

Press Release

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Maximum Uncertainty of 1.8 Percent

Precision measurements verify power output of PV solar modules

The CalLab PV Modules of the Fraunhofer Institute for Solar Energy Systems ISE has further improved the accuracy of its precision measurements on photovoltaic solar modules. Belonging to the best worldwide, its precision testing with a measurement uncertainty of only 1.8 percent enables the manufacturer to exactly determine the PV module power. For investors, this increases both the reliability and the calculation certainty.

Photovoltaics plays a key role in the energy transformation to renewable energy sources and is experiencing historical success worldwide. At the end of May 2012, the level of solar electricity production in Germany reached more than 22 gigawatts for the first time, corresponding to the electricity production of almost 20 nuclear power plants. Currently the worldwide installation of photovoltaics is at 60 GW, with a sharp rising trend. In this fast developing market, quality assurance is crucial.

Accurate calibration of photovoltaic (PV) modules is enormously important for R&D and production. It is an indispensable factor for module manufacturers, investors and operators of PV power plants. The new record value of ± 1.8 percent uncertainty is determined with consideration to a so-called spectral mismatch correction. "With this value, CalLab PV Modules at Fraunhofer ISE offers manufacturers a reference with which they can even more precisely determine the power output of their PV modules", explains a visibly pleased Klaus Kiefer, Department Head, Quality Assurance PV Modules and Power Plants. "For a production

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volume of 2 GW, a power deviation of one percent corresponds to a monetary value of about 14 million euro. On the side of the investors, a high degree of certainty is demanded in calculating risk premiums and in the overall calculation for PV power plants.”

The calibration laboratory of Fraunhofer ISE has been accredited since 1986. It is considered one of the top calibration laboratories worldwide over the past 25 years. The researchers in Freiburg calibrate reference modules for production lines and carry out spot checks to verify the guaranteed power output in accordance with the international standards. The module measurements include the current-voltage curves as well as electrical characteristics measured under standard test conditions (1000 W/m², 25°C and AM1.5). For the precision measurement in accordance with IEC 60904-1, the spectral mismatch correction is determined according to IEC 60904-3. Here the measurement uncertainty was improved from ± 2 to ± 1.8 percent.

In addition to highly accurate power measurements, the researchers at Fraunhofer ISE also offer services in the development of measurement standards for new technologies as well as in the qualification of entire solar simulators on production lines. Here the high-tech, accurate measurement technology developed at Fraunhofer ISE is used. More information about the CalLabPV of Fraunhofer ISE can be found at: www.callab.de

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Fraunhofer ISE is present at the Intersolar in Munich from 13-15 June 2012 in Hall B2, Booth number 221.

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Preparing the power measurements of PV modules at Fraunhofer ISE. ©Fraunhofer ISE

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