

IEA SHC Task 35 Subtask A DA 1-2 Outcome of PV/T market survey interviews

Interviews in Canada, Germany, Denmark, Sweden, Italy and Spain



Compilation and analyze of interviews
conducted October 2006 to May 2007
with "Architects, Engineers & building owners"
and PV and thermal "Solar Dealers"

DA 1-2 Preliminary Outcome of PV/T market survey interviews

Interviews in Canada, Germany, Denmark and Sweden

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IEA Solar Heating and Cooling Programme

The *International Energy Agency* (IEA) is an autonomous body within the framework of the Organization for Economic Co-operation and Development (OECD) based in Paris. Established in 1974 after the first “oil shock,” the IEA is committed to carrying out a comprehensive program of energy cooperation among its members and the Commission of the European Communities.

The IEA provides a legal framework, through IEA Implementing Agreements such as the *Solar Heating and Cooling Agreement*, for international collaboration in energy technology research and development (R&D) and deployment. This IEA experience has proved that such collaboration contributes significantly to faster technological progress, while reducing costs; to eliminating technological risks and duplication of efforts; and to creating numerous other benefits, such as swifter expansion of the knowledge base and easier harmonization of standards.

The *Solar Heating and Cooling Programme* was one of the first IEA Implementing Agreements to be established. Since 1977, its members have been collaborating to advance active solar and passive solar and their application in buildings and other areas, such as agriculture and industry. Current members are:

Australia	Finland	Portugal	
Austria	France	Spain	
Belgium	Italy	Sweden	
Canada	Mexico	Switzerland	
Denmark	Netherlands	United States	
European Commission	New Zealand		
Germany	Norway		

A total of 44 Tasks have been initiated, 33 of which have been completed. Each Task is managed by an Operating Agent from one of the participating countries. Overall control of the program rests with an Executive Committee comprised of one representative from each contracting party to the Implementing Agreement. In addition to the Task work, a number of special activities—Memorandum of Understanding with solar thermal trade organizations, statistics collection and analysis, conferences and workshops—have been undertaken.

To find Solar Heating and Cooling Programme publications and learn more about the Programme visit

www.iea-shc.org or contact the SHC Executive Secretary, Pamela Murphy, e-mail: pmurphy@kmgrrp.net.

The Tasks of the IEA Solar Heating and Cooling Programme, both underway and completed are as follows:

Current Tasks & Working Group:

Task 35	<i>PV/Thermal Solar Systems</i>
Task 36	<i>Solar Resource Knowledge Management</i>
Task 37	<i>Advanced Housing Renovation with Solar & Conservation</i>
Task 38	<i>Solar Thermal Cooling and Air Conditioning</i>
Task 39	<i>Polymeric Materials for Solar Thermal Applications</i>
Task 40	<i>Net Zero Energy Solar Buildings</i>
Task 42	<i>Compact Solar Thermal Energy Storage</i>
Working Group	<i>Daylight Research Group</i>

Completed Tasks:

Task 1	<i>Investigation of the Performance of Solar Heating and Cooling Systems</i>
Task 2	<i>Coordination of Solar Heating and Cooling R&D</i>
Task 3	<i>Performance Testing of Solar Collectors</i>
Task 4	<i>Development of an Insolation Handbook and Instrument Package</i>
Task 5	<i>Use of Existing Meteorological Information for Solar Energy Application</i>
Task 6	<i>Performance of Solar Systems Using Evacuated Collectors</i>
Task 7	<i>Central Solar Heating Plants with Seasonal Storage</i>
Task 8	<i>Passive and Hybrid Solar Low Energy Buildings</i>
Task 9	<i>Solar Radiation and Pyranometry Studies</i>
Task 10	<i>Solar Materials R&D</i>
Task 11	<i>Passive and Hybrid Solar Commercial Buildings</i>
Task 12	<i>Building Energy Analysis and Design Tools for Solar Applications</i>
Task 13	<i>Advance Solar Low Energy Buildings</i>
Task 14	<i>Advance Active Solar Energy Systems</i>
Task 16	<i>Photovoltaics in Buildings</i>
Task 17	<i>Measuring and Modeling Spectral Radiation</i>
Task 18	<i>Advanced Glazing and Associated Materials for Solar and Building Applications</i>
Task 19	<i>Solar Air Systems</i>
Task 20	<i>Solar Energy in Building Renovation</i>
Task 21	<i>Daylight in Buildings</i>
Task 23	<i>Optimization of Solar Energy Use in Large Buildings</i>
Task 22	<i>Building Energy Analysis Tools</i>
Task 24	<i>Solar Procurement</i>
Task 25	<i>Solar Assisted Air Conditioning of Buildings</i>
Task 26	<i>Solar Combisystems</i>
Task 28	<i>Solar Sustainable Housing</i>
Task 27	<i>Performance of Solar Facade Components</i>
Task 29	<i>Solar Crop Drying</i>
Task 31	<i>Daylighting Buildings in the 21st Century</i>
Task 32	<i>Advanced Storage Concepts for Solar and Low Energy Buildings</i>
Task 33	<i>Solar Heat for Industrial Processes</i>
Task 34	<i>Testing and Validation of Building Energy Simulation Tools</i>

