Bearing Technology and Lubrication Course: Level 1

Course description

Duration:

Course duration is 10 working hours to be performed in two days.

Description:

The course uses audio-visual, lectures, and discussion opportunities.

Language:

Training delivered in Arabic and/or English based on the participants preference.

Training material is in English.

Aim:

The course objective is to impart to participants knowledge on rolling bearing lubrication and maintenance used with typical industrial rotating machinery. This knowledge, when properly applied, leads to longer bearing service life, which improves the reliability of rotating equipment.

Who should attend?

The seminar is recommended for service, maintenance, engineering staff of an industrial plant, OEM facility, institution, or public utilities using rolling bearings and related equipment. It is also recommended for managers and technicians who are responsible for rolling bearing performance and reliability at industrial plants and OEM facilities; rotating equipment engineers, reliability engineers, mechanics, maintenance supervisors, and those interested in rolling bearing, lubrication, and rotating equipment performance.

Participants should have a basic understanding of rotating equipment. Engineering background and / or industrial experience is an advantage

Topics:

Principles of bearing selection and application

Selection of bearing type

Available space

Loads

Misalignment

Precision

Speed

Quiet running

Stiffness

Axial displacement

Mounting and dismounting

Integral seals

Selection of bearing size

Load rating and life

- Dynamic bearing load and life
- Static bearing loads

Selecting bearing size using life equation

- SKF calculation tool

Friction, bearing temperature, power loss

Speed and vibration

Reference speeds

- Influence of load and oil viscosity
- Speeds above the reference speed

Limiting speeds

Vibration generation inside the bearing

Vibration behavior of the application

Bearing data general

Bearing internal clearances

Materials for rolling bearings

- Material for rings and rolling elements
- Cage material
- Seal materials
- Coatings

Cages

Designations

- Identification of bearing type
- Supplementary designation prefixes
- Supplementary designation suffixes

Application of bearings

Bearing arrangement

- Radial location of bearings
  - Selection of fit
  - Dimensional, form and running accuracy
  - Surface roughness and bearing seats
  - Raceways on shaft and in housings
- Axial location of bearings
  - Methods of location
  - Abutment and fillet dimensions
  - Designing associated components
- Bearing preload
  - Type of preload
  - Effect of bearing preload
  - Determining preload force
  - Adjustments procedures
  - Preloading by springs
  - Maintaining the correct preload
  - Bearings for preloaded bearings arrangement
- Sealing arrangements
  - Types of seals
  - Selection of seal types
  - Integral bearing seal
  - External seals

Lubrication

Grease lubrication

- Lubricating greases
- Base oil viscosity
- Consistency
- Temperature range-the SKF traffic light concept
- Protection against corrosion-behavior in the presence of water
- Load carrying ability, EP and AW additives
- Miscibility
- Re-lubrication

Oil lubrication

- Methods of lubrication
- Lubricating oils
- Oil change

Mounting and dismounting

Where to mount

Preparation for mounting and dismounting

Bearing handling

Mounting

- Bearing with a cylindrical bore
- Bearing with tapered bore
- Test running

Dismounting

- Bearing with a cylindrical bore
- Bearing with a tapered bore

Bearing storage

Inspection and cleaning

Troubleshooting

Typical symptoms indicating impending bearing failure

- Symptoms and typical conditions

Bearing failure and their causes

- How is bearing life defined?
- Path patterns
- Bearing damage