

EHPA NEWS

EHPA strategy for the proper deployment of heat pumps in Europe

Norway – This article presents the initial conclusions of the EHPA strategy committee and confirms the 1998 report to the Commission that large scale savings in energy and a reduction in environmental impact are possible.

In support of its objective to promote awareness of the proper deployment of heat pumps in Europe, the EHPA (European Heat Pump Association) established a strategy group in February 2000 with members from Finland, France, the Netherlands, Norway, Switzerland and the UK.

The first milestone was reached on October 27 when a strategy report was presented to the EHPA executive meeting in Brussels. The number of heat pumps currently installed in the EU and EEA areas is more than 4 million units.

The Strategy group believes that with support from the European Commission and good planning the total number of installations could be increased to 20 million units. This volume could save 160 TWh primary energy annually and reduce the annual CO₂ emission by 55 million tons. To achieve this target a common EU strategy and a national policy plan for each EU country are required to remove barriers and to encourage heat pump use. It is also important that heat pumps in general are accepted as a complement to other renewable energy sources. Naturally the EHPA strategy is well in line with the policies to be implemented within the EU regarding environmental protection and energy.

There are currently 145 million houses for an EU population of more than 370 million. Of these dwellings 53 % have hydronic heat

distribution systems, 11 % are heated by electricity, and 10 % are heated by gas. This means that roughly 75 %, or more than 100 million dwellings, could be considered as a potential heat pump market.

Regarding energy savings and the decrease in fossil fuel consumption in particular, the present relationship between heat pumps and other renewable sources such as wind, solar, biomass and small hydro can be illustrated by recent data from Sweden and Austria. In these countries heat pumps account for 75-80 % of the reduction in fossil fuel consumption with other renewable sources for the remainder, i.e. 20-25 %. Despite efforts to promote heat pumps in these and several other European countries, the number of installations in the EU and Europe as a whole is still quite modest, i.e. 4 million as mentioned above. The expected annual growth of the heat pump stock in the various countries is in the range 4-40 %, with an average growth of around 10 %.

The EHPA's strategy committee is therefore convinced that a common EU strategy and framework for national planning and action is required in an effort to overcome the main barriers against a more extensive use of heat pumps in several European countries. The most prominent barriers are limited awareness, high initial cost, poor perception and low energy prices.

The main elements in the EHPA strategy are support programmes, quality assurance activities, and communication and information activities. Once the strategy is accepted by the European Commission, a detailed 3 to 5 year plan for EHPA activities, including a budget, will be drawn up. EC funding is essential for the work and activities proposed in the action plan and for the different EHPA technical committees.

*Roar Rose
Chairman, EHPA Strategy Group*



"The ground is a very good source of heat for heat pumps, even in frozen Finland", says Jussi Hirvonen from the Finnish Heat Pump Association, SULPU. Read more about the Finnish heat pump market on the final page.

EHPA Executive news

Brussels – At a meeting on 27 October, members from 11 countries considered a number of major issues designed to transform the market for heat pumps.

Security of energy supplies: Members noted that heat pumps had been accepted as a renewable energy source together with other technologies such as solar thermal and biomass. A cost comparison was required with other renewable sources in order to establish the potential and identify possible measures that could increase the coefficient of performance of installed systems.

EU energy labelling: Members accepted the principle proposed by Paulo Bertoldi of DG TREN at the recent SAVE meeting on appliances in Naples that heating/cooling systems should be labelled. They agreed that the EHPA should become the lead body for establishing labelling and that the EHPA should work together with other interested organisations.

Affordable warmth: Members noted the outcome of the Perth workshop held on October 18 and discussed the Scottish Executive's plans to aid the installation of central heating systems in 141,000 houses belonging to pensioners and other disadvantaged groups. They recognised the potential of heat pump systems to provide affordable warmth for both single and multi-family dwellings.

Rayner Mayer, Chairman EHPA

GENERAL

Establishing the Spanish strategy plan on heat pumps

Spain – The Spanish National Team for heat pumps (ENEBC) has finished a Heat Pump National Strategy Plan that will help open up the market for heat pumps in Spain. The Strategic Plan will be published and distributed by IDAE (National Public Institute for Diversification and Energy Saving) before the end of 2000.

