

# How we stimulate markets

### **Tools and Information**

- Provide information, planning methodologies and design guidelines for solar manufacturers, process engineers, system installers and purchasers from industry
- Develop simulation tools for planning, performance evaluation and optimisation of operation
- Investigate project finance concepts in different countries
- Study solar heat potential for different countries and temperature levels
- Propose measures for market deployment
- Document and disseminate best practices from demonstration projects

We aim to commercialize solar heat for industrial processes.

## Contact

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**Subtask B:** Process Integration and Process Intensification combined with Solar Process Heat: DI Bettina Muster, AEE Institut für Nachhaltige Technologien, Gleisdorf, Austria

Subtask C: Design Guidelines, Case Studies and Dissemination: Dr. Werner Platzer, Fraunhofer ISE, Institut für Solare Energiesysteme, Freiburg, Germany

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Task Duration: January 2012 – December 2015

### Contact us, join us, share your ideas with us.

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# **IEA SHC Task 49**

Solar Process Heat for Production and Advanced Applications

# Solar Thermal Energy for Industrial Processes







# Solar process heat can provide a relevant fraction of the overall energy demand

The usage of solar heat for industrial processes is at an early stage of development: It accounts for only 24 megawatt hours of solar energy worldwide. This figure could be much higher, as 28 percent of the energy demand in the EU is for industrial processes, for example. A third of that process heat is required at temperatures below 100°C, which could easily be supplied with existing technology.

And this is only the beginning! If both solar thermal systems and industrial processes were optimised, a large fraction of the processes at temperatures between 100°C and 400°C could be run with solar heat.

Taken as a whole, this huge commercial and technological potential is a treasure that is ready to be brought to light. With our activities in Task 49 we aim to tap into this potential and foster economical utilization of solar thermal heat in manufacturing processes. Solar heat and energy efficiency measures can be combined to reduce operation costs for industry around the world – with locally adapted technical solutions!

We want to claim the treasure and provide industrial processes with solar heat.

## Our activities in solar generation ...

### **Collector development and testing**

- Investigate all types of collectors including collectors without covers, flat-plate collectors, improved flat-plate collectors with and without reflectors, evacuated tubular collectors with and without reflectors, CPC collectors, parabolic trough collectors, Fresnel collectors, air collectors
- Improve hydraulic components
- Conduct research on material aspects
- Investigate overheating behaviour of large medium-temperature collector arrays
- Update the IEA SHC Task 33 survey on process heat collectors
- Improve numerical collector models in simulation programs
- Recommend testing standards for the medium temperature level

We aim to optimise the solar generation of process heat up to 400°C.

## ... and in industrial heat processes

### **Process integration**

- Improve the general methodology for integration of solar thermal energy into industrial processes based on IEA SHC TASK 33/IV
- Adapt existing heat management strategies and optimise operation of storage units
- Consider time dependence of the industrial production profile
- Reduce energy demand and increase potential for solar thermal integration by technical optimisation of the applied process technologies
- Propose a methodology for decision on integration types including thermodynamic and cost factors
- Provide checklists for ideal integration
- Investigate new process technologies

# We aim to optimise the demand side in industry for solar thermal process heat.