

NEWSLETTER No 2

June 2005

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Time Schedule

Project started July 1st, 2004
Duration: 36 months

Participants

18 different organisations out of 14 different European countries

Internet

www.swt-technologie.de/html/negst.html

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GENERAL INFORMATION ON THE PROJECT

The overall objective of this project is to provide a framework for research in order to bring more cost-effective solar thermal systems, particularly for domestic hot water preparation and / or space heating on the market. This is necessary in order to contribute to the European Union's Action Plans with regard to the reduction of CO₂ emissions and the cost effective supply of renewable energies.

Project work is divided into 6 different work packages: Work package 1 aims at the development of a new generation of solar thermal systems and their introduction to the market, whereas work package 2 deals with standardised system concepts for larger solar thermal systems. Work package 3 concerns the integration of solar thermal systems in buildings and work package 4 has the objective to complete preliminary normative work for a next generation of solar thermal system and components. Work package 5 concentrates on advanced applications like technologies of seawater desalination and cooling systems and work package 6 comprises mainly project management and the dissemination of project results.

Time Schedule

The project started in July 2004 and has a duration of 36 months.

Project Participants

The consideration of the most important European system requirements is achieved by the involvement of 18 different institutions from science, research and industry from 14 different countries. Consequently a basis for a uniform European market as requirement for further market growth has been created.

The financial contribution of the European Commission confirms the significance of solar thermal technology in Europe.

Internet

Further information:

www.swt-technologie.de/html/negst.html

This newsletter is issued on a regular basis in order to inform industry, manufacturers and other interested parties on the status and results of the project. Furthermore it announces dates and places for scheduled workshops and public conferences where the gained knowledge is disseminated. Former editions of the newsletter can be downloaded at the project website: <http://www.swt-technologie.de/html/wp6.html>

SELECTED RESULTS OF WORK PACKAGE 1

The objective of this work package is the “development” of a new generation of solar thermal systems and their introduction to the market. This is done by close collaboration with industry active in the field of solar thermal systems. For that purpose a detailed survey on today’s state of the art system technology has been made and new system concepts have been evaluated. Industry and researchers have been asked to contribute their ideas and to present their next generation of systems.

The **market survey on today’s system technology** identifies differences in technology which are relevant in the different countries today and which may be important tomorrow. Besides it gives an overview on different market requirements, shows the distribution of solar domestic hot water and combisystems,

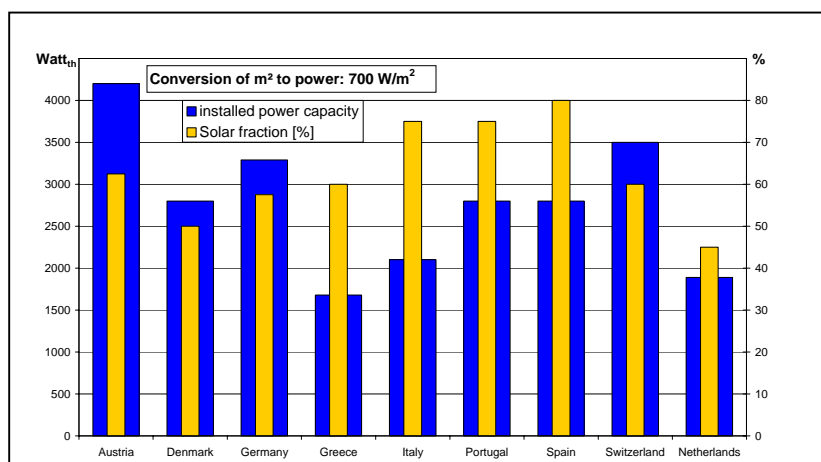


Figure 1: Typically installed power capacity and solar fraction per SDHW

Figure 2 shows the share of glazed solar collectors within combisystems installed in single family houses, multifamily houses and other applications for each country.

