

Annual Report 2006



International Energy Agency



2006

HEAT PUMP PROGRAMME

Implementing Agreement for a Programme of
Research, Development, Demonstration and
Promotion of Heat Pumping Technologies

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The IEA Heat Pump Programme participating countries are: Austria (AT), Canada (CA), France (FR), Germany (DE), Japan (JP), the Netherlands (NL), Norway (NO), Sweden (SE), Switzerland (CH), United Kingdom (UK), the United States (US). All countries are members of the Heat Pump Centre (HPC). Sweden is the Operating Agent of the HPC.

International Energy Agency

The International Energy Agency (IEA) acts as energy policy advisor for its 26 member countries in their effort to ensure reliable, affordable and clean energy for their citizens. Founded during the oil crisis of 1973-74, its initial role was to coordinate measures in times of oil supply shortages. But during the last decades, the energy markets have changed, and so has the IEA. It now focuses well beyond oil crisis management on broader energy issues, including climate change policies, market reform, energy technology collaboration and outreach to the rest of the world. With a staff of around 150, mainly energy experts and statisticians from its member countries, the IEA conducts a broad programme of energy research, data compilation, publications and public dissemination of the latest energy policy analysis and recommendations on good practices.

To support these core issues, the IEA created contracts – Implementing Agreements – and a system of standard rules and regulations, the IEA Framework, that would allow interested member and non-member governments to pool resources of research, development and deployment of particular technologies.

For more than 30 years, technology collaboration has been a fundamental building block among IEA member and non-member countries in facilitating progress of new or improved energy technologies. There are currently 40 Implementing Agreements working in the areas of Fossil Fuels, Renewable Energies and Hydrogen, End-Use (Buildings, Industry and Transport), Fusion and Cross-Sectional Activities. The IEA Committee on Energy Research and Technology (CERT) and its Working Parties review the effectiveness, achievements and strategy of each Implementing Agreement.

This publication concerns the “Implementing Agreement for a Programme of Research, Development, Demonstration and Promotion of Heat Pumping Technologies”, more commonly known as the IEA Heat Pump Programme (HPP).

For more information visit
www.iea.org

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Picture: Joint Carrier / US DOE CO₂ heat pump water heater prototype installed in Oregon

IEA Heat Pump Programme

Heat Pump Centre

The Heat Pump Centre is the central information activity of the Programme. It links people and organisations worldwide in support of heat pumping technologies and communicates through National Teams in its member countries.



Organised under the umbrella of the International Energy Agency since 1978, the IEA Heat Pump Programme is a non-profit organisation funded by its member countries. The scope of the Programme covers heat pumps, air conditioning and refrigeration, commonly denoted as heat pumping technology.

HPP member countries are:

Austria, Canada, France, Germany, Japan, the Netherlands, Norway, Sweden, Switzerland, United Kingdom and the United States.

Mission

The Programme develops and disseminates factual, balanced information to achieve environmental and energy efficiency benefits through deployment of appropriate high-quality heat pump, refrigeration and air-conditioning technologies. By serving the needs of policy makers, national and international energy and environmental agencies, utilities, manufacturers, designers and researchers, the Programme covers all levels of expertise. It also works through national agencies to influence and encourage installers and end-users.

Strategic Objectives

Environmental

To quantify and publicise the environmental and energy efficiency benefits of heat pumps.

Market and Deployment

To develop and disseminate information on heat pumping technologies to support appropriate deployment.

Technology

To maintain and develop international technical RD&D collaboration that furthers the environmental and market objectives.

Information Management

To provide effective collaboration and flow of information to, from and between stakeholders and other relevant bodies.

Activities

The activities of the Programme include an information service, the Heat Pump Centre, international collaborative projects (Annexes), workshops, analysis studies and a triennial international conference.



Hannover Workshop

Chairman's Statement 2006

It is my pleasure to present the Annual Report of the IEA Heat Pump Programme (HPP) for 2006. It has been another very intense and fruitful year: we launched the new Annex 33, *Compact Heat Exchangers for Heat Pumping Equipment*, which brings the number of ongoing Annexes to five; the annual National Teams meeting brought together more than 20 delegates from different countries; and many new ideas of mutual interest are on the table for potential collaborative projects, covering innovative equipment, systems, applications, test and performance procedures and market assessments to remove market barriers to heat pump adoption.

Two workshops were held respectively in Tokyo, Japan and in Hannover, Germany both in conjunction with the Executive Committee meetings, providing opportunities to learn about the Japanese and German national heat pump programmes and present the HPP to their representatives. Four newsletter issues have been published during the year. The HPP has also continued to reach out and coordinate activities with relevant organizations such as the IEA BCG¹, IIR² and EHPA³, in order to encourage activities and information dissemination. Several non-member countries have expressed their interest in joining the HPP, and we soon hope to involve them in our future activities as new members.

At present, there is an increase in activity and interest for heat pump technology throughout the world, most likely motivated by their positive impact on energy use and the environment. The HPP will continue strongly to support market penetration of these technologies by undertaking activities dedicated to developing the knowledge base, augment confidence level, and increase awareness of their benefits in the market, targeting the industry, policy-makers and end-users.

I would like to take this opportunity to bring your attention to the preparation of the next IEA Heat Pump Conference, which will take place in May 2008 in Zurich. I would like to thank particularly the Swiss delegates for having offered to host this conference and for their commitments, and also the national and the international organizing committees that will provide organizational support. This 2008 Conference is a unique place to get the most recent updates in advances and prospects in technology, applications and markets on heat pumps, air conditioning and refrigeration equipment and systems for residential, commercial and industrial applications. This is a "rendez-vous" for all heat pumping technology stakeholders.

Before closing 2006, special thanks go to the Heat Pump Centre in Sweden for their excellent work during this year in promoting the HPP!

A handwritten signature in blue ink, appearing to read 'S. Hosatte'.

Sophie Hosatte
ExCo Chairman

¹⁾The Building Coordination Group

²⁾The International Institute of Refrigeration

³⁾The European Heat Pump Association

Highlights of 2006



NT-meeting in Gothenburg



Harumi DHC plant Tokyo



Hannover workshop

National Teams Meeting in Gothenburg

22 National Team members and researchers met in Gothenburg on September 7-8 to discuss new working areas for the Heat Pump Programme, and to exchange information and discuss research topics. Presentations of ongoing research and future directions from the eight different countries were given on the first day, with the second day being reserved for brainstorming activities and discussions. Many ideas came up, including:

- CO₂ heat pump systems
- Standardisation and seasonal performance (continuation of Annex 28)
- Heat-activated heat pumps
- Impact of heat pumps on a sustainable society
- Hot water domestic heat pumps
- Zero net energy houses

Some of the ideas are in process of being developed to proposals for new annexes. Further information on the projects and contact persons can be found on the Heat Pump Centre website, www.heatpumpcentre.org.

Executive Committee meetings

Two meetings of the HPP Executive Committee were held in 2006:

- May 18-19, in Tokyo, Japan
- November 9-10, in Hannover, Germany

The Tokyo workshop

In connection with the Executive Committee meeting in Tokyo, a workshop was arranged by the New Energy and Industrial Technology Development Organization (NEDO) and the Heat Pump & Thermal Storage Technology Center of Japan (HPTCJ). The morning was devoted to a technical tour of a district heating and cooling plant, with presentations on the Japanese research and market developments for heat pumps being held in the afternoon. The presentations covered topics such as heat pump water heaters, regulations concerning heat pump equipment, district heating and cooling with heat pumps, and ground source heat pump systems. The activities of the Japanese National Team was also presented.

