



Four-Day Microbiologically Influenced Corrosion (MIC) Course

MIC Technologist & Certified MIC Technologist

Syllabus & Learning Outcomes

This in-depth four-day course incorporates theoretical and practical sessions with a focus on providing detailed knowledge on managing and conducting a MIC control program. It includes sampling and monitoring strategies, data interpretation and presentation and identification of potential risks. On completion of the entire course an ICorr “MIC Technologist” certificate of attendance is awarded.

For attendees who also take and pass the additional examination an ICorr “Certified MIC Technologist” certificate is awarded.

Module I-Introduction to MIC

- Introduction to biotechnology and industrial microbiology
- Examples of detrimental effect of uncontrolled industrial microbes
- Corrosion basics and MIC definition
- Bio-sulphide corrosion cell
- Introduction to biofilm, corrosion-influencing microbes and cost consideration
- Sulphate reducing bacteria
- Introduction to sampling and monitoring techniques
- Introduction to affected materials
- Introduction to diagnosis and managing MIC
- Introduction to control methodologies
- Summary and Q&A

Module II-Corrosion Influencing Microbes

- Origin of oilfield microbes and reproduction
- Pre-requisite for microbial growth and physiochemical limits
- Biofilm forming and properties
- Microbiological factors influencing corrosion process
- Corrosion influencing microbes (10 different groups) and mechanisms
- Operating factors affecting microbial growth
- Case studies
- Summary and Q&A

Module III-Monitoring Techniques

- Value of biological monitoring
- Sampling procedures and types
- Sample types
- Biological monitoring techniques
 - Classification
 - Summary of available techniques
 - MPN vs qPCR
- Online probes and modeling
- Case study-
- Summary and Q&A

Module IV-Control Techniques

- Types of MIC control
- Chemical treatment
 - Types and classification
 - Selection criteria and process
 - Health and safety
- Biological treatment
- Nutritional control
- Barrier coating
- Cathodic protection
- Mechanical treatment
- New technologies
- Best prevention strategy
- Summary and Q&A

Module V-Affected Materials

- Metallurgical factors affecting MIC
- Factors affecting microbial adhesion
- Commissioning factors affecting MIC
- MIC pitting
- Steel, Stainless steel, Aluminum alloys, Copper alloys, Nickel alloys, Titanium
- Weldment
- Cement
- Polymeric structure
- Hydrostatic testing
- General avoidance measures
- Fishbone (Ishikawa) diagram
- Case study, Summary and Q&A

Module VI-Identification and Managing MIC

- MIC diagnosis limitation and type of evidence
- Identification of MIC, biological, geochemical and metallurgical
- Supporting analytical techniques
- Bio-mineralisation
- Managing MIC
- Strategy for successful corrosion management
- Risk based assessment
- Summary and Q&A