

PRESS RELEASE

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Investing in the Energy Supply of Tomorrow: Fraunhofer ISE's New Research Lab for Power Electronics and Grid Technologies in the Multi-Megawatt Range

With the grid expansion and modernization process for the German energy transformation, a growing number of applications for advanced power electronics and grid technologies arise. Power electronic devices, or converters, are key for connecting power supplies, consumers and storage systems and are playing an ever more important role in our energy supply. Further, these devices must be tailored to meet the increasingly complex requirements that ensure the flexible and reliable operation of our future energy system. Against this background, the Fraunhofer Institute for Solar Energy Systems ISE is constructing a new lab site for the research, development and testing of the grid integration of renewable power, including controls for the low, medium and high voltage grids. Already most of the impressive lab infrastructure has been acquired and installed, and the new facility in the industrial area in North Freiburg is taking concrete shape.

The portfolio of the Department of Power Electronics and Grid Technologies at Fraunhofer ISE has grown to meet the challenges of the energy transformation. For many years, the scientists and engineers have been operating, among others, the [TestLab Power Electronics](#) where a large variety of power converters up to one megawatt can be tested. In the labs, devices can be investigated and verified with respect to their efficiency and grid code compliance, for example. With the new lab facility, the solar research institute takes another progressive step forward, by offering services for devices and components in the multi-megawatt range. The new orientation and lab equipment will be one-of-a-kind. In the coming years, the lab shall contribute to creating the technical prerequisites for a stable and efficient grid operation under a wide range of varying feed-in conditions. "At our new location in Freiburg, we are expanding our service offer in the field of electrical energy systems in the multi-megawatt range," says Prof. Dr. Hans-Martin Henning, Institute Director of Fraunhofer ISE. "With this step, especially the R&D of our Department of Power Electronics and Grid Technologies is pushing new boundaries."

Power electronics and grid technologies are assuming a central role in an ever widening field of applications. Needed for both PV power plants and storage systems, they are also a main building block in electric mobility and micro grids and also ensure the reliability of the power supply for the railroad networks or large data centers to name a few examples. With its new lab facility, Fraunhofer ISE increases the number of clients it can address. "We are convinced that our long-term expertise in power electronics

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and grid technologies combined with top-class research projects to be carried out in our new laboratory will be met with great interest from a scientific and economic perspective," says Dr. Olivier Stalter, Head of the Department of Power Electronics and Grid Technologies at Fraunhofer ISE. "Up to now, no comparable research and testing facilities have existed that address power electronics and grid technologies in this power range."

The high voltage supply for the new research laboratory is already installed. In the medium and low voltage range, several switch boards and test stands that will allow power converters to be developed in parallel, are still under construction. Among the test and research objects are feed-in inverters for renewable power, battery inverters, converters for electrolysis processes as well as stationary and mobile inverters for grid feed-in and control in the low and medium voltage range.

In addition to increased laboratory space (ca. 900 m²), the new laboratory located in the Freiburg's northern industrial district also offers new office space (600 m²) for the Department of Power Electronics and Grid Technologies at Fraunhofer ISE. Provisions for setting up the infrastructure required for the lab's operation were realized in close cooperation with the regional energy supplier badenova. The project was funded by the German Federal Ministry for Economic Affairs BMWi and the German Research Ministry BMBF with approx. 10 million euros. Fraunhofer ISE invested 5 million euros on top.

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In the longstanding TestLab Power Electronics of Fraunhofer ISE, power converters of all types are tested and developed up to the range of 1 MW. With the new lab facility in Freiburg, the solar research institute is expanding its services to include the multi-megawatt range. ©Fraunhofer ISE