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COURSE BROCHURE

Advanced Carbon Capture, Utilisation and Storage Training Course

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Registered in the United Kingdom and Saudi Arabia

Advanced Carbon Capture, Utilisation and Storage Training Course

Advanced Carbon Capture, Utilisation and Storage is a 2-week training course for engineers, energy project managers and decarbonisation specialists who prepare a CCUS Project Concept Dossier for an industrial site or cluster. Cement, steel, chemicals, gas processing and power plants face emissions they cannot cut through efficiency alone, and capture is moving from pilot units to commercial hubs. Jupiter Prime Training offers this course to professionals who must judge which CCUS projects can work.

Why Carbon Capture, Utilisation and Storage Matters Now

Three forces shape carbon capture today. Heavy industry needs a route to deep emissions cuts where process chemistry, not fuel, releases carbon dioxide. Investors and offtakers want low-carbon products, yet expect projects to prove storage permanence and sound economics. Shared transport and storage hubs are changing project scale, so single emitters can join networks instead of building alone. Organisations that plan well secure storage capacity, partners and funding early; those that do not risk stranded plants or costly late retrofits. The course uses the Greenhouse Gas GHG Protocol for accounting captured and stored emissions and recognised industry practice for storage site assurance.

Who Gains Most from Carbon Capture, Utilisation and Storage

- Process engineers who integrate capture units with existing plants
- Subsurface specialists who characterise reservoirs and saline formations for storage
- Project managers who develop CCUS concepts from screening to investment decision
- Decarbonisation leads who compare capture with other abatement options
- Commercial staff who structure partnerships, offtake and transport agreements

A cross-disciplinary project group gains most when its process, subsurface and commercial members attend together and shape one concept.

Carbon Capture, Utilisation and Storage Capabilities

Participants link capture chemistry, pipelines, reservoirs and contracts into one investable chain.

- Assess post-combustion, pre-combustion, oxy-fuel and direct air capture options for a given flue gas — technology selection
- Specify CO2 conditioning and transport requirements for pipeline or ship — infrastructure planners
- Weigh storage site capacity, injectivity and containment evidence — subsurface teams
- Calculate levelised cost of capture and full-chain project economics — investment committees
- Design measurement, monitoring and verification plans for stored volumes — reporting and assurance staff
- Compare utilisation pathways against permanent storage — product and strategy leads

Key Carbon Capture, Utilisation and Storage Terms

- Post-combustion capture — separating carbon dioxide from flue gas after fuel is burned, usually with amine solvents.
- Direct air capture — extracting carbon dioxide directly from ambient air using sorbents or solvents and energy input.
- Saline aquifer — a deep porous rock formation filled with salty water that can store injected carbon dioxide.
- Injectivity — the rate at which a well and formation can accept injected carbon dioxide without excessive pressure.
- Measurement, monitoring and verification — the set of methods that track injected carbon dioxide and confirm it stays contained.
- Levelised cost of capture — the average cost per tonne of carbon dioxide captured over a plant's life.

Carbon Capture, Utilisation and Storage Day by Day

Day 1: The Role of Carbon Capture in Net Zero

- Hard-to-Abate Sector Profiles — Cement, Steel, Chemicals and Power
- Abatement Option Comparison — Efficiency, Fuel Switching and Capture
- CCUS Value Chain Map — Capture, Transport, Storage and Use
- Hub and Cluster Models — Shared Infrastructure for Multiple Emitters
- Emitter Screening Matrix — Concentration, Volume and Location

Day 2: Post-Combustion Capture

- Amine Solvent Systems — Absorption, Regeneration and Energy Penalty
- Flue Gas Pre-Treatment — Removing Sulphur Oxides and Particulates
- Solvent Degradation and Emissions — Managing Amine Losses
- Heat Integration Options — Steam Supply From Host Plants
- Capture Rate Trade-Offs — Cost Versus Captured Fraction

Day 3: Pre-Combustion, Oxy-Fuel and Direct Air Capture

- Pre-Combustion Capture in Gasification — Syngas Shift and Separation
- Oxy-Fuel Combustion — Air Separation and Flue Recycle
- Natural Gas Processing Streams — High-Purity Capture Opportunities
- Direct Air Capture Systems — Sorbents, Solvents and Energy Demand
- Technology Readiness Assessment — Choosing Mature or Emerging Options