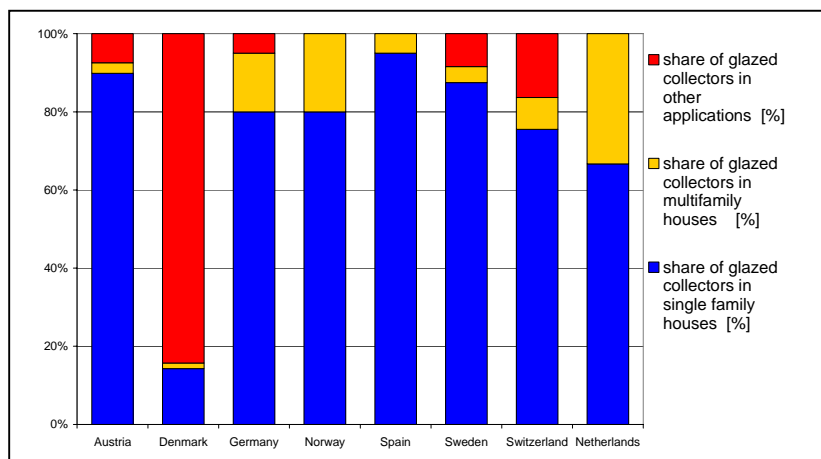


Figure 2: Distribution of installed glazed solar collectors within combisystems in 2003/04

indicates the share of installed collector area in single and multifamily houses, and includes the space heating and domestic hot water demand in the individual countries. An extract of the survey results is given in figure 1 and figure 2. Figure 1 shows the typically installed power capacity per solar domestic hot water system (SDHW) in comparison with the solar fraction in the respective countries.

Meanwhile the systems were grouped in system classes with similarities and the most promising system types of these classes with the highest impact on the market have been identified. In the next step the selected system types will be further evaluated on site. Finally the systems will be presented with regard to efficiency, ecological and installation aspects as well as costs.

All collected experiences will be used to compile design and installation guidelines for the new system generation and will be made available for industry. Workshops with industry participants will be arranged in order to discuss the results and to derive general recommendations for future system development. Dates and places of workshops are listed on page 4.

SELECTED RESULTS OF WORK PACKAGE 2

The work in NEGST WP2 is meant to point out and overcome the barriers that hinder the dissemination of large solar thermal systems for the hot water supply in large buildings. While there is already a wide product range of standardised products offered by the industry for solar hot water preparation systems and also in combination with space heating, standardised solar systems for multi family houses and hotels are not available up to now in most European countries.

As a step towards a higher level of standardisation and systematic approach for large systems, a **detailed questionnaire** for planners, solar manufacturers, and the building industry was developed within the NEGST project and sent out to a clearly defined target group. The aim is to get feedback about the experiences and major barriers for the implementation of large solar thermal systems. The results of the evaluation of the questionnaires will be made available on the project website in August 2005.

SELECTED RESULTS OF WORK PACKAGE 3

In this work package pre-normative work on uniform methodologies to fully integrate solar heating systems in the building envelope is done. For this reason, an **inventory of existing requirements and directives** in EU countries has been compiled concerning topics like strength of construction (wind/snow), avoidance of fire risk, noise problems, construction damage, air leakages/thermal bridges, environmentally problematical materials, rain and moisture penetration, water tightness and maintenance of the roof. This inventory includes more than 150 regulations, guidelines and national standards concerning building integration from Austria, France, Germany, The Netherlands, Norway, Portugal and Sweden.

SELECTED RESULTS OF WORK PACKAGE 4

This work package has the objective to complete pre-normative work for a next generation of solar thermal systems and components. These new standards are needed to help new and better products, which are not covered by the existing standards, to penetrate the market as soon as possible. One of the results in work package 4 is the “conversion from m² to W_{th}”. Traditionally solar thermal installations have been accounted in square meters of collector area, a unit not comparable with other energy sources counting their capacity in kW. Therefore a formula was developed to convert installed collector area into installed solar thermal capacity counted in kW:

$$P = 0.7 \text{ kW/m}^2 * A, P \text{ in [kW]}, A \text{ in [m}^2\text{]}$$

The comparison of global installed solar thermal capacity with the regenerative energy sources photovoltaics and wind power is illustrated in figure 3.

