

Ground Source Heat Pump FAQs

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What is a heat pump and how efficient is it?

A heat pump is a device, which transforms low-temperature energy to higher-temperature energy using the refrigeration cycle. A ground source heating system heat pump is three to four times as energy efficient as the most efficient gas or oil boiler. Instead of burning a fuel, and producing the associated emissions that contribute to global warming, they simply move heat that already exists.

What is a ground source heating system?

A ground source heating system is an electrically powered system that taps the natural heat stored in the earth to heat your home. A heat pump will also heat your domestic hot water, heat your swimming pool and can cool your home in the summer.

How does it work?

It simply moves heat energy from one place to another. Your fridge works on the same principle. By using the same process ground source heating systems remove heat stored in the earth and transfer it into your home. The sun naturally replenishes the heat removed from the ground.

How is the heat transferred from my garden into my home?

The earth has the ability to absorb and store heat from the sun. This heat is extracted from the earth, for example, by using a ground loop. The ground loop is a continuous closed loop of special pipe buried in your garden. Water is circulated through the buried pipes where it absorbs heat from the surrounding earth. The ground loop is connected to a heat pump inside your home that takes heat out of the circulating water and transfers it into your heating circuit.



How are the loops installed?

The special ground loops are either buried in trenches at a depth of 1 - 2m or installed in bore holes that may be up to 90m deep. Both methods are equally efficient. Available space determines which method is used.

What plumbing do I need and can I keep my existing radiators?

You can use under-floor heating and radiators for heat distribution in your home. Ideally for maximum benefit and efficiency, a heat pump works best with under-floor heating, but oversized or extra radiators are also a practical option.

Will a ground source heat pump work in my home?

Before looking in detail at ground source heat pumps, it is worth making sure your house is suitable. The following questions will need to be asked:

- * **Is there space for a trench or bore hole to be dug just outside your home?**
- * **Is the ground suitable for digging?**
- * **What kind of heating fuel would your ground source heat pump replace? If it is electricity, oil or liquid petroleum gas and you live in an area with no gas supply, then the payback will be more favourable**
- * **Do you need a back-up heating system for additional space or water heating? This will depend on your overall heating needs, compared to the size of system that you install**
- * **Is your home still being built? If so, it will be cheaper to install the ground source heat pump and under-floor heating system at the construction stage rather than when construction is complete.**

But don't feel you need to work out all this on your own; Rain Wind and Sun can do this for you.

How do ground source heat pumps affect the environment?

By using electricity to power the compressor in the heat pump, a ground source heat pump system will still produce a certain amount of CO₂ – although a lot less than a conventional gas or oil boiler. To reduce this amount further, you could use another renewable form of energy such as solar electricity or sign up to a green electricity tariff to power the system.

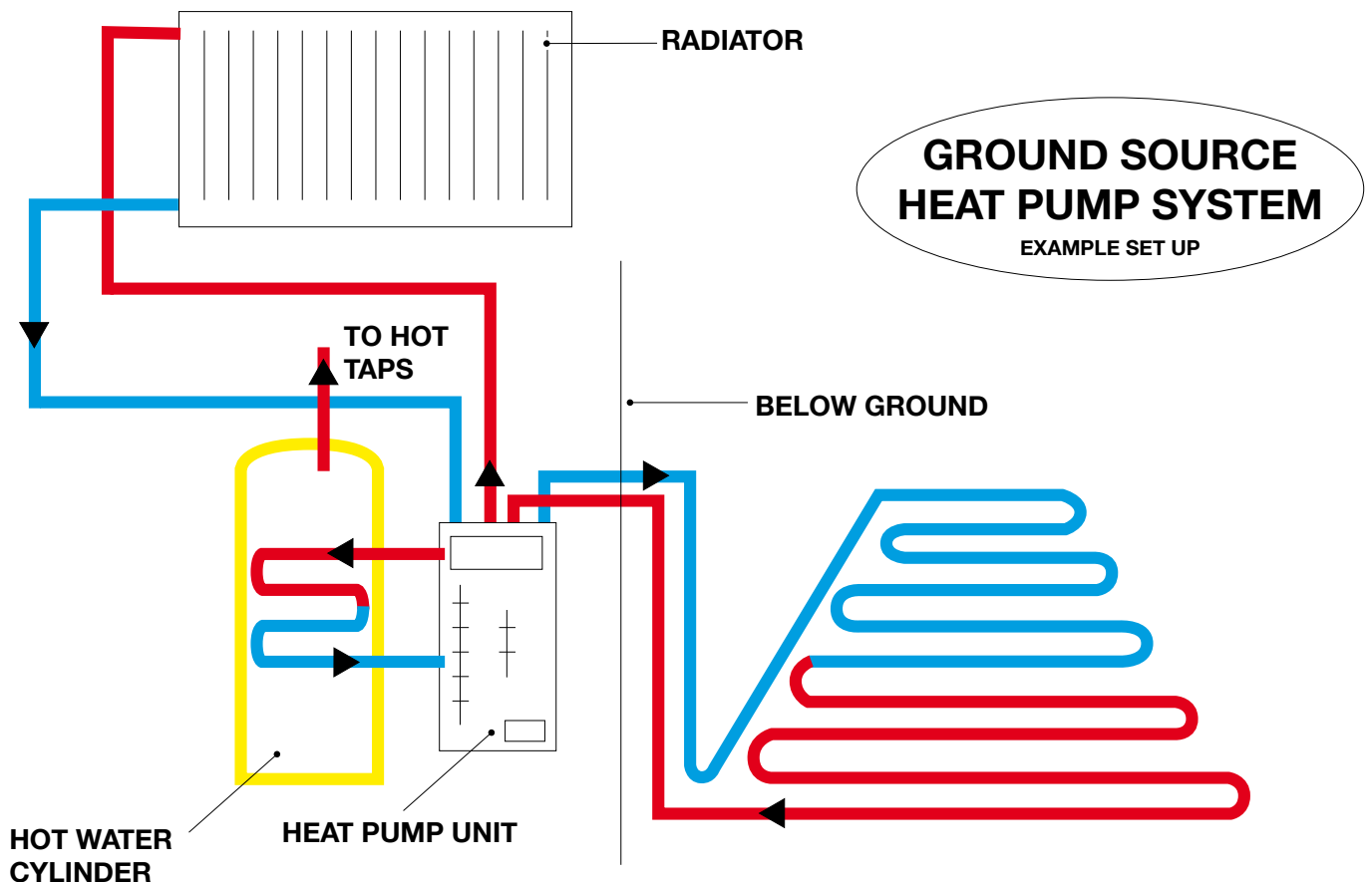
Also, ground source heat pumps use toxic or flammable refrigerants to regulate temperature. Although these can potentially pose a threat to the environment, new, less harmful blends are being developed.



How much will it cost to heat my home with a ground source heat pump?

The exact cost of buying and installing a ground source heat pump system will depend very much on the sort of home you have and where you live in the country. But as a general guide, a typical system that produces 6 kW of heat at any one time will cost from £6,500 to £11,500 to buy. This does not include installation or the cost of your heat distribution system. Your running costs will vary according to the type of heat distribution system you have in your home, which affects the efficiency of your ground source heat pump. Under-floor heating works at a lower temperature than radiators and will help your system to be more efficient. It should be cheaper to run than gas, oil, LPG or electric storage heaters.

How It Works...



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