Applied Materials Teaming with Central Hudson Gas & Electric to Demonstrate Superconducting Fault Current Limiter Technology in New York

April 15, 2014

- *Applied joins Central Hudson Gas and Electric, SuperPower Inc., and Three-C to demonstrate technology designed to safeguard power grids from damaging effects of fault currents*
- *Superconducting fault current limiter has potential to improve grid reliability and overall power transfer capabilities, and reduce infrastructure costs*

SANTA CLARA, Calif., April 15, 2014 - Applied Materials, Inc. today announced that it has completed the assembly of a superconducting fault current limiter (SCFCL) system for installation and on-grid testing at the Knapps Corners substation owned and operated by Central Hudson Gas and Electric Corp. (Central Hudson) in New York. This SCFCL system, which is scheduled to become operational in May 2014, is designed to help protect Central Hudson's electricity grid from the potentially devastating effects of electrical faults.

Applied is teaming with the New York State Energy Research and Development Authority (NYSERDA); Central Hudson, a New York State regulated electric and gas utility; SuperPower Inc., a manufacturer of high-temperature superconducting wire; and Three-C Electrical Co., a utility systems integrator, to complete the utility-scale implementation. System testing and evaluation will be conducted over a period of one year starting in May 2014, and the performance data will be provided to the New York State Public Service Commission.

Fault current mitigation is an increasing area of concern for utilities due to changes in power demand and the proliferation of new distributed generation sources. A fault current is an unintended, excessive current flowing through the electrical system that may be caused by various factors, including lightning or downed or crossed power lines. Fault currents can induce significant stress on critical substation equipment such as power transformers and breakers, resulting in a failure of part of the system and leading to interruption of power delivery. These destructive forces also wear out grid components causing premature failure and need for expensive capital replacements.

The SCFCL system is designed to reduce the first peak of a fault current on a power line, thereby limiting the destructive forces on the power system and improving equipment reliability. In developing its SCFCL technology, Applied utilized its high-voltage engineering experience gained in designing ion implant tools for the semiconductor industry, as well as its expertise in large-equipment systems engineering. Incorporating advanced 2G high-temperature superconducting materials, the SCFCL is designed to add essentially zero impedance during normal operation, to insert impedance in time to reduce the first peak of fault current, and to rapidly recover after a fault for subsequent operation. Depending on the specific system configuration and local operating conditions, the SCFCL has the potential to reduce the magnitude of fault currents by the desired levels, typically 50% or more.

"We anticipate that the successful demonstration of our superconducting fault current limiter in New York will be a significant milestone in showing the potential of this technology for wide-scale adoption by electric utilities globally," said Om Nalamasu, Senior Vice President, Chief Technology Officer, Applied Materials. "Applied's development of this technology is an example of how the company's core capabilities can add value in additional market areas. We are grateful to the New York State Energy Research and Development Authority for their support, as well as our project team members Central Hudson, SuperPower Inc., and Three-C for working closely with Applied to install and demonstrate the superconducting fault current limiter at Central Hudson's Knapps Corners Substation."

"We see the application of fault current limiters at our host substation as a great opportunity to test and evaluate this promising technology," said Paul Haering, Central Hudson's Vice President of Engineering and System Operations. "The large current experienced during a fault - up to 200 times nominal current level - exerts excessive forces on power grid components and connections. By adding fault current limiters, our goal is to lengthen the service life of equipment and lower system losses, ultimately lowering costs for our electricity customers."

"As a world leading developer and producer of second-generation high-temperature superconducting wire, SuperPower provides a key component of the fault current limiter system," said Mickey Lavicska, associate director of marketing and sales at SuperPower Inc. "During normal operation, the wire in the fault current limiter is cooled to a critical temperature that brings it to the superconducting state where there is no resistance to the flow of the electric current. When a fault occurs in the line, the wire leaves the superconducting state and immediately becomes resistive, thereby impeding the fault current flow and reducing the electrical current to levels manageable by existing equipment."

About Applied Materials
Applied Materials, Inc. (Nasdaq:AMAT) is the global leader in providing innovative equipment, services and software to enable the manufacture of advanced semiconductor, flat panel display and solar photovoltaic products. Our technologies help make innovations like smartphones, flat screen TVs and solar panels more affordable and accessible to consumers and businesses around the world. Learn more at www.appliedmaterials.com.

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