

## **COURSE OVERVIEW FE0066**

### **Corrosion & Fouling**

#### **Course Title**

Corrosion & Fouling

#### **Course Date/Venue**

January 25-29, 2026/Business II Meeting Room,  
Inter Continental Bahrain, an IHG Hotel,  
Manama, Bahrain

#### **Course Reference**

FE0066

#### **Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs



#### **Course Description**



***This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.***



This course is designed to provide participants with a detailed and up-to-date overview of Corrosion & Fouling. It covers the basic concepts and importance of corrosion and fouling in refinery maintenance; the types of corrosion like chemical, galvanic, pitting, crevice and intergranular corrosion; the common refinery corrosion problems; the types of fouling like biological, chemical, physical and their characteristics; the effects of corrosion and fouling on equipment performance; the safety risks and environmental impact of unchecked corrosion and fouling; the mechanisms of corrosion including the electrochemical processes and environmental factors affecting corrosion rates; and the fouling mechanisms, how fouling occurs and the factors that accelerate fouling in refineries.



During this interactive course, participants will learn the corrosion and material selection; monitoring corrosion and fouling; the control strategies for corrosion and fouling; evaluating benefits and liabilities of control strategies; the design considerations to mitigate corrosion and fouling; managing less common corrosion and fouling problems; the innovative technologies in corrosion and fouling control; integrating corrosion management into reliability-focused maintenance practices; and the predictive maintenance for corrosion control.



### **Course Objectives**

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a comprehensive knowledge on corrosion and fouling
- Identify common refinery corrosion and fouling problems, including where they typically occur
- Describe the type of corrosion or fouling that is present based on location, process conditions, and symptoms
- Identify control strategies for common corrosion and fouling problems, including their benefits and liabilities
- Use problem-solving techniques to resolve corrosion problems
- Apply knowledge of corrosion and fouling management to solve less common problems
- Discuss the basic concepts and importance of corrosion and fouling in refinery maintenance
- Identify the types of corrosion and understand chemical, galvanic, pitting, crevice and intergranular corrosion
- Recognize common refinery corrosion problems as well as locate where corrosion is most likely to occur
- Identify the types of fouling like biological, chemical, physical and their characteristics
- Explain the effects of corrosion and fouling on equipment performance as well as analyze how corrosion and fouling impact refinery operations
- Discuss the safety risks and environmental impact of unchecked corrosion and fouling
- Recognize the mechanisms of corrosion including the electrochemical processes and environmental factors affecting corrosion rates
- Explain fouling mechanisms, how fouling occurs and the factors that accelerate fouling in refineries
- Carryout proper material selection to prevent corrosion and identify corrosion-resistant materials
- Employ appropriate techniques and tools for monitoring including corrosion coupons and electronic probes
- Develop control strategies for corrosion focusing on cathodic protection, coating systems and corrosion inhibitors
- Use control strategies for fouling like mechanical cleaning, chemical cleaning, and antifoulants
- Evaluate benefits and liabilities of control strategies and explain cost-benefit analysis, potential risks and environmental impacts
- Design modifications and process control improvements to mitigate corrosion and fouling



- Apply systematic techniques to resolve specific corrosion and fouling problems
- Manage less common corrosion and fouling problems and apply proper strategies and insights on handling complex issues
- Discuss new advancements in corrosion and fouling control and their practical applications
- Integrate corrosion management into reliability-focused maintenance practices
- Carryout predictive maintenance for corrosion control as well as utilize data analytics and predictive modeling

### **Who Should Attend**

This course provides a wide understanding and deeper appreciation of corrosion and fouling for facility integrity engineers, inspection engineers, metallurgy and corrosion engineers, materials engineers, design engineers, mechanical engineers, chemical engineers, corrosion field personnel, supervisors and other technical staff will find the course very attractive. Senior engineers and managers will be able to develop their interpretive skills in data analysis.

