

## HEAT PUMPS

### **What is a heat pump?**

A heat pump is an electrically powered unit consisting of a compressor and a pair of heat exchangers which is able to tap the natural thermal energy stored in the ground, air or water and use this to heat your home and provide hot water. They can also provide cooling systems.

### **How do they work?**

They work in a similar way to a fridge, but the other way round. Instead of taking heat from the fridge and putting it into the air, it takes heat from the source and puts it into another environment. They do use some electricity to pump the heat but for each kilowatt of electricity used to run the heat pump, three or four kilowatts are produced.

There is a demonstration heat pump at the Alternative Technology Centre, Hebden Bridge.

### **Can I run my house from a heat pump?**

Yes you can but your property should be extremely well insulated to ensure maximum benefit. If there is a lot of heat loss then this can add substantially to the cost of installation. Backup heating is often still required. Particularly with air source heat pumps as they do not perform well on the coldest days of the year.

### **What are the environmental aspects of heat pumps?**

In principle, heat pumps are very environmentally friendly – for every kW of electricity they use, they generate around 3 kW of heat and there are no emissions from the pump. Compared to oil or coal heating, heat pumps will have lower emissions. They do need backup power, particularly if they are being used to heat water. Some studies have shown GSHP used for space and water heating with electric backup can generate almost as much CO<sub>2</sub> as a modern condensing gas boiler. If you use renewable energy from your own sources, or buy it in from your electricity company, then the emissions will be much lower. Heat pumps for space heating can work well in combination with solar thermal water heating as solar thermal systems are better at achieving the high temperatures required for heating water. The refrigerants used in heat pump systems can be environmentally damaging but there are less damaging products available.

# Renewable Energy Information sheet



## **How much does it cost?**

This of course depends on the technology, size of your property, how well insulated it is and whether it is new build or will be fitted to an existing building. In a new, well-insulated, medium-sized building, the cost of installing an air source heat pump would be around £6000 - £10,000. A ground source heat pump would be £9000 - £17,000. Running costs after installation compare favourably to oil and electric run heating systems. Maintenance costs are minimal.

## **Are there any grants or incentives available to help with the costs?**

The new Renewable Heat Incentive (RHI) was introduced in 2011 for non-domestic installations and is expected to be extended to domestic installations later in 2012. This scheme pays a fixed rate per kilowatt hour of heat generated for qualifying technologies. Up until 31st March 2012 there is the Renewable Heat Premium Payment (RHPP) which gives a voucher for towards the cost of an installation, but only if you don't currently have gas heating. For details of these schemes, download the **Financial Incentives information sheet** from our website.

## **Where can I find an installer?**

For information about accredited installers within the Yorkshire and Humber area visit [www.yhmp.org](http://www.yhmp.org)

## **Trade Association**

The Heat Pump Association (HPA) is the trade association representing the UK heat pump industry. It's membership includes many of the country's leading manufacturers of heat pumps, components and associated equipment. A full membership directory can be found at: <http://www.heatpumps.org.uk/>

A variety of low carbon energy calculators, which can help you calculate everything from your carbon footprint to the windpower and solar potentials of your home or workplace can be found at <http://www.energysavingtrust.org.uk/>. These are free and easy to use.

**The ATC also promotes energy efficiency – the more energy we save, the less we have to produce.**