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Advanced Research and Testing Facility Sets the Path for Sustainable Smart Grid of the Future

KEMA and Dutch Ministry for Economic Affairs Open Innovative Power Electronics Laboratory

BURLINGTON, Mass., (April 18, 2008) – As the global electric utility industry works to create sustainable, secure and reliable power grids for the future, effective implementation will require harnessing new and emerging power electronics technology and components. KEMA and the Dutch Ministry for Economic Affairs (ECN) opened an innovative laboratory to research and test advanced power electronics for use in electric transmission and distribution grids.

While rarely used in existing power grids, power electronics ultimately will be needed to interconnect large amounts of distributed sources of electricity such as wind and solar and to implement smarter, more reliable and secure electric energy networks. Power electronics generally include technology that facilitates efficient conversion, control and conditioning of electric power supply. Smart power electronic components can sense voltage and make automatic adjustments, enhancing the control and management of power flows. Grid operators have been reluctant to include power electronics into increasingly complex grids because of the unknowns related to reliability and safety risk.

“U.S. and global utilities are in the early stages of an extensive infrastructure build-out of new power electronics and energy conversion technologies at both the transmission and distribution system levels,” said Dr. Gregory Reed, senior vice president at KEMA, Inc. “We’re seeing unprecedented numbers of project applications for Flexible AC Transmission Systems (FACTS) and High Voltage DC (HVDC) technologies, power quality solutions, and various energy storage project demonstrations. In addition, the integration of other SmartGrid technologies, advanced system requirements, and expected challenges from larger amounts of distributed and renewable generation, the new Flex Power Grid Lab will provide unique opportunities and capabilities for utility applications, vendor prototyping and testing, and university research in the dynamically accelerating field of power electronics.”

The newly opened “Flex Power Grid” laboratory is an advanced research and testing facility designed specifically to test a wide range of power electronics. At the heart of the Flex Power Grid Lab is a programmable converter that allows for testing equipment continuously at industrial medium voltages, ten times higher than at any other existing laboratory worldwide. In addition to housing a wide range of capacitors, resistors and reactors as loads, the facility’s intelligent control equipment makes the lab unique. This means that a live representation of a real grid can be built with real components and with all of the features against which to test the components. By testing components under complex, realistic conditions, the lab enables component manufacturers and grid operators to be confident that components will work when put into operation.

The lab also will help increase the understanding and development of effective approaches to transporting and storing sustainable generation-based electricity. Businesses and universities can research and test how to improve power electronics to prevent electricity network disruptions with, for example, the addition of distributed and sustainable energy. This data in particular will enable industry stakeholders and researchers develop the components needed to build and sustain the future power grid.

“The new lab’s capabilities further enhance KEMA’s highly qualified expertise and vast experience in all aspects of power electronics technology implementations, from initial system planning all the way through to post-commissioning activities. Such capabilities are critical for customers and clients to make important investment decisions and system additions,” said Reed.

The Flex Power Grid Lab is located in Arnhem, the Netherlands. The laboratory is jointly financed by KEMA and the Dutch Ministry of Economic Affairs (ECN) and is the result of a public-private cooperation between KEMA, ECN, and SenterNovem, an agency of the ECN that promotes sustainable development and innovation within the Netherlands and abroad.

For more informational information about the Flex Power grid Lab, go to http://www.flexpowergridlab.com or visit KEMA at the IEEE Power Engineering Society T&D conference and expo in booth 830, April 21 - 24, 2008 in Chicago, Illinois.

About KEMA

Founded in 1927, KEMA (www.kema.com) is a global provider of business and technical consulting, operational support, measurement and inspection, testing and certification for the energy and utility industry. KEMA employs 1,500 professionals in 20 countries. Its North American consulting operations are headquartered in Burlington, Massachusetts. KEMA's global headquarters are in Arnhem, the Netherlands with offices worldwide.

For more information regarding this press release, contact KEMA media relations:

- North America: Kristen Brewitt (kristen.brewitt@kema.com), tel +1 781 418 5714
- Europe: Rolf van Stenus (rolf.vanstenus@kema.com), tel +31 26 3 56 2607

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