

Principles of Bearings and Lubrication



The Bearings and Lubrication Principles course gives you the knowledge and techniques to significantly reduce operating and energy costs and extend the life of your rotating equipment. In addition to bearings and lubrication this course also covers basic coupling systems and shaft alignment.

Learn the different bearing and coupling systems, including their function, load tolerance and operating characteristics. The lubrication chapter will present industry test methods used to define various lubricant characteristics, lubrication chemistry and proper application methods. This course will help anyone who has to specify, purchase, install, maintain or repair bearing and coupling systems.



Lecture



Hands-on



DURATION
2 DAYS



LIVE ONLINE TRAINING



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WHAT THIS COURSE COVERS

- Bearing types and nomenclature
- Bearing selection, installation, pre-loading and alignment considerations
- Troubleshooting and inspecting of bearings
- Grade and precision of bearings
- Shaft bore and housing fits
- Lubrication fundamentals and selection of grease and oils
- Automatic lubrication systems
- Coupling types, function and nomenclature
- Coupling and shaft alignment

COURSE OUTCOMES

- Learn the different bearing systems, including proper selection, and installation procedures
- Learn the basics of industry testing, specifying and application of lubricants
- Learn coupling types and characteristics.

WHO SHOULD TAKE THIS

- Plant & facility maintenance technicians
- Apprentice and experienced HVAC technicians
- Energy management personnel
- Electricians
- Building engineers
- Plant & facility managers
- Stationary engineers
- Anyone who needs cross-training on rotating equipment



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COURSE AGENDA

MODULE I: Power-Transmission Physics

- Basic concepts
- The relationship between power, speed and torque
- Calculate the linear velocity of a rotating component
- Calculate speed ratio
- Efficiency and service factors

MODULE II: Bearings

- Types and nomenclature
- Covers both friction and rolling element bearings
- Covers both mounted and unmounted categories
- Installation and maintenance of bearings
- Troubleshoot bearing failures
- Selection considerations for bearings
- Shaft and housing fits

MODULE III: Lubrication

- Select the right lubricant
- The right lubrication method and amount
- Terminology including viscosity, fire point flash point, NLGI number and many other characteristics
- Properties
- Industry test procedures

MODULE IV: Couplings and Alignment

- Selecting a coupling
- Energy savings
- Shaft alignment process and its importance
- Different types of soft foot
- Shaft versus coupling alignment
- Different types of flexible couplings
- Coupling installation and interference fit

MODULE V: Power Transmission Formulas and Conversions



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Client Equipment



CLIENT MUST PROVIDE

- Classroom, with easy access, of 500 square feet or greater.
- Projection screen, white board and/or flip chart(s)
- For the online option, a video camera facilitator will be needed. NTT can provide a kit mobile use of the Zoom platform. Ask your sales rep for details.



LIVE ONLINE TRAINING EQUIPMENT



CLIENT PROVIDED COMPUTER REQUIREMENTS

- Student email address to receive access to NTT's online platform
- Internet Access through a computer (laptop or desktop)
 - 1:1 Participant minimum bandwidth requirements: 1.2 Mbps (download)
- Ability to download and view files online
- Computer with speakers, microphone and camera.
- Browser with recent updates

NTT PROVIDED STUDENT MATERIALS

- Access to NTT's online platforms:
 - Canvas for digital exercises
 - Zoom for web video conference
 - No purchase or install necessary but students will be required to test the system they will be taking the class on before the day of training.
- Hard-Copy of Texts & Industry Standards, NTT Job Aids and general consumables: notepad, pens/highlighters, tabs
- Digital-copies NTT materials including Phone Apps

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