



TVA and NEETRAC Piloting Smart Wire Technology to Improve Grid Reliability

OAKLAND, CA. -- A pilot demonstration of Smart Wire technology is now under way on the Tennessee Valley Authority's power transmission system. Installed on a 161-kilovolt transmission line near Knoxville, Tenn., the Smart Wire system is designed to provide congestion relief by redistributing power flow onto underused lines, thereby optimizing transmission system operations.

"Smart Wire Technology has the potential of mitigating the problem of overloaded transmission lines, and if the technology proves itself, the nation's power grid will be more stable and reliable," said Stewart Ramsay, CEO for Smart Wire Grid, Inc. "TVA stepped up into a leadership role in the development, testing and trial of our Smart Wire technology."

Smart Wire technology, manufactured by Smart Wire Grid, Inc., consists of an array of distributed series reactance units (DSRs) that easily attach to a transmission line. The units limit the electrical current flow on the line by injecting inductive reactance. The DSRs can be operated autonomously or with full operator control and provides distributed line sensing and monitoring.

"This represents a milestone in moving the Smart Wire technology from concept through development and into utility operation," said Bruce Rogers, Director of Technology Innovations for TVA. "We saw the critical need for this technology and became an early funder of the Smart Wire concept. For several years, TVA has continued support of the Smart Wire technology development effort through the Georgia Tech/National Electric Energy Testing, Research & Application Center (NEETRAC) and the Smart Wire Focused Initiative (SWFI)."

The 99 units will be monitored for a year by the Department of Energy's Advanced Research Program Agency - Electric (ARPA-E) to verify performance. Each unit weighs about 150 pounds each and looks like a long rectangle box.

"The technology offers our transmission grid planners and operators a new tool that helps address a wide range of issues facing TVA today," says Rob Manning, Executive Vice President and Chief Energy Delivery Officer for TVA. "The number of challenges that transmission system owners must meet increases every year. We are asked to improve grid reliability, facilitate efficient electricity markets along with integrating renewables. We think Smart Wire technology will help us do this."



The DSR units were rigorously tested to electric utility standards for fault current, corona, lightning impulse and vibration by Georgia Tech/NEETRAC at its high voltage test facilities.

“The TVA team of engineers, operations, planners and field crews were phenomenal. Crews installed the 99 DSR units in half the time expected,” Ramsay added.

Support and funding for the development of the Smart Wire technology and units was provided by TVA and other utilities as part of NEETRAC/SWFI participation and by the Department of Energy ARPA-E GENI program. TVA provided additional funding to support the pilot demonstration installation.

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