

Solar Process Heat:

Starting-up of markets for solar process heat in 6 European regions

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Solar process heat - the starting point

- In principle, enormous potential for solar thermal systems in industry: about 30% of the total industrial heat demand is at temperature levels below 100°C which can be provided with commercially available solar thermal collectors
- However, the market in Europe and globally is very much in its infancy - a few hundred installations exist





Solar process heat – main barriers

Economic viability

- often very low prices for fossil fuels in industrial companies
- generally, lower acceptance of longer payback periods in industry
- often unused industrial waste heat available (which is often more economic to use)

Lack of information across the value chain:

- solar companies often lack an understanding of the complexity of industrial processes and system integration
- specialists in industrial energy systems know generally very little about solar thermal technologies
- management in industrial companies is not aware of the possibility of using solar thermal
- lack of standardised solutions and communication among these groups



The So-Pro Project

Approach

- bringing together know-how from industrial processes, solar thermal and regional market development
- trans-sectoral approach (not limited to specific industrial sectors/branches)
- carrying out targeted awareness raising and information activities and identifying & supporting pilot projects

Objective

- triggering the starting up of markets for solar process heat in 6 European regions for low temperature process heat

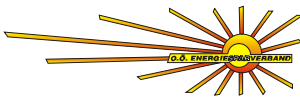






Project duration

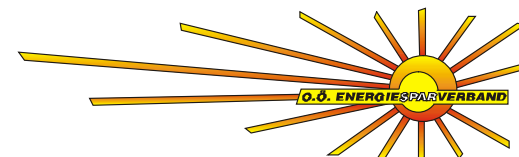
- June 2009 – September 2011



So-Pro project partners & regions



	Partner	Region
	O.Ö. Energiesparverband (ESV)	Upper Austria (Austria)
	ESCAN	Regions of Castillas y Madrid (Spain)
	Energy Centre Ceské Budejovice (ECCB)	South Bohemia (Czech Republic)
	GERTEC	North-Rhine Westphalia (Germany)
	Sächsische Energieagentur (SAENA)	Saxony (Germany)
	Energy agency of Podravje (Energap)	Podravije region (Slovenia)
	Fraunhofer-Institut für solare Energiesysteme (ISE)	



K.O. and O.K. criteria

- **first step: "K.O. criteria"**

- does the company need process heat below 100°?
- is space available to install solar thermal collectors at company site?
- is this space oriented towards south/south-east/south-west or on a flat roof?
- does the company use fossil fuels for process heat during summer months?
- if answered with "no", rather unlikely that solar process heat will be economically feasible

- **second step: "O.K. criteria"**

- is process heat required from March to September? at least during 5 days/week?
- is the temperature level of the process heat mostly below 50°C?
- plans for reconstruction/expansion at the site for the next years?
- is use of waste heat/heat recovery from other processes technically or economically not possible?
- is a pay back period of > 5 years for energy investments acceptable?
- is there a general interest in the use of renewable energy sources?

Checklists

- self-assessment checklists to make a first preliminary analysis whether solar process heat could be an option for a company
- K.O. and OK criteria
- available in English, German, Spanish, Czech, Slovene
- download at www.solar-process-heat.eu

SOLAR PROCESS HEAT

Checklist for companies

Why solar thermal process heat?


Solar process heat is the production of hot water by solar thermal collectors which is used by commercial and industrial companies for process heat purposes. It can be an interesting solution for companies that need process heat at temperature levels below 100° (even better below 50°) during the warmer months.

Solar thermal energy can be used for a range of processes, for example for cleaning and washing, heating of baths & vessels, drying, pre-heating etc.

The solar thermal collectors are usually mounted on the roof. The size of the systems depends on the heat demand, a sufficiently large area is required. The solar system does not need to cover the total process heat demand. A cost optimised system which produces only a part of the process heat demand or is used for pre-heating purposes can be a good solution.

For storing solar heat, a buffer storage is usually necessary, for which sufficient space must be available. The economic viability of a solar process heat installation is generally better if the solar system also supports hot water production or space heating.

