

Case Study

Ground Source Heat Pump

Residential Client



At a glance

- Three 100m vertical boreholes
- Trenches to connect the borehole head to the plant room
- Testing the pipework from the boreholes to the plant room and to the house
- Long term cost savings of up to 70% per year
- Peace of mind that our clients are making small steps towards helping to reduce air pollutions, slow climate change and safeguard the plant for future generations

Objective

Mr & Mrs Mackenzie had always been very eco-conscious, but when their first grandchild was born a few years ago, reducing their carbon footprint became a priority.

Knowing what a big polluter their old combi oil boiler was, the Mackenzies decided to replace it with a renewable energy alternative, a Ground Source Heat Pump.

About the project

The Mackenzies took on a key part of the project management and enlisted their own builder and electrician to support on various tasks. Nicholls dug three vertical 100 metre boreholes spaced evenly apart in the garden.

A separate groundwork team then dug two one metre deep by one metre wide trenches for pipework which would connect the borehole heads to the plant room and then from the plant room to the house.

Nicholls then installed and tested the pipework connecting the boreholes to the plant room. The Nicholls plumbers and electricians installed the heat pump, exchange equipment and water tanks in the plant room. A plumber removed the oil boiler and then connected the equipment to the existing



"Thank you Nicholls for the excellent work on our new Ground Source Heat Pump system. This was a bit of a leap in the dark for us. Frankly we had no idea whether such a system which appears to be based on such a perverse concept as taking heat from the ground to heat a house and provide hot water could work. We have now had a weekend since the project was completed last Wednesday and it is clear that the system works very well indeed. The water is as hot as we could want it and the arrangement whereby there is constant low level heating works better than the frantic surges of heat from the old oil based system. In particular the whole house is warm rather than just certain rooms."

Mr & Mrs Mackenzie, Client

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Did you know?

Oil and gas heating systems are huge polluters. The average UK household emits 2.7 tonnes of CO2 each year from heating their house. In fact 14% of UK greenhouse gases come from houses, which is a similar level to car emissions.

What is a ground source heat pump?

Ground Source Heat Pumps pump a mixture of water and antifreeze around a loop of pipe, which is buried underground in your garden. These pipes are housed in the ground either horizontally or vertically, in boreholes. Heat from the ground is then absorbed into the fluid and passed through a heat exchanger inside a heat pump which lives in a plant room outside your house. This is typically an external building like a converted garage. The heat energy is then effectively concentrated and used to heat your house.

Renewable heat incentive scheme (RHI)

The Mackenzies qualified for the Government's domestic Renewable Heat Incentive (RHI), a UK Government scheme set up to encourage the uptake of renewable heat technologies by providing financial incentives. The domestic RHI was launched on 9 April 2014 and covers England, Wales and Scotland. It provides financial support to the owner of the renewable heating system for the first seven years.



"We were very impressed by the hard work and professionalism of the several Nicholls teams who worked on our system. It is clearly not an easy operation to carry through successfully, particularly when it is not possible to be certain in advance as to the geology that the borers will meet. We were filled with admiration at watching each of the teams tackle its particular aspect of the project: first the borers, then the headerwork team, followed by the guys installing the pump and tanks. We look forward to many years of quiet reliable heat and hot water without the guilt of burning oil."

Mr & Mrs Mackenzie, Client