Fraunhofer ISE

FRAUNHOFER INSTITUTE FOR SOLAR ENERGY SYSTEMS ISE

PRESS RELEASE

Dispensing Head, BIPV and Novel Battery Storage: Fraunhofer ISE is presenting this and more from June 20-22, 2018 at the Intersolar Europe in Munich

The reseachers of the Fraunhofer Institute for Solar Energy Systems ISE will be presenting their newest developments on June 20-22, 2018 at the Intersolar Europe 2018 (Hall A1.540) in Munich. The highlights include novel resource-saving printing technologies for solar wafer metallization, new examples of building-integrated photovoltaics, highly compact and efficient inverters and a broad spectrum of quality assurance instrumentation and testing services as well as an innovative battery storage system for stationary applications.

Solar Cells and Production Technology

Solar cell and module development and production technology are central research themes at Fraunhofer ISE. At the Intersolar Europe 2018, Fraunhofer ISE is again presenting its new approaches in cell fabrication. The institute is developing novel technologies for applying metal contacts to solar cells; for example, a dispensing procedure for which a special dispensing head was developed or also metallization with flexo printing.

Optimizing the processing of surface passivated solar cells is a research focus at Fraunhofer ISE, just as the development of solar cell shingles that allow a shingle-like construction in solar modules. The solar cells used in the shingle technology are bifacial, thus allowing electricity generation on the front and back sides.

Further, a special PID measurement system was developed to detect efficiency losses in solar cells in an accelerated manner. This allows a fast response time for appropriate countermeasures.

PV Quality Assurance and Module Technology

For decades, Fraunhofer ISE has been manufacturing customized reference cells for customers worldwide to assure the continuous quality of their products. The high efficiency monocrystalline solar cells developed at the institute provide a worldwide unique precision and longterm reference, even for the newest cell technologies like PERC.
Within the context of the expanding global PV market, building-integrated solar PV modules (BIPV) are gaining increasing importance. Fraunhofer ISE presents interesting new aesthetic examples for the integration of photovoltaics in the façade.

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Besides the aesthetics, sustainability factors in the production of PV modules also play an important role. New, lead-free interconnection technologies can replace the standard soldering process.

With SmartCalc.CTM, an open-source software developed at Fraunhofer ISE, factors affecting the power output of the cells can be determined for the cell-to-module integration process.

Power Electronics

Fraunhofer ISE is a leader in the development, construction and efficiency of inverters. At the Intersolar Europe 2018, the researchers present several examples of highly integrated and compact demonstrators; for example, a three phase silicon carbide (SiC) inverter with 98.5 percent efficiency that ensures a continuous power supply. This inverter can be further developed and adapted for specific applications.

Also, a modular inverter with gallium nitride (GaN) transistors that addresses the special needs of modular integration is on display.

Fraunhofer ISE is working on developing suitable charging strategies and management for bidirectional inverters. Such inverters are used, for example, for bidirectional inductive charging systems for electric vehicles.

Battery Technology and Systems

Battery storage for PV systems is becoming ever more important, and Fraunhofer ISE is expanding its activities in this field. A battery-stack prototype for stationary applications is on display at the Fraunhofer ISE booth. The stack is based on an aqueous chemical solution and constructed using cost-effective materials. The flexible architecture enables adaptions for a variety of applications.

Fraunhofer ISE at the Intersolar Conference 2018:

The researchers of Fraunhofer ISE also present these topics and other research work at the ICM Munich from June 18-22, 2018 at the Intersolar Conference.

Battery prototype for large-scale energy storage applications. ©Fraunhofer ISE/D. Mahler