PUMPS & COMPRESSOR: Operation, Maintenance and Troubleshooting

Course Overview

This course covers the construction, design, operations and maintenance of compressors, and rotary/centrifugal/reciprocating pumps.

Topics discussed will include the different types of pumps and compressors, their potential problems, maintenance and testing concepts and troubleshooting techniques. The course will also cover the various methods of pump alignments such as visual, straight edge/feeler gauge, rim and face, reverse dial indication, cross dialing and laser alignment.

Participants will also learn how to diagnose soft foot conditions and perform correction techniques.

Course Objectives

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

- Describe the operation of centrifugal and positive displacement pumps including pump design aspects, laws, performance comparisons, characteristic curves and performance testing
- Test rotary pump performance and apply maintenance and troubleshooting techniques accordingly
- Identify reciprocating pump types and perform reciprocating pump maintenance and troubleshooting
- Determine centrifugal pump problems and perform centrifugal pump maintenance and troubleshooting
- Identify compressor types, how they operate, their common problems, and perform troubleshooting techniques
- Apply the various methods of pump alignments such as visual, straight edge and feeler gauge, rim and face, reverse dial indication, cross dialing and laser alignment
- Diagnose soft foot conditions, and apply measurement and correction techniques

Who should attend?

This course is designed for plant personnel responsible for the installation and maintenance of positive displacement/centrifugal pumps and compressors, including plant maintenance technicians and mechanical maintenance technicians.

It will also be beneficial for professionals managing and supervising personnel involved in the operation and maintenance of pumps and compressors

Course Outline

Pump operation and theory

- Centrifugal pumps
- Design aspects
- Pump laws
- Positive displacement pumps
- Performance comparisons

- Special purpose pumps
- Pump characteristic curves
- Performance testing

Rotary pump maintenance and troubleshooting

- Pump performance
- Pump tests
- Pump problems
- Pump maintenance
- Pump troubleshooting

Reciprocating pump maintenance and troubleshooting

- Reciprocating pump types
- Pump problems
- Pump maintenance
- Pump troubleshooting

Centrifugal pump maintenance and troubleshooting

- Pump problems
- Pump maintenance
- Pump troubleshooting
- Pump inspections

Compressor maintenance and troubleshooting

- Rotary screw compressors
- Rotary vane compressors
- Lobe type compressors
- Reciprocating compressors
- Lubrication and cooling

Pump alignment methods

- Straight edge and feeler gauge
- Rim and face
- Reverse dial indication
- Cross dialing
- Laser alignment
- Mathematical alignment formula calculations
- Graphical solutions

Soft foot correction and tolerances

- Soft foot definition
- Effects of soft foot
- Types of soft foot
- Measuring soft foot
- Correcting soft foot