EARTHENERGY™

GeoScience Group

Ground breaking heating that's gentle on the environment

Geothermal Heating System
Operating Instructions

Renewable Geothermal Heating & Hot Water

Reliable Sustainable Affordable Renewable Available

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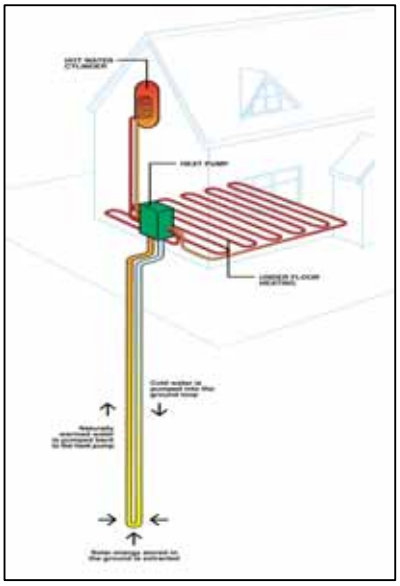
Introduction

The central heating system installed in your home looks very similar to those heated by gas or oil fired boilers, but it differs in several important respects. The information that follows is intended to give an overview of how the system works and the use of its controls.



The heat pump

The heat pump for your home is located either inside or in an external enclosure outside the property. The heat pump is connected to a loop of pipework installed in a borehole near the house. When the heat pump is working it extracts energy from this loop and increases its temperature to a level suitable for heating your home. The energy extracted from the ground is mainly warmth it has gained from sunlight. The temperature of the ground below the surface is stable throughout the year, so your system will work equally well in summer and winter. The heat pump and the water circulating pumps used in the system are driven by mains electricity and the cost of this will appear on your normal electricity bill. It is expected that the cost of this electricity will be less than you are likely to have spent in the past, but it will of course depend on how much heating you use. You are probably aware that you are now free to choose the supplier that you buy your electricity from, and it may be worthwhile for you to compare prices to ensure that you are obtaining the best price available to you.

Heat pump with ground loop pump box and heating circulation pump

The heat pump is not like a conventional boiler, which delivers water at a high temperature for short periods of time. The heat pump works better at lower output temperatures - it is better to run the heat pump for longer periods of time at moderate temperatures than for short periods of time at high temperature.

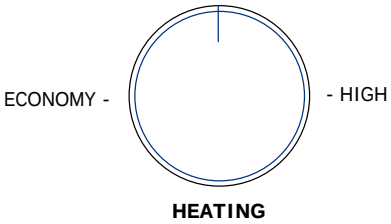
The heat pump fitted to your home has one user control knob, which can be found behind the front panel (the panel is a push on fit and can be removed easily). The control should usually be set to the lowest position between “Economy” and “High” that maintains your comfort. When winter sets in if the weather becomes very cold it may be necessary to turn the temperature up above this setting to “High” but to maximise economy remember to turn it back down when the weather becomes milder.

The heat pump has two operating modes, one of which is designed to heat the hot water tank and the other for the heating system. It can only operate in one of these modes at any one time. The installer will have set your programmer (described below) when the system was installed.

Close up of heat pump front panel showing control knob and fault lights

Radiator system

The radiator system installed in your home uses the same types of fitting used in traditional central heating systems, but it operates at a safer lower surface temperature. This is -not a disadvantage. The system has been designed to produce enough heat to keep your home warm but it needs to deliver a moderate amount of heat for extended periods to work at its best. For this reason it is best not to switch the system on and off many times during the day, but rather to allow it to run automatically to maintain continuous warmth.



Close up of heat pump control knob

Thermostatic Valves may be attached to the radiators in the bedrooms and kitchen (where the kitchen has a radiator). They enable the temperature of those rooms to be varied. Each unit contains a temperature sensitive valve, which switches off the flow of hot water to the radiator when the desired temperature is achieved. Because of the need to maintain background warmth these valves are only fitted in the rooms where individual room temperature control is most needed.

Thermostatic Radiator Valve (TRV)

Underfloor Heating System

If you have an underfloor heating system, this has been designed to work at the lower end of the temperature outputs of the heat pump. The control knob on the front of the heat pump should, therefore be left on “Economy" for all but the coldest days.

A main room thermostat in the living area typically controls the house temperature. A second thermostat in the main bedroom may be installed to enable the bedrooms to be controlled separately from the rest of the house.

The Room Thermostat

Room Thermostat

This is normally positioned on the hall or living room wall. It reacts to the temperature of the air around it. When the temperature set is achieved the room thermostat sends a signal back to the heat pump causing it to switch off. It is recommended that the thermostat should be set between 18°C and 22°C. For energy efficiency the thermostat should be set at as low a level as possible to achieve satisfactory comfort levels.

The Programmer

Programmer

The programmer is a clock, which operates your heating system. Heating and hot water are controlled independently and can be switched on and off automatically a number of times a day. The table on the right shows a typical programme. If you wish to change the settings the important points to remember are:

- Avoid running the hot water system and radiator system at the same time. If they are switched on at the same time the radiators will turn off while the hot water tank is heating up.

- Programme the radiator system to run for a reasonable length of time - at least an hour at a time and preferably more. The heat pump is least efficient (more expensive to run) when switched on and off for short periods of time.

	Heating	Hot Water
On		5.00 am
Off		7.00 am
On	7.00 am	
Off	9.00 am	
On		2.00 pm
Off		4.00 pm
On	4.00 pm	
Off	10.30 pm	
On		
Off		

The programmer's internal clock can be left on GMT(winter time setting) and need not be changed when British Summer Time begins and ends, although you can change this if you wish.

Immersion Heater

Your hot water cylinder is fitted with an immersion heater for emergency use. A switch in the cylinder cupboard controls this. As your heating system provides hot water you should not normally use it. Heating water with the immersion heater is more expensive than the heating system. Switching the immersion heater on while the heating system is on will prevent the heat pump from working correctly.