

2017 NETL CO₂ Capture Technology Project Review Meeting Summary

The 2017 NETL CO₂ Capture Technology Project Review Meeting, hosted by the U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL), was held in Pittsburgh, Pennsylvania, on August 21–25, 2017. A total of 191 participants from 51 companies, 19 universities, and 22 national laboratories, research institutes, and government agencies attended the meeting. The Carbon Capture Simulation for Industry Impact (CCSI²) Program also held its Industrial and Academic Stakeholder Board (IASB) Workshop on August 23–24, 2017, concurrent with the NETL CO₂ Capture Technology Project Review Meeting.

After welcoming remarks by Lynn Brickett (NETL Technology Manager, Carbon Capture Program), John Litynski (Acting CCS Division Director, DOE) initiated the Opening Session with an overview of DOE's carbon capture research budget and priorities. The Opening Session also included a presentation by Abhoyjit Bhowan on EPRI's CO₂ Capture R&D; presentations that provided insight into carbon capture projects and technology development in Norway (Bjorn-Erik Haugan, Gassnova SF and Thomas De Cazenove, CO₂ Technology Centre Mongstad) and Australia (Geoff Bongers, Gamma Energy Technology); a global perspective on the status of carbon capture by Keith Burnard from the International Energy Agency, as well as an update on the International Test Center Network by Frank Morton of Southern Company Services.

Researchers representing more than 50 of the active projects in the Carbon Capture Program's project portfolio gave presentations covering their research and development (R&D) work in advanced solvents, sorbents, membranes, and CO₂ compression for post- and pre-combustion projects that range from laboratory scale to large pilot-scale applications. An extensive session on CO₂ reuse provided updates on 10 projects in this area, while presentations about Systems Studies and Modeling provided attendees with updates on CO₂ capture-related systems analysis activities.

An NETL Research and Innovation Center session included presentations on experimental materials development in both mixed matrix membranes (MMMs) and solvents, as well as computational screening of pre-combustion solvents and the design of novel MMMs using high throughput computational methods. A session on CCSI² provided an overview of the CCSI² Program and its key capabilities, with presentations on topics such as multi-scale modeling, modeling amine aerosol formation, and modeling packing performance parameters. In addition, a session on the Discovery of Carbon Capture Substances and Systems (DOCCSS) Initiative included presentations on low-viscosity, water-lean, CO₂-binding organic liquids; amine-appended metal-organic frameworks; and integrated reactors created using additive manufacturing. The final day of the meeting was devoted to oxy-combustion and chemical looping, providing attendees with updates on 13 projects funded by NETL in these key technology areas.

Poster presentations on carbon capture, carbon use and reuse, and oxy-combustion and chemical looping included 33 posters, mainly on active R&D projects for which oral presentations had not been made. This open forum provided a less formal environment and encouraged and facilitated discussion amongst the presenters and attendees.

The wide range of topics over the course of the five-day meeting facilitated lively, interactive discussions about these technology areas and gave participants an opportunity to explore new ideas to inform the future direction of the NETL R&D portfolio.