

3M Announces Seventh Major Utility Installation of Aluminum Conductor Composite Reinforced

Arizona Public Service (APS) has become the seventh major utility to install or place an order for an important new overhead conductor developed by 3M specifically for critical line segments needing extra transmission capacity.

Among the other utilities using the new conductor, known as Aluminum Conductor Composite Reinforced (ACCR), are Xcel Energy, Alabama Power Company, and the Western Area Power Administration.

In the case of APS, installation of ACCR has been completed on a six-mile line into the Phoenix business district. It provides extra capacity to service the fast-growing and congested downtown area and eliminates the need for APS to site and acquire right-of-way and construct a new power line route.

ACCR can carry more than twice the electrical power of conventional lines of the same size and can be run at higher operating temperatures with minimal conductor sag. Conductor sag is a common cause of bottlenecks in the nation's power grid.

The key to this new conductor is the core, which is made of a stable inorganic aluminum matrix composite that has proven its reliability in more than six years of field testing and commercial use.

"We are excited about this new installation as the solution to upgrade the existing ACSS line in order to provide extra capacity to serve this fast-growing area of Phoenix," notes Tracy Anderson, who heads business development for 3M ACCR.

"ACCR has proven itself where reliability and performance are key. After years of rigorous field testing in a variety of harsh environments and an additional two years of commercial experience under our belts, the conductor and accessories continue to perform as expected without any problems or field failures," says Anderson. "ACCR was developed with a focus on reliability, from the choice of chemically compatible materials used in the conductor to the inherent redundancy on strength that occurs from having a multi-strand core surrounded by full strength aluminum zirconium."

ACCR's strength and durability result from its aluminum oxide (alumina) fibers, which are embedded in the high purity 3M aluminum matrix core wires, utilizing a highly specialized and patented process. The constituent materials are chemically inert with respect to each other and can withstand high temperatures without chemical reactions or any appreciable loss in strength.

Recent tests of ACCR at Oak Ridge National Laboratory demonstrated the conductor's integrity after exposure to temperatures even higher than the rated continuous operating temperature for a limited time - a significant safety factor over 210 degrees Celsius. Because of its aluminum base, the conductor is not adversely affected by environmental conditions, such as moisture or ultraviolet exposure.

3M holds 14 patents on this new technology. 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, ACCR was one of the technologies that President George W. Bush viewed during a recent visit to 3M.

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

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