

Industrial Pump Repair



Description

This 32 hour course offers intensive insight into industrial pump troubleshooting and repair. The participant will gain knowledge in pump maintenance, alignment and disassembly as well as predictive and preventative maintenance of industrial pumps. Class includes instructor led student labs on instructor's trainers as well as customer's own pumps. This course will be customized to suit customers' specific needs.

Outline

- I. Types of Industrial Pumps
 - A. Positive Displacement Pumps
 - 1. Gear Pumps
 - 2. Lobe Pumps
 - 3. Piston Pumps
 - 4. Vane Pumps
 - 5. Diaphragm Pumps
 - B. Non-Positive Displacement Pumps
 - 1. Centrifugal Pumps
- II. Introduction to Positive Displacement Pumps
 - A. Gear Pump Basics
 - 1. Pressure and suction sides
 - 2. Pressure regulation
 - 3. Sizing, HP and GPM
 - 4. Disassembly for troubleshooting and repair
 - B. Lobe Pumps
 - 1. Pressure and suction sides
 - 2. Pressure regulation
 - 3. Sizing, HP and GPM
 - 4. Disassembly for troubleshooting and repair
 - C. Piston Pumps
 - 1. Reciprocating pump basics
 - 2. Reciprocating pumps operation
 - 3. Single and multiple stage piston pumps
 - 4. Disassembly for troubleshooting and repair
 - D. Vane Pumps
 - 1. Vane pump usage
 - 2. Vane pump operational basics
 - 3. Troubleshooting and repair of diaphragm pumps
 - E. Diaphragm Pumps
 - 1. Usage of the diaphragm pump
 - 2. Diaphragm pump basics
 - 3. Troubleshooting and repair of diaphragm pumps
 - F. Screw Pumps
 - 1. Applications and usage of screw pumps
 - 2. Operation of a screw pump
 - 3. Troubleshooting and repair of a screw pump
- III. Centrifugal Pumps
 - A. Single Stage Centrifugal Pumps
 - 1. Pump laws of operation
 - 2. What is Pump Head Pressure
 - 3. Sizing a pumps impeller
 - 4. Speed and diameter required to do the job
 - 5. Disassembly, troubleshooting and repair of centrifugal pumps
 - B. Types of Centrifugal Pumps
 - 1. Radial flow
 - 2. Axial flow

Industrial Pump Repair (cont'd)

Outline (cont'd)

- 3. Combination flow
- C. Repairing a Centrifugal Pump
 - 1. Step-by-step troubleshooting
 - 2. Disassembly and repair
 - 3. Pump packing
 - 4. Mechanical and other types of pump seals
 - 5. Troubleshooting pumps using pressure and flow information
- IV. Basic Pump Alignment
 - A. Effects of Misalignment
 - B. Indicators of Misalignment
 - C. Causes of Misalignment
 - D. Correcting Pump Misalignment
 - 1. Dial indicator alignment
 - a. Reverse dial method
 - b. Rim and face method
 - 2. Precision straight edge alignment techniques
 - E. Correcting soft foot
- V. Pump Bearings
 - A. Roller bearings
 - B. Sleeve bearings
- V. Pump Terminology
 - A. Explanation and Definitions
- VII. Instructor led student labs on instructor's trainers as well as customer's own pumps.

Course Length

32 hours.

Performance Objectives

At the completion of this course the participant will:

- Be able to troubleshoot failed pumps and prevent recurrence of failure.
- Have a better understanding of predictive and preventative maintenance of pumps.
- Be able to select the best type of packing or mechanical seals for the application.
- Understand the lubrication needs of the pump bearings.
- Be able to correctly set up a pump for maximum efficiency
- Understand the impeller relationship to pump head pressure.
- Be able to correct pump misalignment.