

# OUTLOOK 2010 .Z| t t hy,

## European Heat Pump Statistics



## Title picture of the 2010 outlook

### VULCANO BUONO, Naples – Italy

Volcano Buono is a vegetation-covered concrete, steel and glass structure conceived by Renzo Piano, the famous contemporary architect. The building is located in Naples and resides harmoniously beside the real volcano. It hosts 160 shops, 20 restaurants, a supermarket, a 9 screen cinema and a \*\*\*\* hotel with 158 rooms.

#### The challenge

The main challenge was to provide living (air) comfort to this enormous building (asymmetrical square, 170m in diameter, 40m in height, several levels, inclined slope without outward opening) without the option of exterior placement of the machinery.

#### The Solution

The Vulcano Buono air-conditioning system is using a WLHP, Water Loop Heat Pump (from Clivet SpA). All heat pumps systems – water-to-air or water-to-water units (despite that of the supermarket) are connected to the heat circuit that connects all parts of the building.

The installed system is considered a success in terms of initial investment cost, effectiveness and efficiency. Operating costs have been reduced and the environmental impact of this building associated with its energy demand is small. With regard to the latter, the installed water loop does not contain refrigerant but water thus easily transferring the energy between areas with opposing thermal needs. Due to the high efficiency of parts used, energy demand was reduced and approx. 35% of carbon dioxide emissions is saved in comparison with traditional systems. Clivet won the Italian Real Estate Award 2008 for the best Retail Development Project with Vulcano Buono.

#### The System

- 9 Clivet rooftop air-to-air heat pumps, for more than 250 000 m<sup>3</sup>/h processed
- 46 Clivet rooftop air-to-air heat pumps, for more than 1 000 000 m<sup>3</sup>/h processed
- 8 Clivet rooftop water-to-air heat pumps for densely crowded settings
- More than 240 Clivet ventilation and air processing units
- 4 Clivet water-to-water heat pumps for a total of 1800 kW
- 2 supersilent SPINchiller refrigerators for a total of 600 kW
- More than 150 heat pumps for the shops
- The system is completed by four evaporative coolers for an overall 15 MW, three condensation water heaters and pumping stations

For more information, please contact

Clivet SpA

Via camp lonc 25 c.ap. | 32032 z.i. Villapaiera

Feltre (BL) | Italy

[www.clivet.it](http://www.clivet.it)

## Authors

Martin Forsén  
Phone: +46 8 522 275 02  
E-mail: martin.forsen@ehpa.org

Thomas Nowak  
Phone: +32 2 400 10 17  
E-mail: thomas.nowak@ehpa.org

## National editors

**Austria**  
Claudia Hübsch | BWP Austria  
phone: +43 5 90 900 3366  
info@bwp.at | www.bwp.at

**Belgium**  
Marc Frere  
phone +32 65 37 42 06  
Marc.Frere@umons.ac.be

Jan Lhoëst  
Phone: +32 47 68 35 001  
jan.lhoest@ode.be

**Czech Republic**  
Martina Boehmová | AVTC  
Phone: +420 605 768 240  
Martina.Boehmova@seznam.cz |  
www.@avtc.cz

**Estonia**  
Jüri Miks | Estonian Heat pump  
Association ESPEL  
Phone: +372 623 27 55  
espel@solo.delfi.ee | www.espel.ee

**Finland**  
Jussi Hirvonen | SULPU  
Phone: +358 9 45 20 750  
jussi.hirvonen@ivt.fi | www.sulpu.fi

**France**  
Michel Coevoet | EDF Centre des  
Renardières  
Phone: +33 1 60 73 79 94  
michel.coevoet@edf.fr | www.edf.fr

Patrick Brandt | AFPAC  
Phone : +33 1 42 93 42 42  
afpac.org@orange.fr | www.afpac.org

**Germany**  
Gregor Dilger | BWP Germany  
Phone: +49 30 208 799 716  
dilger@waermepumpe.de | www.bwp.de

**Hungary**  
Bela Adam | Magyar Hőszivattyú  
Szövetség  
Phone: +361 6 20 972 9663  
adam@hgd.hu | www.hoszisz.hu

**Ireland**  
Paul Dykes | SEAI  
Phone: +353 23 8863393  
pauld@reio.ie | www.sei.ie

**Italy**  
Giampiero Colli | COAER  
Phone: +39 02 45 41 85 54  
colli@anima-it.com | www.anima-it.com

**Lithuania**  
Alvydas Sakavičius | Lietuvos filimos  
siurblių Asociacija  
Phone: +370 5 264 35 82  
info@lietssa.lt | www.lietssa.lt

