MAWA EVENTS

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

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

RELIABILITY ENGINEERING

"Mastering Reliability Engineering for Optimal Plant and Machinery Performance"

Schedule

Date	Venue	Fees (Face-to-Face)
23 – 27 Aug 2026	Manama, Bahrain	USD 3495 per delegate

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

Introduction

Reliability engineering is crucial for ensuring the optimal performance of plant and machinery. This 5-day course covers the core principles and methodologies of reliability engineering, focusing on enhancing equipment uptime, reducing maintenance costs, and improving overall operational efficiency. Participants will learn how to apply reliability techniques to diagnose issues, optimize systems, and develop strategies for long-term machinery performance.

By the end of this course, participants will be equipped to improve machinery reliability, reduce downtime, and implement predictive maintenance strategies effectively.

Objectives

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

- Understand the key principles and tools of reliability engineering.
- Apply reliability analysis techniques to plant and machinery.
- Use failure modes and effects analysis (FMEA) and reliability-centered maintenance (RCM) for system optimization.
- Develop strategies to improve equipment reliability and reduce downtime.
- Implement predictive maintenance practices to enhance operational efficiency.

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Why Attend

- Gain expert knowledge of reliability engineering principles and practices.
- Learn how to enhance the reliability of your plant and machinery through practical techniques.
- Understand how to apply FMEA and RCM in real-world scenarios.
- Improve operational performance through better maintenance strategies.
- Network with professionals from various industries and learn best practices in reliability engineering.

Target Audience

This program is designed for:

- Maintenance engineers and managers looking to enhance plant and machinery reliability.
- Plant operators and technicians involved in machinery maintenance.
- Reliability engineers and professionals in the manufacturing sector.
- Quality control and process improvement specialists.
- Anyone interested in optimizing equipment performance and reducing downtime.

Individual Benefits

Key competencies that will be developed include:

- Expertise in reliability engineering techniques and tools.
- Skills in failure analysis and implementing predictive maintenance strategies.
- Knowledge of FMEA and RCM methodologies for system optimization.
- Competency in reducing equipment downtime and enhancing reliability.
- Ability to assess machinery performance and develop improvement strategies.

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Enhanced ability to optimize machinery reliability and performance.
- Improved decision-making for implementing effective maintenance strategies.
- Greater expertise in reducing unplanned downtime and increasing system uptime.
- A deeper understanding of the relationship between reliability engineering and overall plant efficiency.
- Ability to apply reliability engineering techniques to improve safety, productivity, and operational costs.

Instructional Methodology

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

- Lectures – In-depth coverage of reliability engineering principles, tools, and techniques.
- Case Studies – Real-world scenarios demonstrating the application of reliability engineering methods.
- Workshops – Hands-on activities and practical sessions applying FMEA and RCM.
- Group Discussions – Collaborative discussions to share insights and best practices.
- Site Visits – A practical look at plant operations and reliability optimization techniques.

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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 Reliability Engineering

- Module 1: Principles of Reliability Engineering (07:30 – 09:30)
- Understanding the fundamentals of reliability engineering.
- Key terms and concepts in reliability engineering.
- Overview of reliability functions and performance indicators.
- Module 2: Reliability Analysis Techniques (09:45 – 11:15)
- Introduction to failure modes and effects analysis (FMEA).
- Applying reliability block diagrams (RBD) for system analysis.
- Practical exercise: Basic reliability analysis of a system.
- Module 3: Reliability Metrics and Key Performance Indicators (01:00 – 03:30)
- Key metrics for measuring reliability, availability, and maintainability (RAM).
- Understanding system reliability indices: MTBF, MTTR, and availability.
- Workshop: Analyzing reliability data for plant systems.

Day 2: Reliability-Centered Maintenance (RCM)

- Module 1: Introduction to RCM (07:30 – 09:30)
- What is RCM and how is it applied in plant and machinery?
- The RCM decision-making process.
- Case study: Implementing RCM in a manufacturing environment.
- Module 2: RCM Techniques and Tools (09:45 – 11:15)
- Identifying failure modes and prioritizing maintenance actions.
- Developing RCM strategies for asset management.
- Workshop: RCM analysis of plant equipment.
- Module 3: Preventive vs Predictive Maintenance (01:00 – 03:30)
- Differences between preventive and predictive maintenance.
- Benefits of predictive maintenance in improving reliability.
- Group discussion: Choosing the right maintenance strategy for your plant.

Day 3: Failure Modes and Effects Analysis (FMEA)

- Module 1: FMEA Fundamentals (07:30 – 09:30)
- Introduction to FMEA: Definitions and key concepts.
- The FMEA process and how to perform a failure analysis.
- Case study: Applying FMEA in a real-world scenario.
- Module 2: Risk Assessment and Criticality Analysis (09:45 – 11:15)
- Risk analysis techniques in reliability engineering.
- Prioritizing failure modes based on criticality.
- Workshop: Conducting a criticality analysis on equipment.
- Module 3: Optimizing FMEA for Maintenance Strategy (01:00 – 03:30)
- Integrating FMEA results into a maintenance strategy.
- Strategies for mitigating identified risks and failures.
- Group activity: Developing an optimized maintenance plan using FMEA.

Day 4: Predictive Maintenance Techniques

- Module 1: Introduction to Predictive Maintenance (07:30 – 09:30)
- The role of predictive maintenance in reliability engineering.
- Predictive maintenance tools: Vibration analysis, thermography, and ultrasound.
- Case study: Implementing predictive maintenance in a plant.
- Module 2: Condition Monitoring and Diagnostics (09:45 – 11:15)
- Techniques for monitoring equipment condition in real-time.
- Diagnostics tools for identifying potential failures before they occur.
- Workshop: Using condition monitoring tools to detect faults.
- Module 3: Data-Driven Reliability Optimization (01:00 – 03:30)
- Using data analytics to predict equipment failures and optimize maintenance.
- Machine learning applications in predictive maintenance.
- Group discussion: Leveraging data to enhance equipment reliability.

Day 5: Advanced Reliability Engineering Topics

- Module 1: Root Cause Failure Analysis (07:30 – 09:30)
- Techniques for identifying the root cause of equipment failures.
- Using failure data to prevent recurrence of failures.
- Case study: Root cause analysis in a manufacturing plant.
- Module 2: Advanced Reliability Modeling (09:45 – 11:15)
- Reliability modeling techniques for complex systems.
- Introduction to Monte Carlo simulations for reliability analysis.
- Workshop: Applying reliability models to a plant system.
- Module 3: Implementing Reliability Engineering Practices (01:00 – 03:30)
- Steps to integrate reliability engineering into your organization.
- Developing a reliability improvement action plan.
- Final project: Designing a reliability improvement program for plant operations.

Certification

Participants will receive a Certificate of Completion in Reliability Engineering, validating their skills and knowledge in optimizing plant and machinery reliability.

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.

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