MAWA EVENTS

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

Phone: +601116373203 | **Email:** info@mawaevents.net

PRECISION TROUBLESHOOTING FOR ROTATING EQUIPMENT: ADVANCED METHODS

"Mastering Diagnostic Techniques to Prevent Failures and Improve Equipment Uptime"

Schedule

Date	Venue	Fees (Face-to-Face)
02 – 06 Nov 2026	London – UK	USD 3495 per delegate

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

Introduction

Rotating equipment such as pumps, compressors, turbines, motors, and fans are vital to industrial operations. When these machines fail, it can lead to costly downtime, safety incidents, and maintenance overruns. Precision troubleshooting is critical to detecting early signs of failure, identifying root causes, and restoring equipment to optimal performance.

This advanced-level course delivers a practical, methodical approach to diagnosing and solving rotating equipment issues. Participants will gain hands-on knowledge in vibration analysis, thermography, lubrication analysis, alignment, and root cause methodologies to significantly reduce failure rates and increase equipment reliability.

Objectives

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

- Apply precision troubleshooting techniques to various types of rotating machinery
- Interpret vibration, thermal, acoustic, and oil analysis data for condition monitoring
- Diagnose root causes of recurring faults in rotating equipment systems
- Use alignment, balancing, and reliability tools to prevent equipment degradation
- Enhance reliability-centered maintenance (RCM) practices with precision tools

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Why Attend

- Learn industry best practices for troubleshooting pumps, compressors, turbines, and motors
- Reduce equipment failures and emergency shutdowns through predictive techniques
- Strengthen diagnostic and analytical capabilities for maintenance teams
- Understand how to combine condition-based and precision maintenance strategies
- Advance your role as a reliability or maintenance expert in critical system

Target Audience

This program is designed for:

- Maintenance and reliability engineers
- Rotating equipment specialists
- Mechanical and plant engineers
- Maintenance planners and supervisors
- Condition monitoring and vibration analysts

Individual Benefits

Key competencies that will be developed include:

- Vibration analysis interpretation and fault pattern recognition
- Precision alignment and balancing techniques
- Root cause failure analysis (RCFA) for rotating equipment
- Oil analysis and thermographic inspection skills
- Integration of predictive and preventive maintenance approaches

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved equipment availability and reliability
- Reduction in unplanned maintenance costs and downtime
- Early detection of critical machinery defects
- Better asset life cycle management and failure prevention
- Enhanced safety and operational continuity across facilities

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Failure mechanisms, RCM, and condition-based diagnostics
- Case Studies – Real-world equipment failures and resolution methods
- Workshops – Hands-on data interpretation, troubleshooting logic, and repair planning
- Peer Exchange – Experience sharing on complex maintenance issues
- Tools – Diagnostic flowcharts, troubleshooting checklists, and vibration data templates

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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: Foundations of Precision Troubleshooting

- Module 1: Overview of Rotating Equipment (07:30 – 09:30) • Pumps, motors, fans, turbines, gearboxes – operating principles and configurations
- Module 2: Failure Modes and Effects (09:45 – 11:15) • Mechanical, hydraulic, thermal, and electrical failure causes
- Module 3: Workshop – Failure Symptom Mapping (11:30 – 01:00) • Relating performance symptoms to probable faults
- Module 4: Peer Exchange – Most Challenging Failures Faced (02:00 – 03:30) • Group discussion on past breakdowns and lessons learned

Day 2: Vibration and Dynamic Troubleshooting

- Module 5: Vibration Analysis Fundamentals (07:30 – 09:30) • Frequency, amplitude, phase, spectrum, and waveform analysis
- Module 6: Diagnosing Common Faults via Vibration (09:45 – 11:15) • Misalignment, imbalance, looseness, bearing defects
- Module 7: Workshop – Interpreting Vibration Data (11:30 – 01:00) • Analyze sample vibration plots and diagnose faults
- Module 8: Case Study – Recurring Pump Vibration (02:00 – 03:30) • Troubleshooting a chronic instability issue

Day 3: Thermography, Lubrication, and Root Cause Analysis

- Module 9: Infrared Thermography Techniques (07:30 – 09:30) • Heat signatures in mechanical and electrical systems
- Module 10: Oil and Lubricant Analysis (09:45 – 11:15) • Contaminants, wear particles, and viscosity trends
- Module 11: Workshop – Root Cause Failure Analysis (RCFA) (11:30 – 01:00) • Use cause-mapping and fault trees to determine origin of failure
- Module 12: Peer Exchange – Sharing RCFA Practices (02:00 – 03:30) • Industry experience on RCFA success and pitfalls

Day 4: Precision Maintenance and Optimization Techniques

- Module 13: Laser Alignment and Shaft Coupling Techniques (07:30 – 09:30) • Vertical/horizontal corrections, soft foot, thermal growth
- Module 14: Field Balancing of Rotating Components (09:45 – 11:15) • Single and two-plane balancing using vibration tools
- Module 15: Workshop – Alignment and Balancing Simulations (11:30 – 01:00) • Practical demo (simulated or video-guided) of alignment steps
- Module 16: Case Study – Bearing Wear Prevention (02:00 – 03:30) • Optimizing lubrication and alignment to reduce wear

Day 5: Troubleshooting Strategy and Reliability Integration

- Module 17: Building a Troubleshooting Protocol (07:30 – 09:30) • Systematic approach to repeatable problem solving
- Module 18: Integrating with RCM and Predictive Maintenance (09:45 – 11:15) • Condition-based triggers and data-driven interventions
- Module 19: Final Project – Troubleshooting Plan for Rotating System (11:30 – 01:00) • Develop and present a real-world equipment troubleshooting solution
- Module 20: Wrap-Up, Feedback, and Certification (02:00 – 03:30) • Closing discussion and certificate distribution

Certification

Participants will receive a **Certificate of Completion in Precision Troubleshooting for Rotating Equipment**, confirming their ability to diagnose and resolve complex mechanical issues using advanced troubleshooting and reliability-centered methods.

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Why Choose MAWA Events

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In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**