Solar: Researching the Energy Yield of Thin-Film Modules Worldwide

TÜV Rheinland's project with the University of Oldenburg and the Jülich Research Center researches the energy yield in different climatic regions / Analysis of special features of different thin-film technologies / Sponsorship from German Federal Ministry for the Environment / Project ongoing until autumn 2016

Cologne, June 13, 2013. A research project stretching over several years is looking into the energy yield of thin-film solar modules for electricity generation in different climatic regions around the world. The research activities that TÜV Rheinland is carrying out together with the University of Oldenburg and the Jülich Research Center aim to answer the fundamental question regarding the extent to which climatic factors have an impact on the energy yield of thin-film modules. The experts' tasks include constructing five test facilities, taking comparable measurements of the energy yield and developing models to forecast the energy yield.

The choice of project locations is based on TÜV Rheinland's global network of photovoltaic test laboratories, which cover a wide range of global climate classifications: Cologne in Germany with a moderate climate, Ancona in Italy with a Mediterranean climate, the US city of Tempe in the state of Arizona with a desert climate, Chennai in India with a tropical climate, and Yokohama in Japan with a subtropical climate. The special features of the various thin-film technologies are being analyzed with regard to the climate effects, seasonal effects, low-light behavior, temperature behavior and spectral behavior. The strengths and weaknesses in comparison with crystalline module technologies are also being included in the analysis. The project will run until autumn 2016 and is being sponsored by the German Federal Ministry for the Environment (BMU FKZ 0325517B).

Climate data modeling constitutes another focal point of the project and is conducted on the basis of satellite data and terrestrial radiometer data. Monitoring activities at the locations provide comprehensive meteorological data material for this. The researchers want to derive reference data sets for the different climatic regions in order to develop improved models for calculating the energy yield of thin-film solar modules. These models will draw on performance data measured in the laboratory but will also take the different climatic conditions into account.

The research results will then be used to improve computer programs used to calculate and forecast energy yields and thereby minimize risks for the operation of photovoltaic systems from the perspective of investors and operators. With the results of the measurements comparing their modules with other thin-film technologies and crystalline silicon modules, the manufacturers of thin-film modules will receive information regarding the technological improvement of the products. In addition, the research results will be integrated in national and international standardization activities to further develop existing measurement standards.

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