Carbon Capture, Utilization, and Storage (CCUS) Training Course



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Sharm El-Sheikh

4100 € (Per Person)

Ref: #ACE8913_265888

Course Introduction / Overview:

This training course gives a comprehensive look into the core principles and technologies of carbon capture, utilization, and storage. As industries worldwide face increasing pressure to reduce their carbon footprint, CCUS has become a critical tool for achieving climate goals while maintaining economic growth. This course gives participants a solid foundation in the entire CCUS value chain, from capture technologies like absorption and membranes to transportation methods and geological storage. We also explore innovative ways to use captured CO2 to create valuable products, which turns a waste stream into a resource. The curriculum is informed by leading academic research in the field. The book Carbon Capture and Storage by S. G. Th. van der Meer and P. P. C. H. van den Broek is a foundational reference that gives an in-depth view of the subject. BIG BEN Training Center is committed to giving a forward-thinking curriculum that equips professionals with the skills needed to design, implement, and manage CCUS projects. This course is designed to meet the growing demand for expertise in sustainable energy and environmental engineering.

Target Audience / This training course is suitable for:

- Chemical and process engineers.
- Environmental and sustainability professionals.
- Petroleum and reservoir engineers.
- Project managers in the energy sector.
- Researchers in climate technology.
- Policy analysts and regulators.
- Academics and students in related fields.

Target Sectors and Industries:

- Oil and gas.
- Power generation.
- Cement and steel manufacturing.
- Chemicals and petrochemicals.
- Environmental services.
- Government agencies and regulators.
- Consulting and engineering firms.

Target Organizations Departments:

- Environmental, health, and safety.
- Process engineering.
- Research and development.
- Sustainability and corporate responsibility.
- Project management.
- Carbon asset management.
- Geological storage and exploration.

Course Offerings:

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

- Describe the key technologies for carbon capture.
- Evaluate the effectiveness of different capture solvents.
- Understand the principles of CO2 transportation via pipelines.
- Identify suitable geological formations for carbon storage.
- Explore methods for converting captured CO2 into products.
- Perform a preliminary economic analysis of a CCUS project.
- Understand the regulatory and policy frameworks for CCUS.
- Discuss the challenges and future outlook for technology.

Course Methodology:

This training course uses a blend of theoretical instruction, guided exercises, and hands-on projects to give a dynamic learning experience. The curriculum combines theoretical lectures with real-world case studies to bridge the gap between academic concepts and practical application. Participants will use hands-on activities, including group workshops and scenario-based exercises, to reinforce their understanding of key topics. We use discussions and Q&A sessions to encourage a collaborative learning environment, where participants can share experiences and insights. The course also includes an in-depth analysis of successful and unsuccessful projects from various industries to highlight best practices and common pitfalls. This approach gives participants the confidence to apply their new knowledge directly to their professional roles. At BIG BEN Training Center, we believe that an engaging and interactive format is key to mastering new skills, so we focus on giving immediate feedback and continuous support throughout the training. The methods are designed to ensure every participant leaf with a clear, practical skill set.

Course Agenda (Course Units):

Unit One: Fundamentals of Carbon Capture.

- The global context of carbon emissions.
- Sources of CO2 in industrial processes.
- Introduction to carbon capture technologies.
- Absorption with amines.
- Membrane separation and cryogenic processes.

Unit Two: CO2 Transportation and Storage.

- Methods for transporting captured CO2.
- Pipeline design and safety.
- Geological storage principles.
- Reservoir characterization for storage.
- Monitoring and verification of stored CO2.

Unit Three: Carbon Utilization and Conversion.

- Overview of carbon utilization pathways.
- Using CO2 to produce chemicals.
- Enhanced oil recovery (EOR) with CO2.
- Conversion of CO2 into fuels.
- Mineral carbonation processes.

Unit Four: Economic and Policy Aspects.

- Cost components of a CCUS project.
- Economic analysis: NPV and IRR.
- Government incentives and carbon pricing.
- Regulatory frameworks and permits.
- Risk assessment and public perception.

Unit Five: Case Studies and Emerging Technologies.

- Case studies of large-scale CCUS projects.
- Direct air capture (DAC) technologies.
- Bioenergy with carbon capture and storage (BECCS).
- Future of CCUS and research trends.
- Social and environmental implications.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can the scalability and cost-effectiveness of CCUS technologies be improved to make them a truly global solution for decarbonizing hard-to-abate industrial sectors?

What unique qualities does this course offer compared to other courses?

This training course is unique because it gives a complete, integrated view of the entire carbon capture, utilization, and storage value chain. While many courses may focus on just one component, our program shows how all the pieces fit together to create a viable and sustainable solution. We don't just teach you about the technologies, we help you understand the economic, policy, and logistical challenges of implementing them in the real world. The curriculum is heavily focused on real-world case studies and project analysis, enabling participants to apply their knowledge to solve complex problems. It also covers the innovative and rapidly growing field of carbon utilization, which is turning the paradigm of CCUS from waste management into resource management. It’s an advanced program that gives professionals the skills needed to lead the transition to a low-carbon economy.