

EUROPEAN HEAT PUMP NEWS

issued by the European Heat Pump Association EHPA



Issue 1/1, September 2000

EHPA NEWS

European Heat Pump News launched by EHPA

The European Heat Pump Association (EHPA) was established in Brussels on 18 February 2000. Its main aim is to develop the emerging European heat pump market. Membership is open to all legally registered organisations in the European Union.

The EHPA will play an active role in promoting the new market opportunities for heat pumps in Europe. The work will be carried out by technical committees, two of which have already been formed: planning and strategy, and labelling. In order to communicate and inform interested persons, we will produce this quarterly newsletter which is the successor to the EHPN newsletter. It will be distributed together with the HPC newsletter, and sent to EHPA members directly. Further current EHPA activities include maintenance of the EHPA website and EHPA co-sponsored workshops.

In this issue, we reflect on the principal aim of the Association which is to develop the European market for heat pumps, which can meet one of mankind's basic needs at a lower cost to the environment than almost any other technology. Articles describe two contrasting markets one which is mature and the other emerging whilst Hermann Halozan reminds us of the potential of heat pumps to reduce primary energy requirements.

In our next issue, we will consider the emerging mismatch between the demand and supply of oil and the implications for space and water heating.

Rayner Mayer, Chairman EHPA
Contact: EHPA secretariat, see back cover.

Heat Pumps - now and in the future

Heat pumps offer the possibility of reducing energy consumption significantly, mainly in the building sector, but also in industry. The advantages are demonstrated by basic second law thermodynamics. For example, while a condensing boiler can reach a primary energy ratio (PER) of 105% (the theoretical maximum would be 110% based on the lower calorific value), heat pumps achieve 200% and more. Currently more than 100 million heat pumps with a thermal output of 700 TWh/a are in op-

eration world-wide, reducing CO₂ emissions by 0.12 Gt/a. The potential for reducing CO₂ emissions, assuming a 30% share in the building sector using current technology, is about 6% of the total world-wide CO₂ emissions of 20 Gt/a. Most heat pumps are found in Japan and the US, usually air-to-air dual-mode units for both heating and cooling. China already has the largest industry for producing air conditioners, and in South East Asia the trend towards this technology is increasing rapidly.

In Europe as a whole heat pump market development is in its infancy. Western-central and northern Europe has concentrated on heating-only hydronic heat pumps and heat recovery systems. The drive energy is normally electricity, and the efficiency of power generation systems based on renewable and fossil fuels will improve in the future. The efficiency of gas-fired combined-cycle power plants currently available is about 58%. Using oil as fuel similar values are possible. Ground-source heat pumps combined with low-temperature heat distribution systems achieve seasonal performance factors (SPFs) of four and higher, which means PERs of 220-280%. However, PERs of up to 400% will be possible in the future. Therefore, heat pumps are one of the key technologies for conserving energy and reducing CO₂ emissions.

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Europe in the 21st century

The factors that will shape Europe in the 21st century are already clear and these have been directly responsible for the creation of the European Heat Pump Association. I believe they will also shape the EHPA's activities for the foreseeable future. We will consider the most important factors and then describe the role of the EHPA in helping to develop the new Europe.

The single market is at the core of the European Union (EU) and its creation was one of the main objectives of the original Treaty of Rome in 1957. Its political aims include sustainable growth whilst respecting the environment, a high level of employment, and the raising of living standards and the quality of life. The legislation enacted between 1985 and 1992 has

enabled the free flow of goods and services throughout the member states. In addition, the EU is committed to extending the Union to almost all other European States over a period of years and so the current 15 members will become 30 or more. The EHPA has members not only from the EU but also from the European Economic Area (Norway and Switzerland) and the CEE States (such as the Czech Republic and Romania).

The principle of subsidiarity recognises that activities are only implemented at EU level when they cannot be achieved locally (that is nationally or regionally). This influences not only legislation, but also marketing, product design and sales. This also determines the activities that involve the EHPA directly and those that are the responsibility of national or local associations.

The role of EHPA is to help promote this vision of a Europe working with European and other like-minded bodies to achieve these aims.

The most important contribution we can make is to identify the potential for taking up the renewable energy and estimating the likely savings in energy consumed and the reduction in greenhouse gases. Then we need to devise a strategy and implement it to enable this potential to be achieved.

The biggest task, however, will be that of information, education and training as no strategy can succeed unless consumers are aware of the technology, are able to select products most suited to their needs and can find entrepreneurs able to sell and install these products in the most efficient manner.

