Department of Energy & Climate Change

Domestic RHI
Case study – Fast facts

Technology type:	Ground source heat pump
Equipment manufacturer:	Danfoss
Equipment model:	DHP-L Opti Pro
Capacity:	12kW
Installer:	EcoLogicLiving

Warming up after the 'Great Cumbrian Flood'

Ground source heat pump replaces oil to heat large family home

Scenario

In November 2009, record rainfalls were recorded in Cumbria as rivers and streams spilled into local homes and businesses. One of the houses badly affected belonged to a retired couple, Pamela and Noel Bath, who live in a five bedroom, detached house in the countryside. Engulfed with water following the flood, their home needed complete renovation.

The couple decided to use the opportunity to consider how they would like to lay out their house. The flooring had to be entirely removed to a depth of 18 inch. This gap was ideal for installing underfloor heating. Previously, they had heated their large home with an oil fired boiler which had been expensive, so they started to research alternatives.

Following a recommendation from a friend who had recently had a heat pump installed, the Baths looked into ground source heat pumps (GSHP). They called in local installer EcoLogicLiving, which is based in Carlisle in Cumbria. The company reaffirmed everything the couple had heard, and they decided to go ahead with the installation.

Using technology similar to that found in a fridge, GSHPs take heat from the ground and convert it into heat for the home. The system requires a network of pipes to be laid underground, either in horizontal trenches or in deep holes bored into the ground. A mixture of water and anti-freeze passes through the pipes, absorbing heat from the ground, even in the middle of winter. A heat pump then makes the heat usable and carries it throughout the rest of the home.

"Like much in our house at the time, our oil-fired boiler was beyond repair," says Pam. "The need to replace it led us to consider whether oil was the most efficient way to heat our property. We did a bit of research and thought that a greener solution could mean lower fuel bills.

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> Pamela Bath

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We also liked the idea of lowering our carbon footprint. We found the ground source heat pump to be the most economical way to heat our house and it's absolutely wonderful. It's so simple - it practically looks after itself year round. We can control each room to whatever temperature we want and the whole house is comfortable 24 hours a day."

Installation

EcoLogicLiving recommended a 12kW DHP-L Opti Pro GSHP, which provides a constant room temperature. The necessary pipes were laid in 1.2 metre deep trenches in the Baths' back garden. The DHP-L Opti Pro delivers space heating and hot water to the property via underfloor heating. Pam and Noel also decided to have a solar PV system installed to help further reduce their carbon footprint and energy bills.

"It took us two years to totally get the house sorted after the floods," says Pam. "We had our underfloor heating running by 2012. We really feel that although the flood was a terrible experience, something great has come out of it in the end. Ground source heat pumps are ideal for serious renovations and I believe all new builds should have one too. They don't cost a lot more than a conventional system but can save a considerable amount of money. We now have constant heating and although we are using more electricity than when we used oil, overall we save money on our fuel bills."

Significant savings

Pam and Noel received £1,250 through the Government's Renewable Heating Premium Payment, which contributed to the cost of the heat pump installation. They also benefit from the feed in tariff for the electricity that they produce from their solar PV system.

Despite the increase in their electricity use, the couple estimates that they save over £1,000 a year overall. They plan to take advantage of the Government-backed Renewable Heating Incentive (RHI) payments in the future. 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 gauge the property's energy efficiency. The Baths may receive up to 18.8p per kW hour of energy produced by the GSHP.

"The heat pump allows us to keep the house warm all day long, which is ideal as we are both retired," says Pam. "We wouldn't have been able to afford this with our old heating system. It's also more comfortable as the heat is evenly spread. I would definitely recommend a ground source heat pump to people doing a renovation or building a new house."

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**