The gathering of background information and the elaboration of a Strategic Plan have taken nearly a year. Firstly, information on heat pumps in Spain was collected from technical publications and personal interviews with key persons. The information was divided into analyses of the following sections: technical issues, the market, distribution, prices, promotion, users, training and governmental support. The information was summarised in *Previous Studies* and sent to almost 75 experts in different heat pump technical and non-technical fields for discussion.

Secondly, Spanish heat pump experts were invited to two round tables discussions, one for researchers and one for commercial personnel. At the one-day meeting, attendees

analysed the information provided by ENEBC and exchanged views. All the information collected at the meeting and in *Previous Studies* was used to generate the *Final Strategic Plan*.

The National Strategic Plan for heat pumps is divided into two main sections, *Current Status* and *Strategic Plan*. Both parts are divided into three sections, *Research and Training*, *Marketing* and *Government Support*. The second section, the "*Strategic Plan*", provides a number of initiatives to overcome barriers detected previously.

Inadequate co-operation and a non-strategic mentality among national researchers, a lack of clear information about heat pumps for end-users, promoters, sellers, etc, luke-warm or non-existent support by the relevant authorities, inadequate training courses for new technologies, and traditional heating with radiators are some of the barriers highlighted by the Strategic Plan. Solutions to these barriers have been proposed and will be discussed with the target groups concerned, including national energy authorities next year.

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Swedish experience with subsidies for heat pump installations.

Sweden – This article discusses past and current subsidies in Sweden, the advantages and disadvantages of subsidy programmes, and how future programmes could be designed on a European level.

Subsidy programmes

Since the early 1980s Sweden has had considerable experience with heat pump subsidies. Heat pump subsidies have been available in the form of loans with special rates of interest for single and multi-family houses, and cash contributions for installations in multi-family houses. There was also a subsidy to stimulate the conversion from direct electric heating in buildings to hydronic systems with heat pumps or bio-energy heated systems. This was the payment of a percentage of the total cost of installations in multi-family houses, up to a fixed amount. A fourth subsidy was for renova-

tion activities. This was an income tax reduction for single family households equivalent to a percentage of the total cost up to a fixed amount. In the 1980s the subsidies were available for both single- and multi-family houses but during the 1990s the focus was on single-family houses.

The subsidies have certainly contributed to increasing heat pump sales. Evidence for this is the substantially increased sales during and especially at the end of funding periods. Many of these customers would probably not have bought a heat pump if subsidies had not been available.

The positive effects

Subsidies lead to a great deal of publicity on the television and radio and in the newspapers, more focus on the product and increased activity throughout the market. Professional publications and monthly and weekly magazines carry editorials about the product that market it in a very positive and professional way.

The government also provides information about the subsidy throughout its life. This information is very important as the new product is seen to have official approval, which increases the confidence of other players in the market.

When subsidies are available manufacturers and installers focus more on the specific product and invent new forms of marketing. They start to pull the market forward through information seminars, direct-mailing and advertising.

The non-monetary effects of subsidies are probably the most important when introducing a new product or technique onto the market.

Without any doubt the subsidy itself helps to increase sales of a product as investment costs are lower and profitability increases. An additional factor is that some customers or investors buy the product because they feel that they cannot 'afford' to miss out on a government subsidy.

A subsidy is always accompanied by certain rules and regulations. This creates a need for standards and regulations for the product, which is usually positive for the long-term development of the market.

The disadvantages

The drawback with subsidies is that when they are introduced the whole chain of market players is subject to great stress. Manufacturers are faced with a sudden strong demand, resellers, consultants and installers are very busy. This leads to a shortage of products and trained personnel within the whole market chain. And quality suffers. The increased demand lures less serious actors into the business.

The subsidy can help sell a specific product but sometimes there is no longer a market for the particular system when the subsidy ends. Market players must then adapt to the new situation and the introduction of a viable product onto the market will be delayed.