### **Exclusive Smart Training Kit - H-STK®**



*Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

### **Course Fee**

**US\$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

### **Accommodation**

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

### **Training Methodology**

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos


In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

### **Course Certificate(s)**

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

### **Certificate Accreditations**

Haward's certificates are accredited by the following international accreditation organizations:-

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.





### Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



**Mr. George Poulos**, MBA, MSc, BSc, CEng, is a **Senior Corrosion & Metallurgical Engineer** with over **30 years** of extensive experience within the **Oil & Gas, Petrochemical, Refinery, Construction, Aircraft & Shipbuilding** Industry. His wide experiences cover in the areas of **Pressure Vessels, Piping Inspection, Risk-Based Inspection, Fitness-for-Service (FFS), Metallurgical Failure, Metallurgy & Metallurgical Processes,**

**Metallurgical Lab, Corrosion and Metallurgy, Analysis & Prevention, Corrosion Fabrication & Inspection, Fabrication & Repair, Corrosion Prevention, Corrosion Engineering, Corrosion Control, Corrosion Inhibition, Corrosion Management in Process Operations, Corrosion & Prevention of Failures, Material Selection, Cathodic Protection Systems, Steel Metallurgy, Steel Structure Welding, Steelmaking Slag, Steel Making Application, Steel Making Process, Steel Manufacturing, Steel Forging, Steel Manufacturing & Process Troubleshooting, Hot Rolling Process, Hot Strip Mill, Mill Operations, Roll Mill, Electric Arc Furnace (EAF), Slit Rolling, Carbon Steel Pipe Wall Thickness & Grade Selection, Ferro-Alloys, Heat Treatment & Prevention Techniques and Post Weld Heat Treatment.** Further, he is also well-versed in **Welding Inspection, Welding & Machine Techniques, TIG & Arc Welding, Shielded Metal Arc Welding, Gas Tungsten & Gas Metal Arc Welding, Welding Procedure Specifications & Qualifications, Aluminium Welding, Hot Work-Safety, SMAW, GTAW, Welding Techniques, Pipeline Welding Practices, Welding Engineering, Welding Fatigue & Fracture Mechanics, Welding Inspection Technology, Welding Safety, Welding Defects Analysis, Welding Technology, Welding Problems, Welding & Non Destructive Testing and Metallurgy Techniques.**

During his career life, Mr. Poulos has gained his practical and field experience through his various significant positions and dedication as the **Chief Executive, Head of Technical Studies, Manager, Senior Consultant, Lead Welding Engineer, Senior Welding Engineer, Design Engineer, Sales Engineer, Author, Welding Instructor, Visiting Lecturer and Technical Proposal Research Evaluator** from various international companies such as Greek Welding Institute, Hellenic Quality Forum and International Construction Companies such as Shipbuilding, Aircraft Industry and Oil and Gas Industry.

Mr. Poulos is a **Registered Chartered Engineer** and has a **Master's degree in Naval Architecture**, a **Bachelor's degree in Welding Engineering** and a Master of Business Administration (**MBA**) from the **Sunderland University, Aston University and Open University, UK**, respectively. Further, he is a **Certified Trainer/Instructor**, an active Member of Chartered Quality Institute (**CQI**), The British Welding Institute (**TWI**), The Royal Institution of Naval Architects (**RINA**) and American Welding Society (**AWS**), a Registered **EFW/IW** (European Welding Federation-International Welding Institute W/E) and an **IRCA** Accredited External Quality Systems Auditor through BVQI. He is an **Author** of Technical Book dealing with Protection/Health/Safety in the Welding/Cutting domain and delivered various trainings, seminars, conferences, workshops and courses globally.

