
Storage Tank Integrity Training Course: Corrosion Rates, Remaining Life and Repairs

19 – 23 April 2027
Barcelona





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Ref: 697_34170 Date: 19 – 23 April 2027 Location: Barcelona Fees: 4800 GBP

Programme Summary

Storage tank integrity is the subject of this one-week training course for inspection engineers, integrity managers and terminal leaders, ending in a tank integrity decision file for one tank. Owners must decide how long a tank can stay in service, when to inspect it again and which repair is justified. The programme moves from degradation mechanisms to inspection evidence, remaining life, repair choices and return to service, using cases from refineries, terminals and chemical storage. Mars Training Centre UK delivers this programme on storage tank integrity to mixed-organisation cohorts.

The Business Case

A tank that fails in service releases product, interrupts supply and exposes people and the environment to harm. Inspection and repair spending set by habit, not by measured condition, opens some tanks too early and others too late. A shared method links inspection evidence to corrosion rate, remaining life and repair scope, so that decisions can be explained to owners, insurers and auditors.

- Release Risk: Falls as thickness and settlement evidence drive inspection intervals.
- Shutdown Cost: Falls as repair scope is set from measured condition rather than habit.
- Audit Readiness: Improves as each decision is traceable to recorded evidence.

Principles and Evidence Base

- API 653: Governs in-service inspection, repair, alteration and reconstruction of aboveground tanks, and is applied in Sessions 3, 4 and 5.
- API 575: Describes inspection practices for atmospheric and low-pressure storage tanks, and is applied in Session 2.
- API 651 and API 652: Cover cathodic protection and bottom lining of aboveground tanks, and are applied in Sessions 1 and 4.
- API RP 580: Sets out risk-based inspection reasoning, and is applied in Sessions 3 and 5.

Intended Participants

- Inspection engineers who plan tank inspection and interpret thickness results.
- Asset integrity managers who set inspection intervals and approve repair scope.
- Terminal and tank farm managers who carry operating and release risk.
- Maintenance planners who schedule tank outages.
- HSE leaders who review release prevention arrangements.

Typical settings include refineries, product terminals and petrochemical sites.



Learning Outcomes

1. Participants will be able to diagnose the degradation mechanisms acting on a tank shell, floor, roof and foundation.
2. Participants will be able to construct an inspection scope that yields thickness and settlement evidence of usable quality.
3. Participants will be able to evaluate corrosion rate and remaining life from paired thickness readings.
4. Participants will be able to prioritise tanks and set inspection intervals using risk-based reasoning.
5. Participants will be able to compare repair options for a defective tank and justify the one selected.
6. Participants will be able to justify a tank integrity decision file to an owner or auditor.

Programme Structure

Day 1: Storage Tank Integrity and Degradation Mechanisms

How do tanks degrade, and where does damage start?

- Tank Anatomy and Failure Mode Map
- Product-Side and Soil-Side Corrosion Mechanisms
- Foundation and Settlement Behaviour
- Cathodic Protection Principles from API 651
- Leak Path and Release Consequence Screening

Day 2: Inspection Methods and Evidence Quality

What evidence must an inspection collect to support a decision?

- Inspection Practices from API 575
- Internal and External Inspection Scope Sheet
- Shell, Floor and Roof Thickness Survey Plan
- Settlement Survey Reading
- Anomaly Register and Inspection Record

Day 3: Corrosion Rate, Remaining Life and Intervals

How long can the tank run, and when must it be inspected again?

- Corrosion Rate Calculation from Paired Readings
- Remaining Life Calculation
- Minimum Thickness Check under API 653
- Risk-Based Interval Setting under API RP 580
- Interval Decision Table



Day 4: Repair, Alteration and Return to Service

Which repair is justified, and what shows the tank is fit to return?

- Repair Option Matrix
- Floor Replacement and Lining Choices from API 652
- Alteration Control Points
- Return to Service Checklist
- Repair Record Pack

Day 5: Integrity Decision File for One Tank

Do the earlier records support one defensible decision?

- Applying the Session 1 Failure Mode Map
- Testing the Session 2 Anomaly Register
- Reviewing the Session 3 Interval Decision Table
- Checking the Session 4 Repair Option Matrix
- Completing the Tank Integrity Decision File

Methodology

The programme uses a data-led exercise method built on a shared case of a tank farm holding refined products, with thickness, settlement and repair records. Participants analyse the prepared records, reach a decision on each tank and then adapt the templates to a tank from their own site.

- Suggested activity: Calculating corrosion rate and remaining life for a floor from paired readings.
- Suggested activity: Setting the next inspection interval for three tanks and defending the order.
- Suggested activity: Choosing between patch repair and floor replacement from a defect map.

Capstone Output

Each participant completes a tank integrity decision file for one tank. It holds a failure mode map, an inspection scope, a corrosion rate and remaining life calculation, an interval decision and a repair option matrix. The file is used at work to brief an owner, plan the next outage and answer an auditor.

Frequently Asked Questions

Is storage tank integrity training suitable for managers without an inspector qualification?

Yes. Storage tank integrity is taught through cases and templates. It assumes familiarity with tank operations or inspection records, but not an inspector qualification.



Which standards does storage tank integrity training rest on?

Storage tank integrity training rests on API 653, API 575, API 651, API 652 and API RP 580, used for inspection, repair, protection and interval reasoning.

How is the decision file from storage tank integrity training used at work?

You use the decision file to brief an owner, set the next inspection interval, scope a repair outage and show an auditor the recorded evidence.

How does storage tank integrity differ from general asset integrity training?

Storage tank integrity focuses on shells, floors, foundations and settlement of aboveground tanks, while general asset integrity training covers many equipment types.