

Course No. 2028

Rotating Equipment Reliability & Maintenance Management Training Course

RELIABILITY & ASSET MANAGEMENT
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Rotating Equipment Reliability & Maintenance Management Training Course provides a comprehensive and practical framework for managing the reliability, maintenance, availability, and lifecycle performance of critical rotating equipment. The programme is designed to help engineering, maintenance, and reliability professionals develop effective strategies for preventing failures, optimizing maintenance activities, and improving operational continuity.

Participants will examine the design, operation, failure mechanisms, and maintenance requirements of pumps, compressors, turbines, motors, fans, blowers, gearboxes, couplings, bearings, and other rotating machinery. The course connects equipment reliability with maintenance planning, condition monitoring, failure analysis, spare parts management, and operational performance.

The programme emphasizes the integration of preventive, predictive, condition-based, corrective, and reliability-centered maintenance strategies. Participants will learn how to assess equipment criticality, establish maintenance strategies, optimize maintenance intervals, analyze recurring failures, and use equipment performance data to support maintenance and reliability decisions.

Through practical exercises, equipment case studies, maintenance strategy development, failure analysis, reliability calculations, and an integrated workshop, participants will develop the ability to manage rotating equipment maintenance programmes, improve equipment availability, reduce unplanned downtime, optimize maintenance costs, and strengthen asset performance.

Objectives

- By the end of this training course, participants will be able to:
- Explain the principles of rotating equipment reliability and maintenance management.
- Analyze the operating and maintenance requirements of major rotating machinery.
- Assess rotating equipment criticality and operational risk.
- Identify common failure mechanisms affecting rotating equipment.
- Develop appropriate preventive and predictive maintenance strategies.
- Apply condition monitoring techniques to assess equipment health.
- Analyze equipment performance and maintenance history.

- Evaluate recurring failures and identify reliability improvement opportunities.
- Apply root cause analysis to rotating equipment failures.
- Optimize maintenance intervals and task frequencies.
- Integrate reliability-centered maintenance principles into maintenance programmes.
- Improve maintenance planning, scheduling, and execution.
- Evaluate spare parts and resource requirements for critical equipment.
- Establish reliability and maintenance performance indicators.
- Analyze maintenance costs and equipment availability.
- Develop an integrated reliability and maintenance management strategy for rotating equipment.

Who Should Attend

This course is designed for maintenance engineers, reliability engineers, mechanical engineers, rotating equipment engineers, maintenance planners, asset management professionals, and condition monitoring specialists responsible for equipment performance and maintenance strategy.

It is also suitable for maintenance managers, engineering managers, operations professionals, equipment specialists, inspection engineers, vibration analysts, lubrication specialists, reliability leaders, and maintenance supervisors involved in rotating equipment reliability and maintenance management.

The programme is particularly relevant to professionals working in oil and gas, refineries, petrochemicals, power generation, energy, water and utilities, manufacturing, chemical processing, mining, marine operations, and other asset-intensive industries.

Learning Outcomes

- Upon completion of the course, participants will be able to:
- Evaluate the reliability and maintenance requirements of rotating machinery.
- Assess equipment criticality and prioritize maintenance resources.
- Develop equipment-specific maintenance strategies.
- Identify mechanical, operational, lubrication, and process-related failure mechanisms.

- Apply preventive and predictive maintenance techniques.
- Interpret condition monitoring information for rotating equipment.
- Analyze equipment failure history and maintenance performance.
- Conduct structured root cause failure analysis.
- Develop corrective and preventive actions to eliminate recurring failures.
- Optimize maintenance intervals based on reliability and equipment condition.
- Integrate condition monitoring with maintenance planning and scheduling.
- Improve spare parts planning for critical rotating equipment.
- Establish appropriate reliability and maintenance performance indicators.
- Evaluate maintenance effectiveness, costs, and equipment availability.
- Develop reliability improvement initiatives based on equipment performance data.
- Prepare a comprehensive rotating equipment reliability and maintenance management plan.

Course Outline

DAY 01

Rotating Equipment Reliability Fundamentals

- Principles of rotating equipment reliability
- Reliability, availability, maintainability, and lifecycle performance
- Overview of pumps, compressors, turbines, motors, fans, blowers, and gearboxes
- Equipment operating requirements and performance characteristics
- Equipment criticality assessment
- Common rotating equipment failure mechanisms
- Failure consequences and operational impact
- Reliability data and equipment history

PRACTICAL APPLICATION

Developing a rotating equipment criticality assessment

DAY 02

Maintenance Strategies and Condition Monitoring

- Preventive, predictive, corrective, and condition-based maintenance
- Reliability-centered maintenance principles
- Maintenance strategy selection
- Maintenance task optimization
- Vibration monitoring and analysis
- Lubrication and oil analysis
- Thermography and temperature monitoring
- Motor and electrical condition monitoring
- Equipment condition assessment

PRACTICAL APPLICATION

Developing a maintenance strategy for critical rotating equipment

DAY 03

Failure Analysis and Reliability Improvement

- Rotating equipment failure investigation
- Failure modes and mechanisms
- Root cause failure analysis
- Misalignment, imbalance, looseness, resonance, and bearing failures
- Seal, coupling, shaft, and gear failures
- Lubrication-related failures
- Operational and process-related failure causes
- Recurring failure analysis
- Corrective and preventive action development

PRACTICAL APPLICATION

Conducting a root cause analysis of a rotating equipment failure

DAY 04

Maintenance Planning, Execution and Resource Optimization

- Maintenance planning and scheduling
- Work order management and maintenance execution
- Shutdown and turnaround maintenance considerations
- Spare parts criticality and inventory planning
- Maintenance manpower and resource optimization
- Contractor and specialist service management
- Maintenance cost control
- Equipment availability and downtime management
- Integration with computerized maintenance management systems

PRACTICAL APPLICATION

Developing an optimized maintenance plan for a rotating equipment fleet

DAY 05

Reliability Performance Management and Continuous Improvement

- Reliability and maintenance performance indicators
- Equipment availability and downtime analysis
- Mean Time Between Failures and Mean Time To Repair
- Maintenance effectiveness and cost analysis
- Reliability improvement programmes
- Failure trend monitoring and performance reviews
- Management reporting and reliability dashboards
- Lifecycle asset performance improvement
- Continuous improvement and reliability culture
- Final Integrated Workshop: Developing a comprehensive Rotating Equipment Reliability & Maintenance Management Strategy



Register or Request More Information

Course page: <https://quest-training.com/courses/rotating-equipment-reliability-maintenance-management-training-course>

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