



IEA SHC Task 44 / HPP Annex 38 dissemination activities in workshops and conferences

A technical report of subtask D

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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	Singapore
Austria	France	South Africa
Belgium	Italy	Spain
Canada	Mexico	Sweden
Denmark	Netherlands	Switzerland
European Commission	Norway	United States
Germany	Portugal	

A total of 49 Tasks have been initiated, 35 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.

Visit the Solar Heating and Cooling Programme website - www.iea-shc.org - to find more publications and to learn about the SHC Programme.

Current Tasks & Working Group:

Task 36	<i>Solar Resource Knowledge Management</i>
Task 39	<i>Polymeric Materials for Solar Thermal Applications</i>
Task 40	<i>Towards Net Zero Energy Solar Buildings</i>
Task 41	<i>Solar Energy and Architecture</i>
Task 42	<i>Compact Thermal Energy Storage</i>
Task 43	<i>Solar Rating and Certification Procedures</i>
Task 44	<i>Solar and Heat Pump Systems</i>
Task 45	<i>Large Systems: Solar Heating/Cooling Systems, Seasonal Storages, Heat Pumps</i>
Task 46	<i>Solar Resource Assessment and Forecasting</i>
Task 47	<i>Renovation of Non-Residential Buildings Towards Sustainable Standards</i>
Task 48	<i>Quality Assurance and Support Measures for Solar Cooling</i>
Task 49	<i>Solar Process Heat for Production and Advanced Applications</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>Advanced Solar Low Energy Buildings</i>
Task 14	<i>Advanced 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 22	<i>Building Energy Analysis Tools</i>
Task 23	<i>Optimization of Solar Energy Use in Large Buildings</i>
Task 24	<i>Solar Procurement</i>
Task 25	<i>Solar Assisted Air Conditioning of Buildings</i>
Task 26	<i>Solar Combisystems</i>
Task 27	<i>Performance of Solar Facade Components</i>
Task 28	<i>Solar Sustainable Housing</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>
Task 35	<i>PV/Thermal Solar Systems</i>
Task 37	<i>Advanced Housing Renovation with Solar & Conservation</i>
Task 38	<i>Solar Thermal Cooling and Air Conditioning</i>

Completed Working Groups:

CSHPSS; ISOLDE; Materials in Solar Thermal Collectors; Evaluation of Task 13 Houses; Daylight Research



IEA Heat Pump Programme

This project was carried out within the Solar Heating and Cooling Programme and also within the *Heat Pump Programme*, HPP which is an Implementing agreement within the International Energy Agency, IEA. This project is called Task 44 in the *Solar Heating and Cooling Programme* and Annex 38 in the *Heat Pump Programme*.

The Implementing Agreement for a Programme of Research, Development, Demonstration and Promotion of Heat Pumping Technologies (IA) forms the legal basis for the IEA Heat Pump Programme. Signatories of the IA are either governments or organizations designated by their respective governments to conduct programmes in the field of energy conservation.

Under the IA collaborative tasks or “Annexes” in the field of heat pumps are undertaken. These tasks are conducted on a cost-sharing and/or task-sharing basis by the participating countries. An Annex is in general coordinated by one country which acts as the Operating Agent (manager). Annexes have specific topics and work plans and operate for a specified period, usually several years. The objectives vary from information exchange to the development and implementation of technology. This report presents the results of one Annex. The Programme is governed by an Executive Committee, which monitors existing projects and identifies new areas where collaborative effort may be beneficial.

The IEA Heat Pump Centre

A central role within the IEA Heat Pump Programme is played by the IEA Heat Pump Centre (HPC). Consistent with the overall objective of the IA the HPC seeks to advance and disseminate knowledge about heat pumps, and promote their use wherever appropriate. Activities of the HPC include the production of a quarterly newsletter and the webpage, the organization of workshops, an inquiry service and a promotion programme. The HPC also publishes selected results from other Annexes, and this publication is one result of this activity.

For further information about the IEA Heat Pump Programme and for inquiries on heat pump issues in general contact the IEA Heat Pump Centre at the following address:

IEA Heat Pump Centre
Box 857
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Visit the Heat Pump Programme website - <http://www.heatpumpcentre.org/> - to find more publications and to learn about the HPP Programme.