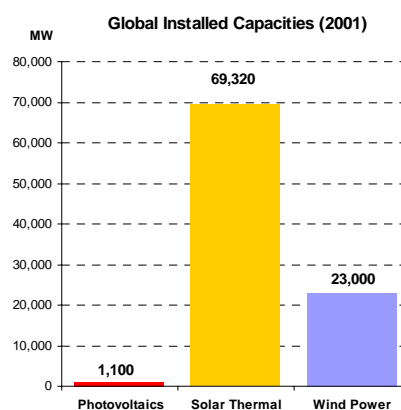


Figure 3: Comparison of different energy sources

SELECTED RESULTS OF WORK PACKAGE 5

The main objective of NEGST Work Package 5 is to assess the potential of solar thermal systems for advanced applications, such as cooling and desalination.

In this context, an overview on all cooling and desalination systems which can be suitable coupled with low to medium temperature solar collectors constitutes a preliminary step towards the aforesaid objective. Thus, the first step of this work package is an investigation, relevant to each considered process, which main issues concern: the brief description of the technologies under investigation, the assessment of the global energy requirements, costs, the main

advantages and drawbacks in particular in view of the coupling with solar thermal systems, the development status and their possible commercial diffusion.

The result of this investigation is a **“Technical Status Report on solar cooling and solar desalination”**. This report will be available via the project website in July 2005 (<http://www.swt-technologie.de/html/wp5.html>).

Besides information about the general status of solar cooling and solar desalination the purpose of the report is to support in the selection of dedicated solar cooling or desalination systems worth to be subject to a further analysis in the following steps of the NEGST WP5. For this purpose, a preliminary screening criterion is introduced according to an energy saving approach. The obtained results are then to be analysed considering the system capital cost, the level of commercial maturity, the presence of technological barriers and any other key factor in order to reach a final assessment of the most promising solar thermal systems for cooling and desalination.

WORKSHOPS WITH INDUSTRY PARTICIPANTS

National workshops with industry participants will be arranged in order to disseminate the current project results among a large number of national experts. Besides pure knowledge transfer the intention of these workshops is to initiate a discussion within solar industry in order to motivate them to intensify their efforts in the development of the next generation of solar thermal systems.

The following national workshops will take place:

- Denmark: Technical University of Denmark, November 9, 2005
DANVAK meeting organized by DANVAK's solar energy group, new developments in the solar heating field, information: www.danvak.dk.
- Germany: ITW (Institut für Thermodynamik und Wärmetechnik), University of Stuttgart
December 1st, 2005: contact: drueck@itw.uni-stuttgart.de, streicher@itw.uni-stuttgart.de
- Switzerland: SPF, to be determined, contact: peter.vogelsanger@solarenergy.ch
- Austria: AEE INTEC, planned at the end of 2005, contact: d.jaehnig@aee.at
- Greece: Demokritos, November 2005, contact: sollab@ipta.demokritos.gr
- Spain: INTA, End of October 2005, Seville, contact: vargasvl@inta.es
- Norway: Uni Oslo, to be determined, contact: mmeir@fys.uio.no
- Portugal: INETI in collaboration with Portuguese Standardisation Committee for Solar Collectors,
November 2005, contact: Mjoao.Carvalho@ineti.pt
- Sweden: “Nordbygg” building exhibition, January 24-27, 2006, information: www.nordbygg.se,
contact: peter.kovacs@sp.se
- Holland: Ecofys, to be determined, contact: b.vanderree@ecofys.nl
- Italy: ENEA Research Centre of Trisaia, September 22, 2005, contact:
giacobbe.braccio@trisaia.enea.it, vincenzo.sabatelli@trisaia.enea.it
- France: CSTB, to be determined, contact: rodolphe.morlot@cstb.fr

NEGST workshop at Intersolar 2006, Freiburg, Germany:

The most important results of the NEGST project will be presented at a large, Europe-wide workshop that will take place around the Intersolar Trade Fair in 2006.

OUTLOOK

The following reports will be soon available on the project website www.swt-technologie.de/html/workpackages.html under the respective work package.

- WP 1: Market Survey on today's System Technology (August 2005)
- WP 2: Results on Questionnaires on Larger Solar Thermal Systems (August 2005)
- WP 3: Inventory of existing guidelines (August 2005)
- WP 5: Technical Status Report (July 2005)