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# Overview on the SoPro India Project

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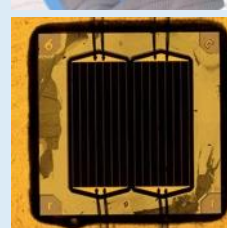
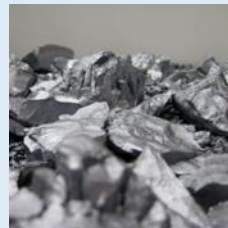
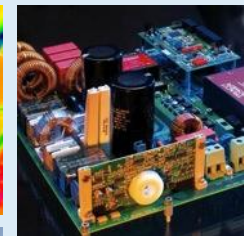
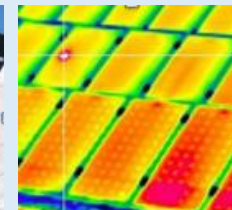
**Workshop Solar Process Heat**  
Delhi, 29 January 2014

# Fraunhofer Institute for Solar Energy Systems ISE

- Applied research on Renewable Energies since 1981
- Largest Solar Research Institute in Europe  
1300 employees incl. 300 PhD and diploma students
- Director: Prof. Eicke R. Weber
- Part of the Fraunhofer Society with 60 institutes and 22000 employees, largest applied research network



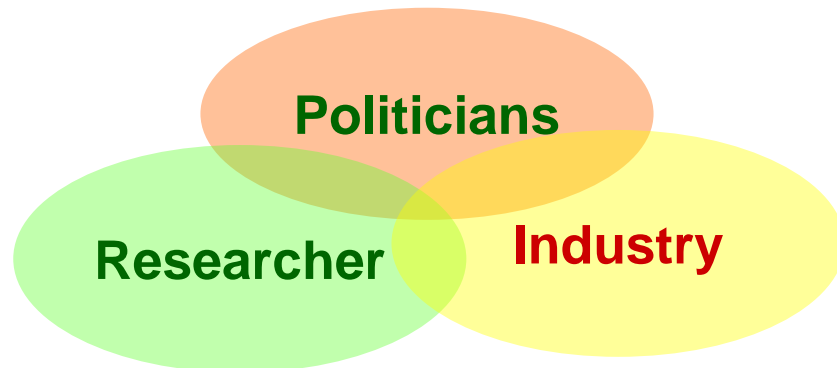
- Energy Efficient Buildings
- Applied Optics, Functional Surfaces
- Solar Thermal Technology
- Silicon Photovoltaics
- Alternative PV Technologies
- Renewable Power Supply
- Hydrogen Technology



# What is the future of Solar Thermal Energy?

The Solar Thermal Technology Platforms are working since 2005 on European and German level on visions and deployment concepts

## Technology Platform concept



Objective: accelerate the technological development

## Solar Thermal Vision 2030

Role of solar thermal energy in 2030, which technologies will be used?

## Strategic Research Agenda

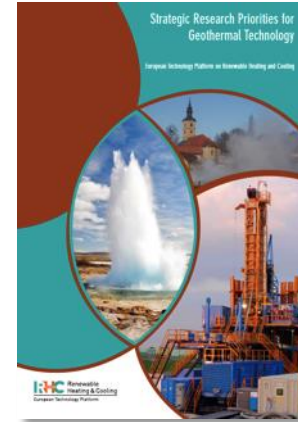
Which R&D is necessary to let the vision become reality?

## Implementation Roadmap

Working on R&D programs, political advice, ...

# Publications

[www.rhc-platform.org](http://www.rhc-platform.org)



**Common  
Vision  
2020 - 2030 -  
2050**

----- **Strategic Research Priorities of** -----  
**Solar thermal**      **Biomass**      **Geo thermal**      **Cross-cutting**

**Under development: Solar Thermal Technology Roadmap**  
**One important pathway: Solar Heat for Industrial Process (SHIP)**

# SoPro India - Outline

## Project of GIZ with Fraunhofer ISE and Apitco

Partner: GIZ, Fraunhofer ISE, Apitco

Support required by: Solar manufacturer, STFI, MNRE, researcher,...