The Hannover workshop

In connection with the Executive Committee meeting in Hannover, a workshop was arranged by the IZW e.V. (Information Centre for Heat Pumps and Refrigeration) and the HPP delegate Claus Börner from Forschungszentrum Jülich. The workshop covered heat pumping activities in Germany and German work on HPP Annexes 30 and 32. The German heat pump market development was also presented. The workshop was followed by a technical tour to the Hannover ice rink complex and to the facility of the IZW e. V.

Annex results used in international standard

The final report of Annex 28, *Test Procedure and Seasonal Performance Calculation for Residential Heat Pumps with Combined Space Heating and Domestic Water Heating*, was published in 2006 and can be ordered from www.heatpumpcentre.org. The two main outcomes of this document are a test procedure, which provides the necessary data for the calculation of the overall Seasonal Performance Factor (SPF) of combined operating heat pump systems, and the development of an easy-to-use calculation method for SPF of integrated heat pump systems. This method has already been integrated in the draft prEN 15316-4-2 standard from the European standardisation organisation CEN in the framework of the European Energy Performance of Buildings Directive (EPBD).

New projects

A new project, Annex 33, *Compact Heat Exchangers in Heat Pumping Equipment*, was formed in 2006. Its principal goal is to identify compact heat exchangers, either existing or under development, that may be used in heat pumping equipment (see page 14).

Another project, concerned with thermally driven heat pumps, has been prepared and is in the start-up phase. It will compare heat-driven heat pumps with other heat pump systems in order to obtain a broader understanding, examine market barriers and consider the environmental impact of such systems.

Preparation for the next conference

9th IEA Heat Pump Conference

– “*Advances and Prospects in Technology, Applications and Markets*”

The conference will be held in Zürich, Switzerland, May 20 – 22, 2008.

The sessions at the conference will cover the following topics:

- **Technology** – Advances in equipment design and development
- **Systems** – Advanced electrically and thermally operated systems, and ground source systems
- **Applications** – Demonstrated energy efficiency and environmental advantages
- **Research and Development** – New developments in heat pumping technologies
- **Policy, Standards and Market Strategies** – Government, utility and professional society activities related to heat pumps
- **Markets** – Market status, trends and future opportunities
- **International Activities** – Discussion of actions in response to climate change initiatives

In association with the HPP Executive Committee, the conference is organised by the International Organising Committee (IOC) and the National Organising Committee (NOC). Visit www.hpc2008.org for more information.



Policy Papers 2006

Two policy papers have been written, highlighting the role of heat pumps in today's key energy policy concerns. The papers outline how heat pumping technology can contribute to the conservation of energy and the energy reduction of energy related greenhouse gas emissions. In addition, the importance of the security of energy supply and the access to energy are emphasised. The target group is policy-makers in different countries.



Programme Achievements 2006

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Heat Pump Centre

The Heat Pump Centre is the central activity of the IEA Heat Pump Programme. The aim is to disseminate factual and balanced information on heat pumping technology and to promote the activities of the Programme.

Activities

The Centre provides general support to Operating Agents (project leaders) of HPP annexes, and to the HPP Executive Committee.

One of the main activities is publication of the Heat Pump Centre Newsletter. Each issue covers a particular topic, and contains articles, news and events, together with a contribution from a guest columnist. Four issues were published in 2006, available free of charge to the HPP member countries from the HPC website.

Non-member countries can subscribe to the Newsletter. Newsletter number two is freely available in order to promote the Programme to potential member countries. In addition, a short version of the Newsletter, an e-Newsletter, is freely available to all countries, either by e-mail subscription or by downloading from the HPC website. The number of subscribers to the e-Newsletter increased by over 40 % in 2006, to a total of over 900. In addition, dissemination through the national teams reaches approximately 1100 readers.

Another important activity is the website, which is continuously updated with news, events and contact information. Descriptions of ongoing and completed HPP annexes are also available on the website as well as HPP publications, which are accessible via a data base. General improvements have been made during the 2006, with the most important ones being the addition of "introduction pages" in seven different languages: Chinese, German, Spanish, French, Italian, Japanese and Portuguese (see pages 20-26). The purpose is to introduce the HPP and the HPC to persons from other countries than the English-speaking ones. Other new features include a large number of links to standardisation organisations, a list of common abbreviations and an Archive section. Traffic on the website has increased steadily throughout 2005 and 2006.



The Heat Pump Centre also plays an active part in generating new activities within the HPP. For example, it publishes ongoing descriptions of project proposals on the website. In 2006, a successful National Teams meeting was arranged in Gothenburg in order to come up with new ideas for annex proposals and other HPP activities. The HPC has also compiled a report with information on research and development and market development in HPP member countries. The report is available to the National Teams in the member countries.

Website: www.heatpumpcentre.org

International collaboration

The Heat Pump Programme and the Heat Pump Centre have good relations with a number of national and international organisations, such as EHPA¹, IIR², ASHRAE³ and ARI/ARTI⁴. Two liaison meetings took place between IIR and the HPP/HPC in 2006, with the main purpose of discussing further collaborative activities for the promotion of heat pumping technology. The Heat Pump Centre also attended the ASHRAE winter meeting in Chicago 2006 in order to promote the Heat Pump Programme.

New publications in 2006

- Final report of Annex 28, *Test Procedure and Seasonal Performance Calculations for Residential Heat Pumps with Combined Space and Domestic Hot Water Heating* (CD ROM)
- Two Policy Papers, *How Heat Pumps can help to address today's key Energy Policy Concerns* and *The Potential Impact of Heat Pumps on Energy Policy Concerns*

In addition promotional material, including a leaflet with general information on the HPP, the HPC, membership etc., has been compiled and is freely available from www.heatpumpcentre.org.

Newsletters 2006

Four newsletters were published in 2006, and are available on the Heat Pump Centre website. The topics of the respective issues are:

1. Thermally activated heat pump systems
2. New regulations and directives – how will they affect heat pump technologies?
3. The latest developments in the use of CO₂ as refrigerant
4. Retrofit heat pumps for buildings

Newsletter number two is freely available, and has been used to promote the Heat Pump Programme.

¹The European Heat Pump Association

²The International Institute of Refrigeration

³The American Society of Heating, Refrigerating and Air-Conditioning Engineers

⁴The Air-Conditioning and Refrigeration Institute/ Air-Conditioning and Refrigeration Technology Institute



Publications can be ordered from the Heat Pump Centre.

Annex 29

Ground-Source Heat Pumps – Overcoming Market and Technical Barriers

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Participating countries: Austria (Operating Agent), Canada, Japan, Norway, Sweden and the USA

Annex 29 investigates the present status of ground-source heat pump systems, which varies widely all over the world, and identifies systems – depending on climate and application – that could improve the performance and market attractiveness of ground source heat pump systems. The objective is to demonstrate the economic and environmental benefits of ground-coupled heat pump systems.

