

Heating with a Ground Source Heat Pump

What is a Ground Source Heat Pump?

Ground source heat pumps extract thermal energy (heat) from the ground (via a Borehole System) and convert this into heating and hot water for your home. They do require electricity to operate, for each kilowatt of electricity used to run a ground source heat pump, at least four kilowatts of **heat** can be delivered to the building. This means that 75% of the energy you use will be from a **renewable** source, which will **reduce your emissions and CO2 impact**.

What is a borehole system?

Boreholes are created by drilling a hole into the ground, The Limes has 4 x 120 meters holes, 150mm in diameter. Looped pipework inserted to the bottom and the hole is then pumped with a special grout mix from bottom to top. This allows heat transfer from the ground to the pipe and vice versa. Boreholes cannot be seen when the installation is complete.

What are the advantages of a heat pump system?

Incorporating heat pump technology into your home is one of the most **economical, effective** and at the same time, **environmentally friendly** ways to cover your heating and hot water needs.

The functioning of a ground heat pump as well as its thermal output are not dependent on the outside weather conditions, as the ground temperatures more or less remain constant year-round.

There are also the following benefits:

- Low running costs, which helps keep energy bills low
- Removes the need for fuel to be delivered and stored
- They **operate efficiently** even in cold temperatures. Just 25% of the energy used by a heat pump is provided by electricity, with the remaining 75% being generated by the environment through the ground
- The utilisation of natural energy sources means the approach to heating and hot water production is particularly **sustainable**
- **Emissions free**
- Can be used as part of a climate controlled system within the home
- Simple and robust technology with low maintenance and a long service life



Mechanical Ventilation and Heat Recovery (MVHR) and Comfort Cooling

We all like the fresh air feeling of living in a house with all the windows open, but in winter that might get a little cold. When a Mechanical Ventilation with Heat Recovery is installed, it gives that same fresh air feeling as though all the windows were open all day but with the added bonus that the home stays warm and uses less energy. This same system allows for comfort cooling in the warmer months.

MVHR

With a MVHR installed it allows the property and the occupants to breathe with controlled fresh filtered clean air entering the living areas and bedrooms whilst removing the stale warm smelly air from the wet areas like toilets, bathrooms and kitchens. This works 24 hours a day with the air movement increasing and decreasing depending on the homes occupancy and time of day. In winter as the cold air enters the home it's pre-warmed by transferring heat through a simple heat exchanger from air being extracted, during this process the two air flows do not mix together. Installing an MVHR reduces the properties heat losses enabling the temperature of the under-floor heating to be lower and so adding to the overall efficiencies of the Heat Pump and the whole property.

Comfort Cooling

The Background Climate Controlled Comfort Cooling System gently cools the property by cooling the air entering the property through the MVHR. So as the weather gets warmer in the summer, operated by a simple on/off switch the supply air into the house can be cooled, maintaining a comfortable background cooling temperature throughout. Comfort Cooling may struggle during the day to overcome solar gain, but at night, when it's most needed, it removes that sticky mugginess and creates the perfect conditions for everyone to enjoy a good night's sleep

