

Resilient Electric Grid (REG) PowerLoop™

An advanced approach to enhance reliability and capacity on distribution networks

AMSC, April 2015

REG PowerLoop™ Application

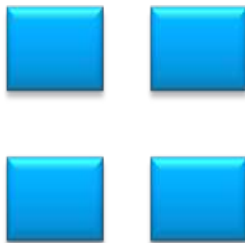
Catastrophic equipment failures, physical and cyber threats, weather-related disasters, as well as failure of aging equipment can all leave entire sections of a city without power for hours or days. The inability to restore power in a timely manner only makes the situation worse. AMSC's REG PowerLoop application provides protection against blackouts, that can follow the loss of critical substation facilities, by allowing the interconnection of nearby substations, enabling them to share transmission connections and excess station capacity, while controlling the high fault currents that naturally result from such interconnections.

REG Cables: High Capacity, Low Voltage, and Fault Current Limiting

AMSC's REG applications feature cable systems that utilize AMSC's Amperium® high temperature superconductor (HTS) wire in place of traditional aluminum or copper conductors. Cables that utilize HTS wire have no resistance to the flow of electricity and can transmit up to 10 times more power than conventional cables, allowing bulk transfer of transmission levels of power in traditional cables. By combining bulk power transfer and fault current limiting at distribution voltages, REG Systems give utility engineers a new tool that provides reliability and load serving improvements that was previously not technically or financially feasible with traditional technologies.

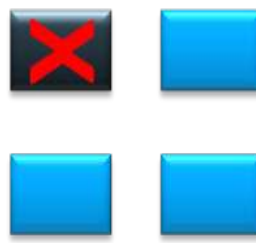
Finally, REG cables are remarkably compact and easy to site compared traditional technologies with similar power transfer capabilities. This makes it much easier and less costly to provide step-change improvements in reliability within dense urban areas where infrastructure improvements are generally expensive and difficult.

Many urban substations are not connected at the distribution side



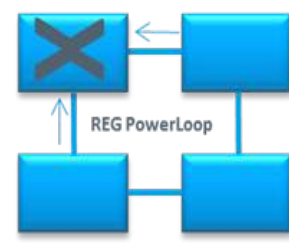
Each substation powers only its section of the city. Increasing power supply capacity is limited to each substation's capabilities.

As a result, substation outages cause blackouts



Loss of transmission or transformers results in the inability of a substation to serve load.

REG PowerLoop prevents blackouts from such outages



If one substation has transmission or transformer outages, other substations can help to serve the load.

Chicago's ComEd Developing REG Deployment Plan with AMSC

AMSC and Com Ed, a unit of Chicago-based Exelon Corporation and one of the nation's largest electric utilities, are developing a deployment plan for AMSC's Resilient Electric Grid system to build a more resilient power grid in the downtown Chicago Loop. REG solutions are a series of applications that utilize compact, power dense cables to increase grid reliability and/or increase load serving capacity while managing fault current. The project in Chicago is part of the U.S. Department of Homeland Security (DHS) Science and Technology Directorate's work to secure the nation's electric power grids. The ComEd installation would be the first commercial application of this technology in the United States and the most extensive in the world, with over three miles in length.

About AMSC

AMSC (NASDAQ: AMSC) generates the ideas, technologies and solutions that meet the world's demand for smarter, cleaner ... better energy. Through its Windtec Solutions, AMSC enables manufacturers to launch best-in-class wind turbines quickly, effectively and profitably. Through its Gridtec Solutions, AMSC provides the engineering planning services and advanced grid systems that optimize network reliability, efficiency and performance. The company's solutions are now powering gigawatts of renewable energy globally and enhancing the performance and reliability of power networks in more than a dozen countries. Founded in 1987, AMSC is headquartered near Boston, Massachusetts with operations in Asia, Australia, Europe and North America.

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