

# CORROSION MANAGEMENT TRAINING COURSE

Learn how to structure and implement a robust **Corrosion Management System** through establishing knowledge of the different corrosion threats and the modern, cost effective techniques required to monitor and control corrosion.

## OUR TRAINING AT A GLANCE

*AIE's Corrosion Management Training course can provide a comprehensive understanding of the key elements essential for successful asset management.*

- **ANALYSE** the crucial components of a functioning Corrosion Management System
- **REVIEW** major incidents and target learning to real-life scenarios
- **LEARN** key corrosion threats and how to identify and mitigate them
- **IMPLEMENT** core corrosion management services
- **UNDERSTAND** the latest corrosion monitoring and control methods
- **COMPLETE** a series of case studies and gain hands on experience
- **NETWORK** with a variety of influential personnel

## WHO SHOULD ATTEND?

*The course is intended for Managers, Engineers, Inspectors and Technicians in the fields of:*

- Corrosion
- Chemicals
- Laboratory Services
- Integrity & Inspection
- Engineering
- Process & Operations

*Industry, such as:*

- Oil & Gas
- Petrochemical & Chemical
- Refineries
- Power Generation

## COURSE OVERVIEW

Loss of containment due to corrosion can result in severe consequences not only with respect to safety, but also on the environment and the commercial profitability of the asset. As such, corrosion management is key for successful asset integrity management.

This 3-day Corrosion Management Training Course is designed to provide a detailed understanding of corrosion as a key threat to industry. This is accomplished by establishing the fundamentals of corrosion in the first module and then building on this knowledge throughout the 3-day interactive course.

The modules are devised based on literature review, standards and codes that are compliant with the latest industry best engineering practices, to cover the different corrosion threats in addition to the modern monitoring and mitigation techniques.

Our course aims to challenge the delegates to collaborate and implement knowledge gained from the modules through attempting to solve case studies with guidance from our leading industry experts.

## COURSE FACILITATOR

This Corrosion Management Training Course is delivered by AIE's competent Principal Engineers. Our trainers have significant amount of expertise in corrosion, material selection, integrity chemicals, coatings and insulation, cathodic protection and asset integrity.

AIE's Corrosion Experts have many years of practical experience in setting up and operating a robust Corrosion Management System. They also have a number of publications which contributed into different research areas in the field. Their skills and experience are fully harnessed to make a lasting impact on our delegates.

# AGENDA DAY 1

### MODULE 1 – INTRODUCTION TO CORROSION

*An overview of the basic principles of corrosion, electrochemistry and the importance of understanding corrosion and corrosion management.*

- Corrosion Overview
- The Importance of Studying Corrosion
- Safety, Environment, and Economic Impact of Corrosion
- Corrosion Principles and Introduction to Electrochemistry
- Factors Affecting Corrosion

### MODULE 2 – TYPES OF CORROSION AND DEGRADATION THREATS

*A detailed insight of a select group of common corrosion and degradation mechanisms found throughout industry along with their respective prevention and detection techniques.*

- Uniform Corrosion
- Pitting Corrosion
- Crevice Corrosion
- Galvanic Corrosion
- Flow-Induced Corrosion
- Intergranular Corrosion
- Fatigue Cracking
- Creep

### MODULE 3 – CORROSION THREATS

*Detailed analysis of different corrosion threat and their respective susceptible systems.*

- Introduction to Internal Corrosion
- CO<sub>2</sub> Corrosion
- Top of Line Corrosion (TOL)
- Preferential Weld Corrosion (PWC)
- Microbial Influenced Corrosion (MIC)
- H<sub>2</sub>S Corrosion
- O<sub>2</sub> Corrosion
- Galvanic Corrosion
- Under Deposit Corrosion
- Corrosion of Corrosion Resistant Alloys (CRA)
- Corrosion Under Insulation

### MODULE 4 – ENVIRONMENTAL CRACKING AND EROSION

*Analysis of erosion and various environmental cracking threats and their respective susceptible systems.*

- Cracking
  - Sulfide Stress Cracking (SSC)
  - Hydrogen Induced Cracking (HIC)
  - Hydrogen Induced Stress Cracking (HISC)
  - Chloride Stress Corrosion Cracking (CSCC)
  - Hydrogen & Liquid Metal Embrittlement (LME)
- Erosion

# AGENDA DAY 2

## MODULE 5 – MATERIAL SELECTION

*An explanation of the methodology, strategy and steps of a robust material selection process employed in the industry.*

- Introduction
- Material Selection in Design
- Material Selection Requirements
- Strategy of Materials Selection
- Material Selection Codes & Standards
- Performing a Corrosion Assessment
- Corrosion Rate Modelling
- Material Selection for Specific Applications/Systems

## MODULE 6 – CORROSION CONTROL

*A description of the different methods of corrosion control that are being employed to mitigate both internal and external corrosion.*

- Internal Coatings, Liners & Cladding
- External Coating
- Cathodic Protection
- Pigging
- Corrosion Inhibitors & Biocide Treatment
- Dehydration
- Process Optimization

