PetroSkills

Carbon Capture from Stationary Industrial Sources - PF-82

COURSE

About the Course

This course provides an overview of the emerging field of CO2 capture from stationary industrial sources - primarily combustion operations. CO2 capture is part of the CCUS chain - CO2 Capture, Utilization and Storage - wherein CO2 is prevented from entering the atmosphere by removing it from flue gas or other vent streams, transported to an appropriate location, and injected deep underground into secure geologic formations.

CCUS is viewed as a key component of Green House Gas (GHG) mitigation by IEA, as part of a migration to long term, sustainable energy systems. The focus of applications reviewed is operations in the Oil and Gas (O&G) industry and the Power industry. The course material is general in nature, but is framed around process technologies for capture - most of which are used in the natural gas processing industry. The content does not cover compression and transport in detail. The material does not cover the technology and engineering in detail and serves mainly as an introduction to the few commercially proven options and the myriad of emerging technologies, along with representative costs.

"There was a good mix of theory, application and economics. The maturity scale presented was quite useful when comparing different emerging technologies. Great course!" - Process Manager, Argentina

"Covering the full spectrum of cargon capture technologies provided the most value. It provided a great understanding of the various applications and pros/cons." - Senior Facilities Engineer, United States

Target Audience

The course provides a wide ranging overview of CO2 Capture, and is suitable for interested parties, such as environmental staff, facilities engineers, and gas processing engineers, including entry-level (1-2 year) engineers, or anyone interested in a general, technically-oriented overview of this approach to Greenhouse Gas (GHG) mitigation.

You Will Learn

- An overview of stationary sources of CO2 emissions, including sector-specific characteristics
- Brief review of drivers and restrainers to deployment of CCUS, including technical readiness and cost
- The general technical approaches to CO2 Capture - Post-Combustion, Pre-Combustion, and Oxyfiring
- Review of Post-Combustion Technologies, Studies and Demonstrations, including strengths and weaknesses

- Review of Pre-Combustion Capture Technologies, Studies and Demonstrations, including strengths and weaknesses
- Review of Capture using Oxyfiring and CO2 purification, including strengths and weaknesses
- Special topic: CO2 Capture from Natural Gas Combined Cycle (NGCC) and co-generation
- Operating CCS projects linked to natural gas processing and power generation

Course Content

- Characteristics of Power Sector and O&G emissions in the context of CCS
- Review of drivers and restrainers to deployment of CCS
- The general technical approaches to CO2 Capture - Post-Combustion, Pre-Combustion, and Oxyfiring
- Review of Post-Combustion Technologies, Studies and Demonstrations
    - Solvents - proven and emerging
    - Alternative technologies - Adsorption and Membranes
    - Studies and industrial demonstrations
- Review of Pre-Combustion Capture Technologies, Studies and Demonstrations
    - Reforming for industrial fuel production - importance of scale & experience with H2 as fuel
    - CO2 capture from Steam Methane Reformers (SMR) - what's old and what's new
    - Operating industrial Pre-Combustion projects
    - Advanced technologies
- Review of Capture using Oxyfiring
    - Background - it's not about white-hot combustion
    - Specific applications and concept testing/demonstrations
    - Novel approaches - Chemical Looping Combustion
- Special topic: NGCC and co-generation
    - Review of all three approaches to capture applied to NGCC
- Operating CCS projects linked to natural gas processing and power generation

Product Details

Categories: Energy Transition

Disciplines: Carbon Capture, Storage, and Sequestration   Process Facilities   Net Zero & Renewables

Levels: Basic

Product Type: Course

Formats Available: In-Classroom   Virtual

Instructors: Karl Gerdes

In-Classroom Format

18 Nov '24   20 Nov '24 - | Course | In-Classroom (in Houston) $3,475.00

Virtual Format

22 Jul '24   26 Jul '24 - | Course | Virtual (Houston UTC) $2,995.00