**The Netherlands**  
Peter Oostendorp | SHF  
Phone: +31 55 506 00 05  
peter.oostendorp@hetnet.nl |  
www.shf-online.nl

**Norway**  
Bard Baardsen | NOVAP  
Phone: +47 22 80 50 30  
novap@novap.no | www.novap.no

**Slovakia**  
Peter Tomlein | Slovak association for  
cooling and air conditioning  
Phone: +42 124 564 69 71  
zvazchkt@isternet.sk | www.szchkt.org

**Sweden**  
Martin Forsén | SVEP  
Phone: +46 8 522 275 02  
martin.forsen@ehpa.org |  
www.svepinfo.se

**Switzerland**  
Stephan Peterhans | FWS  
Phone: +41 31 350 40 65  
stephan.peterhans@fws.ch | www.fws.ch

**UK**  
Johannes Fritsch | BSRIA  
Phone: +44 1344 465 644  
Johannes.Fritsch@bsria.co.uk |  
www.bsria.co.uk

**Canada**  
Ted Kantrowitz | Canadian GeoExchange  
Coalition  
Phone +1 514 807 7559 -34  
Ted.kantrowitz@geoexchange.ca |  
www.geoexchange.ca

**USA**  
Gerald Groff  
Phone: +1 315 655 4577  
E-mail : ggroff2@twcny.rr.com

**Japan**  
Tokura Shogo | HPTCJ  
Phone : +81 3 56 43 24 16  
tokura.shogo@hptcj.or.jp | www.hptcj.or.jp

## Contribution Energy related products (chapter 3.1)

Michel Roffe-Vidal | Airwell  
Phone : +49 69 507 02 169  
mvidall@airwell.de | www.airwell.de

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## Editorial

With the RES Directive and the revised Energy Performance of Buildings Directive being adopted and in the process of implementation, there is still a number of upcoming European legislation that require full attention of the industry.

The reason behind this is compelling: Europe faces a tremendous challenge in transforming the energy markets towards a much larger share of locally available renewable sources in order to secure an affordable energy supply and tackle climate change. Existing legislation has failed to put Europe on track of meeting the ambitious targets that are necessary for a sustainable energy sector. Thus efforts are increased with the recently published energy strategy of the European Commission. The planned energy related spending are in the range of €1 trillion only in the electricity sector. A mindboggling figure that make some Member States doubtful as we are still waiting for economic recovery. However the strategy plan is only the first of several important policy papers which in turn are to be followed by several proposals for new legislation to push Europe towards an energy future also dubbed “the third industrial revolution”. The European Commissions president, José Manuel Barroso is giving energy top priority for this Commission and for the first time ever a summit devoted to energy will be held in February 2011.

As energy and energy efficiency are given such high priority policy makers have realised that the heat pump technology will be one of the important fields that need to continue to develop. Member States, Eurostat as well as the Commission have an increased interest in the market development all over Europe.

The European Heat Pump Outlook has become an important publication enlightening not only the industry but important decision makers all over Europe. The publication is itself developing quickly. We are very pleased that the 2010 edition encompasses 17 national chapters giving insight to the national market developments. As the interest for the development of the heat pump technology is increasing worldwide we have included national reports from USA, Canada and Japan. We are confident that the excellent information given by our team of national editors will strengthen the position of heat pumps as one of the most promising technologies in order to increase the use of renewable energy, improve energy efficiency and reduce green house gas emissions. EHPA is convinced, that as of yet, not enough focus has been given to renewable energy use in heating and cooling of buildings and that the cost efficient contribution potential of heat pumps towards the afore mentioned goals needs much broader acknowledgement and support. We believe, that this message can be fostered by the new report and hope that our readers enjoy reading it as much as we did while preparing.

Martin Forsén  
*Chair Executive Committee, EHPA*

Thomas Nowak  
*Secretary General, EHPA*

# 1 | Executive summary: the European heat pump market 2009

The global economic crisis has not left the heat pump market untouched. It has led to more cost conscious buying decisions (often unfortunately governed by a very short time horizon) and a reduced rate of building construction. This has substantially influenced the sales of heat pumps in the new building segment, a segment that still dominates the heat pump market in many European countries.