Rumours about subsidies, changes to subsidies or announcements about subsidies often cause long delays in the market introduction of heat pumps. A frightening example of this was seen in Sweden in 1998. In early February the authorities announced that subsidies for heat pump and bio-energy installations would be introduced. However, it was not until May, four months later, that the conditions were published. The consequences were devastating. All sales of products related to the subsidy programme ceased from February-May 1998. Many

companies went bankrupt or were in extreme difficulty.

How should a subsidy be designed?

Since it takes 5-10 years to create a market the subsidy should be available for a long time. The market players must know the conditions and must be given an opportunity to develop products and marketing/sales channels, and to train installers and service technicians in a reasonable time-frame. The introduction of a subsidy must be clearly advertised. When a subsidy is introduced the amount, time frame, applications, etc, must be clearly explained.

The transition from a period of subsidy to another subsidy or to a period without subsidies must be very smooth and clearly advertised. The subsidy must be neither too large nor too small. A subsidy that is too large creates a change in product demand that the market is unable to deal with. A subsidy that is too small, on the other hand, does not give the boost that is intended. The Swedish experience is that to be attractive a heat pump installation should have a pay-back period of about 7 years compared to other heating systems.

Subsidies must be simple with regard to application, reimbursement and conditions and the conditions should be generous regarding the size and choice of system, so that the market is given the opportunity to influence long-term developments. An increase in the rate of interest, access to capital and the price of energy has great influence on the choice of the optimum heat pump solution.

European perspective

The reasons for introducing subsidies vary according to the country and the situation at any one time. The shaping of subsidies is also very dependent on market conditions (environmental aims, energy pricing, energy production, employment, taxes, legislation, heating techniques, etc). Therefore it is difficult to create a common system for subsidies within the EU as a whole.

Before a subsidy is introduced the new technology must be well developed and training schemes must be planned and carried out in cooperation with the interested parties.

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Join EHPA!

To achieve the EHPA's aims we need to increase our membership and geographical coverage to ensure that our activities can be initiated and promoted as widely as possible. The membership fee has been kept low to encourage others to join either directly or indirectly through their national associations. We would particularly welcome applications from utilities, Non-governmental organisations concerned about the environment, and planning and consumer associations. The annual fee is Euro 200 for non-beneficial and Euro 500 for beneficial members (those who benefit directly from sales of heat pump systems).

Contact: EHPA Secretariat, see back cover

REGULATIONS

EU Phase-out schedule for HCFCs finally approved

Belgium – The new regulations on the phasing out of ozone depleting substances were adopted by the European Parliament on 13 June 2000 and by the Council on 20 June 2000. They came into force on 1 October 2000. The complete text of the new regulations can be downloaded from: http://europa.eu.int/comm/environment/ozone/latest_news.htm (pdf-file).

German pre-standard for the energy efficiency of heating and ventilation systems

Germany – A pre-standard DIN V 4701-10 for energy performance calculations for heating and ventilation systems was published by DIN (German institute for standardisation) in December 2000. A pre-standard is normally tested for 3 years before it becomes a standard. The pre-standard contains a calculation method to determine the energy performance of heating and ventilation systems in buildings or parts thereof.

For further information: Normenausschuss Heiz- und Raumlufttechnik (NHRS) in DIN, 10772 Berlin, Germany

Coming events

13 December 2000, Paris
Certification of heat pump technologies and installers, Paris
Contact Michel Guittard, ADPM,
E-mail: flexisvc@club-internet.fr

31 January 2001, Bologna
Using energy efficiently in the home
Contact Giovanni Fini, Cita di Bologna,
E-mail: giovanni.fini@comune.bologna.it

2 March 2001, Madrid (tentatively)
Annual meeting of the EHPA together with Climatización exhibition
Contact Marta García, AEDIE,
E-mail: martagarcia@arrakis.es

30 May 2001, Krakow
Saving energy and the environment
Contact Marek Zaborowski, KAPE,
E-mail: trjarock@cyf-kr.edu

Until 5 years ago the prospects for heat pumps in Finland were limited. Now the market for heat pumps is growing rapidly.

