

6.2 | Finland

Key facts

Population:	5.300.000
Area:	338.000 km ²
Capital:	Helsinki
Number of single/two-family houses:	1.100.000
Average heat demand single/two family house:	20–25 MWh/year
Number of all buildings:	1.400.000
Share of energy from renewable sources in final consumption of energy 2005:	28,5%
Binding target for the use of renewable sources by 2020:	38%
Rate of new construction single/two family houses 2008:	10.000
Generation of electricity 2008:	
Net Supplies of Electricity 2008 :	86,9TWh
National emission factor (g CO ₂ /kWh electricity)	168

Energy prices:

Average end consumer prices including distribution and taxes during 2008:

Electricity*:	10,3 Euro cent/kWh
Heating oil**:	5,5 Euro cent/kWh
Pellets***:	4,5 Euro cent/kWh
District heating****:	6,2 Euro cent/kWh

Present market situation

The market for domestic heat pumps in Finland is growing rapidly. The technology is gradually reaching increased recognition and acceptance among the general public. Heat pumps are the preferred choice in new construction as well as for retrofitting the existing building stock. Heat pumps are now in use in nearly 20% of all Finnish single family houses. As the overall economic downturn has had a negative effect on the rate of new construction in the building sector the Finnish heat pump market is more focused on the retrofit and replacement market. Sales are stimulated by a subsidy scheme for renovation and extension works in private homes. The current challenge for the Finnish heat pump market is to overcome the barriers set by the economic situation and a general resistance against any changes in heating systems.

Market trends

The trend that can be observed is that sales of brine-water and air-air heat pumps is continuing to grow, and sales of exhaust air heat pumps (–10%) has decreased (see table 8). The natural explanation to this development is that the retrofit market is opening up and construction of new houses is slowing down. The sales of exhaust air heat pumps are expected to continue to fall in the future. This is due to the fact that the normal type of exhaust air heat pump does not comply with the new building regulations. Sales of the normal type of exhaust air heat pump will be restricted to houses with a very high insulation standard and replacements of old exhaust air heat pumps. A good guess could be a growing share of brine-water heat pumps in new construction. Air-water heat pumps are

²³ Source: *Energiatollisuus*

²⁴ Sources: *12/2008, Direct electricity heated house, **12/2008, ***12/2008, ****12/2008, all data from *Energiatollisuus and Pellettiyhdistys*

new phenomena on the Finnish heat pump market. They will probably gain market shares in the retrofit market, in spite of cold climate conditions.

	2007	2008	Growth
Ground Source HP	5.300	7.500	42 %
Exhaust HP	2.500	2.200	-12 %
Air/Water HP	450	2.500	456 %
Air/Air HP	38.000	48.000	26 %
Total	46.250	60.200	30 %

Table 8: Sales of heat pumps in Finland 2007–2008 *based on estimation of SULPU.

