Press Release

InfraTec GmbH Infrarotsensorik und Messtechnik

Dresden, 05/03/2020

How to Measure Wind Turbines

Scientists from Bremen and Hannover develop novel measuring system for wind turbines

Researchers from the Center for Wind Energy Research (ForWind) are developing a new measuring system together with partners from industry, which for the first time will record and visualize the flow behavior of the rotor blades directly on wind turbines during operation. The research project PreciWind was launched at the beginning of the year and is funded by the Federal Ministry for Economic Affairs and Energy (BMWi) with three million euros over three years.

During one rotor rotation the rotor blades of a wind turbine pass through different heights with different wind speeds and degrees of turbulence of the inflowing wind. The rotor blades have to withstand enormous loads and deform under the dynamically changing flow conditions. “So far it has not been possible to measure on a rotating system how the flow around a rotor blade changes during a rotor rotation and how the blade behaves and deforms under which conditions,” says project coordinator Daniel Gleichauf from the Bremen Institute for Metrology, Automation and Quality Science (BIMAQ) at the University of Bremen. “Therefore, our goal is to develop a precise measuring system to be able to record and analyze the dynamic flow behavior of the rotor blades without contact.” The mobile laser and thermographic measuring system will be able to measure from distances of up to 300 meters.

“On the one hand, we will accompany and support the development of the novel measuring system with high-quality simulations. On the other hand, we will further validate our simulation models with the help of the measurement data on the real system,” explains ForWind scientist Dr. Cristian Gebhardt from the Institute of Structural Analysis (ISD) at the Leibniz Universität Hannover. With the findings from the project, the characteristics of rotor blades could be better understood, wind turbines could be operated more effectively and the costs for wind power could be sustainably reduced. In future, the mobile measuring system could be used for maintenance purposes, for example, without having to switch off the wind turbine.

ForWind is the joint center for wind energy research of the universities of Oldenburg, Hannover and Bremen and bundles wind energy research in the northwest in a research association that is unique in Germany. In PreciWind, the two ForWind members BIMAQ and ISD work closely together with the manufacturer of infrared sensors and measuring technology InfraTec GmbH in Dresden, the manufacturer of laser-based sensor applications LASE GmbH in Bremen and the Deutsche WindGuard Engineering GmbH in Bremerhaven.

Further information:

- www.forwind.de
- www.bimaq.de/
- www.isd.uni-hannover.de

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About InfraTec

The InfraTec infrared sensor and measuring technology company was founded in 1991 and has its headquarters in Dresden, Germany. The privately held company employs more than 230 employees and has its own design, manufacturing and distribution capabilities.

With its Infrared Measurement business unit, InfraTec is one of the leading suppliers of commercial thermal imaging technology. In addition to the high-end camera series ImageIR® and the VarioCAM® High Definition series, InfraTec offers turnkey thermographic automation solutions.

Spectrally single and multi channel infrared detectors, next to infrared sensors with electrically tunable filters based on MOEMS, count among the products of the infrared sensor division. These detectors can be used in gas analysis, fire and flame sensor technology and spectroscopy.

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Images

Measurement setup for thermographic measurements on a wind turbine (Photo: BIMAQ, University of Bremen)

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