

Prior to applying for the Low Carbon Buildings Grant, you must undertake energy efficiency measures to ensure that you are minimising your energy requirements. Specifically,

Insulate loft to 270mm

Install cavity wall insulation

Fit low energy light bulbs

Install basic controls for your heating system.

Details on micro-generation certification on products and technology for the assurance of consumers can be found at:

<http://www.greenbooklive.com/page.jsp?id=4>

For more details on GSHPs, please visit:

www.tvenergy.org

http://www.energysavingtrust.org.uk/generate_your_own_energy/types_of_renewables/ground_source_heat_pumps/

<http://www.dti.gov.uk/energy/sources/renewables/index.html>

www.est.org

To obtain a copy of this leaflet on tape or in large print please telephone (01296) 585112



Photograph Courtesy of TV Energy

Renewable Energy: Installing A Ground Source Heat Pump – A Guide for Householders

Introduction to GSHP

Although we may not know it, heat pumps are very familiar to us; fridges and air conditioners are two examples. Ground Source Heat Pumps (GSHP) transfer heat from the ground into a building to provide space heating and, in some cases, to pre-heat domestic hot water.

For every unit of electricity used to pump the heat, 2-4 units of heat are produced. As well as ground source heat pumps, air source and water source heat pumps are also available. Air source heat pumps can provide cooling in summer and are far easier to install, but are more expensive to run.

The important elements of a GSHP are as follows: The ground loop (pipe buried under the ground with water or anti-freeze to absorb heat from ground), The heat pump (with evaporator – takes heat from the ground loop, compressor – increases temperature of refrigerant through compression and condenser – gives up heat to a hot water tank to feed the distribution system) and the heat distribution system (under floor heating or radiator system).

Requirements:

The ground loop can be: a borehole or a straight horizontal trench, which costs less than a borehole, but needs more land area. A spiral horizontal (or 'slinky coil') needs a trench of about 10m length to provide about 1kW of heating load. Alternatives can include bore holes of up to 75 metres to avoid digging up wide areas of open land.

Although a heat pump can supply heat expensively to a conventional radiator system, it works best with high-efficiency

heating systems such as under-floor heating or specialist over-size radiators, due to the lower temperature produced compared to a boiler system. A household 6 - 8kW system costs £7,000-£12,000 plus the price of connection and any changes to the distribution system. The cost can vary with property and location.

Planning:

From 6 April 2008, any structures related to domestic ground source heat pumps will not require planning permission unless prominent within a Conservation Area or AONB, or on a Listed Building. Contact AVDC Planning on 01296 585431 or TV Energy on 01635 817420 for more details or visit:

http://www.energysavingtrust.org.uk/generate_your_own_energy/planning_permission_for_renewable_energy_technologies

AVDC's Historic Buildings Officers can be contacted on 01296 585383 or 01296 585888 for advice regarding the installation of renewable energy systems in Listed Buildings and Conservation Areas. Information for Conservation Areas: <http://www.helm.org.uk/upload/pdf/89410-EnergyConservation1.pdf>

Considerations:

For heat distribution, GSHPs can be combined with radiators but under-floor heating is better as it works at a lower temperature. Is there space available for a trench or borehole to accommodate a ground loop? Is ground suitable for digging a trench or borehole? What fuel is being replaced? Is internal space available for the pump unit itself? If electricity, oil, LPG or other non-mains gas conventional fossil fuel, the

payback will be more favourable. Heat pumps are a good option where gas is unavailable.

Want to be 100% renewable? Buy your electricity on a green tariff, or install solar PV or other form of renewable electricity-generating system to power the compressor and pump. Some form of back-up heating will be required. If using standard electricity, then economy 7 tariff will give the lowest running costs.

Is there also a cooling requirement? Is the system for a new building development? Combining the installation with other building works can reduce costs. Can you incorporate insulation measures? Wall, floor and loft insulation will lower your heat demand and allow for the application of a grant (see below).

Payback:

The time taken to pay back the original investment varies with the cost of the alternative heating fuel, the price of electricity, the heating system type and the source of heat (ground, air or water). Payback can therefore range from 5 to 15 years.

Household Grants:

An overall maximum of £1,200 or 30% of the relevant eligible costs, whichever is the lower. Householder grants are available until June 2010 on a first come first served basis from:

www.lowcarbonbuildings.org.uk