

# 3M Reports Initial Sale of Composite Conductor for Boosting Power Line Capacity

August 17 2004

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3M's new Aluminum Composite Conductor Reinforced (ACCR), an overhead power conductor that doubles the electrical transmission capacity of conventional conductors of the same diameter, will receive its first commercial application early next year, when Minneapolis-based Xcel Energy installs the ACCR on a 10-mile (16 kilometer) transmission line in the Twin Cities region.

Xcel Energy is using the conductor to increase the capacity of a transmission line that extends from Shakopee to Burnsville. The upgrade is part of a \$100 million expansion project at the utility's Blue Lake "peaking" plant in Shakopee, which is needed to ensure a reliable supply of power to Xcel Energy's customers in the Upper Midwest during periods of peak electricity demand. Xcel Energy provides a comprehensive portfolio of energy-related products and services to 3.3 million electricity customers, and 1.8 million natural gas customers through its regulated operating companies in 11 western and Midwestern states.

3M's ACCR is intended as a solution to thermally constrained transmission bottlenecks that have increasingly plagued electricity grids in recent years, causing brownouts and blackouts.

"ACCR represents one of the most significant advances in transmission technology in decades," said Tracy Anderson, business development manager for 3M's composite conductor program. "The Department of Energy, in its National Transmission Grid Study in May 2002, named

advanced conductors as a key enabling technology for upgrading the national electricity transmission system. 3M is proud to be bringing this technology to fruition."

The product has been extensively tested in the laboratory and field-tested for the past four years, including at Oak Ridge National Laboratory in Tennessee, under the auspices of the U.S. Department of Energy, and at locations operated by Xcel Energy, Western Area Power Administration (in North Dakota and Arizona) sites, the Salt River Project, also an Arizona utility, Hawaiian Electric Company, and Bonneville Power Administration at a site in Washington state. The power line has been proven under a broad range of extreme conditions, such as saltwater corrosion, high winds, vibration, and extreme heat and cold.

Mr. Anderson thanked the U.S. Department of Energy and the utilities that have been participating in field trials, and noted that Xcel Energy "has stepped forward to take a leadership position in helping an important breakthrough technology realize its potential in the energy marketplace."

"We found 3M's new composite conductor to be the right solution for boosting capacity and reliability on a line that is an integral part of the grid in the Upper Midwest, where Xcel Energy serves 1.5 million electricity customers," said Don Jones, director of transmission asset management at Xcel Energy. "We are always looking for new ways to improve service to our customers. We evaluated various conductors for the project, and determined that the 3M conductor is the only option that will get the job done on time, because it will allow us to increase the line's capacity without installing new towers."

ACCR, a new type of bare overhead conductor containing a multistrand core of heat resistant aluminum matrix composite wires, retains its strength at high temperatures and is not adversely affected by

environmental conditions, such as moisture or UV exposure. Because of its lightweight and reduced thermal expansion properties, the conductor can be installed on existing towers and requires no visual changes to a line or additional rights of way.

3M teamed with various companies, whose expertise in certain components helped to make 3M's ACCR viable. Key contributors include Wire Rope Industries, Nexans Inc., Preformed Line Products Co. and Alcoa Conductor Accessories. Organizations playing key supporting roles in laboratory and field-testing of the technology include: National Electric Energy Testing, Research and Applications Center (NEETRAC); Kinectrics, Oak Ridge National Laboratory (ORNL); and the U.S. Department of Energy Western Area Power Administration.

"3M aligned itself with these industry leaders who recognized the value this technology brings to power transmission," says Mr. Anderson.

The technology 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.

More information about the 3M Composite Conductor is available at [www.3M.com/accr](http://www.3M.com/accr)

Citation: 3M Reports Initial Sale of Composite Conductor for Boosting Power Line Capacity (2004, August 17) retrieved 27 April 2024 from <https://phys.org/news/2004-08-3m-sale-composite-conductor-boosting.html>

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