Lower prices for fossil fuels lead many home owners and project developers to postpone a decision towards replacing an existing heating system in general and towards selecting a heat pump based system in particular. In some countries this effect was further pronounced by a reduction or phasing out of existing financial support systems for heat pumps. In combination, these developments have led to a significant reduction in heat pump sales in all markets but Switzerland.

The EHPA statistics – with data for the UK added in 2009 – now provides longitudinal data for 9 countries since 2005. This part of the European market fell by roughly 9,9% to 526 263 units compared to 2008 data (see figure 1-1). The full statistics 2009 covers a total of 17 European countries in which 592 322 heat pump units were sold. Despite of the overall market decline it is worth mentioning that the heat pump industry has in many cases been more fortunate than other industries and even renewable energy sectors. In addition, the figure provided is a very conservative estimate, as national markets on the rise like Denmark, Ireland, and the Netherlands are not included in the presented data.

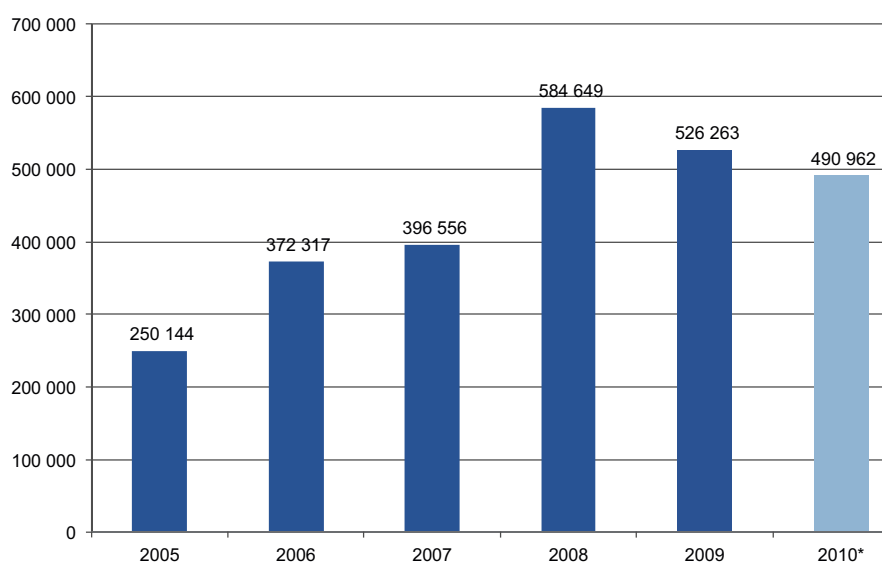


Figure 1-1: European heat pump sales 2005–2009 covering Austria, Finland, France, Germany, Italy, Norway, Sweden, Switzerland and the UK.

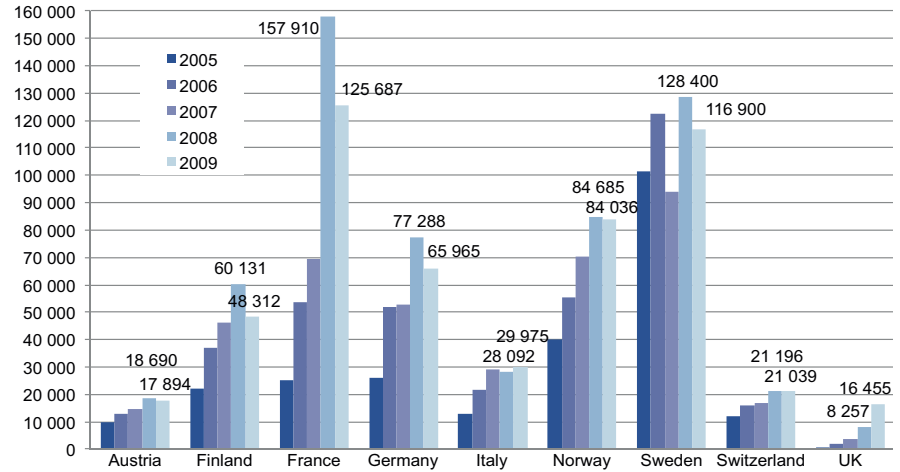
The outlook for 2010 (cf. chapter 5.4) shows that the market decline was stopped and that approx. the same sales figure as in 2009 is expected to be reached in 2010.

