



CO2 Surface Facilities Operations and Integrity Course

2 – 6 May 2027
Cape town

CO2 Surface Facilities Operations and Integrity Course

Ref: 961_173305 **Date:** 2 – 6 May 2027 **Location:** Cape town **Fees:** 6000 Euro

Overview

CO2 Surface Facilities Operations and Integrity Course is a 1-week advanced course for process, facilities, project, and operations professionals who leave with a CO2 Surface Facility Operating and Integrity Plan. Participants connect conditioning, compression, dehydration, metering, dense-phase transport, injection support, materials, corrosion control, process safety, troubleshooting, and performance assurance across facility interfaces. Agile Leaders Training Center delivers this course on CO2 surface facilities operations and integrity.

Who Should Attend

- Teams responsible for CO2 gathering, conditioning, compression, and dehydration operations.
- Functions responsible for facility design reviews, project interfaces, and commissioning readiness.
- Teams responsible for pipeline transport, metering, and injection-facility coordination.
- Functions responsible for materials selection, corrosion control, and mechanical integrity.
- Leaders responsible for process safety, reliability, troubleshooting, and performance assurance.

The course assumes participants already work with process facilities or pipeline systems and leaves out introductory thermodynamics, detailed reservoir engineering, and subsurface storage design.

Departments and Industries

The course supports CO2 surface-facility decisions across energy, industrial processing, transport infrastructure, and carbon-management projects.



- Process and facilities engineering
- Operations and production support
- Pipeline and terminal operations
- Mechanical integrity and corrosion management
- Project delivery and commissioning

Learning Objectives

By the end of this course, participants will be able to:

- Analyze CO₂ phase behavior and impurity effects across surface facilities.
- Evaluate conditioning, compression, dehydration, and metering configurations.
- Apply materials, corrosion, integrity, and process-safety controls.
- Diagnose operating disturbances across transport and injection interfaces.
- Build performance indicators and operating envelopes for CO₂ systems.
- Develop a CO₂ Surface Facility Operating and Integrity Plan.



Course Agenda

Day 1: CO2 Facility Basis and Interfaces

- CO2 Phase Envelope Interpretation Method
- Surface Facility Block Flow Diagram
- CO2 Stream Quality Specification Matrix
- Source-to-Injection Interface Register
- Operating Design Basis Checklist

Day 2: Conditioning and Compression Systems

- Impurity Impact Assessment Matrix
- Compression Train Configuration Map
- Interstage Cooling and Separation Review
- Dehydration Duty Selection Framework
- Energy and Capacity Performance Model



Day 3: Metering, Transport, and Injection Support

- CO2 Metering Uncertainty Budget
- Dense-Phase Transport Operating Envelope
- Booster Pump and Pressure Control Logic
- Pipeline Inventory and Line-Pack Method
- Injection Header Interface Control Document

Day 4: Integrity, Safety, and Troubleshooting

- Materials Compatibility Screening Matrix
- Water and Corrosion Threat Register
- CO2 Release Hazard Bow-Tie Analysis
- Safeguard and Shutdown Cause-and-Effect Review
- Disturbance Diagnosis Decision Tree

Day 5: Operating and Integrity Plan Practice

- Suggested Exercise: Stream Quality Excursion Diagnosis
- Suggested Exercise: Compression Constraint Resolution
- Suggested Exercise: Transport Interface Risk Review
- Suggested Exercise: Integrity Indicator Prioritization
- Capstone Exercise: CO2 Surface Facility Operating and Integrity Plan

Practical Exercises

The course uses suggested activities to connect process behavior, equipment performance, integrity threats, and operating decisions.

- Suggested activity: diagnose a changing CO₂ stream using phase behavior, impurity, dehydration, and compression evidence.
- Suggested activity: define a transport operating envelope and response actions for pressure, temperature, and composition deviations.
- Suggested activity: build a bow-tie linking release scenarios, safeguards, monitoring, and escalation decisions.
- Suggested activity: integrate operating limits, integrity controls, indicators, and interface responsibilities into the capstone plan.

FAQs

Who suits CO₂ surface facilities operations and integrity training, and what does it assume?

Process, facilities, project, pipeline, integrity, and operations professionals suit the training. It assumes practical experience with process facilities or transport systems and excludes introductory thermodynamics and subsurface reservoir design.

How does CO₂ surface facilities training differ from carbon capture process training?

CO₂ surface facilities training begins after capture and focuses on conditioning, compression, dehydration, metering, transport, injection interfaces, integrity, and operability; carbon capture training focuses mainly on separating CO₂ from source streams.

Why is CO₂ stream quality important for surface facilities?

CO₂ stream quality affects phase behavior, compression demand, dehydration duty, metering, materials, corrosion risk, pipeline operation, and injection-facility acceptance.

How are CO₂ surface facility operating limits established?

CO₂ operating limits combine stream specifications, phase envelopes, equipment constraints, pressure and temperature boundaries, integrity threats, safeguard capacity, transport requirements, and injection-interface conditions.



Conclusion

Participants take back a CO2 Surface Facility Operating and Integrity Plan that connects stream quality, equipment limits, transport interfaces, integrity threats, safeguards, and response actions. The plan makes operational decisions and ownership visible. It supports coordinated performance assurance across engineering, operations, projects, pipeline, integrity, and injection-support teams.