MAWA EVENTS

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

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MATERIALS ENGINEERING – DESIGN AND SELECTION FOR THE OIL AND GAS INDUSTRY

"Optimizing Material Selection to Enhance Integrity, Safety, and Lifecycle Performance in Oil & Gas Assets"

Schedule

Date	Venue	Fees (Face-to-Face)
17 – 21 Aug 2026	London, UK	USD 3,495 per delegate

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

Introduction

Materials selection plays a critical role in the safety, reliability, and economic performance of oil and gas facilities. Incorrect material choices can lead to corrosion, premature failures, safety incidents, and significant financial losses. Engineers must consider mechanical properties, corrosion mechanisms, operating conditions, and industry standards when designing oil and gas assets.

This intensive 5-day training provides a comprehensive understanding of materials engineering principles for the oil and gas industry. Participants will gain practical knowledge of metallic and non-metallic materials, corrosion mechanisms, material degradation, and selection methodologies to ensure asset integrity across upstream, midstream, and downstream operations.

Objectives

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

- Understand fundamental materials engineering principles
- Select appropriate materials for oil and gas applications
- Identify corrosion and degradation mechanisms
- Apply international standards and codes for material selection
- Evaluate material performance under extreme operating conditions
- Minimize failure risks and lifecycle costs
- Improve safety and asset integrity

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Why Attend

- Reduce material-related failures and corrosion risks
- Improve reliability and safety of oil and gas facilities
- Enhance design and engineering decision-making
- Gain practical insight into industry standards and best practices
- Optimize lifecycle cost and asset performance
- Strengthen integrity management programs

Target Audience

This program is designed for:

- Materials and corrosion engineers
- Mechanical and pipeline engineers
- Integrity and inspection engineers
- Design and project engineers
- Maintenance and reliability professionals
- Technical managers in oil and gas operations

Individual Benefits

Key competencies that will be developed include:

- Stronger materials selection and evaluation skills
- Improved understanding of corrosion and degradation
- Ability to interpret materials standards and specifications
- Enhanced problem-solving for materials-related issues
- Greater confidence in technical decision-making

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Reduced corrosion-related failures and downtime
- Improved asset integrity and safety performance
- Optimized material lifecycle cost
- Better compliance with industry standards
- Enhanced reliability and operational efficiency

Instructional Methodology

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

- Strategy Briefings – Materials engineering principles and selection frameworks
- Case Studies – Real-world oil and gas material failures and lessons learned
- Workshops – Hands-on material selection and corrosion assessment exercises
- Peer Exchange – Group discussions on operational challenges
- Tools – Material selection charts, standards, and corrosion assessment tools

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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: Fundamentals of Materials Engineering

- Role of materials engineering in oil and gas
- Mechanical properties and material behavior
- Overview of metallic and non-metallic materials

Day 2: Carbon Steels, Low-Alloy & Stainless Steels

- Carbon and low-alloy steels for oil and gas
- Stainless steels and corrosion-resistant alloys
- Material limitations and selection criteria

Day 3: Corrosion Mechanisms & Material Degradation

- Uniform, localized, and galvanic corrosion
- CO_2, H_2S, and microbiologically influenced corrosion (MIC)
- Erosion, fatigue, and stress corrosion cracking

Day 4: Non-Metallic Materials & Standards

- Polymers, composites, and elastomers
- Linings, coatings, and corrosion protection systems
- Overview of API, ASME, NACE, and ISO standards

Day 5: Material Selection Strategy & Lifecycle Optimization

- Material selection methodology and risk-based approach
- Failure case studies and lessons learned
- Lifecycle cost optimization and integrity management

Certification

Participants will receive a Certificate of Completion in Materials Engineering – Design and Selection for the Oil and Gas Industry, validating their expertise in material selection, corrosion control, and asset integrity management within oil and gas environments.

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**