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Course Name

Gear Box Operation Condition, Inspection & Maintenance

Sector Name

Mechanical Engineering

Document Type

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Gear Box Operation Condition, Inspection & Maintenance

Course Introduction

Improve your understanding of gearbox working conditions in turbines, as well as how to be proactive and predictive in service matters to avoid expensive shutdowns. Furthermore, you will learn to understand wear and tear by being able to classify failures and their development. A complete gearbox inspection procedure is applied. Failure Analysis - Root cause determination of failure is critical in confidently returning the gearbox to service.

Equipment maintenance

You will go through the entire system, from operational loads, equipment design, equipment maintenance, and failed components to determine failure cause and permanent corrective action Predictive Maintenance Program can be applied to track the health of your equipment and aid in scheduling gearbox maintenance, avoiding unscheduled equipment, or process shutdowns In this course you will learn to determine why the gear failed and what can be done to prevent future failure, help in getting timely and economical repairs, and provide a clear and concise report to aid in the recovery of losses due to the failure. So, you can shorten the turnaround of failed gears.

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Target Audience

- ✓ Automotive Engineer
- ✓ Boiler Engineer
- ✓ Ceramics Engineer
- ✓ Equipment Engineer
- ✓ High-Pressure Engineer
- ✓ Marine Engineer
- ✓ Mechanical Design Engineer
- ✓ Mechanical Engineer
- ✓ Naval Architect
- ✓ Pipeline Engineer
- ✓ Power Engineer
- ✓ Rotating Equipment Engineer
- ✓ Senior Mechanical Engineer
- ✓ Turbine Engineer
- ✓ Validation Engineer

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Learning Objectives

- ✓ Have a very good background on gearing, including the types of gears, their arrangement & geometry, gear ratings, and quality
- ✓ Know the Gears type
- ✓ Know gearbox failure analysis
- ✓ Know Gearbox lubrication
- ✓ Know Gearbox maintenance and inspection
- ✓ Know Maintenance of Rotating Equipment

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Course Outline

✓ 01 DAY ONE

Module 01: Introduction to Gears

- ✓ Introduction and history of gears
- ✓ Classification of gears and their applications
- ✓ Spur Gear
- ✓ Helical Gear
- ✓ Double helical or Herringbone Gear
- ✓ Bevel Gear
- ✓ Crossed helical gear
- ✓ Law of gearing
- ✓ Gear profiles
- ✓ Meshing of gears

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Course Outline

✓ 02 DAY TWO

Module 02: Gearbox drivers and Reducer

- ✓ Definition of Gears
- ✓ Gear Selection Options
- ✓ Brief Comparison
- ✓ Speed reducers
- ✓ Commercial gearboxes
- ✓ Gearbox design
- ✓ Thermal Design of Gearboxes
- ✓ Differential Gears

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Course Outline

✓ 03 DAY THREE

Module 03: Gearbox Lubrication

- ✓ Introduction
- ✓ The purpose of lubricating gears
- ✓ Equipment designers/manufacturers (OEM)
- ✓ Minimum lubricant requirements
- ✓ Selection of viscosity grade
- ✓ Lubrication Volume
- ✓ Important Gearbox Lubrication Properties
- ✓ Special types of oil applicable for gearbox lubrication
- ✓ Method of Lubrication
- ✓ Worm gear lubrication
- ✓ Temperature Control
- ✓ Contamination Control
- ✓ Breathers
- ✓ Filtration

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Course Outline

✓ 04 DAY FOUR

Module 04: Maintenance and Troubleshooting

- ✓ Inspection
- ✓ Visual
- ✓ Vibration
- ✓ Oil analysis
- ✓ Results of Metal Wear
- ✓ Non-Destructive Test
- ✓ Gear tooth contact patterns
- ✓ Laboratory tests

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Course Outline

✓ 05 DAY FIVE

Module 05: Failure Analysis

- ✓ Fault Frequencies
- ✓ Failure Analysis
- ✓ Modes Of Gear Failure
- ✓ Scoring
- ✓ Initial Scoring
- ✓ Moderate Scoring
- ✓ Destructive Scoring
- ✓ Wear
- ✓ Adhesive Wear
- ✓ Abrasive Wear
- ✓ Corrosive Wear
- ✓ Pitting
- ✓ Determine The Type Of Failure

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
June 22, 2026	June 26, 2026	5 days	4250.00 $	UAE , Dubai
Aug. 31, 2026	Sept. 4, 2026	5 days	4250.00 $	UAE , Dubai
Dec. 14, 2026	Dec. 18, 2026	5 days	4250.00 $	UAE , Abu Dhabi
April 5, 2027	April 9, 2027	5 days	5950.00 $	switzerland , Geneva

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