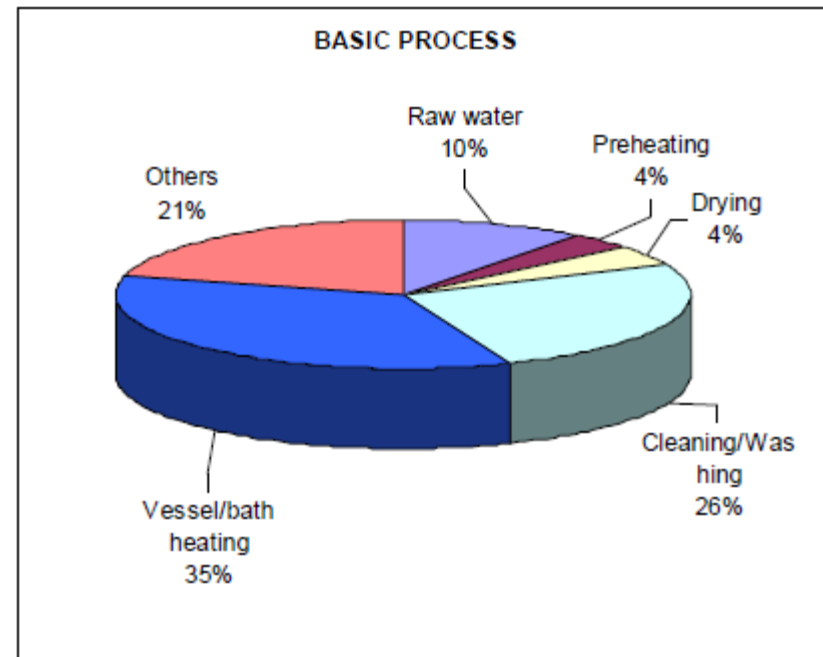
Presently, solar process heat is especially relevant for companies that are interested in innovative technologies and in reducing their emissions from fossil fuel based heat production.

Intelligent Energy  Europe



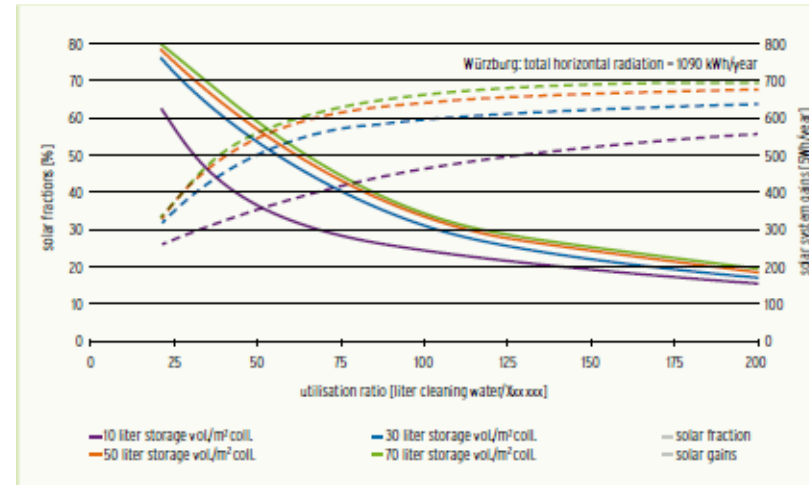
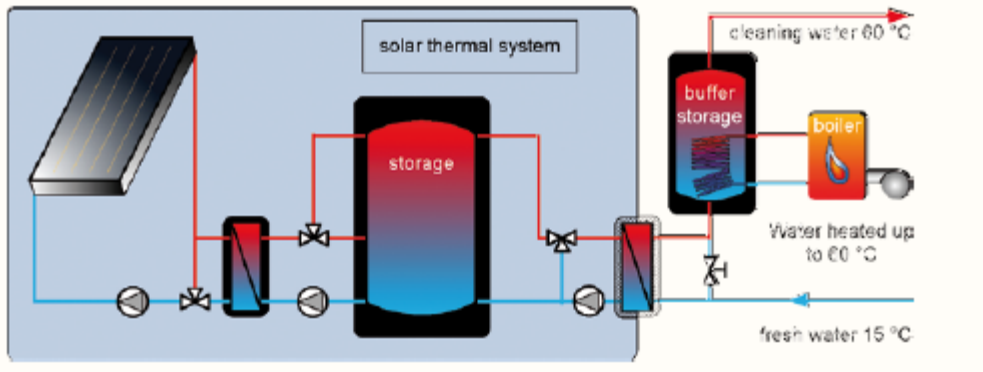
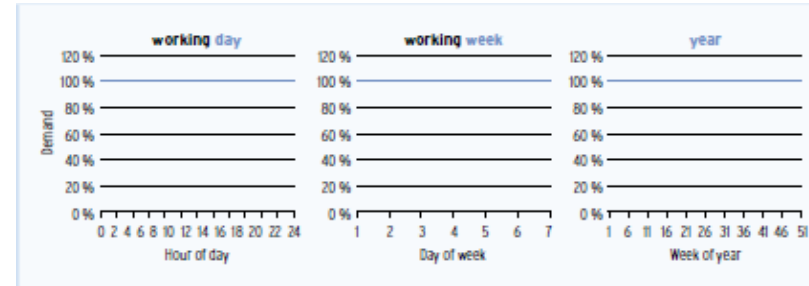
Some relevant industrial processes

