
Allegheny Power to Install 3M High-Capacity ACCR Conductor To Upgrade Key West Virginia Line

Project Will Boost Capacity for Growing Communities Near Maryland Border

ST. PAUL, MN, November 26, 2007 – Allegheny Power, a division of Allegheny Energy Inc., will install 3M's high-capacity Aluminum Conductor Composite Reinforced (ACCR) to upgrade a key line linking the Bedington and Nipetown substations along Interstate-81 in West Virginia, according to Tim Koenig, head of 3M's High Capacity Conductor Program.

Allegheny Power serves 1.7 million customers in four states, including Pennsylvania, Maryland, West Virginia and Virginia. It owns approximately 9,760 megawatts of generating capacity.

The 1.7-mile 3M ACCR upgrade will boost transmission capacity on a line serving growing communities in West Virginia near the border with western Maryland, some 50 miles northwest of Washington, D.C. The 138 kV line, which will share structures with three other lines for most of its length, including two under-built 12 kV lines, has a flow of 2200 amps and is expected to peak at a temperature of 200° C. The line is built on self supporting steel poles with drilled pier concrete foundations.

3M ACCR can carry more than twice the current of conventional steel-core conductors of the same diameter, and generally does not require new tower construction or rebuilding because of its relatively light weight and low sag. Western Area Power Authority, Xcel Energy, Arizona Public Service, and Shanghai Electric Power in China are among the major utilities that have deployed the advanced conductor to alleviate or preclude bottlenecks in major metropolitan areas.

Richard Hoch, an engineer for Allegheny Power, said: "The 3M ACCR we chose for this project gave us the ability to leave the under-built 12 kV circuits in service during construction and to avoid structure replacement. We also needed a conductor that sagged neatly with an adjacent 954 ACSR conductor on the same structure. By using the 3M ACCR, the money and *time* saved was invaluable on this fast-paced project. And, the design and ordering process was a simple task

because of 3M's sales and technical staff, which demonstrates a service culture of which 3M should be proud."

Koenig of 3M noted that four utilities in the past three months alone have selected the 3M ACCR as a "cost-effective, proven solution to power transmission constraints, under a wide range of climate conditions and landscape considerations. One of the most compelling attributes of 3M's ACCR as an upgrade to existing lines is that it can relieve a utility of the costs, risks and environmental concerns of enlarging towers or expanding rights of way. Also, because it can match the sag and tension of the existing conductor with less weight, utilities can reduce the costs and risks associated with major transmission construction projects, without adding risk to the existing system. As for its performance and reliability, those have been thoroughly established over several years of use in both field tests and commercial applications, in desert, ocean shore and brutally cold environments."

Koenig said 3M has invested in a state-of-the art manufacturing infrastructure to meet the growing demand for alternative solutions to problems afflicting the power grid. "Process Design and Control is one of 3M's 45 core technology platforms. Plus, 3M's global presence with operations in nearly 60 countries, enables us to provide our customers reliable technologies and solutions, wherever they are located," he continued.

3M ACCR was developed with the support of the U.S. Department of Energy, which tested the conductor at its Oak Ridge National Laboratory (ORNL) in Tennessee, and with early contributions by the Defense Advanced Research Projects Agency. The ORNL tests demonstrated the conductor retains its integrity after exposure to temperatures even higher than the rated continuous operating temperature of 210 degrees Celsius and the emergency operating temperature of 240 degrees Celsius, which provides a significant safety factor. It has the durability and longevity of traditional steel core conductors, even when operated continuously at high temperatures. Also, since 3M ACCR is based on aluminum, it is not as adversely affected by environmental conditions, such as moisture or UV exposure, and has the corrosion resistance typically associated with aluminum-based conductors.

3M ACCR's strength and durability result from its core, composed of aluminum oxide (alumina) fibers embedded in high-purity aluminum, utilizing a highly specialized and patented process. The

constituent materials are chemically compatible with each other and can withstand high temperatures without adverse chemical reactions or any appreciable loss in strength.

3M has been a full-solutions provider to the utilities industry for decades. The company's vast offerings to the utilities market range from cold shrink sealing and insulating tubes, to Scotchlite Reflective Material for personal safety, to splicing kits and insulating tapes. 3M holds 18 patents on the new ACCR technology. 3M's ACCR has been recognized by *R&D Magazine* with an R&D 100 Award as one of the most technologically significant products introduced into the marketplace, and by the Minnesota High Tech Association with a Tekne Award for innovative development. In addition, 3M ACCR was one of the technologies that President George W. Bush viewed during a visit to 3M in 2006.

The 3M Electrical Markets Division (EMD) designs, manufactures and markets products for electrical utilities, electrical construction and maintenance, and electrical/electronic device manufacturers. EMD has more than 60 years of experience serving customers with highly reliable products, including high capacity transmission conductors; power cable splices and terminations; electrical wire connectors, terminals and tools; wire marking products; cable ties; electrical insulating tapes; electromagnetic shielding and absorbing materials; heat shrinkable tubing and molded shapes for electrical insulation; and cold shrink sealing and insulating tubes.

More information about the 3M High Capacity Conductor is available at www.3M.com/accr.

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