

CO2 Geological Storage Site Characterisation and Assurance Training Course

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Overview

CO2 Geological Storage Site Characterisation and Assurance Training Course is a one-week advanced course for subsurface specialists and CCS project teams who leave with a CO2 Storage Site Characterisation and Assurance Dossier. Participants integrate geological CO2 storage evidence, storage complex characterization, seismic and well data, CO2 storage capacity and injectivity, containment risk, pressure and plume behavior, and monitoring baselines into defensible site decisions. Agile Leaders Training Center presents subsurface CO2 storage assurance through traceable technical evidence.

Who Should Attend

- Functions responsible for screening geological CO2 storage opportunities and ranking candidate sites
- Teams responsible for seismic interpretation, structural mapping, petrophysics, and geological modeling
- Functions responsible for reservoir simulation, capacity, injectivity, pressure, and plume forecasts
- Teams responsible for caprock, fault, geomechanical, well-integrity, and containment evidence
- Project assurance functions responsible for technical risk, uncertainty, monitoring baselines, and decision records

The course assumes participants already interpret subsurface datasets and technical models, and it leaves out capture-process design, surface compression, pipeline engineering, and routine injection operations.

Departments and Industries

The course supports departments and industries that appraise, develop, finance, regulate, or assure subsurface storage assets.

- Carbon storage development and subsurface assurance
- Energy, petroleum, and industrial decarbonization projects
- Geological surveys, geoscience consultancies, and technical services
- Reservoir engineering, geophysics, petrophysics, and geomechanics departments
- Project investment, risk, environmental assurance, and monitoring teams

Learning Objectives

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

- Apply screening criteria to candidate storage complexes
- Analyze seismic, well, petrophysical, and geological evidence
- Evaluate storage capacity, injectivity, pressure, and plume uncertainty
- Diagnose caprock, fault, geomechanical, and legacy-well risks
- Build monitoring baselines and containment assurance evidence
- Prioritize appraisal work through a traceable decision dossier

Course Agenda

Day 1: Screen Storage Complexes

- ISO 27914 Geological Storage Lifecycle Map
- Saline Aquifer and Depleted Reservoir Comparison Matrix
- Storage Formation, Confining Zone, and Complex Boundary Model
- Trapping Mechanism and Containment Concept Diagram
- Site Screening Criteria and Evidence-Gap Register

Day 2: Integrate Characterization Data

- Regional Geology and Basin Evolution Evidence Map
- Seismic Interpretation, Depth Conversion, and Uncertainty Sheet
- Well Log, Core, Pressure, and Fluid Data Integration Matrix
- Petrophysical Property and Heterogeneity Model
- Static Geological Model Quality-Control Checklist

Day 3: Test Capacity and Injectivity

- Probabilistic Pore-Volume and Storage-Capacity Model
- Relative Permeability and Multiphase Flow Assumption Register
- Well Deliverability and Injectivity Assessment Workflow
- Pressure Buildup and Hydraulic Connectivity Diagnostic Map
- Dynamic Plume Forecast and Scenario Comparison

Day 4: Assure Containment and Monitoring

- Caprock Capillary Entry Pressure and Seal-Capacity Review
- Fault Juxtaposition, Seal, and Reactivation Risk Matrix
- Geomechanical Stress and Fracture-Pressure Assessment
- Legacy Well Integrity and Leakage-Pathway Register
- Monitoring Baseline, Trigger, and Corrective-Response Plan

Day 5: Practice Site Assurance Decisions

- Suggested Exercise: Rank Candidate Storage Complexes
- Suggested Exercise: Reconcile Seismic, Well, and Petrophysical Uncertainty
- Suggested Exercise: Challenge Capacity, Injectivity, and Pressure Scenarios
- Suggested Exercise: Build a Containment and Monitoring Risk Case
- Capstone Exercise: Complete the CO2 Storage Site Characterisation and Assurance Dossier

Practical Exercises

The course uses suggested activities to turn subsurface evidence into controlled storage-site decisions.

- Suggested activity: screen saline aquifer and depleted-reservoir candidates against common geological and project criteria.
- Suggested activity: trace uncertainty from seismic interpretation and petrophysical properties into capacity and plume forecasts.
- Suggested activity: connect faults, caprock, geomechanics, and legacy wells to containment controls.
- Suggested activity: defend an appraisal recommendation using evidence gaps, risk ranking, and monitoring baselines.

FAQs

Who suits CO2 geological storage site characterisation training, and what does it assume?

Subsurface specialists and CCS assurance teams suit the course. It assumes practical experience with geological, geophysical, petrophysical, reservoir, or technical-risk evidence.

How does CO2 storage site characterisation differ from a general CCUS course?

CO2 storage site characterization concentrates on subsurface screening, capacity, injectivity, containment, and monitoring evidence. General CCUS training surveys capture, transport, utilization, storage, policy, and commercial interfaces.

How is CO2 geological storage capacity estimated?

CO2 geological storage capacity is estimated from mapped pore volume, porosity, fluid saturation, density, displacement behavior, pressure limits, storage efficiency, uncertainty ranges, and dynamic modeling evidence.

What controls CO2 storage containment assurance?

Containment assurance depends on reservoir and seal properties, structural closure, capillary behavior, faults, geomechanical limits, pressure management, legacy-well integrity, plume forecasts, monitoring evidence, and credible corrective responses.

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Why are monitoring baselines needed for geological CO2 storage?

Monitoring baselines establish pre-injection conditions against which later changes can be interpreted. They connect predicted plume and pressure behavior with measurable indicators, thresholds, investigation routes, and corrective actions.

Conclusion

Participants take back a CO2 Storage Site Characterisation and Assurance Dossier linking subsurface data, models, uncertainties, containment risks, monitoring baselines, and appraisal priorities. It changes separate studies into one traceable site-decision basis. Teams can update the dossier as new seismic, well, laboratory, modeling, and monitoring evidence becomes available.

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