Work on the state of the art and market analysis, and on a matrix of ground-source heat pumps under different climate and site conditions, is almost finished. The majority of installations are small systems. Systems in Europe are mainly heat-only systems, whereas Japanese and North American systems provide both heating and cooling. Large systems generally use the ground as a heat or cold store. Great efforts are made to reduce energy demand by direct cooling and by transferring excess heat from parts of the building with a cooling demand to parts with a heating demand. Systems have to be sized in such a way that the average ground coil temperature caused by heat extraction/heat removal can be kept stable over the years of operation. The influence of neighbouring boreholes must also be considered.

The country reports are available, or will be available, at the beginning of 2007. A website has been constructed. Further products of Annex 29 will be a final report, workshops, presentations at conferences and seminars at national and international levels.

After the workshop held in Las Vegas, presentations at the COP-11 meeting and at Quebec Hydro in Montreal, and on May 11 – 12 2006 in Linz, Upper Austria, a further workshop and a working meeting of Annex 29 was held. The represen-

tatives of the participating countries, as well as participants from Austria, representing the European Heat Pump Association (EHPA), the Association of Electric Utilities (VEOe), the Heat Pump Association (LGWA) and the Heat Pump Manufacturers' Association (BWP) gave presentations on the international and national situation of ground source heat pumps. An interesting topic was the Austrian Klima:Aktiv programme, with the aim of improving the market share of high-efficiency heat pumps in Austria. The country report and the matrix of ground source heat pumps were discussed at the working meeting on May 12, and a decision was taken on the further working plan. The last workshop and working meeting of Annex 29 took place in Sapporo, Japan, in January 2007. A final workshop is planned to be held in Beijing in conjunction with the IIR ICR conference in August 2007. The annex will be completed during the autumn of 2007.



GSHP supply header in Sapporo City University.

Annex 30

Retrofit Heat Pumps for Buildings

Participating countries: France, Germany (Operating Agent) and the Netherlands

In most European countries, the present heat pump market for space and water heating and cooling is largely concentrated on new buildings, and particularly one- and two-family houses. There is, however, a very large potential in the retrofit market to replace old conventional oil-, gas- and coal-fired heating systems with high energy-efficient and environmentally sound heat pumps. Of the 150 million dwellings in Europe, 30 % are built before 1940, 45 % between 1950 and 1980, and 25 % between 1980 and 2000. The graph shows the substantial heat demand of the building stock in Germany.

The main barrier to the use of heat pumps for retrofitting is the high distribution temperature of conventional heating systems in existing residential buildings, with design temperatures up to 70 – 90 °C, which is too high for the present heat pump generation, for which the maximum, economically acceptable heat distribution temperature is up to 65 °C.

The objective of the annex is therefore to survey the availability, technology, economy, ecology and possible R & D trends of heat pump systems for retrofitting low-energy efficient space and tap water heating systems in existing residential buildings. The programme is subdivided into four tasks:

- Task 1** State-of-the-art, market analysis
- Task 2** Develop a matrix of heat pumps
- Task 3** Overcoming economic, environmental and legal barriers
- Task 4** Success factors for the marketing of retrofit heat pumps

Three meetings have been held in 2006, concentrating on Tasks 3 and 4. A list of problems and barriers to the use of heat pumps in retrofitted buildings has been compiled. Success factors have been studied by analysis of existing research, development and demonstration (R, D & D) projects and new concepts of heating/cooling systems, definition of heat pump systems and components for retrofit applications, cooperation with national/regional manufacturers, demonstration and prototype projects and support of market introductions.

The annex will be completed by the beginning of 2008. A symposium will be organised in 2007, not only to present the results of the annex but also to provide a global overview of the present trends of retrofit heat pumps, the highly promising heat pump market of the future, and the most important contribution of heat pumps to the reduction of CO₂ emissions from the heating and cooling of buildings.

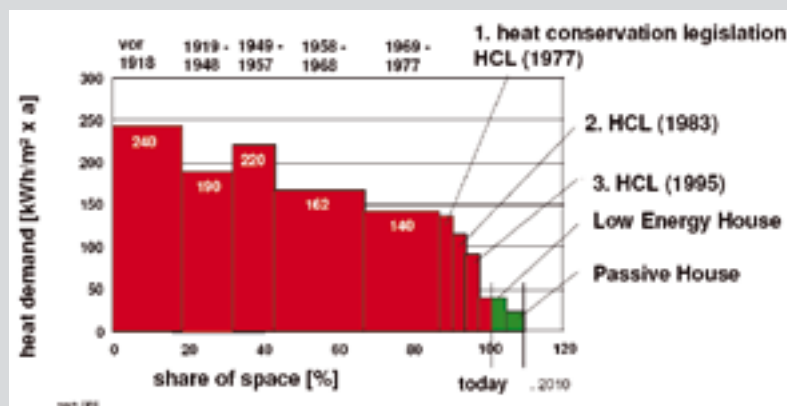
A password-protected website has been set up for the Annex on IZW's website, www.izw-online.de, as a common information source for participants, with detailed protocols of the Annex meetings and all attachments as well as further necessary information.

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Heat demand of the building stock – Germany



Annex 31

Advanced Modeling and Tools for Analysis of Energy Use in Supermarkets

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Participating countries: Canada, Germany, Sweden and the USA.

Supermarkets are the most energy-intensive buildings in the commercial sector. It has been estimated that 3-5 % of the total use of electricity stems from supermarkets in industrialised countries. In addition, it is estimated that the annual refrigerant losses are as high as 15 - 30 % of the total charge, thus making supermarkets the second largest emission source after mobile air conditioning. The supermarket sector has therefore a significant role to play not only from the point of view of the energy consumed, but also from the point of view of the impact of refrigerant leakage.

The overall objective of Annex 31 is thus to provide new knowledge, methods and tools for enhanced energy efficiency and therefore reduced environmental impact from supermarkets. The aim is also to share ideas and best practices among participating countries. The annex builds on experience and findings from Annex 26, Advanced Supermarket Refrigeration/Heat Recovery Systems.

In order to achieve the objectives of the annex, it is planned that the following task-sharing activities should be carried out by the participants:

- Task 1** Collection of available data from different supermarkets (benchmarking)
- Task 2** Development of performance indices for supermarkets
- Task 3** Development and validation of a model library for specific supermarket equipment
- Task 4** Development of whole-building simulation models.
- Task 5** Comparison of the results obtained with the different whole-building simulation models for selected case studies
- Task 6** Future perspectives and possibilities
- Task 7** Deployment of the knowledge developed (indices, guidelines, papers, fact sheets)



The kick-off meeting was held on 20th January 2006 in Chicago in conjunction with the ASHRAE Winter Meeting. Discussion was principally focused on Tasks 1 and 2 of the Annex, for which it was decided to collect data for analysis and supermarket characterisation at five different system levels.

The group also decided to use the Centra internet meeting tool for meeting purposes. Three Centra meetings were held during February and March 2006, during which discussion concentrated on a list of data to be collected and performance indices for the five different levels for Tasks 1 and 2.

The last working meeting of Annex 31 was held in Germany in conjunction with the IKK Fair in October 2006. The purpose of the meeting was mainly to discuss the contribution of Germany to the Annex.

The next meeting and a workshop are planned in conjunction with the IIR Congress in Beijing 2007.

Annex 32

Economical Heating and Cooling Systems for Low Energy Houses

Participating countries: Austria, Canada, Germany, Japan, the Netherlands, Norway, Sweden, Switzerland (Operating Agent) and the USA

Heat pumps are the only devices which can generate heating and cooling energy, even at the same time. Multifunctional heat pump systems for space heating, domestic hot water (DHW) production, ventilation and space conditioning may therefore be a cost-effective means of meeting all building needs with one integrated system.