Rayner Mayer, Chairman EHPA
Contact: EHPA secretariat, see back cover

EHPA co-sponsored workshops

Affordable heat using heat pumps - 18 October 2000 in Perth, Scotland. The current state of the Scottish housing stock will be considered and how heat pump systems can be used to provide affordable warmth - to be hosted by Scottish and Southern Energy.

Using energy efficiently in the home - 31 January 2001 in Bologna, Italy. Topics will include the contribution that heat pumps can make to heating and cooling and the selection of energy efficient appliances.

Contact: EHPA Secretariat, see back cover

EHPA members and associate members

Current EHPA members and associate members are listed below. Full contact details can be found on the Internet site: <http://www.ehpa.org>.

AEDIE	Spain
Czech heat pump association	Czech Republic
Danish heat pump association / DTI	Denmark
DACH (secretariat at IWP)	Germany
Electricité de France	France
FIZ Karlsruhe	Germany
FWS	Switzerland
HPA / FETA	UK
IWP	Germany
Institut für Wärmetechnik TU Graz	Austria
LGW	Austria
Norsk Vaermepumpeforening	Norway
Sciotech projects	UK
SULPU	Finland
SVEP	Sweden
VET	Sweden

Distribution of the European Heat Pump News

The European Heat Pump News is distributed free-of-charge via EHPA members and with the Heat Pump Centre (HPC) Newsletter in all European countries (the UK is an exception, as the UK Heat Pump Network already distributes its own Newsletter with the HPC Newsletter). To obtain a copy of the European Heat Pump News, contact an EHPA member in your country, the EHPA secretariat or download your issue from <http://www.ehpa.org>.

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

EHPA on the Internet



The Internet sites of the **European Heat Pump Network (EHPN)** (<http://www.ehpn.de>) and the **European Heat Pump Association EHPA** (<http://www.ehpa.org>) will become an important means of communication for the EHPA. The EHPA site introduces the association and its members and features a news section with events, this Newsletter, projects with EHPA involvement as well as publications and a members list. The EHPN site is a result of the two THERMIE projects "European Network on Heat Pumping Technologies" and "Concerted Actions for the Promotion of Heat Pumps in Europe". The most important items of this site are a news

section, market data and a compilation of heat pump related links.

FIZ Karlsruhe, the operator of both sites, is looking Europe-wide for partners who are willing to act as so-called Focal Points, coordinating national contributions to the EHPN/EHPA websites. In particular, national heat pump associations are invited to contribute to the sites and to report on their activities and experiences for the benefit of all European partners.

Axel Lehmann, FIZ Karlsruhe, Germany
Address see back cover

GENERAL

European workshop on the certification of heat pump technologies and installers

The way to quality in comfort.

13 Dec 2000 - ELEC 2000 - Paris

Everyone involved in the heat pump quality assurance chain should be aware of the importance of an adequate certification procedure, in order to provide end-users with top quality safe systems. However, there is no procedure currently in place in Europe. A consortium comprising ADPM and Eurovent Certification with SINTEF (Norway), TWK (Germany), and UCF (France) has just finished a two-year project which aims to change this situation.

This one-day workshop presents the "European charter on guaranteed performance of the heat pump system" developed by the consortium. Speakers will discuss the implementation of the scheme and international experience with similar schemes. In a round-table discussion, chaired by Prof. F. Steimle, honorary president of IIR (International Institute of Refrigeration), participants will discuss what actions need to be taken by governments and others for the certification of heat pump installations throughout Europe. The workshop is aimed at consultants, architects, designers, training companies, manufacturers, decision-makers and executives from industries, utilities and the public sector.

The workshop is held under the auspices of the European Commission DG-TREN - SAVE programme - as an activity of the project "The certification of heat pump technologies and installers". It is organised jointly by ADPM [Association de Promotion et Maîtrise de l'énergie - Association for the Promotion and Control of Energy] and IIR, and co-sponsored by the IEA Heat Pump Centre. The project consortium worked closely with the European Heat Pump Concerted Action Group.

The full programme and details of this one-day workshop will be available on request at the end of September from ADPM.

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TZWL: European test centre for domestic ventilation systems

The TZWL e.V. (Europäische Testzentrum für Wohnungslüftungsgeräte or European test centre for domestic ventilation systems) was established in December 1999 by current and former staff of the German utility VEW ENERGIE AG and the Technical Academy of Dortmund, Germany. The association TZWL e.V. is responsible for the test centre for domestic ventilation systems in Dortmund.

