
Internal Corrosion Management for Oil and Gas Production Training Course

22 – 26 March 2027
Cape town





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Programme Summary

Internal corrosion management for oil and gas production is the subject of this one-week training course for integrity and asset leaders at advanced level, ending in a corrosion threat management plan for one production system. Wells, flowlines and processing plant lose wall thickness from the inside, where damage is hidden until it leaks. The approach moves from corrosion mechanisms and threat assessment to materials, chemical treatment, monitoring and performance review. Mars Training Centre UK delivers this programme in internal corrosion management.

The Business Case

A single flowline leak can shut in production, trigger an environmental release and force an expensive replacement years ahead of plan. Operators that manage internal corrosion as a system decide earlier on inhibition, materials and inspection, and avoid failures the data predicted.

- Loss of Containment Events: Fall as corrosion threats are ranked and controlled before wall loss reaches the limit.
- Deferred Production and Unplanned Shutdowns: Decline as chemical injection and monitoring are kept reliable.
- Asset Replacement Cost: Reduces as remaining life is extended through the right mix of materials, inhibition and inspection.

Principles and Evidence Base

- NACE MR0175/ISO 15156: Requirements for materials in H₂S-containing environments guide the sour service selection decisions in Session 2.
- Inhibitor Availability Model: Linking expected corrosion rate to the share of time inhibitor is actually delivered structures the chemical treatment review in Session 3.
- AMPP SP0775: Practice for preparing, installing and analysing corrosion coupons informs the monitoring design in Session 4.
- NACE TM0212: Detection and testing of microbiologically influenced corrosion supports the microbial threat assessment in Session 1.



Intended Participants

- Leaders accountable for the integrity of wells, pipelines and production facilities.
- Managers who approve corrosion control budgets, chemical contracts and materials choices.
- Specialists who own corrosion risk assessments and set inspection intervals.
- Production leaders who must balance output targets against corrosion threats from water, sand and souring.

The programme serves national and international oil companies, gas processing operators, chemical service providers and pipeline operators.

Learning Outcomes

1. Participants will be able to diagnose the dominant internal corrosion mechanisms in a production system from operating and fluid data.
2. Participants will be able to evaluate materials and corrosion allowance options for sweet and sour service.
3. Participants will be able to justify a chemical inhibition and biocide programme using inhibitor availability targets.
4. Participants will be able to design a monitoring and inspection scheme that confirms corrosion control is working.
5. Participants will be able to construct leading and lagging corrosion indicators for management review.
6. Participants will be able to prioritise corrosion threats into a risk-ranked action plan with clear owners.

Programme Structure

Day 1: Internal Corrosion Mechanisms and Threats

What is attacking the system from the inside, and where?

- CO₂ Corrosion and Protective Iron Carbonate Scale
- H₂S Corrosion, Souring and Reservoir Fluid Changes
- Microbiologically Influenced Corrosion and Sulphate-Reducing Bacteria Under NACE TM0212
- Oxygen Ingress in Water Injection Systems
- Under-Deposit Attack, Sand Erosion and Flow Regime Effects

Day 2: Materials Selection and Sour Service

Which materials and allowances will survive the intended design life?

- Carbon Steel With Corrosion Allowance Versus Corrosion-Resistant Alloys
- Sulphide Stress Cracking and Hydrogen-Induced Cracking
- Sour Service Qualification Under NACE MR0175/ISO 15156
- Internal Linings, Cladding and Non-Metallic Pipe



- Life Cycle Cost Comparison of Materials Options

Day 3: Chemical Treatment Programmes

Is the inhibitor reaching the steel often enough to control corrosion?

- Corrosion Inhibitor Selection and Field Qualification Testing
- Inhibitor Availability Targets and Inhibited Corrosion Rates
- Chemical Injection System Reliability and Dosage Control
- Biocide Strategy, Pigging and Cleaning Programmes
- Chemical Supplier Performance and Treatment Cost Review

Day 4: Corrosion Monitoring and Inspection

How does the operator know corrosion is under control?

- Corrosion Coupons and Probes Under AMPP SP0775
- Electrical Resistance Probes and Online Monitoring Data
- Intelligent Pigging and Wall Thickness Surveys
- Water Chemistry, Iron Counts and Microbial Sampling
- Linking Corrosion Risk Assessment to Inspection Intervals

Day 5: Applying Internal Corrosion Management

Is the corrosion threat management plan ready for approval?

- Corrosion Management System: Policy, Roles and Review Cycle
- Leading and Lagging Corrosion Key Performance Indicators
- Ranking Day 1 Threats Against Day 3 Treatment Performance
- Feeding Day 4 Monitoring Results Into Day 2 Materials Decisions
- Completing the Corrosion Threat Management Plan

Methodology

The programme is built on case analysis using field data from oil wells, gas gathering networks and water injection plant. Participants interpret coupon, probe and pigging results and defend their decisions in peer review.

- Suggested activity: Diagnosing the cause of a flowline leak from fluid analysis and inspection records.
- Suggested activity: Calculating inhibitor availability from a year of injection logs.
- Suggested activity: Building a corrosion indicator dashboard for a gas processing facility.



Capstone Output

Each participant completes a corrosion threat management plan for one production system. It contains a threat register, materials and treatment decisions, a monitoring and inspection scheme, indicator targets and named owners. It is used to set the next corrosion budget.

Frequently Asked Questions

Is internal corrosion management training suitable for experienced integrity managers?

Yes. It is set at advanced level for leaders who already oversee production assets, and assumes working familiarity with corrosion terms, inspection data and chemical treatment.

Which standards does the internal corrosion management programme rest on?

It rests on NACE MR0175/ISO 15156 for sour service materials, AMPP SP0775 for coupons, NACE TM0212 for microbial corrosion and the inhibitor availability model.

How is the plan from internal corrosion management training used at work?

You can use it to set corrosion budgets, agree chemical treatment targets with suppliers and fix inspection intervals for the system you manage.

How does internal corrosion management differ from cathodic protection training?

It addresses corrosion inside wells, flowlines and plant caused by produced fluids, while cathodic protection deals with external corrosion of buried and submerged surfaces.