The aim is to investigate different system configurations of integrated heat pump systems, and their associated energy source and distribution systems, for application in low-energy and ultra-low-energy houses. The principal objectives are:

- to improve multifunctional heat pump systems in terms of overall energy use, achievable comfort and costs
- to gather more field experience from real-world operation of integrated heat pump systems, and
- to derive design guidelines for multifunctional heat pump systems and their control systems.

The Annex has been structured into four tasks:

- Task 1** State-of-the-art survey of low energy buildings and respective systems
- Task 2** Assessment, calculation and comparison of system solutions
- Task 3** Field testing of systems (in parallel with Task 2)
- Task 4** Develop guidelines for systems and their control systems.

The Annex started in January 2006, and is scheduled to run for three years.

Activities in 2006 were dedicated to the start of the project and the state-of-the-art survey in Task 1. The kick-off meeting was held in April 2006, with an introduction of the participants, general project planning and coordination of work.

At the second Annex 32 working meeting in November 2006, preliminary results from Task 1 were discussed. A basic result of the survey of the market state of low energy buildings is that, in all participating countries, activities to extend the number of low energy buildings are ongoing as a means of reducing energy consumption in the building sector, for climate protection reasons.

However, the levels of market penetrations are different between the participating countries: While some countries already have a considerable proportion of low and ultra-low energy houses in the new building sector, other countries are more in the phase of the market introduction.

Concerning the system technology, heat pump compact units incorporating ventilation, space heating and DHW functions have become a standard solution for ultra-low energy houses, particularly in German passive houses. Further developments of these systems are ongoing.

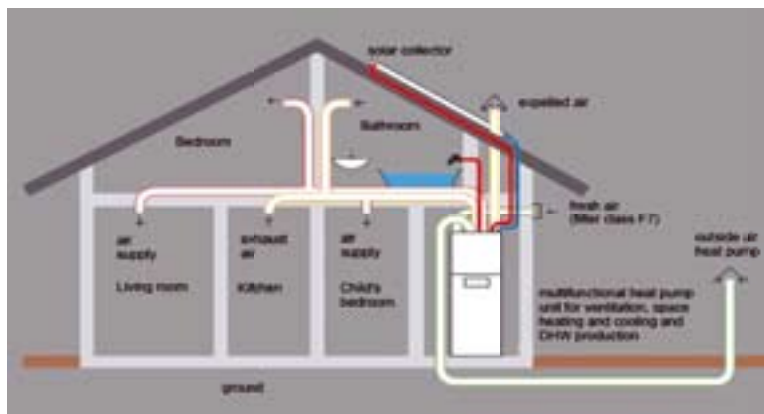
Information on the project can be found on the Heat Pump Centre website, in the category of 'Projects'. A dedicated Annex 32 website is under construction.

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Example of an integrated heat pump system for low-energy houses (source: Viessmann)



Annex 33

Compact Heat Exchangers in Heat Pumping Equipment

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Participating countries: Japan, Sweden, United Kingdom (Operating Agent) and the USA.

This Annex, which commenced activities in the Autumn of 2006, is directed at widening the use of compact heat exchangers (CHEs) in heat pumping systems. It is believed that these will improve efficiencies, minimise fluid inventories and reduce package size. The data collected during the Annex will, it is hoped, quantify the possible benefits from CHE use, and also highlight any concerns. Ultimately, the use of compact heat exchangers should significantly improve the acceptability of heat pumps across all applications, by allowing improved COPs and reduced materials content.

The principal objective of this Annex is to present a compilation of possible options for compact heat exchangers, used as evaporators, condensers and in other roles in heat pumping equipment. The aim is to minimise the direct and indirect effect on the local and global environment due to manufacture operation and final disposal of the equipment.



The photo shows a compact heat transfer surface, in the form of a 'shim' used in heat exchangers produced by Chart Energy & Chemicals, Inc.

Specific technical goals involve identifying and documenting reasonably accurate methods of predicting heat transfer, pressure drop and void fractions in CHEs, thereby promoting their commercial use by heat pump manufacturers by simplifying the design and selection procedures. Integral with these activities will be an examination of manifold/flow distribution in compact/micro-heat exchangers, in particular in evaporators.

Annex 33 involves the following tasks:

- Task 1** Market research
- Task 2** The evaluation of the performance of compact heat exchangers relevant to heat pumps
- Task 3** The evaluation of properties and operating limits of such equipment
- Task 4** Information sharing.

There will be opportunities for open meetings at which industry and academia can put forward their views and contribute to the project.

The Annex has as Operating Agent the School of Engineering and Design, Brunel University in London, UK, represented by Professor David Reay or his Deputy, Dr. Peter Kew of Heriot-Watt University, Edinburgh. The first meeting of the Annex since its approval in November 2006 will take place in Stockholm on 23rd and 24th May 2007.

Summary of Annexes

Annex	Operating Agent	Participants	Completed
1. Common Study of Advanced Heat Pumps	Germany	Austria, Belgium, Canada, Denmark, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, United Kingdom, the United States	1980
2. Vertical Earth Heat Pump Systems	Sweden	Austria, Canada, Denmark, Sweden, the United States	1983
3. Heat Pump Systems Applied in Industry	Belgium	Austria, Belgium, Canada, Denmark, Finland, Germany, Italy, Japan, the Netherlands, Sweden	1984
4. Heat Pump Centre	Germany	Austria, Belgium, Canada, Finland, Germany, Italy, Japan, the Netherlands, Norway, Sweden, the United States	1990
5. Integration of Large Heat Pumps into District Heating and Large Housing Blocks	Sweden	Denmark, Germany, Italy, Sweden	1986
6. Study of Working Fluid Mixtures and High Temperature Working Fluids for Compressor Driven Systems	Sweden	Austria, Denmark, Finland, Germany, Japan, Sweden, the United States	1986
7. New Development of the Evaporator Part of Heat Pump Systems	Sweden	Canada, Denmark, Finland, Norway, Sweden	1989
8. Advanced in-ground Heat Exchange Technology for Heat Pump Systems	Canada	Canada, Germany, Switzerland, the United States	1992
9. High Temperature Industrial Heat Pumps	Belgium	Belgium, Germany, Finland, Japan, the Netherlands, Sweden, Switzerland, the United States	1990
10. Technical and Market Analysis of Advanced Heat Pumps	the United States	Sweden, the United States	1991
11. Stirling Engine Technology for Application in Buildings	the United States	Japan, Sweden, the United States	1989
12. Modelling Techniques for Simulation and Design of Compression Heat Pumps	the United States, Italy	Austria, Belgium, Germany, Italy, Japan, Switzerland, the United States	1992

