

**News-Archiv Stuttgart**

**Inauguration of new Fresnel collector at Plataforma Solar de Almería in Spain**

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Fresnel reflector at the Plataforma Solar de Almería

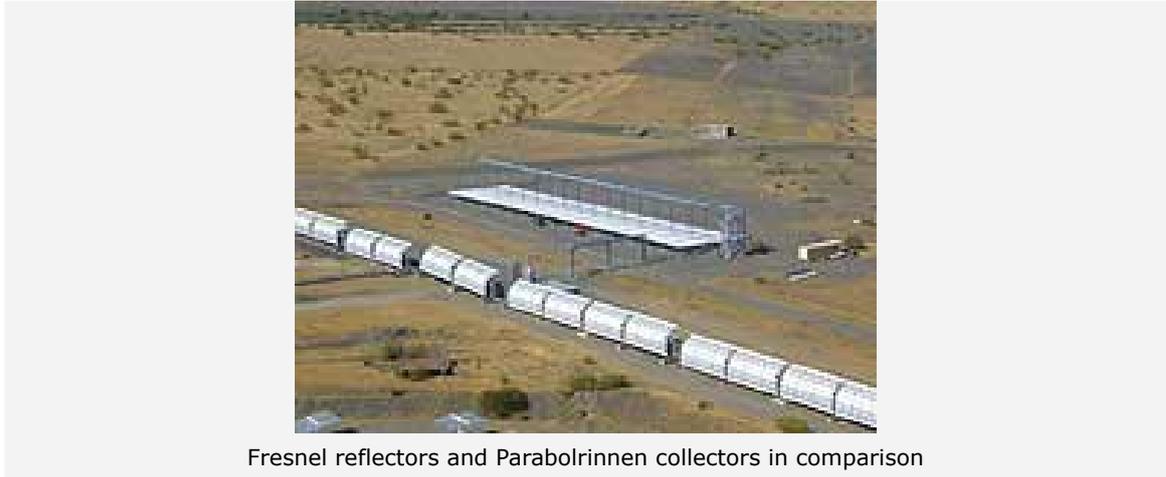
Solar thermal power plants offer great potential for a future sustainable energy supply, particularly in the Earth's "Sun Belt". An important condition for broader market penetration is lowering the cost of solar power production using new technologies. A new prototype called the "Fresnel collector" has been installed at the Plataforma Solar de Almería (PSA, owned and operated by the Spanish research center, CIEMAT) in Spain to evaluate the potential of this new technology for contributing to cost reduction in solar thermal power generation.

The new Fresnel collector was built with funding from the Federal Ministry for Environment and Nature Protection (BMU) under the direction of MAN-Ferrostaal. Among other institutions, the DLR's Institute of Technical Thermodynamics Department of Solar Research has been indispensable in planning this initiative.

**New technology for the concentration of solar radiation**

Fresnel collectors consist of numerous slightly curved mirrors which focus solar radiation onto a central absorber pipe. In this pipe, water can be evaporated and superheated up to 100 bar pressure and over 400 degrees Celsius. The thermal energy is then converted into electricity by a steam turbine. Measuring 20 metres by 100 metres, the 1-megawatt prototype is connected for testing to the already existing PSA DISS (Direct Solar Steam) facility, which is based on parabolic-trough technology.

**The Fresnel collector as an economical alternative to parabolic troughs?**



Fresnel reflectors and Parabolrinnen collectors in comparison

Test operation of the new plant will verify whether Fresnel collectors represent an economic alternative to the current parabolic trough collectors. Advantageous costs are expected because of the simpler technology and the more economical flat mirrors. On the other hand, because it is less efficient, a Fresnel reflectors collector field will have to be larger than a field of similar capacity using parabolic-trough collectors. One of the main results of the Fresnel project is expected to be the economic balance of these opposite tendencies for investment and electricity production cost.

#### **DLR's role**

DLR researchers have been involved throughout the project, from its planning to its execution. DLR has been particularly influential in optical and thermal measurement of the Fresnel reflectors, the optimisation of the evaporation process, and the dynamic simulation and regulation of the steam cycle. Coordination of test operation of the pilot plant and cooperation during interpretation of test results are also major DLR tasks.

#### **Related Contacts**

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