continued from p. 8

(HVAC) industry trade associations, professional societies, and utility-related groups. The unique communication and technology transfer effort promotes markets for desiccant-based air-conditioning products by demonstrating their features and allowing HVAC system designers and potential customers to experience for themselves the comfort of the technology.

The traveling show is part of a move by DOE to accelerate the deployment of desiccant technology as a means of saving energy, improving indoor air quality, and reducing moisture damage in buildings due to excessive humidity. One of ORNL's tasks is to demonstrate the performance of packaged HVAC systems that include desiccant humidity control equipment. Another is to help small desiccant system makers work with large HVAC companies who are beginning to build and market such packaged systems. Using the trailer to introduce and demonstrate desiccant technology to industry groups aids both of those efforts.

During its first year of operation, the DHC Van has been displayed at the 25th World Energy Congress, Atlanta Gas Company, the Business Energy Solutions Conference and Expo, and the American Society for Healthcare Engineering International Conference and Exhibition on Health Facility Planning, Design, and Construction.

Information about the schedule for the van and about hosting tours of the DHC Van is available at http://www.ornl.gov/desiccantvan/hosting.htm.

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Sponsor: DOE/EERE Distributed Energy

ORNL and TVA Team Up to Test New Transmission Lines

Like the heating coils on an electric stove, power transmission lines heat up when high currents pass through them. Utilities must restrict the amount of current they send through power lines to avoid the problems that high temperatures cause, such as excessive sagging. As demands on the U.S. power grid increase, utilities are looking to new types of transmission line conductors to help solve capacity problems and avoid blackouts such as the August 14, 2003, system collapse that caused 50 million Americans to lose electrical power.

To aid in the search for better conductors, ORNL has worked with the Tennessee Valley Authority (TVA) utility to design and assemble a transmission line section that will be studied at a new facility at ORNL called Powerline Conductor Accelerated Testing (PCAT). PCAT is one of several new and planned facilities that comprise ORNL's National Transmission Technology Research Center (NTTRC).

"PCAT is designed to operate conductors at up to 300° Celsius, exceeding maximum-rated temperatures for most powerline conductors," said Mike Ingram of TVA's Energy Research and Technology Applications. "This will let us evaluate new technologies and materials for transmission lines."

The low-voltage, high-current ORNL testing facility makes it possible to evaluate advanced technologies realistically under a wide range of conditions without jeopardizing the reliability of an operating power grid. It will operate at up to 5000 amps of direct current and up to 400 volts. A 2400-foot length of conductor is installed on two 600-foot spans that make up three powerline structures.

James Glotfelty of DOE (right) tours the PCAT facility with TVA and ORNL officials during its recent dedication.

Monitors installed on the powerline structures measure conductor temperatures and ambient temperatures, wind speed and direction, and incident solar radiation. PCAT can simulate aging of lines by repeatedly heating the conductors and then allowing them to cool to the ambient temperature. This allows researchers to evaluate how a conductor design is likely to perform through its life cycle.

"We have to raise the awareness of the cost of doing nothing, letting our transmission grid continue down the path of lower power quality and poor reliability," James Glotfelty, senior policy adviser to Energy Secretary Spencer Abraham, said at the recent NTTRC dedication.

Reliability problems with the power transmission system cost an estimated $100 billion annually, and power quality problems cost another $25 billion, Glotfelty said. "The cost of doing nothing means higher electricity costs," with consumers footing the bill.

A new powerline conductor made by 3M has been installed at PCAT for testing. It consists of ceramic fibers embedded in aluminum and surrounded by temperature-resistant aluminum-zirconium wires.

A ribbon-cutting for the PCAT facility was conducted on March 25, 2003.

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Sponsor: DOE Office of Electric Transmission and Distribution, TVA