Summary of Annexes

Annex	Operating Agent	Participants	Completed
13. State and Transport Properties of High Temperature Working Fluids and Non-Azeotropic Mixtures	Sweden	Canada, Germany, Japan, Norway, Sweden, the United States	1992
14. Working Fluids and Transport Phenomena in Advanced Absorption Heat Pumps	Japan	Belgium, Denmark, Germany, Japan, Sweden, the United States	1991
15. Heat Pump Systems with Direct Expansion Ground Coils	Canada	Austria, Canada, Japan, the United States	1993
16. Heat Pump Centre	the Netherlands	Austria, Japan, the Netherlands, Norway, United Kingdom, the United States	2003
17. Experiences with New Refrigerants in Evaporators	Sweden	Canada, the Netherlands, Norway, Sweden, Switzerland	1993
18. Thermophysical Properties of Environmentally Acceptable Refrigerants	the United States	Austria, Canada, Germany, Japan, Sweden, United Kingdom, the United States	1999
19. Cancelled			
20. Working Fluid Safety	Belgium	Belgium, Japan, the Netherlands, Norway, Switzerland	1993
21. Global Environmental Benefits of Industrial Heat Pumps	the United States	Canada, France, Japan, the Netherlands, Norway, Sweden, United Kingdom, the United States	1996
22. Compression Systems with Natural Working Fluids	Norway	Canada, Denmark, Japan, the Netherlands, Norway, Switzerland, United Kingdom, the United States	1999
23. Heat Pump Systems for Single-Room Applications	Canada	Canada, France, Switzerland, Sweden, the United States	1999
24. Ab-Sorption Machines for Heating and Cooling in Future Energy Systems	Sweden	Canada, Italy, the Netherlands, Norway, Japan, Sweden, United Kingdom, the United States	2000
25. Year-Round Residential Space Conditioning Systems using Heat Pumps	France	France, the Netherlands, Sweden, the United States	2005

Summary of Annexes

Annex	Operating Agent	Participants	Completed
26. Advanced Supermarket Refrigeration/Heat Recovery Systems	the United States	Canada, Denmark, Sweden, United Kingdom, the United States	2003
27. Selected Issues on CO ₂ as Working Fluid in Compression Systems	Norway	Japan, Norway, Sweden, Switzerland, United Kingdom, the United States	2004
28. Test Procedure and Seasonal Performance Calculation of Residential Heat Pumps with Combined Space and Domestic Hot Water Heating	Switzerland	Austria, Canada, France, Germany, Japan, Norway, Sweden, Switzerland, United Kingdom, (partly), the United States	2005
29. Ground Source Heat Pumps – Overcoming Market and Technical Barriers	Austria	Austria, Canada, Japan, Norway, Sweden, the United States	Ongoing
30. Retrofit Heat Pumps for Buildings	Germany	France, Germany, the Netherlands	Ongoing
31. Advanced Modeling and Tools for Analysis of Energy use in Supermarkets	Sweden	Canada, Germany, Sweden, the United States	Ongoing
32. Economical Heating and Cooling Systems for Low Energy Houses	Switzerland	Austria, Canada, Germany, Japan, Netherlands, Norway, Sweden, Switzerland, the United States	Ongoing
33. Compact Heat Exchangers in Heat Pumping Equipment	United Kingdom	Japan, Sweden, United Kingdom and the United States	Ongoing





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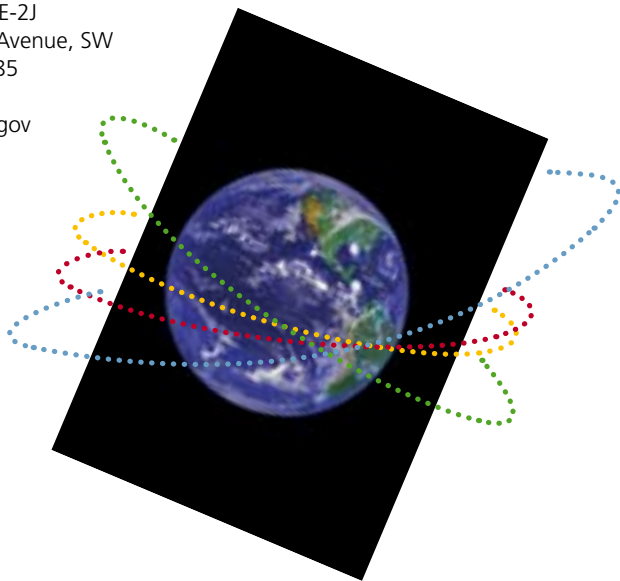
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国际能源署热泵项目 (HPP)

国际能源署热泵项目是一个在国际能源署(IEA) 旗下的于1978年成立的非赢利性组织。来自不同国家的参予者在有关热泵及诸如空气调节、制冷、工作流体(制冷剂)等相关技术的各个项目中合作。在代表各参与国的执委会的管理下, 热泵项目实施的战略是加速热泵在各相关领域的应用, 从而降低能耗使环境得以改善。

某些成员国以成立自己的工作组。他们的工作包括宣传介绍本国的有关信息, 开发本国所关心的新的热泵计划的项目, 以及参与已有的热泵计划项目。协作性的国际能源署热泵项目的方案被称作“附录”, 它们由参与国家以费用分摊或任务分摊的方式来实施。一个国家指派一个代理人来管理一个“附录”。大部分的“附录”都有运作时限, 其目的也不尽相同, 从信息交换到新技术的研发和实施应用等。

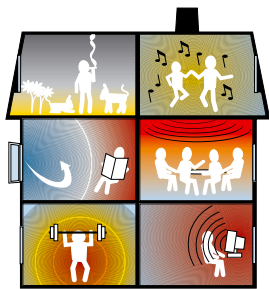
国际能源署热泵中心 (HPC)

国际能源署热泵中心是国际能源署热泵计划的信息中枢。热泵中心的职能是加速热泵技术的应用, 从而优化能源的利用并改善环境。实现这一目标的途径就是提供一个全世界范围的信息服务来支持所有对热泵技术的应用有利的事物(不论是国际水平的还是国内水平的)。热泵中心服务的对象包括政策制定者、代理商、制造商、研究人员、公用事业公司、设计人员、终端用户、安装公司、及其它相关组织。

每年发布四次的时事通讯期刊是热泵中心信息服务的一个主要内容。每一期的时事通讯将涵盖一些专题, 包括一些文章、新闻通讯、时事报道、以及一个作者专栏。热泵计划的成员国可以从热泵中心的网页免费得到时事通讯期刊, 非成员国则可以订购。不过, 简化版的时事通讯, 即电子版的时事通讯, 是对所有国家免费的。电子版的时事通讯着重于热点新闻并概述了所有原版期刊中的文章。电子版的时事通讯期刊提供了一个简便的方式来宣传热泵项目, 让相关的讯息影响大范围的读者。

另一个重要的信息服务是热泵中心的网页, 新闻通讯、时事报道、及联系方式的信息持续更新。热泵中心网页还提供有关正在进行着的或已经完成了的“附录”的介绍, 以及热泵项目公开发表的文献。这些资料均可以从热泵中心的一个数据库获取。

此外, 热泵中心在开发新的热泵项目的活动中扮演了一个积极的角色。热泵中心的网页提供有关新项目建议的说明书以及联系方式。另一个特别内容是关于热泵技术在热泵计划成员国中的研发及市场开发的报告, 但这个报告只面向热泵项目成员国的工作组。



Programme sur les Pompes à chaleur de AIE (HPP)

Organisé sous les auspices de l'Agence internationale de l'énergie (AIE) depuis 1978, le Programme des Pompes à chaleur de l'AIE est une organisation à but non lucratif au sein de laquelle les représentants de différents pays collaborent à la réalisation de projets dans le domaine des Pompes à chaleur et des technologies associées comme la climatisation, la réfrigération et les fluides frigorigènes (réfrigérants). Administré par un Comité exécutif représentant les pays membres, le programme établit une stratégie pour accélérer l'utilisation des Pompes à chaleur afin de réduire la consommation d'énergie et les impacts environnementaux dans les applications.

