



Householder's Project Case Study
Ground Source Heat Pump



Low Carbon Building Programme

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System Installation Detail

Technology	Ground Source Heat Pump (GSHP)
Size	12kWth
Annual Yield	25,792kWh
Total Cost	£7,435
LCBP Grant	£1,200
Estimated £ saved per year ¹	£700
Estimated kgCO ₂ saved per year ²	2,770kgCO ₂
Location	Thornbury, Bristol
1 Assumes 11p/kWh 2 Assumes 0.43kgCO ₂ /kWh	



Mr Hoskins originally had electric storage heaters installed in his 3 bed-roomed detached house which is an old property in a remote location. He decided to replace the electric storage heaters with a more efficient heating system which included underfloor heating.

Mr Hoskins researched all the available options with gas being ruled out first due to the remote location of his property. LPG was too expensive and with the ever increasing cost of oil Mr Hoskins didn't feel that an investment in this would provide value for money in the long run.

Mr Hoskins decided that a Ground Source Heat Pump would be the best option as he had the land to install the ground loop and the heat pump would be compatible with his underfloor heating system. As Mr Hoskins is planning to stay in his cottage for a long time he felt he would be able to receive the payback from the system and therefore make the investment worthwhile.

“It is quiet, low maintenance and very efficient”

Nicholas Hoskins
Householder

Mr Hoskins had already installed loft installation to minimise his energy usage but he did ensure that energy saving light bulbs had been fitted where appropriate to comply with the terms and conditions of the Low Carbon Buildings Programme (LCBP) grant. These measures also helped to improve heat retention and reduce overall energy consumption.

Mr Hoskins found applying for the LCBP grant a very easy process with the online application form being very simple. One piece of advice he would give is to ensure you have all the details of the installer and equipment you are using to hand and ensure that they are accredited before starting the application form.

Mr Hoskins experience of having the GHSP installed has been very positive; his installer provided excellent advice on which system to install and claiming his LCBP grant was simple and easy.

Even the disruption to his garden was a small price to pay for his installation. For Mr Hoskin's installation 6 trenches were dug in his garden each 2m deep and 25m long. It has taken approximately a year for the ground to settle enough so that it can be levelled and reseeded, however he was aware this would be required and therefore it hasn't been too much of a problem.

Mr Hoskins is very pleased with the Ground Source Heat Pump installation; it is working extremely well and he feels that for his property it was definitely the right thing to have installed. It is providing a good level of heating especially compared with the electric storage heaters and provides plenty of hot water for the property. Mr Hoskins has also seen a reduction in his electricity bills. With the electric storage heaters Mr Hoskins spent approximately £80 a month on his electricity bills, but the first winter that the heat pump was installed these bills dropped to £65 a month.

Mr Hoskins would definitely recommend installing a heat pump, especially if you are building a new property and have land to install ground loops

Is a heat pump suitable for my home?

Heat pump systems can be integrated into most heating systems but will be more cost effective in some homes than others. Before choosing to install a heat pump consider:

Energy efficiency first – make sure you improve the energy efficiency of your home first. Focus on improving the insulation, tackling draughts and improve control of the heating and hot water systems. Heat pumps are most efficient when used in highly insulated buildings.

Your current heating system – heat pumps work better with slow response, low temperature heating systems such as under-floor heating rather than conventional wet radiator systems. But low temperature heating systems work better in buildings with a high 'thermal mass'. If your home heats up and cools down quickly, a low temperature heating system is unlikely to provide the heating you require – and a heat pump may not be the best option for your home.

Choosing a heat collection system – most domestic systems use a ground based heat source which requires a borehole or a trench for heat collection. A loop buried in a trench can need a lot of ground space, usually around 35 – 50 metres per kilowatt of heat energy provided. If you do not have enough land for a large trench you can use a borehole but this tends to be more expensive to install – this will require a depth of around 20 metres per kilowatt. Otherwise an air source heat pump might be worth considering as an alternative.

Disruption and mess – digging trenches or boreholes is a dirty job and can be disruptive to you and to your neighbours. Bear in mind that a trench will disrupt appearance of your garden and this may take some time to recover.

Get connected – heat pumps need high electrical currents to start up. Check that your electrical supply is up to the job by speaking to your electricity supplier about any limitations at your point of supply. A heat pump system should be connected to its own breaker in the fuse board.

Launched in April 2006, Phase I of the Low Carbon Buildings Programme offer grants to householders towards the installation of renewable technologies such as solar photovoltaic (PV), solar thermal hot water and wind turbines.

For the full list of accredited technologies and installers please visit:

www.microgenerationcertification.org

For further information about the Low Carbon Buildings Programme please visit our website:

www.lowcarbonbuildings.org.uk

Helpline: **0800 915 0990**