MAWA EVENTS

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

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CORROSION CONTROL OIL AND GAS EXPLORATION INDUSTRY

"Preserve Asset Integrity and Operational Safety through Effective Corrosion Control Strategies in Oil & Gas Systems."

Schedule

Venue (InHouse)	Fees
At Your Organization Premises	Ask For The Quotation

► **Available delivery methods:** In-House Training

Introduction

Corrosion poses one of the most significant challenges to the oil and gas industry, leading to equipment failures, safety hazards, production downtime, and financial losses. Pipelines, drilling rigs, offshore platforms, refineries, and storage facilities are continuously exposed to corrosive environments such as saltwater, high humidity, and harsh chemicals. Without proper corrosion management, these assets can deteriorate rapidly, affecting both performance and safety.

The Corrosion Control in Oil and Gas Exploration Industry course provides an in-depth understanding of corrosion mechanisms, prevention techniques, and monitoring methods specific to the oil and gas sector. It focuses on the science of corrosion, the selection of appropriate materials, the use of protective coatings and inhibitors, and the implementation of Cathodic Protection (CP) systems. Participants will learn how to evaluate corrosion risks, interpret inspection data, and apply international standards to develop a comprehensive corrosion management program.

This course combines theoretical knowledge with real-world practices to help engineers and technicians identify, prevent, and mitigate corrosion effectively across all stages of oil and gas exploration and production.

Objectives

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

- Understand the electrochemical principles and mechanisms of corrosion.
- Identify different types of corrosion common in oil and gas environments.
- Evaluate corrosion risks in pipelines, tanks, platforms, and production facilities.
- Select suitable materials and protective coatings for corrosion prevention.
- Design and implement cathodic protection systems for metallic structures.
- Use corrosion inhibitors effectively in upstream and downstream operations.
- Conduct corrosion inspection, monitoring, and data interpretation.
- Apply international standards such as NACE, ISO, and API in corrosion control programs.
- Develop long-term corrosion management strategies for asset integrity.

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Why Attend

Corrosion control is not just a technical requirement—it is a vital part of operational integrity, safety, and cost efficiency in the oil and gas industry. Professionals equipped with corrosion management expertise play a crucial role in preventing failures, minimizing maintenance costs, and ensuring compliance with environmental and safety regulations.

This course delivers a comprehensive learning experience combining theory, case studies, and field applications. Participants will gain practical insights into identifying early signs of corrosion, implementing preventive measures, and optimizing maintenance strategies to extend the lifespan of critical infrastructure. Whether you work in design, operations, inspection, or maintenance, this course empowers you to make informed decisions that protect both assets and personnel.

Target Audience

This course is ideal for:

- Corrosion Engineers and Technicians
- Integrity and Maintenance Engineers
- Pipeline Engineers and Inspectors
- Production and Facility Engineers
- Coating and Material Specialists
- HSE Officers and Quality Control Personnel
- Project and Asset Managers
- Technical Supervisors and Field Operators
- Anyone involved in corrosion prevention, inspection, or maintenance in oil and gas operations

Individual Benefits

- Gain an in-depth understanding of corrosion science and prevention methods.
- Develop practical skills in detecting, analyzing, and controlling corrosion.
- Learn to select and apply protective coatings, inhibitors, and CP systems effectively.
- Enhance your ability to interpret corrosion inspection and monitoring data.
- Improve your decision-making in maintenance and risk management.
- Strengthen your professional qualifications and career opportunities in the oil and gas sector.

Organizational Benefits

- Extend the service life of critical infrastructure and reduce maintenance costs.
- Enhance operational safety and environmental protection.
- Achieve compliance with NACE, ISO, API, and other international standards.
- Minimize production downtime and unexpected shutdowns.
- Improve efficiency through optimized corrosion control programs.
- Build in-house expertise to manage corrosion risks proactively.

Instructional Methodology

The course adopts a practical and interactive learning approach, combining theory with application-based learning to ensure participants gain both understanding and confidence. Key training methods include:

- Instructor-led presentations with visual aids and diagrams.
- Real-world case studies from oil and gas projects.
- Group discussions and interactive Q&A sessions.
- Practical demonstrations of inspection tools and techniques.
- Workshops on coating selection, CP design, and inhibitor application.
- Problem-solving exercises and corrosion failure analysis.
- Reference to global best practices and standards.

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Course Outline

Module 1: Introduction to Corrosion in Oil and Gas Industry

- Nature and importance of corrosion control
- Economic and safety impacts of corrosion
- Overview of corrosion in exploration, production, and refining

Module 2: Fundamentals of Corrosion Science

- Electrochemical reactions and corrosion cells
- Types of corrosion – uniform, galvanic, pitting, crevice, stress cracking, etc.
- Factors influencing corrosion – material, environment, and operation

Module 3: Corrosion in Oil and Gas Equipment

- Corrosion mechanisms in pipelines, tanks, offshore platforms, and refineries
- Corrosion under insulation and microbiologically influenced corrosion (MIC)
- High-temperature and sour gas corrosion

Module 4: Material Selection and Design for Corrosion Resistance

- Material properties and corrosion behavior
- Criteria for selecting corrosion-resistant alloys and coatings
- Design considerations to minimize corrosion risk

Module 5: Protective Coatings and Linings

- Types of protective coatings used in oil and gas systems
- Surface preparation, application, and inspection techniques
- Coating failure modes and quality control

Module 6: Cathodic Protection (CP) Systems

- Principles of CP and its role in corrosion control
- Sacrificial and impressed current systems
- CP system design, monitoring, and maintenance
- Integration of CP with coating systems

Module 7: Corrosion Inhibitors and Chemical Control Methods

- Types of corrosion inhibitors and their mechanisms
- Application techniques and monitoring of inhibitor performance
- Safety and environmental considerations

Module 8: Corrosion Monitoring and Inspection Techniques

- Visual inspection and non-destructive testing (NDT) methods
- Corrosion probes, coupons, and ultrasonic thickness testing
- Data collection, analysis, and interpretation

Module 9: Corrosion Risk Assessment and Management

- Developing corrosion management plans
- Risk-based inspection (RBI) approach
- Maintenance strategies and life-cycle cost analysis

Module 10: Standards, Regulations, and Case Studies

- Overview of NACE, ISO, API, and DNV standards
- Case studies of corrosion failures and mitigation successes
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Lessons learned and best industry practices

Certification

Upon successful completion, participants will receive a Certificate in Corrosion Control in Oil and Gas Exploration Industry, recognizing their expertise in corrosion prevention and management. The certification validates their proficiency in identifying corrosion risks, implementing mitigation strategies, and maintaining the integrity of assets according to international standards — strengthening their professional credibility in the global oil and gas industry.

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**