MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

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SURVEILLANCE & MAINTENANCE OF ROTATING EQUIPMENT

""Ensuring Reliability, Performance, and Uptime through Proactive Surveillance and Strategic Maintenance of Critical Rotating Machinery""

Schedule

Date	Venue	Fees (Face-to-Face)
02 – 06 Mar 2026	Dubai, UAE	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Rotating equipment such as pumps, compressors, turbines, and fans form the operational backbone of industries like oil & gas, power generation, chemicals, and manufacturing. The performance and integrity of these assets are crucial to plant reliability and safety. Surveillance and maintenance strategies play a vital role in minimizing breakdowns, extending equipment life, and optimizing cost.

This comprehensive 5-day course focuses on technical and operational practices for monitoring, diagnosing, and maintaining rotating machinery. It provides a strong foundation in failure analysis, condition monitoring, alignment techniques, and predictive maintenance strategies that enhance asset reliability and reduce total cost of ownership.

Objectives

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

- Identify and classify types of rotating equipment and their failure modes
- Apply surveillance techniques for condition and performance monitoring
- Develop structured inspection, lubrication, and maintenance plans
- Perform root cause analysis for vibration, thermal, and mechanical faults
- Implement predictive and preventive maintenance programs (CBM/RCM)
- Interpret data from vibration, oil analysis, and infrared monitoring systems

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Why Attend

- Reduce unplanned shutdowns and repair costs
- Improve reliability and availability of rotating assets
- Learn best practices in condition monitoring and surveillance systems
- Gain skills in diagnosing mechanical issues and preventing failure recurrence
- Build competency in strategic maintenance planning and performance tracking

Target Audience

This program is designed for:

- Maintenance engineers and technicians
- Rotating equipment specialists
- Mechanical and reliability engineers
- Maintenance planners and inspectors
- Asset integrity and operations professionals

Individual Benefits

Key competencies that will be developed include:

- Equipment fault diagnosis and failure prevention
- Condition monitoring and vibration analysis
- Predictive maintenance implementation
- Surveillance and inspection planning
- Maintenance optimization and scheduling

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Enhanced operational uptime and reduced equipment failure
- Improved cost efficiency through proactive maintenance
- Accurate diagnostics and root cause elimination
- Stronger alignment between maintenance and operations
- Sustainable maintenance strategies aligned with international best practices

Instructional Methodology

- Strategy Briefings – Rotating equipment theory, maintenance strategies, and reliability frameworks
- Hands-On Exercises – Vibration analysis interpretation, inspection checklist development, failure mode identification
- Case Studies – Industry scenarios involving pump, compressor, and turbine issues with lessons learned
- Workshops – Maintenance program design, lubrication planning, criticality analysis
- Peer Exchange – Experience sharing on rotating equipment problems and improvements
- Tools – RCA templates, condition monitoring route planners, lube schedules, and reliability metrics dashboard

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Course Outline

Detailed 5-Day Course Outline

Training Hours: 7:30 AM – 3:30 PM Daily Format: 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1 – Rotating Equipment Foundations

- **Module 1: Classification and Functions of Rotating Equipment (07:30 – 09:30)**
- Pumps, compressors, turbines, blowers, mixers
- Functional overview and typical applications
- Common mechanical configurations and components
- **Module 2: Failure Modes and Effects (09:45 – 11:15)**
- Mechanical, thermal, lubrication, and alignment failures
- Seal, bearing, and shaft issues
- Effects of poor installation and operation
- **Module 3: Introduction to Surveillance Concepts (11:30 – 01:00)**
- Surveillance vs. inspection vs. monitoring
- Early warning indicators
- Setting up surveillance programs
- **Module 4: Workshop – Equipment Mapping and Failure Profiling (02:00 – 03:30)**
- Teams identify equipment in their facility and map failure history

Day 2 – Condition Monitoring & Vibration Analysis

- **Module 5: Condition Monitoring Techniques (07:30 – 09:30)**
- Vibration, thermography, ultrasound, oil analysis
- Selection of methods and setup of routes
- Criticality and monitoring frequency
- **Module 6: Vibration Analysis Fundamentals (09:45 – 11:15)**
- Frequencies, FFT spectrum, imbalance, misalignment
- Early failure detection and severity classification
- Vibration data interpretation
- **Module 7: Infrared and Oil Monitoring (11:30 – 01:00)**
- Thermal scanning for hotspots and electrical faults
- Oil quality, viscosity, contamination, and wear particle analysis
- Trend analysis and alarm limits
- **Module 8: Hands-On Simulation – Fault Identification from Monitoring Data (02:00 – 03:30)**
- Groups assess monitoring reports and identify possible failures

Day 3 – Maintenance Strategy and Planning

- **Module 9: Preventive vs Predictive Maintenance (07:30 – 09:30)**
- When to use PM vs CBM
- Cost-benefit and ROI considerations
- Time-based, usage-based, and condition-based triggers
- **Module 10: Maintenance Task Planning (09:45 – 11:15)**
- Developing job plans and task libraries
- Scheduling based on equipment condition
- Spare parts and lead time integration
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Module 11: Reliability and Risk-Based Maintenance (11:30 – 01:00)

- RCM principles for rotating equipment
- Asset criticality and FMEA
- Integration into CMMS and planning systems
- **Module 12: Workshop – Creating a Predictive Maintenance Plan (02:00 – 03:30)**
- Participants create a plan using real asset case studies

Day 4 – Inspection, Alignment & Lubrication

- **Module 13: Routine Inspection and Surveillance (07:30 – 09:30)**
- Visual inspections, tolerances, and documentation
- Use of checklists and inspection routes
- Degradation patterns and inspection frequencies
- **Module 14: Alignment and Balancing (09:45 – 11:15)**
- Laser alignment basics
- Shaft misalignment effects
- Balancing methods and weights
- **Module 15: Lubrication Strategy (11:30 – 01:00)**
- Grease vs. oil; manual vs. automatic systems
- Lubrication intervals and volume calculation
- Lube storage and contamination control
- **Module 16: Workshop – Lubrication and Alignment Program Setup (02:00 – 03:30)**
- Participants build a lubrication matrix and alignment SOP

Day 5 – Root Cause, Safety, and Performance Optimization

- **Module 17: Root Cause Analysis (RCA) for Rotating Equipment (07:30 – 09:30)**
- Structured RCA (5 Whys, Fishbone, FTA)
- Chronic vs. acute failures
- Using failure data to prevent recurrence
- **Module 18: Safety and Regulatory Compliance (09:45 – 11:15)**
- Lockout/tagout, confined space, guarding
- Maintenance-related safety incidents
- Recordkeeping and audit preparation
- **Module 19: Performance Metrics and Improvement (11:30 – 01:00)**
- MTBF, MTTR, availability, and downtime tracking
- Visual dashboards and reporting
- Continuous improvement and reliability strategies
- **Module 20: Final Simulation – Rotating Equipment Reliability Action Plan (02:00 – 03:30)**
- Teams create and present an improvement plan
- Peer feedback and course wrap-up

Certification

Participants will receive a **Certificate of Completion in Surveillance & Maintenance of Rotating Equipment**, recognizing their ability to monitor, maintain, and optimize critical rotating assets in complex industrial environments.

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Why Choose MAWA Events

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