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1 Introduction

Within IEA Task 44 / Annex 38 life span, Subtask D has promoted events and workshops. The aim was on the one hand to disseminate Task main outcomes to a wider audience and on the other to form relationships with local industry stakeholders. The venue of industry meeting changed according to bi-annual project meetings. Annual scientific conferences have also represented a privileged stage for disseminating Task's contents to scientists and experts in the field of solar and heat pump technologies.

In the following a shortened list of papers submitted during these years has been presented. A more comprehensive view can be found in Subtasks A, B and C dissemination reports

2 Project meeting and industry workshops

Meeting	Date	Location	Number of participants
1	April 29-30, 2010	Bolzano, Italy	55
2	October 28-29, 2010	Vienna, Austria	43
3	April 7-8, 2011	Barcelona, Spain	47
4	October 18-19, 2011	Marseille, France	42
5 + industry	May 2-4, 2012	Povoar do Varzim, Portugal	35
6 + industry	October 8-12, 2012	Lyngby, Denmark	35
7 + industry	April 9-12, 2013	Mechelen, Belgium	30
8	October 23-25, 2013	Chandolin, Switzerland	32

3 A selection of papers presented on IEA Task 44 / SHC Annex 38

Bertram, E., Glembin, J. & Rockendorf, G., 2012. ***Unglazed PVT collectors as additional heat source in heat pump systems with borehole heat exchanger.*** In: Solar Heating and Cooling (SHC) Conference 2012, San Francisco, USA.

Bertram, E., Stegmann, M., Scheuren, J., Rockendorf, G., 2010. ***Condensation heat gains on unglazed solar collectors in heat pump systems.*** In: Proc. of the EuroSun 2010 Conference, Graz, Austria.

Bunea, M., Eicher, S., Hildbrand, C., Bony, J., Perers, B., and Citherlet, S., 2012. ***Performance of solar collectors under low temperature conditions: Measurements and simulations results.*** In: Proc. of the EuroSun 2012 Conference, Opatija, Croatia.

Fedrizzi, R., Malenković, I., Melograno, P., Haller, M., Schick Tanz, M., Herkel, S., Ruschenburg, J., 2012. ***Uniform representation of system performance for solar***

- hybrid systems.** In: Solar Heating and Cooling (SHC) Conference 2012, San Francisco, USA.
- Fraga, C., Mermoud, F., Hollmuller, P., Pampaloni, E., Lachal, B., 2012. **Direct coupling solar and heat pump at large scale: experimental feedback from an existing plant.** In: Solar Heating and Cooling (SHC) Conference 2012, San Francisco, USA.
- Frank, E., Haller, M., Herkel, S., Ruschenburg, J., 2010. **Systematic classification of combined solar thermal and heat pump systems.** In: Proc. of the EuroSun 2010 Conference, Graz, Austria.
- Genkinger, A., Dott, R. & Afjei, T., 2012. **Combining heat pumps with solar energy for domestic hot water production.** In: Solar Heating and Cooling (SHC) Conference 2012, San Francisco, USA.
- Haller, M.Y. & Frank, E., 2011. **On the Potential of Using Heat from Solar Thermal Collectors for Heat Pump Evaporators.** In: Proc. of the ISES Solar World Congress 2011, Kassel, Germany.
- Loose, A., Mette, B., Bonk, S., Drück, H., 2011. **Development of performance test methods for combined solar thermal and heat pump systems.**, In: Proc. of the ESTEC Conference 2011, Marseille, France.
- Loose, A., Bonk, S., Drück, H., 2012. **Investigation of combined solar thermal and heat pump systems - field and laboratory tests.** In: Proc. of the EuroSun 2012 Conference, Opatija, Croatia.
- Malenkovic, I., 2012. **Solar and Heat Pump systems – Status of IEA SHC Task 44 & HPP Annex 38.** In: European Heat Pump Summit, Nuremberg, Germany.
- Pärisch, P., Warmuth, J., Bertram, E., Tepe, R., 2012. **Experiments for combined solar and heat pump systems.** In: Proc. of the EuroSun 2012 Conference, Opatija, Croatia.
- Perers, B., Andersen, E., Furbo, S., Chen, Z. & Tsouvalas, A., 2012. **Measurement and modelling of a multifunctional solar plus heatpump system from Nilan. Experiences from one year of test operation.** In: Proc. of the Eurosun 2012 Conference, Opatija, Croatia.