3M News

Alabama Power to Install 3M High-Capacity ACCR Conductor To Upgrade Key Transmission Line Near Birmingham

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Project to Provide Power for a Cleaner Environment and a Growing Population

ST. PAUL, MN, February 19, 2008 – Alabama Power Company, which supplies electricity to more than 1.4 million residential and commercial customers, will install 3M's high-capacity Aluminum Conductor Composite Reinforced (ACCR) transmission conductor to upgrade a key line at their Miller Steam Plant, according to Tim Koenig, head of 3M's High Capacity Conductor Program. Alabama Power is a subsidiary of Southern Company, whose utilities also provide power and other services in Georgia, Mississippi and the Florida panhandle. The Miller Plant is located in Jefferson County, Alabama, approximately 25 miles northwest of Birmingham.

3M ACCR can carry more than twice the current of conventional steel-core conductors of the same diameter, generally with no new tower construction or rebuilding because of its relatively light weight, low sag and high strength. Western Area Power Administration, 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 peak-demand bottlenecks in major metro areas.

Alabama Power's 1.7-mile upgrade, utilizing 3M ACCR 1033 kcmil 54/19 Curlew, will boost transmission capacity on a line that goes through and loops around the Miller Steam Plant. The upgrade is part of Alabama Power's ongoing, multibillion-dollar environmental initiative, designed to reduce emissions from the company's power plants while continuing to meet the growing demand for power. The population of greater Birmingham is now estimated at 1.08 million, making it the largest metropolitan area in the state. The new 230 kV line, scheduled for installation this spring, will be rated to carry up to 2,000 amps and is expected to peak at a temperature of 200°C.

"The characteristics of the 3M conductor provided the ideal solution for the particular challenges faced with the line reconductor at the Miller Steam Plant," said Howard Samms, a senior engineer

at Alabama Power. “The existing line crosses below three 500KV line and above one 230KV line and is supported on five existing lattice steel structures. The 3M conductor allowed us to obtain the required capacity, while utilizing the existing structures and maintaining or improving the existing clearances to ground and other obstacles. As a result, significant savings were achieved in both time and cost by eliminating the need for the design, supply and construction of new towers.”

Koenig of 3M noted that, “Utilities around the globe are recognizing that the 3M ACCR is a proven solution to electric transmission constraints that is both cost-effective and applicable to a very broad range of climate conditions and terrain. Most importantly, it offers a means of quickly making more power available in response to growing demand without the financial and environmental risks associated with enlarging towers or expanding rights of way.

“Also, because it can match the sag and tension of the existing conductor, utilities can get the capacity increases they need, while reducing the costs and risks associated with upgrading lines that have under-built facilities and 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, coastal and brutally cold environments,” Koenig continued.

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 appreciable loss in strength, even over long periods of time.

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’s ACCR is based on aluminum, it is not adversely affected by environmental conditions, such as moisture or UV exposure, and has the corrosion resistance typically associated with aluminum-based conductors.

3M has been a full-solutions provider to the utility industry for decades. 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 utility 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.

3M holds 18 patents on the ACCR technology, which 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.

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

About 3M

A recognized leader in research and development, 3M produces thousands of innovative products for dozens of diverse markets. 3M's core strength is applying its more than 40 distinct technology platforms – often in combination – to a wide array of customer needs. With $24 billion in sales, 3M employs 75,000 people worldwide and has operations in more than 60 countries.

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