SOLAR TOWER TECHNOLOGIES

Fraunhofer ISE

Press Release

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Efficient Solar Power through Industry Oriented Research

Fraunhofer ISE Develops Technologies for Solar Tower Power Plants

The Fraunhofer Institute for Solar Energy Systems ISE develops new technologies for more cost-efficient solar tower power plants using solar thermal energy. Within the cooperation project "HelioPack", Fraunhofer researchers together with the industrial partner Solar Tower Technologies AG (STT) of Starnberg develop solutions that allow for significant cost reductions in solar thermal power generation. The project partners aim at cost savings and efficiency gains from an optimised construction of heliostats as well as an improved tracking and control to achieve a more precise concentration of solar beam radiation onto a newly developed receiver.

In solar tower power plants, solar beam radiation is redirected by a multitude of tracked mirrors (heliostats) onto a central receiver mounted at the top of a tower. Therefore, the technology sometimes is referred to as central receiver technology. The extreme concentration of radiation generates very high temperatures at the receiver unit where the thermal energy is transferred to a heat transfer fluid. The thermal energy is used to drive a turbine and generate electricity in a power block. As an alternative, the energy may be completely or partly stored in a thermal storage, to be used for electricity generation at a later time. In this way, solar tower power plants can generate dispatchable power around the clock and thus can contribute significantly to grid stabilization in regions of high direct solar irradiation. Besides other technologies for solar thermal power like parabolic trough or linear Fresnel collectors, which have been under investigation at Fraunhofer ISE for some time now, power towers are particularly suited for the combination with thermal storage

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due to the potentially very high temperatures and the low distance between receiver and storage.

"In the project HelioPack we will cooperate closely with our industrial partner to develop technologies contributing to cost reductions. With the know-how generated in this project, we will be able to offer future customers R&D services to further improve components for solar power towers or to manufacture them at reduced cost," emphasizes Dr. Peter Nitz, project manager of "HelioPack" at Fraunhofer ISE. "STT welcomes this collaboration with Fraunhofer ISE," adds Dr. Antoine Bittar, Chief Science Officer at STT. "Through this cooperation we want to further develop and strengthen the advantages of STT technology: reliability and cost competitiveness."

About the Project "HelioPack"

The cooperation project "HelioPack – Entwicklungspaket neuartiger Technologien für solarthermische Turmkraftwerke" (freely translated to "HelioPack – Innovation Package for Solar Thermal Power Towers") is supported by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The two project partners Solar Tower Technologies AG, located in Starnberg, and Fraunhofer ISE in Freiburg will develop new, cost-efficient solutions over a period of 3.5 years. Fraunhofer ISE's activities will focus on the optimisation of heliostats, their tracking and control, as well as on modelling and simulation of components and power tower plants. STT's activities will focus on the construction and manufacture of heliostats and the development of a new receiver. Supported by Fraunhofer ISE, STT will develop and improve their proprietary technology. To test the heliostats developed in the project, Fraunhofer ISE will establish a test site in the Freiburg area.

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About Solar Tower Technologies AG

Solar Tower Technologies AG (STT), Starnberg / Munich, Germany is a technology company providing products, systems and solutions for Concentrated Solar Power (CSP) plants based on tower plants, particularly heliostat fields and receivers / storage. With patent pending technology and systems, STT heliostat fields are significantly more efficient compared to current reference systems in this market.
STT works closely with industrial partners to carry out larger projects up to utility scale size. The company´s mission is to lead the development of technology, demonstration and deployment of next generation solar tower plants and their components. www.solartowertechnologies.com

About Fraunhofer ISE

With a staff of 1300, Fraunhofer ISE, based in Freiburg, is the largest solar energy research institute in Europe. Fraunhofer ISE is committed to promoting energy supply systems which are sustainable, economic, safe and socially just. It creates the technological foundations for supplying energy efficiently and on an environmentally sound basis in industrialized, threshold and developing countries. To this end, the institute develops materials, components, systems and processes for energy efficiency, energy conversion, energy distribution and energy storage. The Institute also has many accredited test centers and other service units. Fraunhofer ISE is a member of the Fraunhofer-Gesellschaft, the leading organization for applied research in Europe. www.ise.fraunhofer.de

Text of the PI and photos can be downloaded from our website: www.ise.fraunhofer.de

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Heliostat prototype of partner company Solar Tower Technologies AG that allows for a very compact heliostat field design due to its proprietary mechanics and tracking.
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