

## Utility in People's Republic of China Installs 3M's ACCR To Boost Capacity on Key Line Serving Shanghai

- Shanghai Electric is First Utility Outside the U.S. to Deploy High-capacity 3M Aluminum Conductor Composite Reinforced to Help Relieve Transmission Bottlenecks -

Shanghai Electric Power Company Ltd. has become the first utility outside the United States to install the breakthrough 3M Aluminum Conductor Composite Reinforced (ACCR) light-weight, high-capacity transmission conductor. [3M's ACCR](#) can carry more than twice the current of conventional steel-core conductors of the same diameter on existing towers, without requiring new construction or rebuilding.

Shanghai Electric, a publicly owned utility whose major shareholders are China Power Investment Corp. and East China Power Development Company, serves the Shanghai metropolitan area with more than 2,800 megawatts of generating capacity. It deployed 3M's ACCR to increase capacity on a key 10-mile line to meet growing peak demand. Shanghai is the largest city in the People's Republic of China, and the eighth largest metropolis in the world.

3M's ACCR is currently in service in the U.S. for Xcel Energy in Minnesota, Arizona Public Service in Phoenix and Western Area Power Administration's Topac-Davis line along the Colorado River as well as for several other domestic utilities.

"Interest from U.S. and foreign utilities continues to gain momentum as decision-makers realize we have a proven and ready solution to common problems that limit the capacity of conventional transmission lines, often causing constraints and bottlenecks," said Tim Koenig, director of the 3M High Capacity Conductor Program. "The performance and reliability of this high-performance conductor have been persuasively established in several years of use through field tests and commercial applications, under harsh environmental and operating conditions."

Mr. Koenig also noted that, because 3M's ACCR is installed on existing structures and can match the sag and tension of the existing conductor with less weight, utilities can reduce the costs and risks associated with major transmission construction projects, without adding any risk to the existing system.

"In addition, 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, enables us to be where our customers are located and provide reliable technologies," he continued.

"We hope 3M's ACCR can help us by saving total project cost and increasing line transmission capacity," said Mr. Pan, Shanghai Power Yanggao project designer. "Based on the October 14 line energizing, it works well, and we are looking forward to running more performance data to prove it in the future three to five months. After passing a real project's running test, we believe 3M's ACCR will have a brilliant future in field application and will help us enhance the city transmission network."

3M's 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 240 degrees Celsius for emergency operation, 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 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 with meaningful technologies that spawn products that work. The company's vast offerings to the utilities market range from locating and marking systems to find underground cables, 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's ACCR was one of the technologies that President George W. Bush viewed during a visit to 3M last year.

More information about the 3M High Capacity Conductor is available at [www.3M.com/accr](http://www.3M.com/accr).

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3M Public Relations: Colleen Horn Harris, 651-733-1566 <http://www.3m.com/PressContact> LVM Group Inc. Bob Rurman, 212-499-6567 [bob@lvmgroup.com](mailto:bob@lvmgroup.com) or James T. Kimer, 212-499-6571 [james@lvmgroup.com](mailto:james@lvmgroup.com)

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