

Two California Utilities Install 3M's Breakthrough High-Capacity Conductor; California Energy Commission and EPRI Take Interest as Metal Matrix Composite in Use Elsewhere in the U.S. Is Introduced in the State

A breakthrough high-temperature, low-sag overhead conductor from 3M, designed to help eliminate transmission bottlenecks that increasingly have plagued electricity grids in recent years, causing brownouts and blackouts, is getting its first use in California.

Pacific Gas & Electric (PG&E) and a second utility in Southern California have installed 3M's Aluminum Conductor Composite Reinforced (ACCR) on short line segments near substations in Santa Clara and Oceanside (just north of San Diego), respectively. The Oceanside installation was funded, in part, by the California Energy Commission. The Electric Power Research Institute will monitor the line's performance. PG&E funded its own installation and is performing its own monitoring.

Three other major U.S. utilities have installed, or announced plans to install, the new conductor on transmission lines in the West, Midwest and South.

"Parts of California have experienced record demand for electricity this summer which puts stress on the power grid," says Tracy Anderson, business development manager, 3M Composite Conductor program. "3M's ACCR provides a quick and reliable solution to increase the capacity of existing transmission lines by as much as 100 percent without requiring new towers or new rights-of-way."

Anderson notes that Xcel Energy, a major utility, is already using the ACCR to relieve congestion on a 10-mile line in the Minneapolis-St. Paul region. In addition, the Western Area Power Administration recently said it will install the ACCR on a key 80-mile line in Arizona, and Alabama Power Company plans to install the new conductor on a critical 10-mile line in the eastern part of the state.

The ACCR is a new type of metal overhead line that contains a multi-strand core of heat-resistant, aluminum-matrix composite wires. The conductor retains its strength at high temperatures and is not adversely affected by environmental conditions. Its lightweight and reduced thermal expansion properties are what enable installation on existing towers, with no requirement for visual changes to a line or additional rights-of-way.

Prior to being commercialized, the ACCR underwent four years of rugged, extensive field testing by several utilities, partially funded by the Department of Energy, and met all expectations.

Anderson points out that the first two purchases of the ACCR were made by utilities that participated in field testing, for installation in areas subject to extreme weather conditions. "I think that's a powerful endorsement of ACCR's performance," he says.

In addition to the Department of Energy and the utilities that field-tested the ACCR, 3M retained the National Electric Energy Testing, Research and Applications Center, Georgia Institute of Technology, to test the conductor during development.

The ACCR's 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.

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