



## German University Research Center Uses GE Test Bed Systems to Boost Performance and Efficiency of Energy Infrastructure

- *E.ON Energy Research Center of RWTH Aachen University Formally Inaugurates New Test Bed*
- *Test Bed Evaluates Power Electronics Converters and High-Speed Drives in Megawatt Range*
- *GE's Systems Enable Testing of Generators in High-Power Wind and High-Speed Gas Turbines*
- *The Facility Supports Germany's "Energiewende" Goals to Use More Renewable Energy and Gas*

AACHEN, GERMANY—8 July, 2014—Illustrating how GE (NYSE: GE) is helping to boost the efficiency and performance of energy production technologies worldwide, GE's Power Conversion business teams in Frankfurt and Berlin recently supplied the Institute for Power Generation and Storage Systems of the [E.ON Energy Research Center](#) (E.ON ERC) of [RWTH Aachen University](#) with test bench systems that are used to evaluate power electronics converters and high-speed drives in the range of up to 5 megawatt.

E.ON ERC formally [inaugurated](#) its high-performance test bed in April 2014. The facility supports ongoing research at the Aachen-based institute, which is seeking to boost the performance of generation, storage, medium-voltage distribution and multi-terminal dc transmission systems. The equipment installed by GE enables comprehensive testing of power electronics converters (inverters, dc-dc converters) and generators found e.g. in high-power wind energy converters, high-speed gas turbines and in future medium-voltage dc grids.

The test bench is directly helping the university in the research on [Future Electrical Networks](#) (FEN) which focuses on medium-voltage dc grids that have the possibility of increasing flexibility and efficiency of the distribution of electric energy. Testing of prototype converters and other equipment will be an essential task within FEN using the GE's test bench. The research will also support Germany's national energy transition plan ("Energiewende") that calls for the country to expand its use of renewables as well as natural gas and focus on energy efficiency as Germany reduces its use of nuclear energy and fossil fuels. "With this test bench, we can achieve a level of variability that is unique worldwide in the power class of up to 5 megawatts (MW)," said Professor Rik W. De Doncker, director of E.ON ERC and the head of RWTH Aachen University's [Institute for Power Generation and Storage Systems](#). "Generators, motors and turbine drives can be studied just as much as inverters and dc-dc converters. The maximum speed of 15,000 rpm—to which the different mechanical components can be accelerated via the special gear—is another exceptional feature. The test bench enables us to test powertrains, including the integrated power electronics, with unprecedented intensity and reliability."

One special feature of the new Aachen test setup is its integrated recuperation capacity to feed back a large part of the energy into the grid. This keeps the test bench's power consumption low.

In addition to this high-speed test bench that will be upgraded for additional inverter testing, GE's Power Conversion business is supporting the university with other projects. The University of Aachen is one of the top universities in the power generation test bench field and has built several test facilities to support research in the "renewables market" in its Center for Wind Power Drives.

"We have been working successfully with RWTH Aachen for several years, and we are both pleased and proud to support the future of renewable energy with trailblazing test benches," said Franz Hubl, global business leader—Test Systems, GE's Power Conversion business. "We are currently preparing to build a



new 4-MW test bench with a direct drive that will allow operators to emulate, for instance, the wind load of a rotor. This is just one more contribution for improving the reliability of renewable energy."

Such large-scale test benches were once rare, but GE has been an equipment supplier for several test facilities. GE is working on several additional system orders as power equipment specifications are continually changing. RWTH Aachen University also is working closely with industry and other research institutes to establish testing best practices that will lead to realistic results and supporting the quality and reliability of generation systems.