Completed Working Groups:

CSHPSS, ISOLDE, Materials in Solar Thermal Collectors, and the Evaluation of Task 13 Houses

IEA SHC Task 35 PV/Thermal Solar Systems

Objective

The objectives of the Task are to catalyze the development and market introduction of high quality and commercial competitive PV/Thermal Solar Systems and to increase general understanding and contribute to internationally accepted standards on performance, testing, monitoring and commercial characteristics of PV/Thermal Solar Systems in the building sector.

The Task is organized in 5 subtasks:

- Subtask A: Market and Commercialization of PV/T
- Subtask B: Energy Analysis and Modeling
- Subtask C: Product and System Development, Tests and Evaluation
- Subtask D: Demonstration Projects
- Subtask E: Dissemination

Organisation

IEA SHC Task 35 "PV/Thermal Solar Systems" is a three year Task initiated by the International Energy Agency (IEA) Solar Heating and Cooling (SHC) Programme in January 2005.

The Danish Energy Authority, acting through Mr. Henrik Sørensen, Esbensen Consulting Engineers A/S, Denmark, is designated as Operating Agent for the Task.

Task 35 is a so-called "minimum-level" collaboration task with IEA PVPS (Photovoltaic Power Systems Programme). At this level, experts selected by the PVPS Executive Committee participate in experts meetings of the Task managed by the SHC Executive Committee. The Task is fully defined and managed by the SHC Executive Committee with appropriate input from the PVPS Executive Committee. In this project Israel participated as a PVPS country member.

The official participants in the Task are listed in the table below:

Country	Organization	Person
Canada	Dept. of Mechanical Engineering, University of Waterloo, Waterloo, Ontario, Canada	Mike Collins
Denmark	Esbensen Consulting Engineers A/S	Henrik Sørensen
	Solar Energy Center, Danish Technological Institute	Ivan Katic
Israel	Millennium Electric	Ami Elazari
Sweden	Lund Technical University	Björn Karlsson Johan Nilsson Bengt Perers
The Netherlands	ECN (Energy Research Centre of the Netherlands)	Wim van Helden Herbert Zondag Marco Bakker

Apart from the above mentioned a number of manufacturers, universities, and research institutes from the countries Germany, Greece, Hong Kong, Italy, South Korea, Thailand, and Spain have been involved in the work.

Visit the Task 35 website: <http://www.iea-shc.org/task35> for more details on activities and results.

Introduction PVT

Background

PVT systems are developed by a handful of companies world wide, and a number of products are already on the market.

Market Survey

As a part of the IEA SHC Task35 – PV/T Subtask A, interviews have been conducted by task members in Canada, Germany Denmark and Sweden.

The group conducted about 65 interviews in the six countries.

The summaries and questionnaires can be found in appendix. They are worth reading and contain comments from the interviews.

Very short country PVT profiles

Canada

In Canada, the company Conservall Engineering Inc has for a number of years market their PVT/air product Solarwall.

