Lubrication Fundamentals

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This three-day course is designed for plant personnel responsible for the proper lubrication of industrial equipment. The primary focus of this course is the proper selection and application of lubricants. In addition, oil testing and system cleanliness will be discussed with an emphasis placed on the major causes of lubrication-related failures. Machinery in industrial applications are required to perform at higher speeds and pressures. For this very reason, industrial facilities are monitoring their lubrication programs very closely. Maintenance supervisors are strongly recommended to attend this course as maintenance philosophies relating to lubrication and lubricating systems are also discussed.

I. Lubrication

- Solid Friction
- Lubrication of Rubbing Surfaces
- Boundary Lubricants
- Interaction Between Metals and Lubricants
- Modes of Full Film Lubrication Viscosity

II. Lubricants

- Mineral Oils
- Additives
- Machinery Lubricants
- Oil Deterioration and Maintenance
- Synthetic Oils
- Solid Lubricants
- Greases

III. Types of Wear and Erosion

- Abrasive Wear
- Adhesive Wear
- Surface Fatigue
- Fretting
- Particle and Droplet Erosion
- Cavitation Erosion
- Spark Erosion
- Thermal Softening
- Impact Wear
- Corrosive Wear

IV. Lubrication of Plain Bearings

- High and Low Speed Limits
- Allowances for Deflection in Plain Journal Bearings
- Journal Bearings with Reciprocating Loads
- Methods of Oil Supply
- Open Systems
- Continuous Lubricators
- Closed System
- Thrust Bearings
- Flat Land Thrust Bearings
- Tapered Land Thrust Bearing
- Kingsbury Thrust Bearing
- Oil Grooving
- Journal Bearing Vibrations
- Turbulence in Lubrication
- Grease Lubrication

V. Lubrication of Roller Bearings

- General
- Lubricating Correctly

VI. Lubricating Specific Components

- Lubricating Gears
- Types of Gear Lubricants
- Piston Ring Lubrication
- Reciprocating Air Compressors
- Rotary Compressors
- Hydrocarbon Compressors
- Industrial Diesel and Gas Engines
- Gas Turbines

VII. Oil Tests

- Viscosity
- Viscosity Index
- Cloud and Pour Points
- Gravity
- Flash/Fire Point
- Color
- Neutralization Number
- Total Base Number
- Precipitation Number
- Foaming
- Oxidation
- Lubricity
- Synthetic Fluids