SOLLAB – Alliance of European Laboratories for Research and Technology on Concentrating Solar Power

A WINNING QUARTET

Prof. Dr.-Ing. Robert Pitz-Paal

Dwindling natural resources and the need for climate protection are forcing us to implement sustainable alternative energy concepts – fast. Concentrating solar technologies are an immediately feasible solution to many of today's energy production issues. To ensure the commercial viability and cost-efficiency of the technologies involved, large-scale research infrastructures and well-coordinated planning are essential.

SOLLAB is an alliance of European research and technology laboratories in the field of concentrating solar power that was founded in 2004. It is made up of five research institutions from the four European countries with the most advanced research infrastructures in this field. In total, around 300 technological and scientific experts currently work for SOLLAB.

Melting experiment in the 6 kW solar furnace of the PROMES testing plant belonging to the CNRS research group in Odeillo, France (source: CNRS-PROMES)

10 kW solar furnace at the DLR site in Cologne-Porz, Germany

The partners:

- PROMES (Processes, Materials and Solar Energy Laboratory) of the Centre National de la Recherche Scientifique (CNRS), **France**
- Abteilung Solarforschung of the Institut für Technische Thermodynamik of the Deutsches Zentrum für Luft-und Raumfahrt (Solar Research Division, DLR Institute of Technical Thermodynamics), **Germany**
- Plataforma Solar de Almeria des Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas (Solar Platform of Almeria, CIEMAT), **Spain**
- Energietechnisches Institut der Eidgenössischen Technischen Hochschule Zürich (Institute of Energy Technology, ETHZ), Zurich, **Switzerland**
- Solartechnik Laboratorium, Paul Scherrer Institut (Solar Technology Laboratory, PSI), Villigen, **Switzerland**

The goal of SOLLAB is to support and stimulate the collaborative partnerships between its member laboratories. A stronger, more long-term integration is envisioned than can be achieved simply through joint research projects. In the medium term, the research alliance wants to define common research goals and priorities and designate the available national and European resources in the most efficient way possible. This will allow a European identity to be created in this field of research. Synergies are to be exploited through planned coordination of institutional programmes, optimal utilisation of large-scale infrastructures, the establishment of virtual task groups, Europe-wide sharing and interpretation of results, and the improvement of training/education programmes.

Thanks to these measures, SOLLAB is establishing an extensive framework to reinforce European collaboration in the area of concentrating solar power systems. All collaborative activities are coordinated by a steering committee and set out in a yearly activity plan.

Collaboration examples

SOLLAB Doctoral Colloquium

This event is designed for the further training of young scientists. Once a year, doctoral candidates at the various partner organisations present their research during an international workshop. As well as being a forum for the exchange of information on current research activities, the colloquium is also an opportunity for the up-and-coming scientists to make useful contacts. Around 40 doctoral students have participated each year.

SOLLAB Flux and Temperature Measurement Group

Solar flux and operating temperatures are key parameters in the thermal efficiency of concentrating solar power systems. This taskforce was created to develop measurement techniques, calibration procedures, protocols and devices for achieving more accurate measurements and defining common standards.

SOLLAB High-Temperature Receiver Engineering Group

High-temperature receivers are a key component in concentrating solar power systems. As well as generating heat, they can be used for chemical applications. This taskforce was established to define common parameters for describing component performance. Another crucial part of its work is sharing findings on materials and developing predictive models for component lifecycles. This latter aspect is especially important for improving the reliability and operating lifespan of solar receivers.

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Aerial view of the Plataforma Solar testing centre in Almeria, Spain (source: CIEMAT)

40 kW solar furnace at the Paul Scherrer Institute in Villingen, Switzerland (source: PSI)