Il existe dans certains pays membres une Équipe nationale. Leur rôle consiste à diffuser des informations au niveau national, à promouvoir et générer des idées de nouveaux projets ou activités d'intérêt pour leur pays, ainsi qu'à participer à des projets ou activités au sein du HPP.

Les projets de collaboration du Programme sur les Pompes à chaleur de l'AIE sont connus sous le terme «Annexes». Ils sont réalisés selon un modèle de tâches/frais partagés par les pays participants. Un pays désigne un coordonateur pour gérer l'Annexe. La plupart des Annexes se déroulent sur une période limitée. Leurs objectifs peuvent aller de l'échange d'informations au développement et à la mise en oeuvre de nouvelles technologies.

Le Centre sur les Pompes à chaleur de l'AIE (HPC)

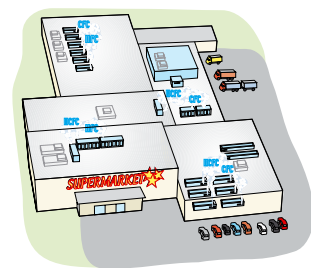
Le Centre sur les Pompes à chaleur est l'organisme central d'information du Programme sur les Pompes à chaleur de l'AIE. Le rôle du CPC est d'accélérer la mise en oeuvre de la technologie des Pompes à chaleur et d'optimiser ainsi l'utilisation des ressources énergétiques au bénéfice de l'environnement. Ceci est réalisé par un service international d'information qui offre un support à tous ceux qui peuvent jouer un rôle dans la mise en oeuvre des technologies liées aux Pompes à chaleur, aussi bien au niveau national qu'international. Le groupe cible inclut les responsables, organismes, fabricants, chercheurs, services publics, concepteurs, utilisateurs finaux, installateurs et autres organisations.

Une des activités principales est la publication trimestrielle du bulletin d'information du Centre des Pompes à chaleur. Chaque bulletin couvre un sujet particulier et contient des articles, actualités, événements ainsi qu'une chronique. Le bulletin est mis gratuitement à la disposition des pays membres du PPC sur le site internet du CPC. Les pays non membres peuvent s'abonner au bulletin. Une version abrégée électronique est accessible gratuitement pour tous les pays. Elle présente les principaux extraits des nouvelles et un résumé de tous les articles. Le bulletin électronique est un moyen simple de diffuser l'information et promouvoir le PPC. Le but est d'atteindre un grand nombre de lecteurs.

Une autre activité importante est le site Internet, qui est mis à jour continuellement avec des nouvelles, événements et coordonnées. Le site Internet contient une description des annexes (ou projets conjoints de collaboration) du PPC complétées et en cours, ainsi que les publications du PPC, disponibles au moyen d'une base de données.

Le CPC a aussi un rôle actif dans la création de nouvelles activités au sein du PPC. Les informations sur les propositions de projets sont disponibles sur le site Internet. Un rapport contenant des informations sur la recherche et le développement ainsi que le développement de marchés est également à la disposition des Équipes nationales dans les pays membres.

French



Das Wärmepumpenprogramm (HPP) der Internationalen Energie Agentur (IEA)

Das seit 1978 unter der Schirmherrschaft der Internationalen Energie Agentur laufende Wärmepumpenprogramm wird durch eine Non Profit Organisation organisiert. Teilnehmer aus verschiedenen Mitgliedsstaaten kooperieren bei Forschungsfragestellungen aus dem Bereichen der Wärmepumpentechnologie aber auch ähnlichen Themen wie zum Beispiel Klima- und Kühlanlagen oder Kälte- und Arbeitsmittel. Die Programmleitung obliegt einem Führungsgremium, das sich aus Vertretern der Mitgliedsstaaten zusammensetzt und die zuvor definierte Strategie umsetzt. Die Strategie lautet: Verstärkter Einsatz von Wärmepumpen in allen Bereichen, um damit den Energieverbrauch zu reduzieren und einen aktiven Beitrag zum Klima- und Umweltschutz zu leisten.

In einigen der Mitgliedsstaaten gibt es nationale Teams, die an der nationalen Informationsverbreitung, an neuen, für das jeweilige Land bedeutsamen Konzepten und Vorschlägen für künftige Wärmepumpenprogramme arbeiten und auch an allgemeinen Aktivitäten und Projekten teilnehmen.

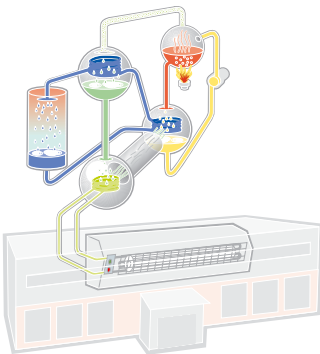
Ein gemeinsames Projekt im IEA Wärmepumpenprogramm wird „Annex“ genannt. Die am „Annex“ beteiligten Länder können entweder auf Basis einer Kosten- oder Aufgabenteilung teilnehmen. Ein beteiligtes Land stellt den „Operating Agent“, der den „Annex“ leitet. Die meisten „Annexe“ laufen während eines zuvor definierten Zeitraumes, wohingegen die Zielsetzungen variieren können: von Informationsaustausch bis zur Entwicklung und der Implementierung einer neuen Technologie.

Das IEA Wärmepumpen-Informations-Zentrum (HPC)

Das Wärmepumpen-Informations-Zentrum (Heat Pump Centre) ist das zentrale Informationsservice des Wärmepumpenprogramms der Internationalen Energie Agentur (IEA), mit dem Ziel, den Einsatz von Wärmepumpen voranzutreiben, um dadurch einen Beitrag zur Schonung der Energieresourcen und zum Umweltschutz zu leisten. Mit Hilfe von einem weltweiten Informationsservice, der sich an alle jene Akteure richtet, die auf nationaler sowie auf internationaler Ebene beitragen, den Einsatz der Wärmepumpe zu unterstützen, soll dieses Ziel erreicht werden. Die Zielgruppen sind Entscheidungsträger, Energieagenturen, Hersteller, Forscher, Versorgungsunternehmen, Planer, Endkonsumenten, Installateure und andere Organisationen.

Eine der wichtigsten Tätigkeitsbereiche des Wärmepumpen-Informations-Zentrums ist die Publikation des Wärmepumpen-Newsletters, der vierteljährlich erscheint. Jeder Newsletter ist einem Schwerpunktthema gewidmet und beinhaltet themenrelevante Fachartikel, News, Veranstaltungshinweise & -rückblicke und eine Kolumne. Der Newsletter ist für Interessenten aus den Ländern der Mitgliedsstaaten gratis und kann auf der Website des Wärmepumpen-Informations-Zentrums angefordert werden. Jene, die nicht aus Mitgliedsländern kommen, können den Newsletter bestellen. Eine Kurzversion des Newsletters – der E-Newsletter – kann gratis bezogen werden. Hier finden Sie die wichtigsten News und eine kurze, prägnante Zusammenfassung der publizierten Artikel. Der E-Newsletter ist ein Mittel zur schnellen Informationsverteilung mit der Zielsetzung eine möglichst große Leserschaft zu gewinnen.

