



GEAR BOXES, BEARINGS, LUBRICATON AND MECHANICAL SEALS



COURSE OVERVIEW

This comprehensive course provides in-depth knowledge and practical skills related to gearboxes, bearings, lubrication, and mechanical seals used in industrial rotating equipment. Designed for maintenance engineers, reliability professionals, technicians, and mechanical supervisors, the course covers fundamental concepts, selection criteria, failure analysis, troubleshooting techniques, and best maintenance practices to enhance equipment reliability and performance. Participants will engage in case studies and hands-on exercises to build expertise in diagnosing and resolving mechanical equipment issues effectively.

DATES, VENUES AND FEES



20 – 24 July 2025 - Dubai

(5 Days)

Fees

US\$ 4500

Note: Fee is per participant + 5% VAT (if applicable).
Groups from the same company can enjoy a **discounted** price.

WHO SHOULD ATTEND?

This training course is designed for maintenance engineers, reliability professionals, technicians, and mechanical supervisors working in industrial and rotating equipment environments.

CONTACT US NOW

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ACCREDITATION



This training course is certified by CPD.

The CPD Certification Service is the leading independent CPD accreditation institution operating across industry sectors to complement the Continuing Professional Development policies of professional institutes and academic bodies. The CPD Certification Service provides support, advice, and recognised independent CPD accreditation compatible with global CPD principles. CPD is the term used to describe the learning activities professionals engage in to develop and enhance their abilities and keep skills and knowledge up to date. CPD Units are only awarded to programmes after each programme is scrutinised to ensure integrity and quality according to CPD standards and benchmarks.

COURSE CERTIFICATE

MSTC certificate will be issued to all attendees completing a minimum of 80% of the total tuition hours of the course.

CPD internationally recognized certificate will be issued for all participants who will meet the course requirements. CPD certificates will be issued within a month of the successful completion of the course.

TRAINING METHODOLOGY

- Expert instructor lecture, input using numerous visual aids
- Supportive comprehensive course manual enabling practical application and reinforcement
- Participant discussion and involvement regarding their specific projects and challenges
- Real-world case studies and best practices

LEARNING OBJECTIVES

By the end of this course, participants should be able to:

- Understand the principles and types of gearboxes and power transmission systems
- Identify various types of bearings, their selection criteria, installation procedures, and operational characteristic
- Apply lubrication principles, select appropriate lubricants, and implement effective lubrication management and monitoring
- Recognize different mechanical seals, their components, installation requirements, and maintenance practices
- Perform integrated troubleshooting of gearboxes, bearings, and seals
- Develop maintenance strategies, plan preventive and predictive maintenance activities, and document maintenance records

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COURSE OUTLINE

DAY 1

Introduction to Gearboxes and Power Transmission Systems

- Pre-test
- Overview of rotating machinery and power transmission
- Types of gearboxes: spur, helical, bevel, worm, planetary
- Gear terminology: pitch, module, backlash, gear ratios
- Selection criteria for gearboxes in industrial applications
- Gearbox design fundamentals and load calculations
- Common failure modes and root causes in gearboxes
- Case study: Diagnosing gearbox problems in real systems

DAY 2

Bearings – Types, Selection, and Operation

- Introduction to bearings and their role in machinery
- Types of bearings: ball, roller, thrust, plain, sleeve
- Bearing materials and their selection
- Load ratings and life expectancy (L10 life)
- Installation, alignment, and handling of bearings
- Vibration, noise, and temperature indicators of bearing issues
- Case study

DAY 3

Lubrication Principles and Best Practices

- Basics of lubrication: functions, types, properties
- Lubricant selection for gearboxes, bearings, and seals
- Lubrication regimes: boundary, mixed, hydrodynamic

Cont'd.

- Lubrication methods: splash, forced-feed, grease vs. oil
- Oil analysis and monitoring techniques
- Lubrication management and contamination control
- Lubrication failure modes and troubleshooting

DAY 4

Mechanical Seals – Operation and Maintenance

- Introduction to sealing systems and their importance
- Types of seals: lip seals, packing, mechanical seals
- Components of mechanical seals and sealing faces
- Seal material selection for various process fluids
- Seal support systems: flush plans, barriers, and buffers
- Installation and alignment of mechanical seals
- Seal failure analysis and troubleshooting methods

DAY 5

Troubleshooting, Condition Monitoring, and Case Studies

- Integrated troubleshooting approach for gearboxes, bearings, seals
- Vibration analysis and thermography
- Preventive vs. predictive maintenance strategies
- Maintenance planning and recordkeeping
- Case studies of common failures and solutions
- Group workshop: Hands-on fault diagnosis and root cause analysis
- Q&A, wrap-up session and Post-test

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