MAWA EVENTS

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

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

CBM & CONDITION MONITORING TECHNIQUES - TECHNIQUES INCLUDING VIBRATION ANALYSIS / VIBRATION MONITORING

"Optimize Equipment Reliability and Prevent Failures Through Advanced Condition-Based Maintenance Strategies"

Schedule

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

Introduction

As industrial operations grow more complex, minimizing unplanned downtime and optimizing equipment reliability are more critical than ever. Condition-Based Maintenance (CBM) offers a proactive maintenance strategy that relies on real-time data to detect early signs of equipment deterioration before failure occurs.

This intensive course provides a comprehensive understanding of CBM principles, with a strong focus on vibration monitoring and analysis—one of the most effective predictive maintenance tools. Participants will gain the technical skills and strategic knowledge required to implement condition monitoring programs across mechanical systems.

Objectives

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

- Understand the fundamentals and advantages of Condition-Based Maintenance
- Apply vibration analysis techniques for machinery diagnostics
- Identify failure modes through real-time monitoring and spectral data
- Integrate CBM tools such as thermography, ultrasound, and oil analysis
- Design and implement an effective CBM program in their facility
- Interpret vibration trends and correlate findings with mechanical faults

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Why Attend

- Learn how to reduce downtime and increase equipment availability
- Gain practical knowledge of vibration monitoring systems and sensors
- Develop expertise in machinery diagnostics and fault identification
- Improve asset lifecycle management through predictive techniques
- Receive hands-on experience in condition monitoring data interpretation

Target Audience

This program is designed for:

- Maintenance and reliability engineers
- Mechanical engineers and rotating equipment specialists
- Plant managers and maintenance supervisors
- Condition monitoring technicians and vibration analysts
- Professionals involved in asset health and performance

Individual Benefits

Key competencies that will be developed include:

- Mastery of CBM fundamentals and real-world application
- Skills in using vibration analysis for fault detection
- Proficiency in interpreting condition monitoring data
- Ability to recommend corrective actions based on trends and diagnostics
- Improved decision-making regarding equipment service intervals

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Reduced maintenance costs through early fault detection
- Improved uptime and asset availability across plant operations
- Higher safety and reduced risk of catastrophic failure
- Better planning and scheduling of maintenance activities
- Enhanced reliability culture and technical capability within teams

Instructional Methodology

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

- Strategy Briefings – Core principles of CBM, reliability-centered maintenance, and failure mechanisms
- Case Studies – Real-world applications of vibration monitoring and fault analysis
- Workshops – Spectral analysis interpretation, equipment diagnostics, and system setup
- Peer Exchange – Group exercises on program design and technical challenges
- Tools – Vibration data sheets, fault frequency charts, and CBM implementation 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: Introduction to CBM and Asset Reliability

- Module 1: Fundamentals of Condition-Based Maintenance (07:30 – 09:30) • Principles and benefits of CBM • Comparison with other maintenance strategies (PM, PdM, RCM)
- Module 2: Introduction to Condition Monitoring Tools (09:45 – 11:15) • Overview of vibration, thermography, ultrasound, and oil analysis
- Module 3: Failure Modes and Maintenance Planning (11:30 – 01:00) • Understanding equipment failure patterns and criticality
- Module 4: Workshop – Equipment Criticality Ranking (02:00 – 03:30)

Day 2: Vibration Analysis – Principles and Applications

- Module 1: Vibration Basics (07:30 – 09:30) • What vibration tells us about machine health • Key terms: amplitude, frequency, velocity, displacement
- Module 2: Vibration Measurement Techniques (09:45 – 11:15) • Types of sensors and signal acquisition methods
- Module 3: Spectral Analysis and FFT (11:30 – 01:00) • Fast Fourier Transform and interpretation of spectrums
- Module 4: Practical Demo and Analysis (02:00 – 03:30)

Day 3: Diagnosing Faults Using Vibration Monitoring

- Module 1: Identifying Common Machinery Faults (07:30 – 09:30) • Imbalance, misalignment, looseness, bearing and gear defects
- Module 2: Case Study – Diagnosing Complex Faults (09:45 – 11:15) • Real scenarios of problem detection and troubleshooting
- Module 3: Vibration Data Trending and Alarm Setting (11:30 – 01:00) • Trending vibration levels and defining alarm thresholds
- Module 4: Workshop – Building a Vibration Analysis Plan (02:00 – 03:30)

Day 4: Integrating CBM Techniques and Advanced Tools

- Module 1: Thermography and Oil Analysis (07:30 – 09:30) • Infrared scanning and lubrication condition tracking
- Module 2: Ultrasound and Acoustic Emission (09:45 – 11:15) • Detecting leaks, electric faults, and early-stage bearing wear
- Module 3: CBM Software and Data Integration (11:30 – 01:00) • Using CMMS and dashboards to manage data and alerts
- Module 4: Program Design Exercise (02:00 – 03:30)

Day 5: CBM Program Implementation and Review

- Module 1: Designing a Condition Monitoring Program (07:30 – 09:30) • Key steps in CBM strategy implementation and rollout
- Module 2: KPI Tracking and ROI Justification (09:45 – 11:15) • Calculating savings, uptime improvements, and investment return
- Module 3: Final Case Review and Team Presentation (11:30 – 01:00) • Real-world scenario assessment and planning
- Module 4: Course Wrap-up & Q/A (02:00 – 03:30)

Certification

Participants will receive a Certificate of Completion in CBM & Condition Monitoring Techniques, validating their applied knowledge in vibration analysis, predictive maintenance, and strategic implementation of condition-based reliability programs.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

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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**