MAWA EVENTS

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

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

TURBO MACHINERY - OPERATIONAL PERFORMANCE & MAINTENANCE MANAGEMENT

"Maximizing Efficiency, Reliability, and Service Life of Critical Rotating Equipment"

Schedule

Date	Venue	Fees
10 – 13 Feb 2026	Dubai, UAE	USD 2995 per delegate

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

Introduction

Turbomachinery—such as compressors, turbines, and pumps—plays a critical role in industrial operations, especially in sectors like oil & gas, petrochemicals, and power generation. Poor performance or failure of this equipment can result in costly downtime, safety risks, and reduced operational efficiency.

This intensive 4-day course equips operations and maintenance personnel with the knowledge and tools to enhance the performance and reliability of turbomachinery. Through real-world case studies, technical deep-dives, and practical exercises, participants will gain insights into performance optimization, failure prevention, and maintenance best practices tailored specifically for rotating equipment.

Objectives

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

- Understand the operating principles of key turbomachinery types
- Analyze performance parameters and efficiency indicators
- Identify failure modes and implement preventive measures
- Apply condition monitoring and diagnostic techniques
- Improve maintenance planning and reduce unplanned shutdowns

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Why Attend

- Deepen your knowledge of rotating equipment behavior and optimization
- Reduce operational risk and avoid catastrophic failures
- Enhance asset lifespan through proactive maintenance strategies
- Learn practical tools for troubleshooting and performance analysis
- Align operations and maintenance goals for higher equipment availability

Target Audience

This program is designed for:

- Mechanical and reliability engineers
- Rotating equipment and turbomachinery specialists
- Maintenance planners and supervisors
- Operations personnel responsible for compressors and turbines
- Process and utility engineers in oil, gas, and energy sectors

Individual Benefits

Key competencies that will be developed include:

- Technical knowledge of turbomachinery design and function
- Skill in identifying performance deviations and diagnosing issues
- Proficiency in interpreting vibration and other condition monitoring data
- Confidence in planning and executing maintenance shutdowns
- Ability to align reliability goals with production objectives

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved availability and reliability of critical rotating equipment
- Reduced maintenance costs and unplanned failures
- Enhanced safety performance by managing mechanical risks
- Stronger diagnostic capabilities using modern condition monitoring tools
- Better alignment between operations, maintenance, and reliability teams

Instructional Methodology

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

- Strategy Briefings – Technical deep-dives into equipment performance and design
- Case Studies – Root cause analysis and turnaround success stories
- Workshops – Failure diagnostics and vibration data interpretation exercises
- Peer Exchange – Practical experience sharing on turbomachinery challenges
- Tools – Maintenance templates, inspection checklists, and monitoring dashboards

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Course Outline

DETAILED 4-DAY COURSE OUTLINE

Training Hours: 07:30 AM – 03:30 PM **Daily Format**: 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Fundamentals of Turbomachinery and Operational Performance

- Module 1: Introduction to Turbomachinery Types and Principles (07:30 – 09:30) • Overview of turbines, compressors, and pumps • Operating principles: dynamic vs. positive displacement machines • Applications across oil & gas, energy, and industrial sectors
- Module 2: Performance Metrics and Efficiency (09:45 – 11:15) • Key performance parameters: flow, head, efficiency, power • Interpretation of curves and OEM data • Causes of performance degradation
- Module 3: Equipment Matching and Operating Conditions (11:30 – 01:00) • Matching machine capability with system demand • Effects of off-design operation • Control systems and protective devices
- Module 4: Group Workshop – Performance Evaluation (02:00 – 03:30) • Reviewing real performance curves • Identifying signs of inefficiency • Case-based group recommendations

Day 2: Reliability and Failure Prevention in Turbomachinery

- Module 1: Common Failure Modes and Mechanisms (07:30 – 09:30) • Mechanical, thermal, and process-related failures • Erosion, cavitation, misalignment, and surge • Recognizing failure signatures early
- Module 2: Condition Monitoring Fundamentals (09:45 – 11:15) • Basics of vibration analysis, thermography, and oil analysis • Monitoring bearing health and imbalance • Establishing alarm limits and response actions
- Module 3: Diagnostic Tools and Techniques (11:30 – 01:00) • Using FFT, orbit plots, and spectrum analysis • Root cause identification from monitoring data • Role of advanced monitoring systems (online and offline)
- Module 4: Group Activity – Failure Case Diagnosis (02:00 – 03:30) • Simulated failure case with data and symptoms • Teams propose diagnosis and preventive actions • Peer presentation and discussion

Day 3: Maintenance Strategies and Execution Planning

- Module 1: Maintenance Philosophies and Strategy Selection (07:30 – 09:30) • Reactive, preventive, predictive, and RCM approaches • When to apply time-based vs. condition-based maintenance • Economic considerations of each strategy
- Module 2: Planning and Scheduling of Turbomachinery Maintenance (09:45 – 11:15) • Maintenance workflow: planning, execution, close-out • Managing planned shutdowns and overhauls • Coordination between OEM, contractors, and internal teams
- Module 3: Spare Parts and Lubrication Management (11:30 – 01:00) • Critical spare identification and stocking strategies • Lubrication planning and contamination control • Reducing failure risks through parts standardization
- Module 4: Workshop – Building a Maintenance Plan (02:00 – 03:30) • Drafting a preventive maintenance plan • Integrating inspections, condition data, and corrective tasks • Feedback from trainer on completeness and realism

Day 4: Troubleshooting and Continuous Improvement

- Module 1: Troubleshooting Operational Issues (07:30 – 09:30) • Diagnosing instability, noise, high vibrations, and temperature rise • Tools and techniques for troubleshooting rotating equipment • Escalation and shutdown decision criteria
- Module 2: Turnaround and Post-Maintenance Start-Up (09:45 – 11:15) • Critical steps in safe startup post-maintenance • Inspection, alignment, balancing, and verification • Managing risks during re-commissioning
- Module 3: Continuous Reliability Improvement (11:30 – 01:00) • Reliability improvement programs (RCM, RCA, LCC) • Maintenance audits and performance tracking • Training and cross-functional alignment
- Module 4: Final Review and Action Planning (02:00 – 03:30) • Review of lessons and key takeaways • Development of individual and team action plans • Certification and course wrap-up

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Certification

Participants will receive a Certificate of Completion in Turbomachinery – Operational Performance & Maintenance Management, recognizing their expertise in optimizing, diagnosing, and maintaining high-performance turbomachinery systems to meet demanding industrial requirements.

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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