

Platte River Power Authority Energizes 3M's ACCR Conductor, Boosting Capacity on Key Line Serving Colorado's Front Range

Revolutionary Aluminum Conductor Significantly Increases Transmission Capacity Without New or Larger Towers

Platte River Power Authority, a utility owned by and serving four major communities in north-central Colorado, has energized a key transmission line upgraded with 3M's revolutionary ACCR (Aluminum Conductor Composite Reinforced). The high capacity overhead conductor can carry more than twice the power of conventional lines of the same diameter, without the need for new or larger towers, or new rights of way.

3M ACCR was energized on a three-mile line linking the Timberline and Harmony Substations in Fort Collins, primarily to help ensure adequate transmission capacity during summer peak-demand hours. Platte River also serves Estes Park, Longmont and Loveland. All four communities are situated north of Denver.

The conventional solution would have required larger and taller towers to achieve the same capacity increase provided by 3M ACCR on the existing structures. Considerable time was saved by eliminating the need for extensive permitting and other requirements that must be met for new towers.

Already in service in major metropolitan areas, including Phoenix, Minneapolis-St. Paul, and Shanghai, China, 3M ACCR is also finding application as a dependable cost-effective solution for needed upgrades in less populated areas, where minimal environmental disruption may be required. For example, Western Area Power Administration (WAPA) recently installed the new conductor on its Topac-Davis-Lake Mead line in rural western Arizona.

According to Mike Dahl, Platte River Power Authority's Division Manager, Electric Operations, the Timberline-Harmony line "is an important part of the grid between Denver and Cheyenne, and we chose 3M ACCR as a way to safeguard against overloading when demand is high."

3M's Tim Koenig, who heads 3M's High Capacity Conductor Program, says a rapidly growing list of "utilities of all types and sizes recognize 3M ACCR as a proven and ready solution to problems that limit the capacity of conventional transmission lines, often causing constraints and bottlenecks. The reliability of this breakthrough conductor has been well established in more than six years of use, in field tests and commercial applications, and under every type of harsh environmental condition."

Koenig adds: "3M has invested in a state-of-the-art manufacturing infrastructure to meet the growing demand for alternative solutions to problems afflicting the power grid. Process Design and Control is one of 3M's 45 core technology platforms. Plus, 3M's global presence, with operations in nearly 60 countries, means we can provide reliable technologies wherever our customers are located."

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 that 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 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 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 any appreciable loss in strength.

3M has been a full-solutions provider to the utilities industry for decades. The company's vast offerings to the utilities market range from cold shrink sealing and insulating tubes, to Scotchlite Reflective Material for personal safety, to splicing kits and insulating tapes. 3M holds 18 patents on the new ACCR technology. 3M's 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, 3M ACCR was one of the technologies that President George W. Bush viewed during a visit to 3M in 2006.

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 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. 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 \$23 billion in sales, 3M employs 75,000 people worldwide and has operations in more than 60 countries.

About Platte River Power Authority

Platte River Power Authority generates and provides reliable, low-cost and environmentally responsible electricity to its owner communities of Estes Park, Fort Collins, Longmont and Loveland, Colorado, for delivery to their utility customers. Platte River's facilities are located along the Front Range and northwestern Colorado in addition to near Medicine Bow, Wyoming. For more information about Platte River, visit www.prpa.org.

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3M Public Relations Colleen Horn Harris, 651-733-1566 cahornharris1@mmm.com or LVM Group Inc. Bob Ruman, 212-499-6567 bob@lvmgroup.com or Platte River Power Authority Rae Todd, 970-229-5255 toddr@prpa.org

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