
Cathodic Protection Assurance for Buried and Submerged Assets Course

12 – 16 September 2027
Doha





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Programme Summary

Cathodic protection assurance for buried and submerged assets is a one-week training course for senior leaders at managerial level, culminating in a cathodic protection assurance plan for a pipeline network, tank farm or offshore facility. External corrosion of buried and submerged steel remains a leading cause of loss of containment, yet many organisations hold survey data that no decision-maker reviews. The approach equips leaders to judge design and survey evidence against international criteria and to govern performance, interference and remediation. Mars Training Centre UK delivers this programme in cathodic protection assurance.

The Business Case

Cathodic protection systems work silently, so failures in rectifiers, anodes, coatings or isolation can go unnoticed for years while corrosion advances. Leaders who set clear criteria, demand trended evidence and act on interference and coating defects reduce leak risk and avoid unplanned excavations.

- Loss of Containment Risk: Falls as protection levels are verified and gaps are closed before wall loss becomes critical.
- Integrity Expenditure: Becomes better targeted as survey findings direct digs, coating repairs and anode replacement.
- Asset Life: Extends as buried and submerged steel stays protected across its design life.

Principles and Evidence Base

- ISO 15589-1: Defines design, protection criteria and monitoring for on-land pipeline cathodic protection applied in Sessions 1 to 3.
- ISO 15589-2: Frames cathodic protection of offshore pipelines and submerged structures discussed in Session 2.
- AMPP SP0169: Provides recognised practice for controlling external corrosion on underground or submerged piping used to test survey evidence in Session 3.
- ISO 55001: Structures the governance, performance indicators and review of cathodic protection within asset management in Session 4.

Intended Participants

- Leaders accountable for the integrity of pipelines, storage tanks, well casings or offshore structures.
- Managers who approve corrosion control budgets, survey programmes and remediation work.
- Heads of engineering who review cathodic protection designs and contractor reports.
- Operations leaders who manage interference from power lines or third-party pipelines.



The programme serves upstream oil and gas, pipeline and terminal operators, refining and petrochemicals, and water and power utilities with buried steel networks.

Learning Outcomes

1. Participants will be able to evaluate whether a cathodic protection design suits the asset, environment and coating condition.
2. Participants will be able to interpret potential surveys and coating defect surveys against international protection criteria.
3. Participants will be able to diagnose stray current and alternating current interference risks.
4. Participants will be able to prioritise remediation actions using trended data and integrity risk.
5. Participants will be able to construct key performance indicators and review routines for cathodic protection systems.
6. Participants will be able to justify a cathodic protection assurance plan to senior management.

Programme Structure

Day 1: Cathodic Protection Principles and Asset Exposure

Why does buried and submerged steel corrode, and how does current stop it?

- Electrochemistry of External Corrosion in Soil and Seawater
- Galvanic Anode and Impressed Current Systems
- Role of Coatings and Electrical Isolation
- Pipelines, Tank Bottoms, Well Casings and Offshore Structures
- Corrosion Threat Register for Buried Assets

Day 2: Design Evidence and Protection Criteria

How can leaders tell whether a design will protect the asset across its life?

- ISO 15589-1 Design Basis and Current Demand
- ISO 15589-2 Offshore Pipeline and Structure Requirements
- Polarised Potential and Polarisation Criteria
- Anode Bed and Transformer-Rectifier Sizing Review
- Design Review Checklist for Contractor Submissions

Day 3: Surveys, Monitoring and Interference

What does survey evidence reveal about protection levels and defects?

- Test Post Readings and IR Drop Correction
- Close Interval Potential Survey Interpretation
- DCVG and ACVG Coating Defect Surveys
- Stray Current and AC Interference Testing
- Shorted Casings and Remote Monitoring Units



Day 4: Governing Cathodic Protection Performance

How are performance, remediation and accountability managed over time?

- Key Performance Indicators for Protection Levels
- Data Trending and Anomaly Escalation
- Risk-Based Remediation Prioritisation
- Contractor Scope, Competence and Quality Control
- Cathodic Protection Within the ISO 55001 Asset Management System

Day 5: Applying Cathodic Protection Assurance

How are design, survey and governance combined into one assurance plan?

- Review of a Participant Survey Data Set
- Interference Mitigation Options for a Shared Corridor
- Peer Challenge of Remediation Priorities
- Management Reporting of Protection Status
- Cathodic Protection Assurance Plan Presentation

Methodology

The programme is built around case analysis of real survey data sets and failure investigations from onshore pipelines, tank farms and offshore facilities. Participants read survey graphs, challenge design reports and decide on remediation, then apply the same judgement to their own evidence.

- Suggested activity: Interpreting a close interval potential survey with coating defect overlays.
- Suggested activity: Diagnosing interference on a pipeline running beside a high-voltage line.
- Suggested activity: Ranking remediation actions for a tank farm under a fixed budget.

Capstone Output

Each participant completes a cathodic protection assurance plan for an asset group they oversee. It sets out protection criteria, survey and monitoring frequencies, performance indicators, interference controls, a ranked remediation list and reporting lines, ready for adoption by the integrity or asset management committee.

Frequently Asked Questions

Is cathodic protection assurance suitable for managers who are not corrosion specialists?

Yes. It assumes senior technical or managerial experience and explains the electrochemistry and survey methods needed to challenge specialist reports.



Which standards underpin cathodic protection assurance for buried and submerged assets?

It draws on ISO 15589-1 and ISO 15589-2 for pipeline cathodic protection, AMPP SP0169 for external corrosion control and ISO 55001 for asset management governance.

How is the cathodic protection assurance plan used at work?

You take back a plan your integrity committee can adopt, setting survey frequencies, indicators, interference controls and remediation priorities for your assets.

How does cathodic protection assurance differ from technician cathodic protection training?

It focuses on judging evidence, setting criteria and governing performance and spending, while technician training concentrates on taking measurements and maintaining equipment.