

PRESS RELEASE

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CallLab PV Modules Increases Measurement Precision to a Record 1.3 Percent

The calibration laboratory at the Fraunhofer Institute for Solar Energy Systems ISE has achieved a best value: Photovoltaic modules can now be calibrated with an even higher measurement precision of 1.3 percent. Repeatability lies at 0.4 percent. Measurement precision is a decisive factor for quality assurance in the module production and for investments in PV plants. For a volume of 10 MW, for example, each percentage point increase in measurement precision corresponds to a monetary value of about 60,000 euros.

“Maximum measurement precision is not just an academic exercise, rather it greatly helps gain the confidence of investors,” says Dr. Harry Wirth, division director of Photovoltaic Modules, Systems and Reliability. Module manufacturers have to maintain their quality assurance at a high level daily and guarantee their sold output. Power plant operators must know the module power as exact as possible in order to minimize yield uncertainty. Researchers need exact measured values to evaluate innovative technologies or to detect degradation at an early stage. All of these actors profit from low tolerance measurement of modules.

“We regularly carry out round robin tests with the world’s best accredited calibration laboratories. Germany’s national accreditation body DAkkS has checked our measurement uncertainty analysis and verified the 1.3 percent,” explains Frank Neuberger, group leader of CallLab PV Modules. This backs up the very good standing that Fraunhofer ISE holds in measurement precision worldwide. Carefull tracing of the current-voltage curves as well as spectral corrections were the focus of the researchers’ optimizations.

The calibration laboratory for PV modules at Fraunhofer ISE has the particular advantage of being able to combine highest precision with the capability of measuring large batches quickly. On the one hand, customers can be assured that their data is handled with the utmost confidentiality. On the other hand, they also profit from the research environment and the newest research results of the institute. CallLab PV Modules is the only calibration laboratory worldwide that is equipped to measure bifacial modules on both sides simultaneously with the highest precision. A new test stand has been specially developed for this purpose. This new variant of solar electricity production uses solar energy incident on the front and rear side of the module.

FRAUNHOFER INSTITUTE FOR SOLAR ENERGY SYSTEMS ISE

Offer and Data

Detailed information on the services offered by Fraunhofer ISE CallLab PV Modules is available at: www.callab.de and modules@callab.de.

CallLab PV Modules is an accredited calibration and test laboratory according to ISO/IEC 17025. All types of PV module technologies can be characterized: crystalline silicon, all thin film modules, concentrator modules, III-V materials, dye solar modules, etc. Maximum module dimensions are 3x3 m², maximum short circuit current is 20 amperes and the maximum open circuit voltage is 250 volts. Measurements may also be made under conditions other than the standard test conditions (STC), especially under lower irradiation, different temperature and non-normal incident light. Before the measurements, the module is properly stabilized which produces results with high reproducibility.

Background

Calibration means comparing something to a reference. For scales, the calibration offices guarantee the correct display values. For solar modules, the calibration laboratories constantly control their equipment using copies of the highly precise reference cells of the national physical laboratories.

SNEC PV POWER EXPO

Meet our experts from April 19-21 at the International Photovoltaic Power Generation Conference & Exhibition (SNEC PV POWER EXPO) Shanghai/China at booth W5-525.



Test stand developed at Fraunhofer ISE for measuring bifacial PV modules. ©Fraunhofer ISE

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