

Press Release

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Fraunhofer ISE Celebrates 30 Years of Solar Research

Towards 100 Percent Renewable Energy Production

This year the Fraunhofer Institute for Solar Energy Systems (ISE) celebrates its 30th anniversary. What began as a vision of Professor Adolf Goetzberger, the Institute's founder, has long become a reality. Founded on July 1, 1981 in Freiburg with 24 pioneers of solar research, Fraunhofer ISE today has developed into the largest solar research institute in Europe with over 1100 employees. Worldwide it is one of the primary initiators of a 100 percent renewable energy supply and an important research partner towards this goal. The Institute celebrated its historical success story with a festive gala for invited guests on Thursday, July 7 and an open house for the public on Saturday July 9.

Visionaries with Perseverance

Be it a self-sufficient solar house, photovoltaic world records or certified testing facilities, Fraunhofer ISE is internationally renowned for its projects and services in the fields of photovoltaics, solar thermal energy, solar buildings, energy storage, hydrogen technology and comprehensive energy concepts. Both its interdisciplinary approach, which takes, for example, the economic and social facets into consideration at an early stage, and the dedication of its staff, extending far beyond the workplace, have contributed to its success.

In the areas of research, industry and politics, the Institute has acted as a driving force, shaping public opinion, and propelling the changeover to renewable energy forms. Whether at the Fraunhofer Energy Days in Berlin, the Ethic Commission of the German Federal Government, the DESERTEC Consortium for Solar Energy Harvesting in North

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Africa or the Climate Conference in Cancún, the impetus set and the evaluations of Fraunhofer ISE hold weight not only in technical questions. "Since the Institute's founding, the staff at Fraunhofer ISE is united by a collective vision which is put into action with determination," says Professor Eicke R. Weber, the current Institute Director. "That the German federal government acknowledged the changeover in energy production and pronounced the nuclear power phase-out on June 30, the day before our official 30th anniversary, reconfirms our conviction and our research work."

With team spirit and ingenuity

The success of Fraunhofer ISE lies in comprehensive, solution-oriented concepts that are developed in close cooperation with industry partners and always maintain the perspective of user benefits. "At an early stage, we began to research integrated approaches for the energy efficiency in buildings using solar energy, because, only when the interaction of all parts is considered, is it possible to develop truly future-oriented concepts which are also low in costs. Today this has been accepted on the political arena. In Freiburg, we have just celebrated the completion of the first residential high-rise worldwide that has been renovated to meet passive house standards," explains Dr. Hans-Martin Henning, Deputy Director of the Institute and Director of the Division of Thermal Systems and Energy Efficient Buildings.

Since its founding, Fraunhofer ISE has carried out research on solar cells. The research concentrates on optimizations throughout all stages of the entire value added chain. This begins with the silicon material and continues up to photovoltaic modules and system technology. Also alternative photovoltaic technologies play a key role in the on-going research at the Institute. "In addition to silicon solar cells, we perform research on multi-junction solar cells from the semiconductor material gallium-arsenide. We develop systems which use these cells combined with Fresnel

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lenses to concentrate the sunlight on the solar cell," says Bett, Deputy Director and Director of the Division of Solar Cell Materials and Technologies. "The company Soitec Solar in Freiburg was established as a result of this technology. Today it is a high-tech company with a staff of over 100. The company is responsible worldwide for manufacturing commercial concentrator photovoltaic systems with the highest efficiencies. Research results like these and the subsequent successful transfer to the industry are only possible through continuity, motivation and team spirit."

Over the past thirty years, the research and development work at Fraunhofer ISE has been continually recognized with many highly distinguished awards. Most recent, Dr. Heribert Schmidt received the Joseph von Fraunhofer Prize 2011. He developed a switching for PV inverters that makes the conversion from direct current into alternating current more efficient. "In this case, it was a real Eureka moment," remembers Schmidt. "After a bit more work on the controls, we had the proof that it works. The inverter losses could be cut in half, thereby increasing the efficiency of the entire PV system."

Fraunhofer ISE in a Nutshell

- July 1, 1981 Institute founded by Prof. Adolf Goetzberger, Institute Director until 1993; from 1993-2006 Prof. Joachim Luther, Institute Director (currently Director of the Solar Energy Research Institute of Singapore, SERIS); from 2006-present Prof. Eicke R. Weber, Institute Director
- currently 1100 employees (25 percent are doctoral, diploma or master students)
- operational revenue 2010: 53 million euro (13 percent growth as compared to 2009), with an additional 8 million euro for investments
- by 2012 new laboratory building (under construction) is to be finished. (net floor area: 4000 m² of which 2000 m² is allotted for office space and laboratories respectively)

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- seven business areas divided into 32 working groups: Energy Efficient Buildings, Applied Optics and Functional Surfaces, Solar Thermal, Silicon Photovoltaics, Alternative Photovoltaic Technology, Renewable Power Supply, Hydrogen Technology
- branches at other locations: Laboratory and Service Center LSC in Gelsenkirchen, the Fraunhofer Center for Silicon Photovoltaic CSP in Halle, Technology Center for Semiconductor Materials THM in Freiburg.
- Fraunhofer Branch in the USA: Fraunhofer Center for Sustainable Energy Systems CSE (Boston,USA)

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30 years of research towards 100 percent renewable energy production: The Fraunhofer Institute for Solar Energy Systems ISE in Freiburg celebrates its 30th anniversary in 2011. ©Fraunhofer ISE/Guido Kirsch