

Second Brazilian Utility Chooses 3M ACCR for Line Upgrade Without Need to Construct Larger Towers

Unit of CPFL Energia Will More than Double Capacity in Urban Right-of-Way Using Proven Light-Weight, Low-Sag Conductor

CPFL Piratininga, a power distribution unit of CPFL Energia, one of Brazil's largest electric utilities, will install the 3M™ Aluminum Conductor Composite Reinforced (ACCR) to upgrade the capacity of a key transmission line serving a densely populated area in the state of São Paulo. The light-weight, sag-resistant 3M conductor provides more than twice the capacity of conventional steel conductors of similar size without requiring major tower modifications or construction of new towers.

CPFL Energia serves some 6.3 million customers in four states, with a generating capacity of 1,672 megawatts. With an expansion program underway to accommodate Brazil's dynamic economic growth, the company expects to have 2,174 megawatts of capacity available in 2010.

The line to be upgraded with 3M ACCR passes through a residential neighborhood in Várzea Paulista, where houses lining both sides of the right of way present numerous costly logistical problems for building new towers. According to Paulo Ricardo Bombassaro, engineering and planning manager for CPFL Energia: "After reviewing numerous options for meeting the growth in demand in this area, we determined that 3M ACCR is the most cost-effective, reliable and best technical solution available to us."

Earlier in 2008, another major electric utility in Brazil, CTEEP, chose the 3M ACCR for a capacity upgrade under very different circumstances. The utility is applying the breakthrough conductor to avoid new tower construction in a rural area, on a line that crosses an environmentally sensitive section of the Paraná River.

"Electric utilities are recognizing 3M ACCR as a compelling tool in cases where upgrades are needed but new or larger towers and rights of way would pose substantial risks," says Tim Koenig, director of the 3M High Capacity Conductor Program. "This revolutionary conductor allows them to avoid the expense and risk of new construction and permitting, and minimize environmental disruption."

To date, more than 20 utilities in the United States and five other nations have installed the 3M ACCR, including two in China. In the U.S., major users include Western Area Power Administration, Arizona Public Service, Xcel Energy and Alabama Power Company, a unit of Southern Company. These installations are all performing successfully, as 3M expected.

The CPFL Energia installation, boosting power to Varzea Paulista and Jundiaí, which are both north of the city of São Paulo, is expected to be completed in March 2009. The 3.3 kilometer upgrade increases capacity on an 88 kilovolt, double circuit line.

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 can withstand high temperatures without 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. 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 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.

3M ACCR is offered by 3M's Electrical Markets Division (EMD), which 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 utility 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 \$24 billion in sales, 3M employs 79,000 people worldwide and has operations in more than 60 countries. For more information, visit www.3M.com.

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