Starting and Speed Control of AC induction motors
- Speed control methods of AC Motors
- Construction, Enclosures and cooling methods of AC Motors
- Basic principles of AC Variable-Speed Drives (VSD's)
- Electromagnetic Interferences, Cable Details and Filtering

Training Language:

EN / AR

Training Methodology:

The training methodology combines lectures, discussions, group exercises and illustrations. Participants will gain both theoretical and practical knowledge of the topics. The emphasis is on the practical application of the topics and as a result participant will go back to the workplace with both the ability and the confidence to apply the techniques learned to their duties.

Venue | Date | Fees

Khobar | 24-12-2023 | 10,350 SAR

ONLINE | 24-12-2023 | 7,475 SAR

Maintenance and Troubleshooting

- Types of maintenance
- Factors affecting pump, compressor and motor maintenance
- Vibration Analysis and Condition Monitoring
- Electrical Signature Condition Monitoring
- Thermal Imaging condition monitoring
- Oil Analysis

Associated Mechanical Equipment

- Mechanical Seals
- Bearings
- Faults associated with bearings and mechanical seals
- Lubrication
- Control Valves

Who Should Attend:

- Professionals in Maintenance, Engineering and Production
- Those with little or no prior formal background who function as Managers, Planners, Inspectors, Designers, Researchers, Investors or Procurers
- Those who are or will become involve at any stage in project applications and applicable maintenance technologies