

Brazil's Companhia de Transmissao de Energia Eletrica Paulista Chooses 3M ACCR for Upgrade of Line Over Parana River in Sao Paulo State

Selection Will Increase Capacity Without Need for New Towers in River Bed;

CTEEP, a Unit of ISA Group, Is Second Foreign Utility to Embrace 3M Solution

One of Brazil's largest electric utilities, Companhia de Transmissao de Energia Eletrica Paulista (CTEEP), will install the 3M Aluminum Conductor Composite Reinforced ([ACCR](#)) to upgrade the capacity of a key transmission line crossing an environmentally sensitive river bed. The lightweight, sag-resistant 3M conductor provides more than twice the capacity of conventional conductors of similar size without requiring construction of new or enlarged towers.

CTEEP, which is principally owned by Grupo Empresarial ISA (ISA Group), one of South America's largest electricity and telecommunications providers, supplies almost all of the electricity consumed in the State of Sao Paulo and 30 percent of the electrical power consumed nationwide. The line will boost capacity for power transmission for the Jupiá Electrical System. The line crosses the nearly mile-wide Parana River and is subject to strong winds and extremely high temperatures.

"3M ACCR was determined to be the most cost-effective, proven solution available," says CTEEP engineering manager Caetano Cezario Neto. Installation is scheduled to begin immediately.

Recently, Shanghai Electric Power Company, Ltd., became the first non-U.S. utility to use the 3M ACCR for a key line upgrade serving the world's eighth largest city. Several major U.S. utilities, including Western Area Power Administration, Arizona Public Service, Xcel Energy and Alabama Power Company, a unit of Southern Energy, have chosen 3M ACCR to increase capacity on line segments subject to transmission constraints.

Tim Koenig, director of the 3M High Capacity Conductor Program, says 3M ACCR is under evaluation in several other countries, as well as by large and small domestic utilities, as a solution to the problem of bottlenecks, especially on lines where permitting and construction of new towers or obtaining additional rights of way would create major problems and delays.

"There is a growing recognition that this a proven, reliable and cost-efficient conductor that provides substantially greater capacity while minimizing the risks and environmental concerns associated with tower construction," says Koenig. "The performance and reliability of this conductor have been persuasively established over years of field tests and commercial use, under all kinds of harsh environmental and operating conditions."

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 appreciable loss in strength, even over long periods of time.

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 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's ACCR is based on aluminum, it is not susceptible to environmental conditions such as moisture or UV exposure, like other traditional conductors, and it has the corrosion resistance typically associated with aluminum-based conductors.

3M has been a full-solutions provider to the utility industry for decades 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.. The 3M Electrical Markets Division (EMD) designs, manufactures and markets products for electrical utilities, electrical construction and maintenance, and electrical/electronic device manufacturers.

3M holds 18 patents on its ACCR technology, which 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.

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 \$24 billion in sales, 3M employs 75,000 people worldwide and has operations in more than 60 countries.

3M Public Relations: Colleen Horn Harris, 651-733-1566 cahornharris1@mmm.com or LVM Group Inc. Bob Rurman, 212-499-6567 bob@lvmgrou.com or Paul Marin, 212-499-6571 paul@lvmgrou.com

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