



Producing renewable heat



A short history

The earth under our feet, the groundwater, the air which surrounds us : all of these store the energy provided by the sun every day. Recovering this free and inexhaustible energy and using it for heating is possible thanks to heat pumps which move heat or cold (depending on the season) from outside to inside a house with a high degree of efficiency at a competitive price.



How do they work?

A heat pump is a piece of heating or cooling equipment which operates using renewable energy. It draws heat or cold from a renewable source such as the air outside, water (groundwater or seawater) or the earth and then transfers it at a higher or lower temperature to another location (a building, an office, a home) using a thermodynamic process.

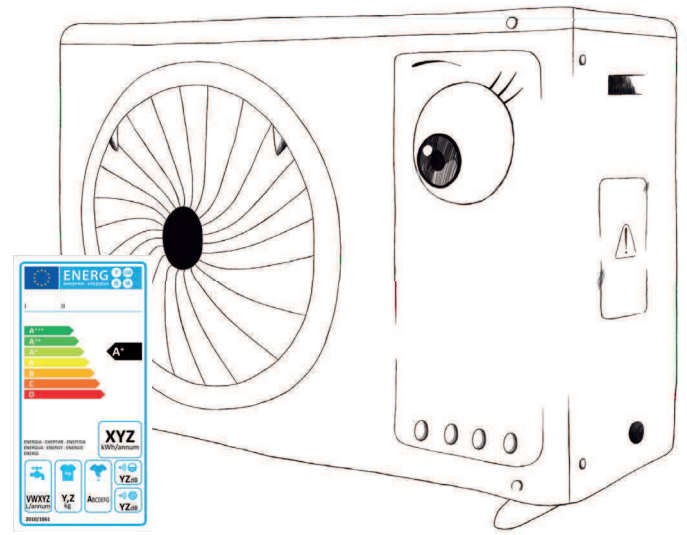
Heat pumps reduce the use of fossil fuels while also limiting our greenhouse gas emissions. With 1kWh of electricity, a heat pump can generate up to 5 kWh of heat or cold. In other words, it can produce up to 80% renewable energy. There are several types of heat pump, which draw heat and cold from the air (air-source heat pumps), the ground or groundwater (geothermal pumps), or the sea (ocean thermal pumps).



In the Principality

Since 1960, heat pumps which draw their energy from the sea are operated in the Principality of Monaco. Numerous buildings situated on the shoreline take advantage of the pumps for heating in winter and air conditioning in summer. There is an important seawater system under the Rocher which feeds these numerous heat pumps.

A global pioneer in this technology, the Principality now has more than 80 heat pumps.



Savings

To give an example: for a 150-square-metre home accommodating four people, installing a heat pump to replace electric convection heaters would result in savings of nearly €1,100 per year.

How much do they cost?

Full installation of a reversible heat pump or a reversible air conditioner which produces heat and cold costs an average of between €5,000 and €8,000. The initial investment is generally recouped within an average of six years through annual savings on energy bills.

Good to know

Life span:

The life span of a heat pump depends on how it is used, but they usually last longer than 15 years. It is recommended that you have your heat pump serviced by a professional as part of an annual maintenance contract.

End of a heat pump's service life:

All parts of a heat pump are recyclable: the exchangers are aluminium, the motor is made of copper and iron, the pipes are copper, and plastic and rubber are used for the bodywork and joints. It must be dismantled by a specialist who will recover the refrigerant for recycling or destruction.



For more tips, go to www.transition-energetique.gouv.mc