

Bearing Technology Z MEC-40

Duration

Three days 18 Hours

Who should attend?

This course is intended for engineers involved in product design, materials selection, failure analysis, product endurance testing, and process control

Language

Arabic , English

Overview

To provide product engineers, machine designers and manufacturing engineers with better appreciation for the design, application, life, and use of rolling element bearings. Provide participants with up-to-date knowledge & Boiler Efficiency Improvement

Topics

- Applications
 - Ball Bearings Angular Contact
 - Deep Groove
 - Roller Bearings
 - Cylindrical
 - Spherical
 - Needle
 - Tapered
- Roller Bearing Standards
 - ANSI/ABMA/ISO
 - ABEC
 - RBEC
 - Metric v. Inch
- Manufacturing Tolerances & Internal Clearances
 - Dimensions
 - Internal Radial Diametrical
 - Clearance
 - Free or Bench
 - Mounting
 - Operating
 - Failure Modes Related to Bearing Life
 - Subsurface -- Origin spalling



- Inclusions and Carbides
- Subsurface Structural Changes
- Subcase Fatigue Case Crushing
- Surface -- Origin spalling
- Point Surface Origin
- Geometric Stress Concentration
- Microspalling
- Transverse Cracking Cross-section fracture
- True and False Brinelling
- Misalignment
- Excessive Thrust
- Lubrication
- Heating and Thermal Preload
- Roller Edge Stresses
- Bearing Life and Reliability
 - Lundberg-Palmgren Theory and Application
 - Weibull Analysis
 - ANSI/ABMA Standards
 - Life Factors
 - Manufacturers' Catalogue Methods
 - Remanufactured Bearings and Bearing Reuse
 - Warranty Considerations
- Bearing Loads and Stresses
 - Hertz Contact Stress
 - Subsurface Stress and Critical Depth
 - Line, Point, and Elliptical Contact
 - Heavy Load and Distortion
 - Misalignment
 - Ball Bearings
 - Roller Bearings
 - Residual and Hoop Stresses
 - Axial Loads and Cylindrical Roller Bearings
 - Rotor dynamic Loads
 - Centrifugal Loads
 - Static Capacity
- Bearing Lubrication
 - Type of Lubrication
 - Lubrication Selection
 - Liquid
 - Grease
 - Elasto hydrodynamic (EHD) Lubrication
 - Effect of Contaminants
 - Wear Particles
 - Water
- Materials and Processing
 - Bearing Materials
 - Through-Hardened Steels
 - Corrosion-Resistant Steels
 - Nonferrous Materials
 - Ceramic Bearings
 - Ceramic Hybrid Bearings

- Material Processing
- Melting Practice
- Metal Working
- Heat Treatment
- Material Hardness
- Carbide Effects
- Compressive Residual Stress
- Coatings
- Bearing Kinematics
 - Low Speed v. High Speed
 - Skidding
 - Time Transient
 - Characteristic Frequencies
 - Speed Limitations
- Multi Bearing Systems
 - Statically Indeterminate
 - Fixed Bearings
 - Floating Bearings
 - Load Sharing
 - Three Degrees of Freedom
 - Five Degrees of Freedom
- Computer Aided Design of Roller Bearings
 - Typical Bearing Codes
 - Design Variables
- Computer Optimized Ball and Roller Bearing Applications
 - Introduction to Computer Bearing Analysis COBRA
 - Single Bearing and Multi Bearing Analysis
 - Bearing Types
 - Iterative Nature
 - Sign Convention
 - Example