Domestic ventilation systems include balanced ventilation with heat recovery, balanced ventilation with heat recovery and heat pump, and exhaust-air source heat pumps. Among the 19 members of the association are the German association of domestic ventilation (Verband für Wohnungsluftung e.V.), the Austrian heat pump association LGW, and the Swiss heat pump association FWS. TZWL co-operates with the heat pump test centre in Töss, Switzerland and Siegen University (solar energy and building physics).

The association's objectives are to:

- prepare test concepts for domestic ventilation systems;
- test domestic ventilation systems;
- train technical staff and application engineers to achieve an improved application of domestic ventilation systems in practice, and
- contribute to increased product quality by the general information and documentation on test results.

The Ministry of Economic Affairs, Technology and Transport, Nordrhein-Westfalen, Germany chose TZWL to progress the above tasks and to provide incentives for technological improvements by increased market transparency.

First test results

The test agency started its independent activities in January 2000. Test results are published in a bulletin, the *List of domestic ventilation systems with heat recovery*. The current issue lists 27 units, 21 tested at TZWL and the remained at other test agencies, including:

- Twenty five units for balanced ventilation with heat recovery including 11 units with counter-current and 14 units with cross-flow heat transfer;
- One unit for balanced ventilation with heat recovery and heat pump;
- One exhaust-air source heat pump for the production of domestic hot water (DHW).

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MARKET ISSUES

Development of heat pump installations in the Czech Republic

The first heat pump installations for the heating of Czech one-family houses were installed in 1992. These were products from IVT and EUFOR – now MARKUS ENERGI – in Sweden, STIEBEL ELTRON in Germany and OCHSNER in Austria. Owing to the very low price of electricity for heating there was no motivation for people to use heat pumps, especially if the economic return on the investment exceeded the lifetime of the appliances. The price of electricity was low because of government subsidies. Paradoxically, electrical energy was more expensive for large consumers and the business sector than for households. Only a few dozen heat pumps were installed annually. This was the situation until 1996 when interest in more economic heating methods started to grow owing to a rise in the price of electricity. However, the growth of installations was slow because of the high cost of heat pumps and the low buying power of the population. The government's attitude was completely passive. The year 2000 has seen an important change in the development of the market.

Currently only about 1000 heat pumps are installed in the Czech Republic, but now the first Czech manufacturers have appeared. The majority of systems installed are ground-water heat pumps, and a smaller number are air-water heat pumps supplied mainly by a Czech manufacturer.

What has changed in favour of heat pumps in 2000?

- 1) A grant from the National Environment Fund is provided for heat pump installations comprising 30% of the initial and installation cost. (An application for a grant must meet a number of criteria. A house must be well insulated, there should be no district heating at the location, and the heat pump must be used for space heating and production of domestic hot water – in order to obtain the greatest efficiency from the heat pump. In addition a COP higher than 3 is required.)
- 2) After several years of discussion a special electricity tariff for heat pumps has been proposed. It will be offered from 1 January 2001. This tariff will be in operation for 22 hours a day, not only for the heat pump but also for all electricity consumption in the home. It is an important step forward in reducing domestic electricity costs and will substantially improve the economics of heat pumps.
- 3) Because of their positive ecological impact the VAT on heat pumps was set at 5% (previously 2%).

4) One in eight energy distribution companies passes on a direct grant for heat pump installations to customers whom they supply with electrical energy.

5) The National Heat Pump Association cooperates with government organisations at the highest level.

6) The Heat Pump Association cooperates with the Czech Architectural Chamber of Commerce to enforce heat pump planning at the start of new house-building projects.

The outlook is promising. At present the share of energy obtained from renewable resources in the Czech Republic is only 1.5%. The aim is to achieve a growth of 6% by 2003. We have a great deal of work in front of us, especially in the field of information dissemination and education, and the training of project managers and installers, etc.

In 1999, however, a problem arose that has now been resolved. A Czech firm started to import low cost heat pumps from the USA that used R22 refrigerant and come only as a basic unit. Many people bought these units without knowing how to install them. They did not realise that a heat pump requires additional equipment to operate. The final cost was likely to be three times the initial payment. The added cost upset many customers and their anger resulted in adverse publicity for heat pumps. This has negated the hard work put in over several years to promote the installation of heat pumps. We appreciate any advice and suggestions you may have that could solve these problems.

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REGULATIONS

Energy security on European agenda

Energy security and supply is one of the initiatives of the French presidency of the European Union, which will culminate in a meeting of the Energy Council on December 5. A green paper is being formulated by the Commission with the help of member states to consider long term strategies up to 2050. It is clear that renewable energy will assist in reducing both import dependence and the environmental impact of energy use, and heat pump technology will therefore be able to make a substantial contribution.