Duration: October 2013 – June 2014

Technology: **Non-concentrating solar heat technology** up to 100° C

Motivation: Support of the Solar Heat for Industrial Processes (SHIP) sector in India to promote and deploy SHIP systems by:

1. Increase the **awareness** of the SHIP systems
2. Increase the **trust** in SHIP systems
3. Support the **enhancement of quality** of SHIP systems

Measures:

1. **Online database** on 20 representative SHIP systems in India and further information on SHIP systems on a website
2. **Scientific monitoring** on 3 SHIP systems to get reliable data on the solar energy output and fuels savings of selected SHIP systems
3. **Recommendations on monitoring** of SHIP systems



# Motivation for starting SoPro

- GIZ has done sector studies, awareness generation workshops, pre-feasibility studies and demonstration projects in SHIP sector; Fraunhofer ISE compared in a master thesis SHIP technology in Germany and India

## Findings

- The SHIP market in India is rather small yet, but has a **great potential**
- There are several SHIP systems already installed in India, but **concerns** were mentioned that some systems are not working or not optimal working
- There is a great interest of the industry in India on solar technology to avoid increasing fuel costs, however there are several **barriers** for the deployment:

- **Lack of awareness** of the SHIP technology
- **Concerns on the reliability** of the technology
- **No reliable data on performance and cost savings** of SHIP systems
- Available **roof space** is limited
- **Financing**
- Some industries require a higher **temperature level**
- ...

**SoPro India**

# Work packages

## WP 1: Identification and data gathering of good practice examples

- Identification and selection of **20 SHIP systems** for the online database and gathering of basic information on the systems (size, location, application, solar system design, hydraulic scheme, operation strategy, radiation level,...)

## WP 2: Key studies - monitoring

- Identification and selection of **3 SHIP systems** to be monitored
- Design and implementation of the scientific monitoring system (Fraunhofer)

## WP 3: Programming the database

## WP 4: Evaluation of key studies and check list

- Analysis of the monitoring data, comparison with simulation results
- Check lists and information sheets on design, operation and economical calculation methods will be developed based on the results
- Recommendations on monitoring of SHIP systems (aim: propose a simple, cheap and robust monitoring concept)

## WP 5: Launch of website and awareness measures

# Summary

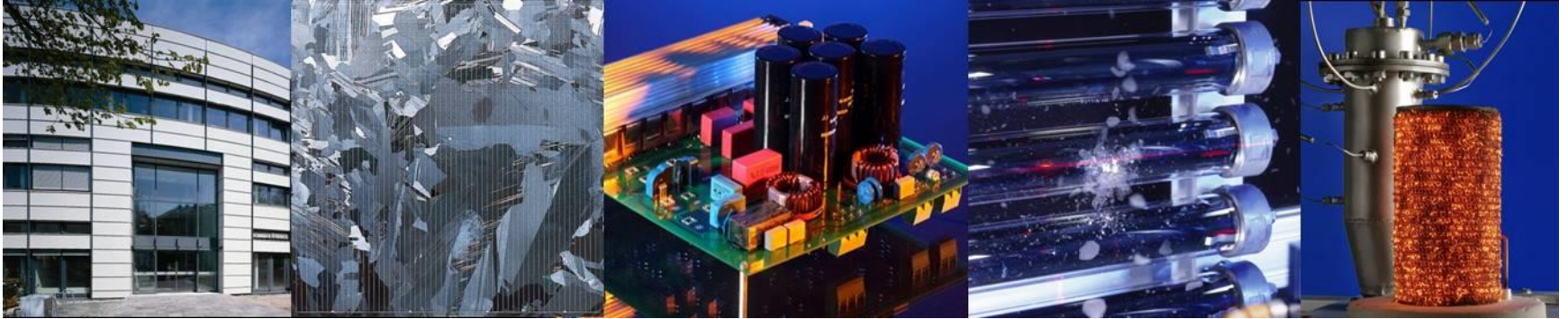
- Solar Heat for Industrial Processes (SHIP) has a **great potential**
- SoPro **aims to support the solar industry** in India to overcome some barriers in the market
- Focus of SoPro:
  1. **awareness raising** by providing a website on SHIP systems (20 good practise examples & further information)
  2. **providing reliable data** on energy output of 3 exemplary SHIP systems
  3. Developing **recommendations** for a simple, cheap and robust **monitoring concepts**

⇒ **How can we work together to accelerate the SHIP deployment in India?**





# Thank you very much for your attention!



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