MAWA EVENTS

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

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

MATERIALS / CORROSION ENGINEERING & MANAGEMENT

"Protecting Assets and Infrastructure Through Strategic Materials Selection and Corrosion Control"

Schedule

Date	Venue	Fees (Face-to-Face)
10 – 14 May 2026	Manama, Bahrain	USD 3495 per delegate

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

Introduction

Corrosion is one of the most persistent and costly threats to industrial systems, infrastructure, and equipment. Effective corrosion engineering and materials management are critical to minimizing failures, extending asset life, and ensuring safety across sectors such as oil & gas, petrochemicals, utilities, and manufacturing.

This course provides a comprehensive framework for identifying, analyzing, and mitigating corrosion risks through optimal materials selection, protective design, and strategic asset management. Participants will gain the technical knowledge and management skills necessary to develop and maintain sustainable corrosion control programs aligned with global best practices.

Objectives

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

- Identify corrosion mechanisms and evaluate their impact on materials and systems
- Select appropriate materials based on service environment and lifecycle performance
- Design and implement corrosion prevention and control techniques
- Apply inspection, monitoring, and failure analysis methods
- Develop cost-effective corrosion management and asset protection strategies

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Why Attend

- Protect high-value assets from structural damage and performance degradation
- Reduce unplanned downtime and maintenance costs through better corrosion control
- Understand the interplay between materials, design, and environmental conditions
- Gain practical tools to assess corrosion risk and manage mitigation activities
- Ensure compliance with industry codes such as NACE, ASME, and ISO

Target Audience

This program is designed for:

- Corrosion, integrity, and materials engineers
- Asset managers and maintenance planners
- Project and design engineers in oil, gas, power, and water industries
- Inspection, QA/QC, and plant reliability professionals
- Technical managers responsible for asset longevity and failure prevention

Individual Benefits

Key competencies that will be developed include:

- Understanding corrosion forms, rates, and influencing factors
- Ability to select materials for strength, corrosion resistance, and cost-efficiency
- Knowledge of protective coatings, cathodic protection, and inhibitors
- Inspection techniques such as UT, RT, visual, and electrochemical monitoring
- Practical skills in failure analysis and risk-based decision making

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Enhanced reliability and extended lifespan of plant and equipment
- Reduced maintenance costs through effective corrosion management programs
- Improved regulatory compliance and HSE performance
- Minimized risk of environmental incidents due to material failure
- Better alignment of engineering decisions with lifecycle asset management goals

Instructional Methodology

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

- **Strategy Briefings** – Corrosion risk, lifecycle planning, codes and standards
- **Case Studies** – High-impact failures and lessons learned
- **Workshops** – Material compatibility, corrosion mapping, protection planning
- **Peer Exchange** – Cross-industry challenges and applied solutions
- **Tools** – Corrosion rate calculators, risk matrices, coating selection charts

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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 Materials and Corrosion Engineering

Module 1: Materials Science Fundamentals (07:30 – 09:30)

- Metals, alloys, polymers, and ceramics in engineering applications

Module 2: Corrosion Mechanisms and Classifications (09:45 – 11:15)

- Uniform, galvanic, pitting, crevice, intergranular, MIC

Module 3: Material Selection Criteria (11:30 – 01:00)

- Cost, mechanical properties, corrosion resistance

Module 4: Workshop – Match Materials to Environments (02:00 – 03:30)

- Selection based on service condition case studies

Day 2: Corrosion Control Techniques and Design

Module 5: Protective Coatings and Surface Treatments (07:30 – 09:30)

- Paint systems, galvanizing, thermal spraying, linings

Module 6: Cathodic and Anodic Protection (09:45 – 11:15)

- Impressed current, sacrificial anodes, CP system design

Module 7: Corrosion Inhibitors and Chemical Treatments (11:30 – 01:00)

- Selection, injection systems, environmental controls

Module 8: Workshop – Design a Corrosion Prevention Plan (02:00 – 03:30)

- Build a layered defense approach for a process system

Day 3: Inspection, Monitoring, and Failure Analysis

Module 9: Corrosion Monitoring Techniques (07:30 – 09:30)

- Electrical resistance, LPR, ultrasonic testing

Module 10: Inspection Methods and Condition Assessment (09:45 – 11:15)

- NDT tools, visual, radiography, drones, corrosion probes

Module 11: Failure Analysis and Root Cause Techniques (11:30 – 01:00)

- Fractography, metallurgical testing, incident reviews

Module 12: Workshop – Analyze a Corrosion Failure Case (02:00 – 03:30)

- Hands-on review of failure scenarios and reports

Day 4: Corrosion Management Programs and Standards

Module 13: Corrosion Risk Assessment (07:30 – 09:30)

- Risk matrix, consequence modeling, criticality ratings

Module 14: Developing a Corrosion Management Plan (09:45 – 11:15)

- Strategy, documentation, KPIs, training

Module 15: Regulatory Compliance and Codes (11:30 – 01:00)

- NACE MR0175/ISO 15156, ASME, API RP 571/580

Module 16: Workshop – Build a Risk-Based Management Program (02:00 – 03:30)

- Tailor a corrosion plan for a selected plant type

Day 5: Lifecycle Planning and Continuous Improvement

Module 17: Lifecycle Costing and Asset Longevity (07:30 – 09:30)

- Capex vs Opex, ROI of prevention, asset value modeling

Module 18: Digital Tools and Data Integration (09:45 – 11:15)

- CMMS, sensors, digital twins, corrosion modeling software

Module 19: Case Studies and Best Practices (11:30 – 01:00)

- Global failures, design improvements, industry benchmarks

Module 20: Final Workshop – Draft a Corrosion Strategy Report (02:00 – 03:30)

- Create a corrosion roadmap for a critical asset group

Certification

Participants will receive a **Certificate of Completion in Materials / Corrosion Engineering & Management**, validating their technical competence in material selection, corrosion control, and integrity management strategies across industrial applications.

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**