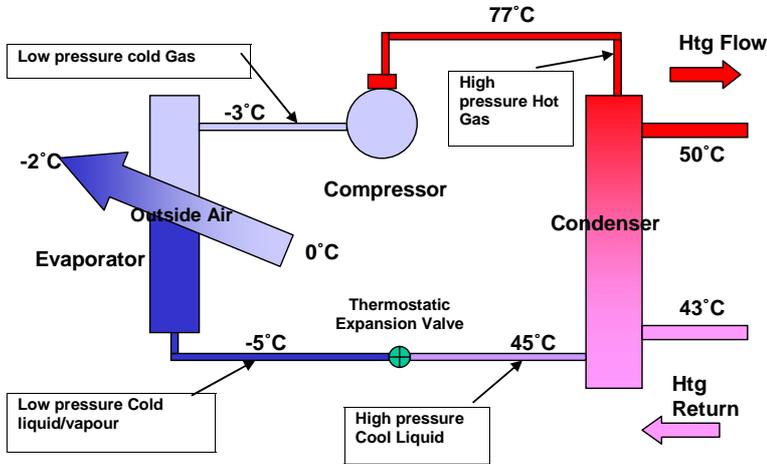


Air Source Heat Pumps

What is it?

Heat pumps extract thermal energy from a variety of renewable sources, including the air, earth or water, and upgrade it to a higher, more useful temperature. If the heat source for the system is the air then it is known as an Air Source Heat Pump (ASHP). The use of heat pumps can lead to savings on fossil fuels and a subsequent reduction in the emission of greenhouse gases.



The benefits

The amount of energy consumed to operate the pump is much less than would be required to heat the building by conventional means. Heat pumps are inherently efficient as they use low temperature heat created from renewable energy sources, and release relatively low carbon emissions.



Who is it suitable for?

ASHP's can be used to provide space heating to a wide range of building types. They are used in houses and community buildings across the country. The technology has, in the first instance, been developed with the housing market in mind so smaller systems up to 12kW have so far been developed. Heat pumps are most suited to energy efficient buildings and are most efficient when supplying low temperature distribution systems such as underfloor heating. These pumps are particularly cost effective in areas where mains gas is not available.

An ASHP typically costs in the region of £3,500 (6kW) and £6,000 (12kW), excluding the cost of the distribution system eg radiators.

How does it work?

ASHPs supply more energy than they consume. By extracting heat from the surrounding air, the heat energy released can be up to 4 times the energy required to power the equipment.

An ASHP system consists of a compressor and a carefully matched evaporator coil and heat exchanger. A refrigerant liquid which circulates within the system has a boiling point as low as minus 40°C and evaporates when absorbing heat from the outside air. It is possible to extract considerable heat from the air at temperatures as low as minus 15°C .

The resulting refrigerant gas is then compressed adding more heat energy and raising its temperature to around 75°C . This heat is then passed via the heat exchanger into water and used to provide space heating through radiators as for conventional heating systems, or via underfloor heating systems.

CASE STUDIES

A semi detached house had storage heaters until recently costing the occupier £27 a week in electricity plus £16 a week for two bags of coal. Following the installation of an ASHP the electricity bill dropped to £13 per week and there is no requirement for coal, a saving of £30 per week.

A village hall in Scotland (see picture) installed 3 separate 6kW ASHP units to heat each of the three rooms in the hall. The heat pump feeds a wet radiator system and is around 50°C at the delivery point. Each heat pump consumes on average 2kW of electrical power whilst providing in excess of 6kW of heat www.heatking.co.uk

For more information contact:

The UK Heat Pump Network: www.heatpumpnet.org.uk
The Heat Pump Association: www.feta.co.uk
The IEA Heat Pump Centre: www.heatpumpcentre.org
CLAREN: www.claren.org.uk

The market

The ASHP market is a new and evolving market, which is receiving considerable interest. A number of systems are currently being installed across the Northwest.