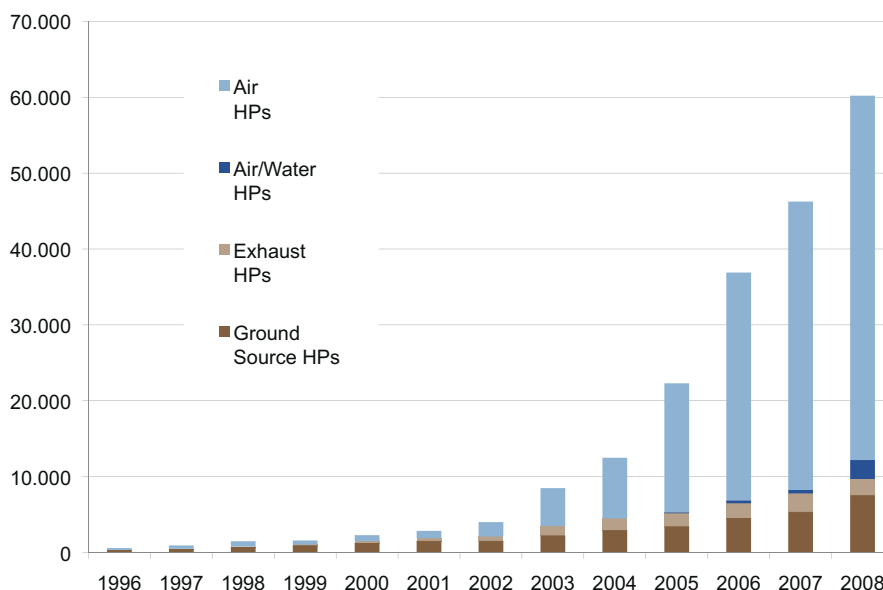


Figure 20: Sales of heat pumps in Finland 1996–2008.

Costs

Table 9 depicts average end consumer prices, including VAT, for turnkey installation in single family houses. The turnkey solutions include everything to take the installation in operation, i.e. the heat pump, auxiliary equipment, material and labour costs.

	Air-Air	Air-Water	GSHP
Euro	1.500–2.000	8.000–12.000	11.000–20.000

Table 9: Typical end consumer prices for Finland.

Air-air heat pumps are predominantly installed in existing houses using direct electricity heating. This is currently the most cost effective solution for this type of house. A recent trend is to install air-air heat pumps in summer cottages. Several products offer new features enabling maintenance heating to avoid freezing during wintertime and long distance control systems via GSM-modem. The air-air heat pump is used as a complement to direct electricity heating.

Air-water heat pumps are generally replacing or complementing oil or electric boilers and for climatic reasons such replacement is more frequent in the southern part of Finland.

Ground source heat pumps are completely dominated by vertical indirect systems. Horizontal systems do exist but are restricted in use due to the significant space requirements. The main reasons that vertical systems have become so successful are:

1. Liberal regulations regarding drilling.
2. Favourable crystalline bedrock of high thermal conductivity.
3. Reasonable costs for drilling (25–35 Euro/meter including VAT and collectors).

Brand names

Some of the most significant brand names existing on the Finnish market are listed in alphabetical order below.

Ground-source heat pumps:

Carrier, CTC, Ekowell, Gebwell, Geopro, IVT, Karhu, Lämpöässä, NIBE, Stiebel-Eltron, Thermia, Vaillant, Viessmann.

Air-water heat pumps:

Carrier, CTC, Daikin, IVT, Mitsubishi, NIBE, Sanyo, Stiebel-Eltron, Thermia, Vaillant, Viessmann.

Air-air heat pumps:

Daikin, Electrolux, Fujitsu, IVT, LG, Mitsubishi, Panasonic, Sharp, Sanyo, Toshiba, Ultimate.

Exhaust-air heat pumps:

Carrier, Enervent, IVT, NIBE, Nilan, Meptek ComfortZone.

Distribution channels

Dedicated retail networks and wholesalers dominate the heat pump market. Nonetheless for the last couple of years air-air heat pumps are offered at construction material stores, mail-order firms and web-stores.

Industry infrastructure

The following sections highlight some of the existing industry supportive organisations and schemes that serve as part of the industry's infrastructure.

National industry associations

The Finnish Heat Pump Association SULPU, formed 1999, has approximately 80 members. The members constitute of manufacturers and importers of heat pumps, installers and other companies with interest in the industry. The association serves as the official voice for the heat pump industry on a national level.

Training and certification

Training according to the European Certified Heat Pump Installer scheme is offered from the beginning of year 2009 by SULPU.

With contribution of SULPU Finland joined the IEA Heat Pump Program in 2009.

Incentive schemes

Heat pump installations qualify for the tax reduction scheme that applies to renovation and extension works in private households. According to the scheme up to 60% of the labour costs related to renovation and extension may be deducted from each owner of a private property. The maximum amount that may be deducted for each owner is 3,000 Euro.