



Domestic RHI Case study – Fast facts

Technology type: Ground source
heat pump

Equipment manufacturer: NIBE

Equipment model: F1145

Capacity: 12kW

Installer: isoenergy



Warm feelings for renewable heat in North Yorkshire

Ground source heat pump heats large newly built home at low cost

Scenario

Three years ago, Nicole and Richard Smyth built a new house in a small North Yorkshire village, 20 minutes outside of York. With five bedrooms and plenty of space to host their grown children, the large house requires a substantial amount of heat to feel warm. The Smyths knew from the outset that they didn't want to rely on a traditional gas or oil-fired boiler, and that they wanted to include a renewable heating solution in their home. Nicole was born and raised in Switzerland where renewable heat is well established.

In 2009, Richard met a representative from renewable energy installers isoenergy at a professional conference. Although it was located in the south of England, the couple contracted isoenergy to install its new system. Together they decided that a ground source heat pump (GSHP) was the right heating solution for their property.

Using technology similar to a fridge, GSHPs take the heat from the ground, increase the temperature and then transfer it to radiators or under-floor heating systems. Installers lay a network of pipes underground, either horizontally or in deep bore holes, and these

pipes then lead back to a heat pump located either inside the house or in a shelter outside. GSHPs are among the most efficient renewable heat technologies on the market.

“Our house is located off the gas grid and a GSHP was the most intelligent way for us to heat our home,” says Nicole. “We did our research to make ourselves comfortable with the technology. Since renewable heating is somewhat new, we felt strongly that we wanted to go with an installer that had a lot of experience and who would understand any site-specific challenges that could arise. We feel that we should be more responsible about our impact on the environment, and a renewable heating system allows us to do just that.”

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Installation

Since the Smyth’s house is located on a limited plot of land, there wasn’t enough room to lay horizontal pipes. Instead, the installers drilled in the garden two boreholes with a combined depth of 300 metres to accommodate the pipes.

With large equipment needed to drill this hole, the installers completed this task before the builders started on the house. After the structure was complete in late 2010, the heat pump installers connected the pipes to the rest of the heating system. The house now has under-floor heating running throughout, along with heated towel rails in the bathrooms. The GSHP also provides the home’s hot water. The heat pump itself is stored in an outhouse next to the house.

“We are thrilled with the new system,” says Nicole, whose house was finished in December 2010. “We don’t have to think about it at all. It’s always on in both the summer and winter, but the system self-adjusts the temperature so we always feel comfortable. It’s so unlike the other heating systems that we have used. We got used to it very quickly and can’t believe how simple it is to use.”

Significant savings

The Smyths paid £32,000 to drill the boreholes and install the new heating system. The couple estimates that the increased electricity costs to run the heat pump total around £80 a month.

The Smyths also plan to apply for the Government’s Renewable Heat Incentive, which launched spring 2014. The RHI is part of the Government’s commitment to increasing the UK’s renewable energy use. It provides homeowners with long-term financial support for installing renewable heating instead of a fossil fuel system. As part of the application process, homeowners (except self-builders) must have a Green Deal Assessment carried out to measure its energy efficiency. Based on initial RHI assessments, the Smyths estimate that they will receive around £2,500 a year for seven years, which would cover around half of the cost of installation.

“Our builder initially questioned our judgement because of the system’s higher installation costs,” says Nicole. “However, we felt very strongly that we didn’t want a gas or oil system, and we know that our energy bills are cheaper as a result. It’s a great added bonus that with the RHI payments we will be getting something back for making a positive contribution to our environment.”

To find out more and apply for the Domestic Renewable Heat Incentive or to book a Green Deal Assessment:

- Call the Energy Saving Advice Service on **0300 123 1234** (England and Wales) or Home Energy Scotland on **0808 808 2282** for free and impartial advice
- For further information and guidance documents visit:
www.ofgem.gov.uk/domestic-rhi