## MODULE 7 – CORROSION MONITORING

*An explanation of the different corrosion monitoring techniques and guidelines that could be applied and their importance.*

- Introduction
- Corrosion Monitoring vs. Inspection
- Corrosion Monitoring Guidelines
  - Location and Method Selection
- Corrosion Monitoring Methods
  - Weight Loss Coupons
  - Erosion Probes and Bio-Probes
  - Sampling
  - Side Stream Monitoring

## MODULE 8 – CATHODIC PROTECTION

*Provision of the theoretical background and the practical knowledge that is necessary to operate, maintain and test Cathodic Protection (CP) systems.*

- Cathodic Protection Overview
- Galvanic/Sacrificial Anode Systems
- Impressed Current (Rectifier) Systems
- Components of Cathodic Protection Systems
- Cathodic Protection Design Considerations
- Standards for Cathodic Protection
- CP System Maintenance and Testing

# AGENDA DAY 3

## MODULE 9 – CORROSION MANAGEMENT SYSTEM ELEMENTS

*An overview of the essential elements for an optimized corrosion management system.*

- Policy & Strategy
- Organization, Roles & Responsibilities
- Corrosion Threats & Risk Assessments
- Planning & Implementation
- Corrosion Control and Monitoring
- Data Management, Analysis & Reporting
- Measure Performance
- Review Performance & Audit

## MODULE 10 – CORROSION RISK ASSESSMENT AND RBI

*A description of the methodology used to perform a successful corrosion risk assessment.*

- Introduction to RBI
- Risk Assessment Workshop Attendees
- RBI Software and Methodology
  - Establishment of Requirement
  - Creation of Asset Register & Grouping
  - Probability & Consequence of Failure (POF & COF)
  - Confidence Grading & Inspection Interval
  - Written Scheme of Examination (WSE) Preparation
  - Inspection Plan & Risk Assessment Update

## MODULE 11 – OPERATIONAL CORROSION MANAGEMENT

*Explanation of how to establish an operational corrosion management system.*

- Introduction
- Standards & Recommended Practices for Corrosion Management
- Corrosion Management System Document
- Operational Requirements of a Corrosion Management System
  - Key Performance Indicators (KPIs)
  - Corrosion Matrices & RACI Charts
  - Data Collection & Analysis
  - Reporting & Management Meeting
  - Mitigation & Optimization

### **FLEXIBLE TO MEET YOUR REQUIREMENTS**

AIE provides training courses tailored to our clients' unique operating environments. We also offer a comprehensive range of corrosion, chemical and integrity services, please contact us with your enquiry at [training@aiegroup.org](mailto:training@aiegroup.org) or [info@aiegroup.org](mailto:info@aiegroup.org)

# REGISTER TODAY

Please complete the below form in full using **BLOCK CAPITALS**.

One completed form is required per delegate. Booking forms and any enquiries should be emailed to [training@aigroup.org](mailto:training@aigroup.org).

Delegates can also register direct via our website: <http://www.assetintegrityengineering.com/training/book-now/>

## DELEGATE DETAILS PLEASE USE BLOCK CAPITALS

|                         |                                                                       |            |
|-------------------------|-----------------------------------------------------------------------|------------|
| TITLE (MR, MRS, MS, DR) | NAME                                                                  | LAST NAME  |
| YOUR DESIGNATION        | COMPANY NAME                                                          | DEPARTMENT |
| NAME OF DEPARTMENT HEAD | NAME OF TRAINING MANAGER                                              |            |
| ADDRESS                 | COUNTRY                                                               |            |
| POSTAL CODE             | EMAIL                                                                 | TELEPHONE  |
| FAX                     | SIGNATURE                                                             |            |
| DATE                    | I HEREBY AGREE TO AIE'S TERMS AND CONDITIONS FOR THIS TRAINING COURSE |            |

## TRAINING PRICES

### COURSE TITLE

Corrosion Management

### EARLY BIRD PRICE

1,800 USD\*

### NORMAL PRICE

2,400 USD

Prices quoted are per delegate attending. Team discounts are available on request.

\*The Early Bird Price expiry date is as per the training schedule shown on our Online Training Courses webpage (<https://www.assetintegrityengineering.com/training/online-training-courses/>).

## TERMS & CONDITIONS

### PAYMENT TERMS

Payment must be made in full at time of registration. Registration will only be confirmed once payment is received in full and notification is received back from AIE. All bank charges to be borne by the payer. All early bird bookings must be paid in full before the offer date closes, otherwise course fees will be charged in full and discount will be lost. It is the responsibility of the attendee to ensure that they have an adequate internet connection as well as audio and microphone facilities.

### PAYMENT METHOD

Payment must be made by direct bank transfer. An invoice will be submitted within 5 days of making the booking which will include all bank account and transaction details.

### CANCELLATION & POSTPONEMENT POLICY

Payments are non-refundable in the event of a cancellation. However, substitute delegates are permitted at any time by providing advance notice to AIE. In the event that AIE postpones the course and the delegate is unable or unwilling to attend on the rescheduled date, a full refund of monies will be provided.

AIE shall assume no liability in the event of this conference being cancelled due to any unforeseen or uncontrollable circumstances.