Day 4: CO2 Conditioning and Transport

- Compression and Dehydration — Meeting Transport Specifications
- Impurity Limits — Effects on Pipelines and Storage
- Pipeline Design for Dense-Phase CO2 — Pressure and Material Choices
- Ship and Rail Transport — Options for Dispersed Emitters
- Transport Network Planning — Routing and Shared Capacity

Day 5: Geological Storage

- Storage Site Characterisation — Capacity, Injectivity and Seal Integrity
- Depleted Oil and Gas Fields — Reusing Known Reservoirs
- Saline Aquifer Storage — Larger Capacity With Less Data
- Trapping Mechanisms — Structural, Residual, Dissolution and Mineral
- Legacy Well Assessment — Leakage Pathway Screening

Day 6: Utilisation Pathways

- Enhanced Oil Recovery With CO2 — Storage and Production Effects
- Mineralisation and Building Materials — Permanent Carbon Products
- Synthetic Fuels and Chemicals — Hydrogen and Energy Needs
- Food, Beverage and Industrial Gas Markets — Small-Volume Outlets
- Utilisation Life Cycle Accounting — Net Emissions of Each Pathway

Day 7: Measurement, Monitoring and Verification

- Monitoring Plan Design — Baseline, Operational and Post-Closure Phases
- Seismic and Pressure Surveillance — Tracking the CO2 Plume
- Surface and Atmospheric Monitoring — Detecting Potential Releases
- GHG Protocol Accounting for Stored CO2 — Reporting Captured Volumes
- Third-Party Verification — Confirming Reported Storage

Day 8: Risk and Containment Assurance

- Containment Risk Assessment — Faults, Wells and Caprock
- Induced Seismicity Screening — Pressure Management Limits
- Corrective Measures Planning — Responses to Unexpected Migration
- Long-Term Liability Arrangements — Post-Closure Responsibilities
- Community Engagement for Storage Sites — Building Local Acceptance

Day 9: Project Economics and Commercial Structures

- Levelised Cost of Capture Models — Capital, Energy and Operating Costs
- Full-Chain Cost Allocation — Capture, Transport and Storage Shares
- Revenue and Support Mechanisms — Carbon Prices, Contracts and Credits
- Partnership and Offtake Agreements — Risk Sharing Across the Chain
- Investment Decision Gates — Concept, Feasibility and Front-End Design

Day 10: Practising the CCUS Project Concept Dossier

- Applying Emitter Screening — Selecting the Capture Source
- Applying Capture Technology Assessment — Preferred Process Route
- Applying Storage Characterisation — Candidate Site Ranking
- Peer Investment Panel — Testing Cost and Risk Assumptions
- CCUS Project Concept Dossier — Final Version for Gate Review

Applying Carbon Capture, Utilisation and Storage After the Course

- Run an emitter screening exercise across company sites and shortlist the streams with the lowest expected capture cost.
- Prepare a storage options note comparing nearby depleted fields and saline formations for discussion with subsurface partners.

Carbon Capture, Utilisation and Storage Questions FAQ

What is carbon capture, utilisation and storage, and why does it matter now?

Carbon capture, utilisation and storage is the chain that separates carbon dioxide at a source, moves it and stores or uses it. It matters now because heavy industry needs deep cuts that efficiency alone cannot deliver.

Which roles gain most from carbon capture, utilisation and storage training?

Process engineers, subsurface specialists, energy project managers and decarbonisation leads gain most. You benefit if you screen emitters, select capture technology, assess storage sites or build the business case for a CCUS project.

How does carbon capture, utilisation and storage differ from a net zero strategy course?

Carbon capture, utilisation and storage goes deep into one abatement route: capture plants, pipelines, reservoirs and monitoring. A net zero strategy course compares many levers across an organisation without the engineering and storage detail covered here.

What do you bring back from carbon capture, utilisation and storage training?

You bring back a project concept dossier with a chosen capture route, transport option, ranked storage sites, cost estimate and monitoring outline. You also bring back screening matrices and cost models you can reuse on other sites.

Carbon Capture, Utilisation and Storage: The Way Forward

The CCUS Project Concept Dossier supports the first decision a project sponsor faces: whether a site should move to feasibility study and with which partners. Engineers, subsurface teams and commercial staff use it to align scope and budgets. After the first gate review, the storage ranking and cost assumptions deserve another look as appraisal data and supplier quotes arrive.