
Gas Facility Fault Diagnosis Training Course: Compressors, Separators and Controls

2 – 6 November 2026
Milan





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Programme Summary

Gas facility fault diagnosis is the subject of this one-week training course for operations, maintenance and process leaders, ending in a fault rectification review pack for one gas facility. Repeat trips, unstable pressure and liquids carry-over are often repaired again and again without the cause being settled. The programme builds a method for tracing faults in compressors, separators and controls back to causes, choosing a rectification and testing that it holds. Mars Training Centre UK delivers this programme on gas facility fault diagnosis to mixed-organisation cohorts.

The Business Case

A gas facility earns only while its compressors, separators and control loops run together, so each unplanned stop spreads through the whole line. When gas facility fault diagnosis stops at the first visible symptom, the same fault returns after each restart and maintenance effort goes to the wrong item. Leaders who ask for evidence of cause before approving a repair cut repeat work and protect throughput.

- Repeat Failures: Fall as repairs are tied to a tested cause, not a visible symptom.
- Unplanned Downtime: Falls as fault patterns are found before they trip the plant.
- Maintenance Spend: Improves as effort moves to the items that actually fail.

Principles and Evidence Base

- ISO 14224: Guidance on collecting reliability and maintenance data for petroleum, petrochemical and natural gas equipment shapes the fault records built in Session 1.
- IEC 60812: The failure mode and effects analysis method structures the fault review in Sessions 2 and 3.
- Root cause analysis: Separating symptom, mechanism and cause guides the diagnosis work in Sessions 3 and 4.
- ISO 31000: Risk management guidelines frame the ranking of rectification options in Session 5.

Intended Participants

- Operations managers who run gas gathering, compression and treatment areas.
- Maintenance leaders who plan and approve repairs on rotating and static equipment.
- Process engineering managers who review recurring upsets and trips.
- Control and instrument leaders who own alarm, trip and loop performance.
- Reliability leaders who track failure records and repeat defects.

Typical functions include gas production, gas processing, pipeline compression and power generation teams.



Learning Outcomes

1. Participants will be able to construct a fault history that separates symptoms, mechanisms and causes.
2. Participants will be able to diagnose compressor faults from performance, vibration and process data.
3. Participants will be able to evaluate pressure control faults, relief events and trip causes.
4. Participants will be able to assess separator carry-over and liquids handling faults.
5. Participants will be able to prioritise rectification options by risk, cost and time to restore.
6. Participants will be able to justify a fault rectification plan to operations and maintenance management.

Programme Structure

Day 1: Gas Facility Fault Diagnosis and Fault Records

How is a fault described so that its cause can be found?

- Gas Handling Layout and Fault Map
- Fault History Register
- Symptom, Mechanism and Cause Ladder
- Reliability Data Template
- Repeat Fault Screening Table

Day 2: Compressor Faults

What do compressor performance and condition data say about the fault?

- Compressor Performance Curve Check
- Vibration Trend Review
- Seal and Lubrication Fault Table
- Surge and Recycle Event Log
- Failure Mode and Effects Analysis Sheet

Day 3: Pressure Control and Relief Faults

Why does pressure move away from its set point, and what follows?

- Control Valve Fault Checklist
- Pressure Loop Tuning Review
- Relief Event Investigation Form
- Trip Cause Timeline
- Root Cause Analysis Tree



Day 4: Separation and Liquids Carry-Over

Where does liquid enter the gas path, and what does it damage?

- Separator Level and Flow Review
- Carry-Over Symptom Chart
- Scrubber Internals Inspection List
- Hydrate and Fouling Check
- Downstream Damage Assessment

Day 5: Applying the Tools to One Gas Facility

Do the fault records and causes support one rectification plan?

- Applying the Session 1 Fault History Register
- Using the Session 2 Failure Mode and Effects Analysis Sheet
- Testing the Session 3 Root Cause Analysis Tree
- Ranking Rectification Options by Risk
- Completing the Fault Rectification Review Pack

Methodology

The programme uses a case analysis method built on anonymised fault histories, trend plots, alarm logs and maintenance records from gas production, processing and pipeline compression sites. Participants work in peer groups on a shared facility, challenge each other's causes and receive written facilitator feedback on each exercise set before the next begins.

- Suggested activity: Tracing a repeat compressor trip from alarm log to tested cause.
- Suggested activity: Rebuilding a carry-over event from separator trends.
- Suggested activity: Ranking three repair options for one fault by risk and time to restore.

Capstone Output

Each participant completes a fault rectification review pack for one gas facility. It holds a fault history register, a failure mode and effects analysis sheet, a root cause analysis tree, a ranked list of rectification options and a prevention plan. The pack is used at work to challenge repair requests, brief maintenance planners and review recurring faults at operations meetings.

Frequently Asked Questions

Is gas facility fault diagnosis suitable for leaders who are not equipment specialists?

Yes. Gas facility fault diagnosis assumes some operations, maintenance or process experience and builds fault tracing skills step by step, using trend and log data.



Which standards does gas facility fault diagnosis rest on?

Gas facility fault diagnosis rests on ISO 14224 for reliability data, IEC 60812 for failure mode and effects analysis and ISO 31000 for risk, with root cause analysis.

How is the pack from gas facility fault diagnosis used at work?

You use the fault rectification review pack to challenge repair requests, brief maintenance planners and review recurring faults at operations meetings.

How does gas facility fault diagnosis differ from general maintenance planning training?

Gas facility fault diagnosis centres on finding the cause of faults in compressors, separators and controls, while general maintenance planning training centres on scheduling and resourcing work.