### **Course Program**

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

#### **Day 1: Sunday, 25<sup>th</sup> of January 2026**

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0900	<b>Overview of Corrosion &amp; Fouling:</b> Introduction to the Basic Concepts, Definitions, and Importance in Refinery Maintenance
0900 – 0930	<b>Types of Corrosion:</b> Understanding Chemical, Galvanic, Pitting, Crevice, and Intergranular Corrosion
0930 – 0945	Break
0945 – 1030	<b>Common Refinery Corrosion Problems:</b> Identification & Locations Where Corrosion is Most Likely to Occur
1030 – 1230	<b>Introduction to Fouling:</b> Types of Fouling (Biological, Chemical, Physical) and their Characteristics
1230 -1245	Break
1245 – 1420	<b>Effects of Corrosion &amp; Fouling on Equipment Performance:</b> Analyzing How Corrosion and Fouling Impact Refinery Operations
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day One

#### **Day 2: Monday, 26<sup>th</sup> of January 2026**

0730 – 0830	<b>Safety &amp; Environmental Considerations:</b> Discussing the Safety Risks and Environmental Impact of Unchecked Corrosion and Fouling
0830 – 0930	<b>Mechanisms of Corrosion:</b> Electrochemical Processes, Environmental Factors Affecting Corrosion Rates
0930 – 0945	Break
0945 – 1100	<b>Fouling Mechanisms:</b> How Fouling Occurs, Factors that Accelerate Fouling in Refineries
1100 – 1230	<b>Corrosion &amp; Material Selection:</b> How Material Selection can Prevent Corrosion, Examples of Corrosion-Resistant Materials
1230 - 1245	Break
1245 – 1420	<b>Monitoring Corrosion &amp; Fouling:</b> Techniques & Tools for Monitoring, including Corrosion Coupons & Electronic Probes
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Two

#### **Day 3: Tuesday, 27<sup>th</sup> of January 2026**

0730 – 0830	<b>Case Study Discussion:</b> Real-World Examples of Corrosion and Its Resolution
0830 – 0930	<b>Group Activity:</b> Identifying Corrosion Types from Provided Scenarios & Photographs
0930 – 0945	Break



0945 – 1100	<b>Control Strategies for Corrosion:</b> Cathodic Protection, Coating Systems, Corrosion Inhibitors
1100 – 1230	<b>Control Strategies for Fouling:</b> Mechanical Cleaning, Chemical Cleaning, and Antifoulants
1230 - 1245	Break
1245 – 1420	<b>Evaluating Benefits &amp; Liabilities of Control Strategies:</b> Cost-Benefit Analysis, Potential Risks, and Environmental Impacts
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Three

**Day 4: Wednesday, 28<sup>th</sup> of January 2026**

0730 – 0930	<b>Design Considerations to Mitigate Corrosion &amp; Fouling:</b> Design Modifications & Process Control Improvements
0930 - 0945	Break
0945 – 1100	<b>Problem-Solving Workshop:</b> Applying Techniques to Resolve Specific Corrosion & Fouling Problems
1100 – 1230	<b>Interactive Q&amp;A Session:</b> Solving Participant Queries with Expert Responses
1230 - 1245	Break
1245 - 1420	<b>Managing Less Common Corrosion &amp; Fouling Problems:</b> Strategies and Insights on Handling Complex Issues
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Four

**Day 5: Thursday, 29<sup>th</sup> of January 2026**

0730 – 0930	<b>Innovative Technologies in Corrosion &amp; Fouling Control:</b> New Advancements and their Practical Applications
0930 - 0945	Break
0945 – 1045	<b>Reliability Engineering &amp; Asset Integrity:</b> Integrating Corrosion Management into Reliability-Focused Maintenance Practices
1045 – 1230	<b>Predictive Maintenance for Corrosion Control:</b> Utilizing Data Analytics and Predictive Modeling
1230 - 1245	Break
1245 - 1345	<b>Workshop: Simulation of Corrosion Management:</b> Participants Use Simulation Software to Manage Hypothetical Corrosion Scenarios
1345 - 1400	<b>Course Conclusion</b>
1400 - 1415	<b>POST-TEST</b>
1415 - 1430	Presentation of Course Certificates
1400	Lunch & End of Course



### **Practical Sessions**

This practical and highly-interactive course includes real-life case studies and exercises:-



### **Course Coordinator**

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