Ein weiterer wichtiger Tätigkeitsbereich ist die laufend aktualisierte Website mit News, Veranstaltungen und Kontaktinformationen. Hier finden Sie Informationen über aktuelle und abgeschlossene „Annexe“ und Publikationen, die in einer umfangreichen Datenbank zu finden sind. Außerdem nimmt das Wärmepumpen-Informations-Zentrum eine aktive Rolle in der strategischen Weiterentwicklung des Wärmepumpenprogramms ein. Auf der Website finden Sie neue Projektvorschläge und die dazugehörigen Kontaktdaten. Eine weitere Tätigkeit ist die Publikation eines Jahresberichts zur Forschung & Entwicklung, sowie zur Marktentwicklung in den Mitgliedsstaaten. Diesen Bericht erhalten die nationalen Teams der Mitgliedsstaaten.



Programma dell'AIE per le pompe di calore (HPP)

Fondato nel 1978 sotto l'egida dell'Agenzia Internazionale dell'Energia (IEA), l'HPP è un'associazione senza scopo di lucro nella quale i partecipanti nei vari paesi collaborano allo sviluppo di progetti nel campo delle pompe di calore e delle loro tecnologie, come aria condizionata, refrigerazione e refrigeranti. Sotto la guida del Comitato Esecutivo che rappresenta i vari paesi membri dell'HPP, il programma sviluppa strategie per aumentare l'utilizzo delle pompe di calore in applicazioni nelle quali esse possono ridurre il consumo energetico a beneficio dell'ambiente.

In alcuni dei paesi associati esistono specifici gruppi nazionali. Il loro lavoro consiste nell'informazione, nella promozione e nello sviluppo di nuove attività e progetti di interesse all'interno del paese di appartenenza e nella partecipazione anche a varie attività e progetti dell'HPP.

I progetti di collaborazione dell'IEA Heat Pump Programme si chiamano "Annexes". Sono basati sulla divisione dei costi e/o dei compiti fra i paesi che fanno parte del progetto. Ogni paese incarica un "Operating Agent" per gestire l'"Annex". La maggior parte degli Annex lavora per un periodo limitato con obiettivi che variano dallo scambio d'informazioni allo sviluppo ed all'applicazione di nuove tecnologie.

Centro dell'AIE per le pompe di calore (HPC)

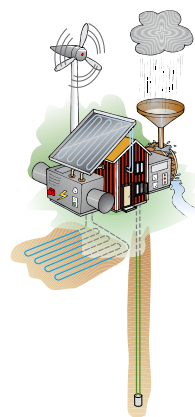
L'HPC costituisce l'attività centrale d'informazione dell'IEA Heat Pump Programme (HPP). Il ruolo dell'HPC è di accelerare l'implementazione della tecnologia delle pompe di calore e, di conseguenza, di ottimizzare l'uso delle risorse energetiche a beneficio dell'ambiente. Per ottenere questo obiettivo, l'HPC offre un servizio globale d'informazione a tutti coloro che possono avere un ruolo nell'applicazione della tecnologia delle pompe di calore, sia a livello nazionale che internazionale. I "target groups" includono "policymakers", agenzie specializzate, industria, ricercatori, società pubbliche, designers, utilizzatori, installatori ed altre organizzazioni.

Una delle attività principali dell'HPC è la pubblicazione dell'Heat Pump Centre Newsletter, quattro volte all'anno. Ogni newsletter affronta un argomento specifico e contiene articoli, novità, eventi ed il parere di un esperto. Le newsletters sono a disposizione gratuita dei paesi che fanno parte dell'HPP attraverso il sito internet dell'HPC. I paesi che non fanno ancora parte dell'HPP possono abbonarsi alla newsletter. In ogni caso, una versione breve della newsletter (una e-Newsletter), è a disposizione gratuita per tutti i paesi. La e-Newsletter mette in evidenza le novità più importanti ed riassume tutti gli articoli della Newsletter. La e-Newsletter costituisce un mezzo semplice di divulgazione delle informazioni e di promozione dell'HPP, il cui scopo è raggiungere il grande pubblico.

Il sito internet costituisce un'altra attività importante e viene aggiornato continuamente con novità, eventi e contatti. Il sito contiene informazioni sui progetti di collaborazione degli HPP Annexes in corso e di quelli completati, oltre che sulle pubblicazioni dell'HPP, rese disponibili attraverso un database.

L'HPC ha anche un ruolo propositivo per la creazione di nuove attività nel quadro dell'HPP. Informazioni su proposte, progetti e contatti sono a disposizione sul sito internet, che contiene anche un documento informativo sulla ricerca e sviluppo e sul marketing nei vari paesi associati all'HPP. Il rapporto è a disposizione dei gruppi nazionali nei paesi membri dell'HPP.

Italian



IEA ヒートポンププログラム(HPP)

IEA ヒートポンププログラムは、1978年に国際エネルギー機関 (IEA) の傘下に組織された非営利の組織であり、その下で各国の参加者が、空調、冷凍、作動媒体（冷媒）などのヒートポンプに関連する技術分野のプロジェクトに協力しています。参加国を代表する執行委員会の運営のもとで、このプログラムは、環境保護のためにエネルギー消費を削減することができるあらゆる応用分野で、ヒートポンプの使用を促進する戦略を実行します。

いくつかの参加国では、ナショナルチームを組織しています。その仕事は、各国の情報の普及と促進、参加国が関心をもっている新しいHPP活動やプロジェクトに関連する新しいアイデアの創出、および新しいHPP活動やプロジェクトに参加することです。

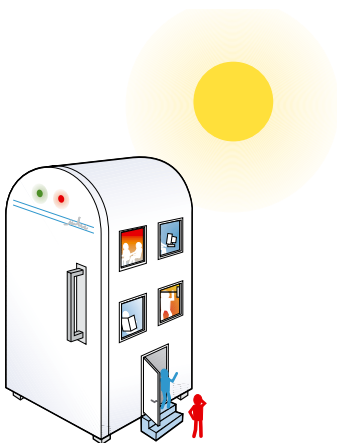
IEA ヒートポンププログラムの協力プロジェクトは「アネックス」として知られています。参加国によってコストシェアおよび／またはタスクシェアで運営されています。そのアネックスを運営するために1つの国がOA（幹事国）として任命されます。ほとんどのアネックスは一定の期間で実施されますが、アネックスの目的は情報交換から新技術の開発、実施にいたるまで広範囲にわたります。

IEA ヒートポンプセンター(HPC)

IEA ヒートポンプセンターはIEA ヒートポンププログラムの中心的な情報活動です。ヒートポンプセンターの役割は、ヒートポンプ技術の実施を促進して、その結果として、環境保護のためエネルギー資源の使用を最適化することです。これは、国際または国レベルで、ヒートポンプ技術の実施のために役割を担う人々を支援するために、世界的な情報サービスを提供することで達成されます。ターゲットグループは政策立案者、各種機関、メーカー、研究者、公益事業者、デザイナー、エンドユーザ、設備業者、その他の機関を含んでいます。

主な活動の1つはIEAヒートポンプセンターニュースレターを1年に4回の発行することです。毎回のニュースレターには特定テーマの特集として、アーティクル、ニュース、イベントやコラムニストなどを含んでいます。ニュースレター（詳細版）はヒートポンププログラムの参加国に対してはヒートポンプセンターのホームページで無料で提供されています。非参加国からもニュースレターを定期購読することができます。しかし、概要版の電子ニュースレター“e-News-letter”はすべての国において無料で利用可能です。概要版の電子ニュースレターは大部分の興味あるニュースおよび全てのアーティクルの概要を紹介しています。この概要版の電子ニュースレターは情報の容易な普及と同時にヒートポンププログラムのプロモーションの手段を提供することで読者数を増やすことが目的です。

もう一つの重要な活動はホームページで、ここではいつでもニュース、イベント、および問合わせ先



Programa AIE de Bombas de Calor (HPP)

Criado em 1978, sob a alçada da Agência Internacional de Energia (AIE), o Programa AIE de Bombas de Calor é uma organização sem fins lucrativos onde participantes de diferentes países colaboram em projetos relacionados a bombas de calor e às demais tecnologias de bombeamento de calor, tais como sistemas de ar condicionado, de refrigeração e fluidos de trabalho (refrigerantes). Sob a gestão de um Comitê Executivo que representa os países membros, o Programa implementa estratégias para acelerar a utilização de bombas de calor em todas as aplicações em que o consumo de energia possa ser reduzido, para benefício do meio ambiente.