Germany

Being the world largest PV market and one of the major solar thermal markets, the knowledge of the systems is good and many dealers carry both PV and thermal.

Denmark

Denmark has a small PV market, funded with project money, and a growing thermal market.

Sweden

The grid connected PV market in Sweden is only two years old and knowledge about PV is weak. Solar Thermal on the other hand has a long history and good public reputation. People often mistake PV for solar thermal.

Spain

Spain, with a large solar resource, started an ambitious feed-in program that was abruptly stopped and a new system is under negotiation. Solar thermal is small compared to the potential, and new legislation makes it compulsory to use renewable energy in new buildings.

Italy

With good solar insolation, there is a large potential. Recently, a bureaucratic system called Conto Energia has provided the basis for a feed-in system. Regional subsidies to solar heat.

Implementation

Low consistency

The markets analyzed and the perspective of both the interviews subjects and the interviewers has been quite different. The results need to be interpreted in that context, and more as an information source on how different actors on the markets are reasoning than a statistic analyze of a possible market.

Time frame

In Canada, the interviews were conducted in October 2006 by Johan Holic, Conservall Engineering Inc. Interviews were conducted in February/March 2007 in Germany by Peter Dussle at Arontis Ltd, in Denmark by Jan Hansen at Esbensen Consulting Engineers A/S and in Sweden by Joakim Bystrom, Arontis AB. Finally in April in Italy by Lorenzo Zamboni and in Spain by Valeria Bracamonte.

Interviews	Canada	Germany	Denmark	Sweden	Italy	Spain
Architects, Engineers & Building Owners	x	x	x		x	
Solar Dealers	x	x		x	x	x

Architects, Engineers & Building Owners

Awareness

All the Canadian subjects were aware of PVT, most of the German and Italian subjects but only one of the Danish.

Important factors

Most important factor for a successful system, all subjects in all four countries stressed building integration. Also in all four countries, the subjects stressed that the PVT system should be more economical than side by side systems and that the economy of the system is the main issue.

Several of the Danish architects claimed that they don't do calculations on installation and running costs, but refer this to engineers.

Two of the Italian companies were pressing more efficient use of roof space.

Distribution

The Canadian subjects would turn to dealers of PVT systems while German Danish and Italian subjects asked directly for the manufacturer.

Solar Dealers

Positive attitude

The dealers in Canada, Germany, Spain, Italy and Sweden were all very positive to PVT, except one of the Swedish solar thermal dealers who did not see the point in installing PV in Sweden.

Two cultures

In Sweden, it is clear that it is a large gap between PV integrators and Solar Thermal dealers in the view on PVT. One single company in Sweden, Exoheat, is marketing both PV and solar thermal. All Swedish respondents was worried about the difficulty to combine the two different professions in installing PV and installing solar thermal. This is not the case in Germany, Italy and Spain where the installers generally installs both PV and solar thermal.

Air or water

Opposite to the Canadian companies who already sell a PVT/air solution, no Swedish company thought that PV/air was an attractive product. On the contrary one company had investigated the possibility but discarded the idea due to Swedish climate (that must be quite similar to Canadian climate)

Profitable

The Swedish, Italian and Spanish dealers all stressed strongly the importance of making the system profitable, and that them can also be seen in the German summery.

Subsidy

Both the Italian and Spanish dealers were unsure if the subsidies from solar energy also could be used for installing PV/T.

Solar cooling

The Spanish dealers specifically asked for a combination with PV/T and solar cooling.

Proved track record

Three of the Italian dealers and also the Italian building related companies asked for a proven track record, certifications and a mature product before working with the systems.

Compactness

Three of the Italian dealers mentioned compactness as an important selling point.

Discussion

Different markets

One of the important conclusions is that the markets are very different, depending mainly on how well PV has become a part of the solar industry.

Roof space

The Italian subjects referred to the decreased need of roof space, one of the main advantages of PV/T.

System cost

Price of the system is in both groups and all countries an essential parameter. Payback time is on all markets depending on what grants PV and Solar Thermal has, making the PVT sector double sensitive to political decisions. One dealer suggested a special grant for PVT-systems.

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