



This Week at NETL

August 26, 2013

NETL Laboratory Develops New Capability in Geophysics

NETL's [Core Flow Laboratory](#) has been significantly upgraded with the addition of devices that allow the simultaneous measurement of permeability and ultrasonic velocities from the same core sample. In addition, the laboratory now provides the ability to measure smaller cores. By varying pressures from atmospheric to more than 50 megapascal, changes in permeability, as indicated by ultrasonic velocity variation, are being investigated. This information—together with rock physics modeling, amplitude variations with angle, and other techniques—can provide deep insight in monitoring the volume and location of CO₂ sequestered underground. Such a relationship will also be helpful in a wide range of other energy activities, including enhanced oil recovery and geothermal energy production.

NETL and Maryland Department of the Environment Sign MOU

In anticipation of the lifting of the current moratorium on shale gas drilling in Maryland, the Maryland Department of the Environment (MDE) requires an assessment of pre-development air quality so that comparisons can be made post-development to evaluate the impact of natural gas exploration and production activities on local air quality. The signing of a new memorandum of understanding between NETL and the MDE will allow NETL to use its [Mobile Air Monitoring Laboratory](#) to collect baseline air quality data in Maryland's Garrett and/or Allegany counties in each of the four seasons over the next 2 years. The laboratory trailer houses instrumentation to measure concentrations of criteria pollutants, such as ozone, nitrogen oxides, and particulate matter; greenhouse gases, such as methane and CO₂; and hazardous air pollutants and other non-methane volatile organic compounds. The laboratory also serves as a meteorological station to measure meteorological parameters. NETL plans to return to the area for post-development monitoring in future years to evaluate any changes in air quality.

GTI Develops, Launches Training Curriculum on Modern Energy-Efficiency Building Systems with NETL Support

To keep pace with advancing technologies, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) is funding development of a training curriculum on modern energy-efficient building systems. Working with NETL, the [Gas Technology Institute \(GTI\)](#) has developed [22 online training modules](#) on five topic areas: boilers, water heaters, combined heat and power, electric, and HVAC (heating, ventilation, and air conditioning) systems. The modules are designed to equip technicians, supervisors, and contractors with the knowledge and skills needed to provide effective and sustainable inspection, troubleshooting, and maintenance of existing systems. Materials are available for onsite classroom training, as well as online e-learning programs. NETL's Office of Energy Project Management manages this and other projects in support of the [EERE Buildings Technologies Office](#).

Consolidated Edison of New York Executes Sixth and Final Demonstration

As part of an NETL-managed [Smart Grid demonstration project](#), [Con Edison](#) and its sub-recipients met July 15, 2013, at Con Edison's Manhattan headquarters to perform demonstrations focused on minimizing peak electricity demand by leveraging customer resources as spinning reserve. Con Edison successfully demonstrated the ability to (1) leverage controllable field assets that reduce load where and when needed; (2) provide demand response participants with greater visibility, flexibility, and value; and (3) manage peak load

growth and improve grid reliability. The demonstration achieved these by building on a platform of open standards and specially developed cyber secure software to aid interoperability while delivering intelligent capabilities for distribution operators. This project is managed by the NETL Office of Energy Project Management for the U.S. Department of Energy's [Office of Electricity Delivery and Energy Reliability](#).

Final Report Received for Successful Nanomanufacturing Project

In an [NETL-managed project](#), [Oak Ridge National Laboratory](#) and [A123 Systems LLC](#) (Waltham, Mass.) used Oak Ridge's existing processing science, modeling, and quality control capabilities to develop A123's current nanocomposite film and to improve coating technology and quality control measures. The primary purpose of the effort was to advance the state of the nanomanufacturing of this material for lithium-ion batteries, thus enabling improvements in the film's reliability and production and enhancing the economic feasibility of scale-up. The team developed better quality control procedures and safety testing for A123's nanocomposite separator technology, a cell-based, patented technology and separator. Focusing on characterization of the existing defects in the A123 separator and the development of an understanding of the defect formation mechanisms, the team's effort led to the success of the new material and guided the pathway to a successful scale-up to mass production. The work directly supported the U.S. Department of Energy's mission in the [Advanced Manufacturing Office](#) of the Office of Energy Efficiency and Renewable Energy by developing a material system and its processing conditions to be used in electrochemical energy storage systems for automotive and other industrial applications.

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