Alguns países membros apresentam também Equipes Nacionais. O trabalho destas equipes consiste na disseminação e promoção nacional de informações, na geração de ideias para novas atividades/projetos para o HPP, que sejam de interesse para os respectivos países, e na participação em atividades/projetos do HPP.

Os projetos de colaboração do Programa AIE de Bombas de Calor são conhecidos como “Anexos”. Eles são conduzidos pelos países participantes, baseados em partilha de custos e/ou de tarefas. Cada país nomeia um Agente de Operação para coordenar o Anexo. A maioria dos anexos têm um período de vida limitado, sendo que os objetivos contemplam tanto a troca de informações quanto o desenvolvimento e implementação de novas tecnologias.

Centro AIE de Bombas de Calor (HPC)

O Centro AIE de Bombas de Calor é a atividade central de informação do Programa AIE de Bombas de Calor. O papel do HPC é acelerar a implementação de tecnologias de bombas de calor para otimizar a utilização de recursos energéticos, beneficiando assim o meio ambiente. Para tanto, oferece um serviço de informação a nível mundial que visa apoiar todos os que desejam participar na implementação de tecnologias de bombeamento de calor, tanto a nível internacional quanto nacional. Os grupos alvo incluem responsáveis pelo desenvolvimento de políticas, agências, fabricantes, pesquisadores, concessionárias, designers, utilizadores finais, instaladores e outras organizações.

Uma das atividades principais do centro é a publicação, quatro vezes por ano, da Newsletter do Centro de Bombas de Calor. Cada newsletter cobre um determinado tópico e contém artigos, notícias, eventos e um editorial. As newsletters são grátis e estão disponíveis no site do HPC para os países membros. Países que não são membros podem assinar a newsletter. No entanto, uma versão resumida da newsletter está disponível gratuitamente para todos os países. O boletim destaca as notícias mais interessantes e apresenta um sumário de todos os artigos. A e-newsletter consiste num meio fácil de disseminação de informações para a promoção do Programa de Bombas de Calor. O seu objectivo é atingir um grande número de leitores.

Outra atividade importante é o site web, cujas notícias e informações de eventos e de contatos são continuamente atualizadas. O site oferece descrições dos anexos do HPP que estão em andamento e dos que foram finalizados, bem como publicações do HPP, que estão disponíveis numa base de dados.

Além disso, o HPC tem também um papel ativo na geração de atividades dentro do HPP. Descrições de propostas de projetos e informações sobre contatos podem ser encontradas no site. O site apresenta também um relatório com informações sobre pesquisa e desenvolvimento, bem como sobre o desenvolvimento de mercado nos países membros. O relatório encontra-se disponível para as Equipes Nacionais dos países membros.

Portuguese



Programa AIE de Bombas de Calor (HPP)

Organizado bajo el amparo de la Agencia Internacional de Energía (IEA), desde 1978, el IEA Heat Pump Programme es una sociedad sin ánimo de lucro cuyos participantes en diferentes países cooperan en proyectos en el campo de bombas de calor y tecnologías afines como acondicionamiento de aire, refrigeración y líquidos frigorígenos (refrigerantes). Bajo la gestión de un Comité Ejecutivo que representa a los países miembros, el programa lleva a cabo una estrategia encaminada a acelerar el uso de bombas de calor en todas aquellas aplicaciones donde puedan reducir el consumo de energía en beneficio del medio ambiente.

En algunos de los países miembros existen equipos nacionales (National Teams). Su trabajo incluye la propagación de información y promoción nacional, la generación de ideas para nuevas actividades/proyectos HPP de interés para su país, la participación en actividades/proyectos HPP.

Los proyectos del IEA Heat Pump Programme se conocen como "Anexos". Estos se realizan de acuerdo a la participación de los países miembros en los costes y/o en la división de tareas. Según este principio, un país elige un Agente Operativo para gestionar los Anexos. La mayor parte de estos operan durante un periodo limitado de tiempo mientras que los objetivos pueden variar, yendo desde el intercambio de información al desarrollo e implementación de nuevas tecnologías.

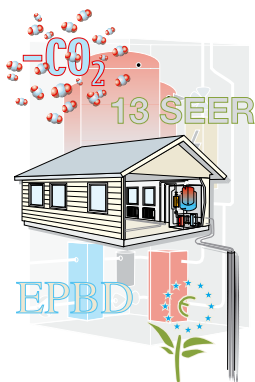
Centro AIE de Bombas de Calor (HPC)

El IEA Heat Pump Centre es el centro de las actividades de información del IEA Heat Pump Programme. La tarea de HPC es agilizar la implementación de la tecnología de bombas de calor y, mediante ésta, optimizar el uso de recursos energéticos en beneficio del medio ambiente. Esto se obtiene mediante un servicio de información de alcance mundial en apoyo de quienes pueden desempeñar un papel en la implementación de esta tecnología, tanto en el campo internacional como en el nacional. Los grupos objetivo incluyen diseñadores de normas, agencias, fabricantes, investigadores, empresas de servicio público, diseñadores, usuarios finales, instaladores y otras organizaciones.

Una de las actividades principales es la publicación del Boletín de Heat Pump Centre cuatro por veces por año. Cada boletín cubre un tema e incluye artículos, noticias, eventos, así como un editorial o artículo de fondo. Los boletines son gratuitos para los países miembros de HPP a través del sitio web HPC. Los países que no son miembros pueden suscribirse al boletín. Sin embargo, en todos los países se halla a disposición gratuitamente una versión electrónica resumida del boletín (e-Newsletter). Esta versión subraya las noticias más interesantes y resume los artículos. El boletín electrónico (e-Newsletter) facilita la propagación de información así como la promoción de Heat Pump Programme; su propósito es llegar a un mayor número de lectores.

Otra actividad importante es la actualización continua del sitio web con noticias, eventos e información de contactos. El sitio web ofrece descripciones de los anexos HPP, en curso o completados, y las publicaciones HPP disponibles en una base de datos.

Además, HPC participa activamente en la generación de nuevas actividades de HPP. En el sitio web pueden encontrarse descripciones sobre propuestas de proyectos e información de contactos. Otra actividad es la publicación de un informe sobre investigación y desarrollo de mercados en los países miembros. El informe puede obtenerse de los equipos nacionales en los países miembros.



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