Mechanical Maintenance: Pumps and Shaft Alignment

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This five-day course covers pump design, operating theory, rotary pumps, reciprocating pumps, and centrifugal pumps, compression packing and gaskets, couplings, and alignment

I. Pump Design

- Standards
- Applications
- Pump Classifications

II. Pump Operation and Theory

- Centrifugal Pumps
- Design Aspects
- Pump Laws
- Positive Displacement Pumps
- Pump Performance Comparisons
- Special Purpose Pumps
- Pump Characteristic Curves
- Performance Testing Centrifugal Pumps

III. Rotary Pump Maintenance

- Pump Performance
- Pump Tests
- Rotary Pump Problems
- Rotary Pump Maintenance

IV. Reciprocating Pump Maintenance

- Metering Pumps
- Axial and Radial-Piston Pumps
- Hydraulic Pump Maintenance

V. Centrifugal Pump Maintenance and Troubleshooting

- Factors Affecting Performance
- Troubleshooting
- Inspecting Components for Wear

VI. Compression Packing

- Mechanical Seals Applications
- Packing Materials
- Selecting and Sizing Packing
- Lantern Rings and Throttle Bushings
- Renewal Techniques
- Formed and Molded Packing

VII. Gaskets

- Transformer Gaskets
- Preparation of Surfaces and Gaskets
- O-Ring, Foam Rubber, and Cork Gaskets
- Leak Detection
- Common Gaskets and Materials
- Gasket Replenishment

VIII. Coupling Purposes and Types

- Couplings
- Types of Flexible Couplings
- Coupling Lubrication
- Coupling Installation
- Keys and Keyways

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IX. Alignment Introduction

- Shaft Alignment
- Measuring and Correcting Misalignment
- Typical Alignment Tools
- Preliminary Preparation for Alignment
- Coupling Alignment
- Preparing for Alignment, Part 1
- Foundations, Baseplates, and Machine Casings
- Preparing for Alignment, Part 2

X. Methods for Measuring Misalignment in Rotating Machinery

- Rough Alignment Method
- Dial Indicator Method
- Making the Corrections
- Do's and Don'ts of Moving Machinery