

## Brazil's CPFL Piratininga Installs 3M ACCR on Key Transmission Line to Avoid Tower Construction in Wetlands of São Paulo Coast

Light-Weight Conductor Can Double Capacity but Leave Infrastructure Unchanged In Sensitive or Crowded Terrain; ACCR Application Is 7th in South America

ST. PAUL, Minn.--([BUSINESS WIRE](#))--Brazil's utility industry has increased transmission capacity by using 3M's Aluminum Conductor Composite Reinforced (ACCR), which can more than double line capacity without requiring larger towers or new rights of way.

CPFL Piratininga, the distribution unit of CPFL Energia, which serves more than 6.5 million customers in four of Brazil's states, has installed the conductor on a double-circuit 12-kilometer (7.5-mile) segment of its Henry Borden-Jabaquara line near Cubatão on the coast of São Paulo State.

Upgrading the line segment with a conventional steel or aluminum conductor would have required larger towers to be built in a marshy flood plain that posed foundation construction problems and high costs, besides the danger of interfering with underground oil and gas pipelines, according to Paulo Ricardo Bombassaro, engineering director of CPFL Piratininga.

Henry Borden-Jabaquara represents the utility's third application of 3M ACCR, and the seventh application in South America by five utilities. The light-weight, low-sag, high-capacity conductor also is in use by more than a dozen U.S. utilities, and by electric power companies in Europe and Asia, including China and India.

"3M ACCR is gaining worldwide recognition as a reliable, cost-saving and time-saving problem-solver for capacity expansion projects, wherever tower construction and right-of-way enlargement pose difficulties," says Tim Koenig, director of the 3M High Capacity Conductor Program. "Its applications have been in environmentally-sensitive river and channel crossings, dense urban neighborhoods, and locations where line clearance is an important factor."

Koenig adds that 3M ACCR offers a proven, readily available and cost-effective option with which to accommodate the growing need to link renewable energy sources to the power grid. "It's an important new tool to help utilities meet the expanding range of demands that our changing society imposes on electricity distribution," he says.

The upgraded Henry Borden-Jabaquara line employs 3M ACCR for two crossings of the Boqueirão River as it meanders eastward from the nearby Serra do Mar Mountains to Brazil's Atlantic coast. The line serves residential and industrial customers in Cubatão, which is about 15 kilometers (9.3 miles) from Santos -- city of Brazil's major port.

Mr. Bombassaro says the problems associated with upgrading the line with a conventional conductor would have been compounded by the need to build a temporary parallel line to compensate for the outage. "We would have required two sets of foundations in that difficult terrain, taking an estimated 10 months to complete," he explains. "The ACCR stringing needed only four months, with no construction time."

3M ACCR's innovative technology has proven itself over the last ten years - first through exhaustive field testing

that spanned four years, under a broad range of harsh climate and operating conditions – plus years of commercial application, all without a single performance failure.

The conductor 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. It has the durability and longevity of traditional steel core conductors, even when operated continuously at high temperatures.

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.

Also, since 3M's ACCR is based on aluminum, it is as not susceptible to environmental conditions such as moisture or UV exposure, as are 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.

The [3M Electrical Markets Division](#), based in Austin, Texas, designs, manufactures and markets products for electrical construction, industrial maintenance, utility and industrial power, and electrical and electronic components. EMD has more than 60 years of experience serving customers with highly reliable products, including electrical and electronic insulating tapes and papers; electromagnetic compatible products; power cable splices and terminations; high-temperature, low-sag transmission conductors; heat shrinkable tubing and molded shapes; electrical wire connectors, terminals, tools and lugs; wire marking products; cable ties; and electrical diagnostic and detection products.

More information about the 3M high capacity conductor is available at [www.3M.com/accr](http://www.3M.com/accr).

#### About CPFL Piratininga

CPFL Energia is a holding company of the Brazilian electricity sector which operates through its subsidiaries in the distribution, generation and sale of electricity and value-added services businesses, being the largest private group at its sector in the country. Its generation matrix, predominantly clean and renewable, is composed of hydropower, Small Hydro Power (SHP), wind and thermal biomass from sugar cane and fuel oil. It is a leader in distribution, with 13% market share, commercialization leader, with 16% of the market, and the 2nd largest private power generator in Brazil. Recognized as an international benchmark in governance, sustainability and corporate excellence, the Group has shares listed on different segments on the stock exchanges of New York (ADRIII) and Bovespa Novo Mercado, with access to capital markets in domestic and international levels.

#### About 3M

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