

3M Composite Conductor for Boosting Power-Line Capacity Begins Additional Field Tests

3M has expanded the field testing of its new high-capacity electricity transmission cable to include installations at the Western Area Power Administration's (WAPA) Liberty Substation near Phoenix, and at the Salt River Project's Santan Generating Station Expansion in the Phoenix suburb of Gilbert, Ariz.

The cable, known as Aluminum Conductor Composite Reinforced (ACCR) from 3M, has been meeting expectations in on-going field tests at Oak Ridge National Laboratories in Tennessee, and at utility installations in Minnesota, North Dakota and Hawaii.

Designed to reduce electrical transmission congestion by increasing overhead electrical power-line capacity, the ACCR may help provide near-term solutions to the thermal bottlenecks afflicting the nation's power grid, according to Tracy Anderson, program manager for 3M's Composite Conductor Program.

The heat-resistant cable, with its unique metal composite core, is capable of transmitting two to three times more electricity than conventional power-line cables of the same diameter, while not increasing mechanical stresses on the towers, or exceeding sag limits during peak thermal loads or heavy ice loads. As a result, it can be installed quickly on existing towers, requiring no additional rights of way.

The ACCR has undergone more than nine-and-one-half cumulative years of field operation so far, under conditions testing various cable sizes and constructions for high temperature, corrosion performance and ice and wind loading. The WAPA Phoenix installation will demonstrate performance of cable constructed with 3M's Composite Conductor as a core with three constructive layers of aluminum. The Salt River Project will demonstrate the high-temperature operation of the ACCR. The Valley Group's Cat 1 monitoring system will provide performance data at 15-minute intervals.

"The outstanding results obtained by independent test laboratories have now been confirmed in the field," says Anderson. "We are working with engineers at a number of utilities on commercial applications."

Anderson adds: "While 3M's Composite Conductor provides a cost-effective alternative to replacing or rebuilding towers, another significant benefit is that it avoids a visual change to the line. It can be deployed quickly without the uncertainty associated with permitting new lines."

Companies contributing key components to the 3M Composite Conductor 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 Laboratories (ORNL); and the U.S. Department of Energy Western Area Power Administration.

More information about the 3M Composite Conductor is available at www.3m.com/accr.

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