The average Finnish family uses 20,000 kWh per year

Five million Finnish people are accustomed to an indoor temperature of 21 °C, regardless of the outside conditions. They also expect hot water on tap, especially for the traditional Finnish Saturday sauna. After sitting in the sauna the whole family and sometimes relatives as well like to take a long hot shower. Finnish people also want to breath fresh air inside their homes so Finnish standards require an air change rate of 0.5 h⁻¹.

The outside temperature in Finland, in the extreme North East of the EU, varies from 20-35°C in the summer to subzero temperatures of -40°C in the winter. The requirements for temperature, hot water and ventilation combined with the Scandinavian climate mean that Finnish families must ensure their houses have good heating, plumbing and air conditioning. This technology requires 20,000 kWh of energy every year.

Heat pump sales have increased by 50 to 100% per year during the last 5 years

Huge energy requirements, rising energy prices, environmental considerations and existing reliable technology explain why Finnish families are now choosing heat pumps to heat their new houses. Five years ago only 1 % of new houses used a heat pump. This year over 10 % of Finnish builders are supplying free and non-polluting energy to homes by means of a heat pump. Most of these are brine/water heat pumps, which use as a heat source a vertical or horizontal ground heat exchanger or one of the 200,000 lakes in Finland. Exhaust-air heat pumps are now entering the market. They are a very attractive alternative because of their low cost and small space requirements.

Table 1 shows a cost comparison of various heating systems for new houses in Finland, and their rough market shares in the years 1995 and 2000 and prognoses for the year 2005.

Table 1: Comparison of heating systems for new houses in Finland

Heating system	Energy consumption for heating and hot water in a typical 150 m ² house					
	Purchased energy/(year)	Operation cost (Euros/year)*	Investment (Euros)**	Market share (%)		
				1995	2000	2005
Direct electric heating	20,000 kWh	1,300	7,500	> 70	30	0-20
Electric heating with hydronic distribution	20,000 kWh	1,000	9,500	< 10	40	10-40
Oil-fired boiler	2,500 litres	1,300	12,000	20	20	0-10
Exhaust-air source heat pump	11,000 kWh	750	9,000	0	< 1	10-30
Ground source heat pump	6,500 kWh	437	16,000	< 1	10	20-40

*) Energy prices: electricity 0.065 Euro/kWh, (0.05 Euro/kWh for electric heating with hydronic system); oil 0.52 Euro/litre.
**) 'turn key' delivery including heating, hot water production and heat distribution system.

Half a million houses heated directly by electricity, great potential for air-source heat pumps

Finland has been and still is the promised land for direct electric heating systems. Most of the houses built in the 1970s to 1990s have electric radiators or electric floor heating, owing to cheap electricity and the aggressive marketing policy of an electricity supply company. Electricity is the only form of distribution in almost 500,000 houses.

Air-to-air heat pumps are attractive complementary systems for saving energy in these houses. The heat pump can take free energy from outside air at temperatures up to -15°C and produce directly warmed air for heating the house. Indeed half the heating energy required can be taken from outside air in Finland. Also air conditioning, which is another feature of air heat pumps, is useful on hot summer days. The total number of heat pumps in Finland is 10-15,000 and 2-3,000 of them are air-to-air heat pumps. Pure air conditioners are not included in the figures.

Renovation market opens up

Eighteen months ago the oil price in Finland was under 0.2 Euros per litre whereas today it is over 0.5 Euros. At least 25,000 water distributed heating systems are in need of renovation annually. This potential has given rise to considerable optimism in the heat pump field.

Information and education are very important, the technology exists

To produce and disseminate information, to educate installers, salespersonnel, consultants, etc, and to keep the quality of deliveries high are the biggest challenges for the heat pump sector. These were the reasons why the 'Finnish Heat Pump Association, SULPU' was set up in 1999. Currently SULPU has 26 members. The author of this article was the first chairman of the board and is a member of the European Heat Pump Association's (EHPA) Strategic and Planning Committee.

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The deadline for the March 2001 issue is **29 January 2001**.

Publisher: European Heat Pump Association
Secretariat: Mr Axel Lehmann

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Editor in chief: Mr Jos Bouma, Novem

Technical editing:

Ms Gerdi Breembroek, Novem

Production: de Vormgeverij

Frequency: quarterly