Rayner Mayer, Chairman EHPA
Contact: EHPA secretariat, see back cover

COUNTRY IN FOCUS: SWEDEN

Introduction

The population of Sweden is currently 9 million inhabitants. The number of single family houses is around 1.6 million, including summer residences. Of these 550,000 use electricity, 224,000 use oil, 281,000 use a combination of electricity and wood, and 104,000 use district heating as primary energy source. Around 350,000 houses are currently heated by some form of heat pump.

Market and history

The Swedish heat pump market has shown large fluctuations in sales over the years (from 1986 to 1999), see Figure 1.

One of the explanations for the increase in sales between 1986 and 1990 was the rising oil price, which made it advantageous to convert from oil to a heat pump. The decrease between 1991 and 1994 was caused by stagnation in the construction of new dwellings, falling oil prices, disappearing subsidies and a number of non-professional installers who rode on the positive market tidal wave between 1990 and 1991. The consequence was that sales dropped dramatically during the period 1992-1995.

Three important factors contributed to the favourable development from 1995:

- the Swedish government subsidised the changeover from oil/electricity to other forms of individual heating. These forms of subsidies were successful and influenced the heat pump industry positively towards the end of the 90s;
- an increase in the construction of new dwellings and an increase in the substitution market;

- the Swedish Heat Pump Association (SVEP) developed a form of certification for heat pump installers to ensure that they had obtained the level of knowledge needed for a heat pump installation. Furthermore the consumer safety aspect was strengthened as the Association developed common warranties and insurances, as a part of a security package. The goal was – and indeed is – to create confidence in future buyers.

Market and development

According to the latest forecasts from Boverket (a department of the ministry of housing) 19,000 dwellings will be built during 2000 and 22,000 in 2001. More than half of the dwellings will be single family houses. That means an increase of 1,000 dwellings each year compared to earlier forecasts. Another development we can foresee this year is that the sales of exhaust air-source heat pumps will increase much faster than brine/water-source heat pumps.

The increase in sales during the first half of 2000 indicates an annual increase of approximately 10% compared to 1999. This indicates that

about 23,000 heat pumps will be sold during the year 2000. As can be seen from Figure 1 sales have increased each year since 1995.

Possibilities

In Sweden the heat pump has the best chance of being the first choice when building new dwellings and when changing a heating system from oil, electricity and wood. This assumes that the heat pump industry continues to promote quality. Quality in this context means quality all the way down the chain from the producer to the installer. The customer must also feel secure even after installation of the heat pump. We can achieve this by placing as much emphasis on after sales service as on the original sales work. The security package including warranties and insurances developed by the SVEP plays an important role and has succeeded in creating the confidence needed for a successful heat pump market.

Threats

The threats emanate mainly from the heat pump industry itself. If we neglect the quality aspects described this positive development will change for the worse. We must maintain the current quality standard and make sure it improves.

It can be concluded that Sweden has a vigorous heat pump market. It is now up to manufacturers, installers and others involved to behave in such a way that the current positive trend continues. The mission is and must remain: *Quality throughout the chain!* Success will then follow.

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The Swedish Heat Pump Association, SVEP, was founded in 1981 and currently has 21 member companies, mainly manufacturers and import companies. SVEP also has 550 certified installation companies affiliated.
Internet: <http://www.svepinfo.se>

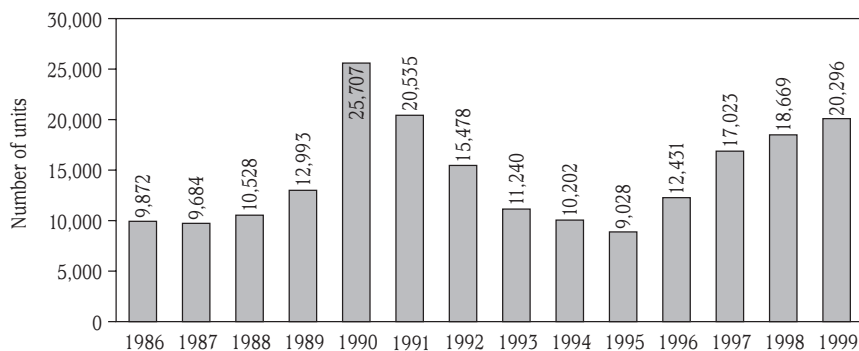


Figure 1: Swedish residential heat pump sales development.

Contribute to this Newsletter

You are invited to send news about heat pumps (market, regulations, standards etc.) in Europe to the editors of the European Heat Pump News. The deadline for the December issue is **25 October 2000**. We also welcome your comments on the first issue of the European Heat Pump News. Do not delay, reply today!

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