



Renewable Energy - Heat Pumps

Heat pumps can result in significant savings compared to conventional boilers. They are ideal with underfloor heating because they operate at peak efficiency when providing the low water temperature required by the UFH, and will work at outside temperatures as low as -20 deg C.

There are two main types of heat pump; ground source and air source. Both types extract usable heat from either the ground or the air and process this within the unit using refrigeration technology to provide warm water for your domestic hot water cylinder and your heating system. For more about the refrigerant cycle, see overleaf.

Ground Source Heat Pumps

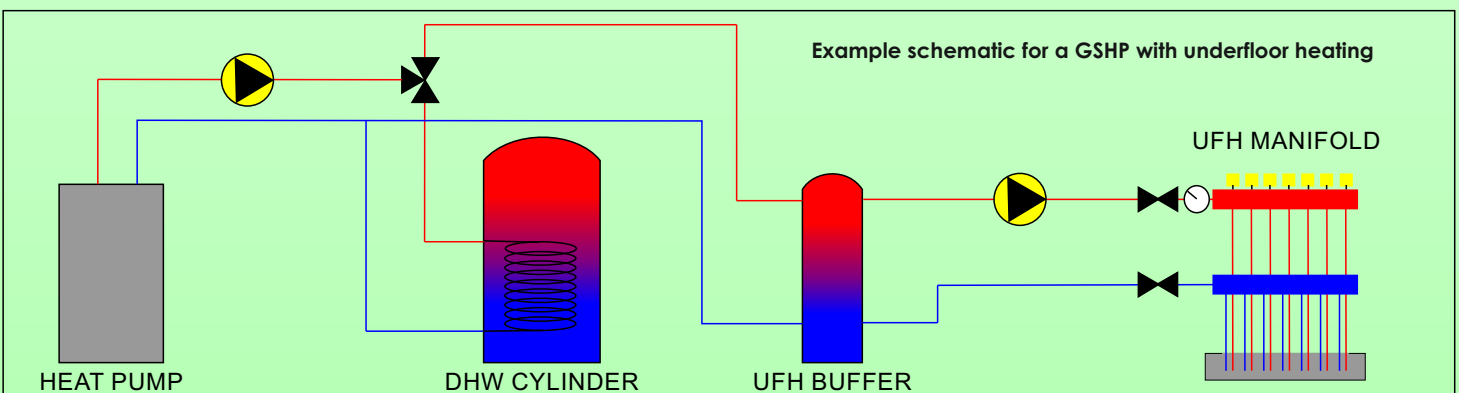


Ground source heat pumps (GSHP) use either horizontal collectors or boreholes to extract the latent heat from the ground. Horizontal collectors are made up of linear pipe laid in trenches between 1 and 2 metres below the ground surface, and at least 1 metre apart. As such, they do require a fairly large area of ground such as a large garden, paddock or field.

Boreholes are used where space for horizontal collectors is not available. In most cases 2 or more boreholes will be required for the average installation, with a depth of up to 100 metres. For both horizontal and borehole collectors the wetter the ground conditions are, the better. In some cases the borehole may pass through an aquaduct or other underground water which provides excellent heat transfer qualities at a very constant temperature.

Heat can also be extracted from a river, lake, or large pond. The water temperature is always fairly constant, especially if the water is moving. Even in the depths of winter there is usable heat that can be extracted.

Some heat pumps need a minimum volume of circulation to maintain their efficiency. If the open circuits in the UFH pipes do not provide enough volume of circulation, a buffer cylinder is required between the heat pump and the heating system. The buffer will have sufficient volume to prevent it from short cycling.



We put our energy into your comfort.

We won't compromise on quality

A Match Made in Heaven

You would search long and hard to find a better combination than a ground or air source heat pump used in conjunction with our underfloor heating. A heat pump will provide an energy saving solution and high comfort level.

Air Source Heat Pumps

One of the benefits of using an air source heat pump is that you don't need to allocate space for the unit indoors as you would with a ground source heat pump. Air source heat pumps are quieter than you might expect. The ASHPs we install have Quiet Mark certification. ASHPs work in a similar way to GSHP, except that they extract latent heat from the surrounding outside air rather than from the ground. The ASHPs we install are able to provide water flow temperatures of up to 55 - 60 deg C. (Source: Mitsubishi and Vaillant.)

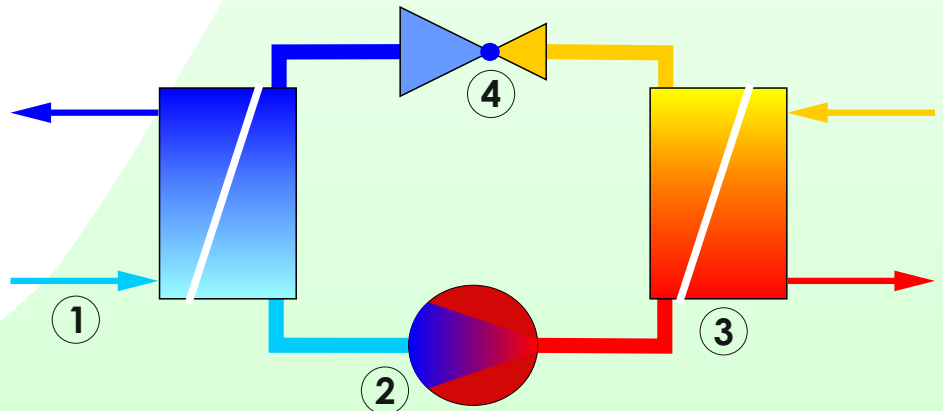


Vaillant aroTherm Plus



Mitsubishi Ecodan

The Refrigerant Cycle



1. Heat energy is delivered from the source to the liquid refrigerant which has a boiling point of minus 26.55 deg C.
2. The source temperature raises the refrigerant temperature which changes from liquid to gas and enters the compressor where it becomes pressurised, raising the gas temperature even further.
3. The hot gas enters the condenser and transfers its heat to water for distribution to the heating and hot water system.
4. The refrigerant gas passes through an expansion valve where it drops in temperature and becomes a liquid once more, ready to continue the cycle.

Our Expertise and Experience

- ◆ We are MCS accredited for the installation of ground and air source heat pumps and solar thermal panels.
- ◆ We specialise in combining heat pumps with underfloor heating.
- ◆ We care for every project as if it were our own.
- ◆ We use quality products and equipment with excellent guarantees.
- ◆ We provide a bespoke design service to suit your project.
- ◆ Our installation photos are used in our suppliers' manuals and training literature, and have also been used in various building magazines.
- ◆ We offer advice and support from the planning stage, right through to completion and beyond.
- ◆ We provide an unrivalled after sales service.

*Thank you for considering
our company.*

Simon & Pauline Currie.



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We leave our clients with a warm feeling.

