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 & CORROSION MANAGEMENT - ONSHORE, OFFSHORE & SUBSEA ENVIRONMENT

"Protect Assets and Extend Lifecycle with Effective Corrosion Management Strategies for Critical Environments"

Schedule

Date	Venue	Fees (Face-to-Face)
17 – 21 Aug 2026	London, UK	USD 3495 per delegate

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

Introduction

Corrosion remains a major threat to the structural integrity, safety, and performance of equipment and infrastructure in onshore, offshore, and subsea environments. Addressing this challenge requires a deep understanding of materials science, corrosion mechanisms, and protective strategies.

This intensive 5-day course delivers an in-depth exploration of materials selection, corrosion engineering principles, and corrosion control methods tailored for demanding industrial applications. Participants will learn to evaluate risks, implement effective protection systems, and optimize asset reliability in harsh environments.

Objectives

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

- Identify and evaluate corrosion mechanisms in different operational environments
- Select appropriate materials for corrosion resistance in onshore, offshore, and subsea applications
- Design and implement corrosion protection systems, including coatings, CP systems, and inhibitors
- Analyze corrosion failures and apply root cause analysis techniques
- Develop and manage corrosion monitoring and inspection programs

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Why Attend

- Gain a comprehensive understanding of corrosion science and materials behavior
- Learn to mitigate corrosion risks that affect safety, operations, and asset value
- Receive practical tools and frameworks for corrosion assessment and management
- Improve decision-making on material selection and protective strategies
- Boost your professional credibility with recognized corrosion management competencies

Target Audience

This program is designed for:

- Corrosion engineers, materials engineers, and integrity specialists
- Maintenance and inspection personnel working in oil & gas, petrochemical, and marine industries
- Design and project engineers responsible for equipment specification
- Plant, facility, and asset managers
- HSE professionals overseeing infrastructure safety and reliability

Individual Benefits

Key competencies that will be developed include:

- In-depth knowledge of corrosion mechanisms and control strategies
- Ability to assess materials and corrosion performance under various environmental conditions
- Skills to design and maintain corrosion protection systems
- Understanding of international standards for corrosion and materials integrity
- Application of inspection techniques and risk-based monitoring programs

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Capability to reduce corrosion-related failures and extend equipment lifespan
- Proficiency in materials selection aligned with performance requirements
- Enhanced ability to implement corrosion prevention strategies in design and operations
- Strengthened technical leadership in corrosion and integrity management
- Better compliance with regulatory and industry corrosion standards

Instructional Methodology

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

- Strategy Briefings – Deep dive into corrosion mechanisms, materials science, and control techniques
- Case Studies – Real-world examples of corrosion failures and effective interventions
- Workshops – Hands-on problem-solving using inspection data, materials specs, and protection strategies
- Peer Exchange – Interactive discussions on industry challenges and best practices
- Tools – Templates and guidelines for corrosion monitoring plans, risk assessments, and protection systems

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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: Fundamentals of Corrosion and Material Selection

- Module 1: Introduction to Corrosion Science (07:30 – 09:30)
- Understanding corrosion: definitions, types, and impacts
- Electrochemical principles of corrosion
- Environmental factors influencing corrosion rates
- Module 2: Materials and Metallurgy (09:45 – 11:15)
- Overview of metals and alloys used in industrial applications
- Mechanical, chemical, and thermal properties
- Selection criteria for corrosive environments
- Module 3: Corrosion in Onshore and Marine Environments (11:30 – 01:00)
- Corrosion challenges in atmospheric and buried conditions
- Marine and splash zone corrosion mechanisms
- Case examples from land-based and coastal infrastructure
- Module 4: Workshop – Corrosion Identification and Diagnosis (02:00 – 03:30)
- Visual and laboratory identification techniques
- Classification and documentation of corrosion types
- Group review of case-based corrosion scenarios

Day 2: Offshore and Subsea Corrosion Mechanisms

- Module 1: Offshore Corrosion Fundamentals (07:30 – 09:30)
- Unique environmental and operational factors offshore
- High-risk areas and failure modes
- Materials selection for offshore structures and equipment
- Module 2: Subsea and Deepwater Corrosion (09:45 – 11:15)
- Subsea corrosion environments and influencing parameters
- Cathodic protection and anode systems
- Subsea materials: composites, alloys, coatings
- Module 3: Corrosion Fatigue and Erosion (11:30 – 01:00)
- Combined effects of mechanical and corrosion stresses
- Flow-induced corrosion and mitigation
- Damage mechanisms in dynamic and high-pressure environments
- Module 4: Case Study – Offshore Asset Failure Analysis (02:00 – 03:30)
- Real-world investigation of corrosion-related failure
- Lessons learned and mitigation strategies
- Group discussion and problem-solving

Day 3: Corrosion Control and Protective Systems

- Module 1: Coatings and Linings (07:30 – 09:30)
- Types of protective coatings and surface preparation
- Application techniques and coating inspection
- Performance criteria and degradation modes
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Module 2: Cathodic Protection (CP) Systems (09:45 – 11:15)

- Principles of galvanic and impressed current systems
- Design, installation, and monitoring
- CP system maintenance and troubleshooting
- Module 3: Use of Corrosion Inhibitors (11:30 – 01:00)
- Types and modes of action of corrosion inhibitors
- Applications in pipelines, tanks, and closed systems
- Dosage, monitoring, and environmental considerations
- Module 4: Workshop – Designing a Corrosion Control Strategy (02:00 – 03:30)
- Integrating coatings, CP, and inhibitors
- Cost-benefit analysis of protection systems
- Team-based development of a corrosion control plan

Day 4: Inspection, Monitoring, and Risk Assessment

- Module 1: Corrosion Inspection Techniques (07:30 – 09:30)
- Visual, ultrasonic, radiographic, and other NDT methods
- Selection of techniques based on environment and risk
- Interpreting inspection data
- Module 2: Corrosion Monitoring Systems (09:45 – 11:15)
- Online and offline monitoring tools
- Corrosion probes, coupons, and sensors
- Data integration with maintenance systems
- Module 3: Risk-Based Inspection (RBI) and Assessment (11:30 – 01:00)
- Principles of RBI in corrosion management
- Risk matrix and probability-impact modeling
- Integration with asset integrity management systems
- Module 4: Case Study – RBI for a Pipeline System (02:00 – 03:30)
- Walkthrough of RBI methodology
- Discussion of inspection intervals and maintenance priorities
- Lessons for continuous improvement

Day 5: Failure Analysis, Standards, and Future Trends

- Module 1: Corrosion Failure Analysis (07:30 – 09:30)
- Failure modes and mechanisms
- Root cause analysis frameworks
- Documentation and reporting of failures
- Module 2: Corrosion Standards and Compliance (09:45 – 11:15)
- Key standards: NACE, ISO, ASTM, API
- Regulatory requirements for specific industries
- Compliance audits and recordkeeping
- Module 3: Future Trends in Corrosion Management (11:30 – 01:00)
- Advanced materials and nanotechnology
- Digital monitoring and predictive analytics
- Sustainability and green corrosion solutions
- Module 4: Final Review, Action Planning, and Evaluation (02:00 – 03:30)

Summary of course content and key takeaways

- Personal action plans for workplace application
- Course evaluation and closing

Certification

Participants will receive a Certificate of Completion in Corrosion Engineering & Management, certifying their expertise in identifying, analyzing, and managing corrosion in onshore, offshore, and subsea environments based on international best practices and standards.

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**