Some national developments are noteworthy to explain the drop: the French heat pump market is a good example for the combined effect of a reduced subsidy scheme at the same time as the crisis: 2009 sales of air/water heat pumps – the type providing the majority of sales in France – dropped by 26 500 units, whereas brine-water heat pumps stayed at the same level as the previous year. This drop alone constitutes for 4,5% of the European sales reduction.

Whilst most European markets are dealing with the first generation of heat pump customers, some of the more mature markets are experiencing a growing replace-

ment market for old heat pumps. Sweden is such a market, where sales figures dropped by 9% in 2009, but overall, the heat pump industry strengthened its position on the heating market and is now estimated to stand for more than 80% in the sector of new single-family houses. Sales are stabilized in part by a growing replacement market for heat pumps. In Sweden, this segment has been estimated at 8% in a recent market study performed by the Swedish Heat Pump Association, SVEP.

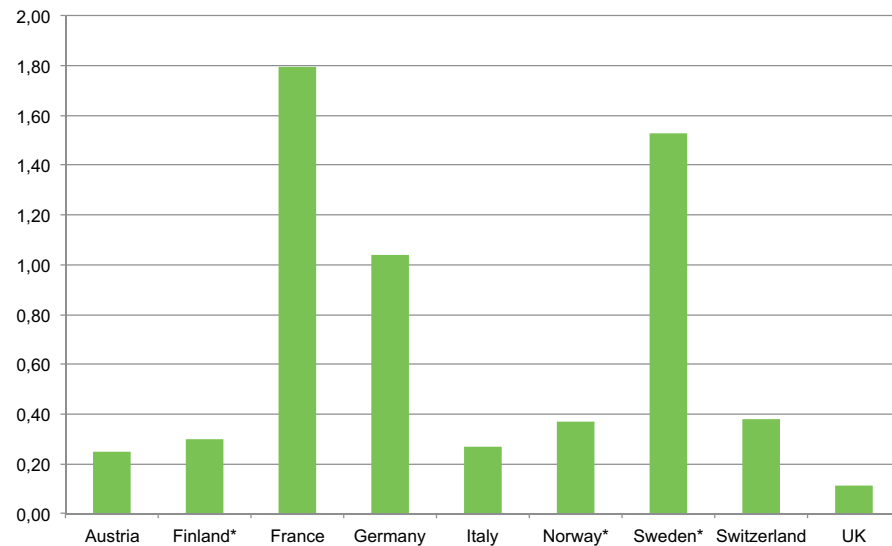
Figure 1-2: Heat pump units sold 2005–2009 per country (\*including air/air heat pumps).



### Renewable energy provided by heat pumps

The implementation of the RES Directive in the Member States (due later this year) gives special attention to the contribution of heat pumps to the use of renewable energy sources. The significant impact already being made by heat pumps is often underestimated. Based on EHPA statistics, a total of 2 129 929 heat pump units were sold from 2005–2009 in the EU-9 area. These heat pumps are annually contributing a total of 25,96 TWh of renewable energy to the overall energy consumption in the heating sector and have saved a similar amount of final energy. As the pool of operating units is even larger, the total savings will be, too.

Figure 1-3: Renewable energy from heat pumps installed from 2005 to 2009 (in TWh).



The total estimated savings of greenhouse gas emissions from the aforementioned stock is 6,03 Mt.

EHPA was established in the year 2000 as a European Economic Interest Group to promote awareness and proper deployment of heat pump technology in the European market place for residential, commercial and industrial applications. EHPA aims to provide technical and economic input to European, national and local authorities in legislative, regulatory and energy efficiency matters.

All activities are aimed at overcoming market barriers and dissemination of information in order to speed up market development of heat pumps for heating, cooling and hot water production.

More information can be found at [www.ehpa.org](http://www.ehpa.org)

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zhs nvt LOWH5



The European Heat Pump Association  
Renewable Energy House  
Rue d'Arlon 63-67  
B-1040 Brussels

phone: +32 22 27 11 11  
fax: +32 22 18 31 41  
mobile: +49 176 63 20 11 40

e-mail: [thomas.nowak@ehpa.org](mailto:thomas.nowak@ehpa.org)