- heating of hot water for washing or cleaning
- heating of make-up water for steam networks
- heating of baths or vessels
- convective drying with hot air
- hot water as "raw material"



Planning Guides for Solar Process Heat

- load profiles / nomograms /system concepts
- available in English, German, Spanish, Czech, Slovene
- download at www.solar-process-heat.eu



SO-PRO Main Outputs

Learning and understanding

- 90+ energy screenings in a range of industrial companies
- 160+ persons trained

Involving and informing stakeholders

- 990 participants in round-table events and conferences
- user-friendly tools: 21 professionally designed publications in 5 languages developed, 13,000 copies distributed

Reaching out to industry

- user-friendly tools, 21 professionally designed publications in 5 languages, 13,000 copies distributed
- stand at the Hannover fair
- 100+ press articles

Triggering & supporting pilot projects

- 7 pilot projects triggered which are already in operation
- 10+ pilot projects in the pipeline



Examples of projects

Montesano, Spain

- food industry (meat products)
- 252 m² solar thermal collectors



Vaporizados Palencia, Spain

- specialised cleaning of truck vessels
- 140 m² solar thermal collectors



Hustert Galvanik, Germany

- surface treatment and electroplating
- 221 m² solar thermal collectors



Asamer, Upper Austria

- concrete plant
- 167 m² solar thermal collectors



Soven, Slovenia

- sheep wool processing company
- 7 m² solar thermal collectors



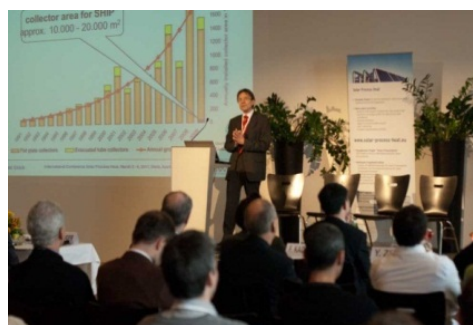
What was difficult...

- during the economic crisis, it was hard to find pilot projects (nearly impossible)
- solar process heat is not really an option in less developed solar thermal markets and without dedicated funding programmes
- specialised HVAC planners for the industrial sector were hard to interest
- energy contracting for solar process heat is a "double complication"
- everything takes longer than you think...



...and what went well!

- a market development process was started in all 6 regions
- project met with high interest in the European solar thermal community
- market uptake in Spain very encouraging
- training programmes will continue beyond So-Pro
- 20+ companies in the project regions now offer dedicated products and services on solar process heat



Beyond So-Pro

- very positive on the mid-term market outlook for solar process heat (short-term in highly developed markets)
- solar process heat is not limited to a few specific industrial sectors
- it is important to continue to identify projects and applications that are economically feasible
- work to improve the framework conditions will need to continue (tailored funding programmes which support sustainable market development)
- informal network "Solar Process Heat Europe" was set up which will continue the work on market development for solar process heat



SO-PRO

www.solar-process-heat.eu