



This Week at NETL

March 11, 2013

Demonstration Unit Commissioned for Pre-Combustion Carbon Capture

Working in cooperation with NETL, product developers from [Membrane Technology and Research Inc.](#) (Menlo Park, Calif.) successfully commissioned a skid-mounted gas separation membrane module designed to demonstrate pre-combustion carbon capture at the [National Carbon Capture Center](#). The membrane system successfully produced a liquid CO₂ stream containing greater than 92% CO₂ at temperature and pressure of -20 °F and 30 atmospheres, respectively, from a coal-derived syngas feed containing approximately 9% CO₂. Future campaigns will focus on performance optimization and parametric data collection.

NETL Collaborates with Polish Research Institute on Chemical Looping Combustion

Collaborating with a visiting scientist from Poland's [Institute for Chemical Processing of Coal](#), NETL scientists evaluated the chemical looping combustion (CLC) performance of bimetallic oxygen carriers made from oxides of copper and iron prepared on various support materials. In the CLC process, oxygen carriers are used to shuttle oxygen from air to fuel, facilitating the separation of CO₂ from the resulting combustion gases. The collaborators conducted ten-cycle CLC tests in an atmospheric thermogravimetric analyzer utilizing simulated synthesis gas derived from the steam gasification of Polish Janina coal and Illinois #6 coal as fuel. Synthesis gas derived from Janina coal had a better reducing ability than that from Illinois #6 coal. Bimetallic oxygen carriers containing more copper than iron showed better reduction rates and stability during the ten-cycle tests. The choice of support material also affected reaction performance and stability. The data indicated that iron and copper act synergistically, and that copper promoted the deeper reduction of iron oxide. These and other results of the research are discussed in the Elsevier publication [Applied Energy](#).

For more information, please contact:

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