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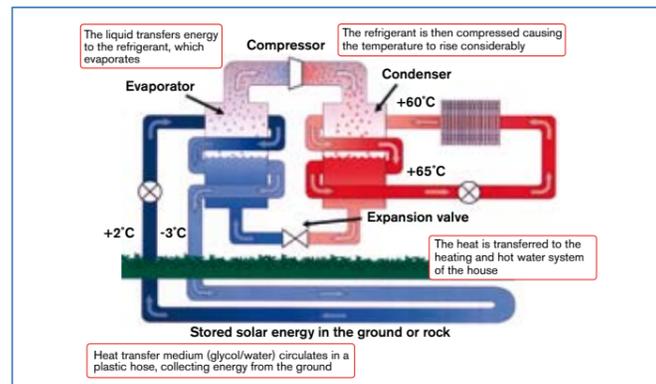
Ground source heat pumps – your questions answered

What is sustainable energy?

Sustainable energy is best thought of as energy which can be replenished within a human lifetime and which causes no long-term damage to the environment. Solar energy, wind energy and geothermal energy, amongst others are all self-sustaining. They all have sources that cannot be depleted. Extended use of these energy sources aids the conservation of other non-renewable energy sources such as fossil fuels.

How does a heat pump work?

The technology inside a heat pump works on similar principles to those of a domestic fridge. Heat pumps take advantage of the principles of thermodynamics in order to achieve their results.



A water and glycol mixture is pumped around the collector circuit and causes the refrigerant in the evaporator to turn into a gas. This refrigerant passes through the compressor, causing the temperature to rise significantly. The hot gas moves to the condenser, where it condenses and the latent energy is released into the heating circuit.

How is energy collected from the ground?

There are three options to obtain the energy from the ground and are shown overleaf. In a horizontal collector, lengths of pipe are buried underground to a depth of around 1 metre. This is a good solution if the property in question has enough land to accommodate the collector.

Worcester offer compact collectors which reduce the amount of space required for the collector by increasing the amount of pipework in a given area. An alternative to the horizontal collector types is the vertical collector. A bore hole is drilled to a depth of between 60 and 200 metres, and the collector is fed into the hole. A vertical collector minimises the amount of land required on the surface of the collector.

What type of heat pumps are available?

Worcester has launched a range of eight system and combination heat pump models, available in outputs ranging from 6-11kW.

Will I also need a boiler with the Greenstore system?

In the majority of circumstances, the answer is no. Worcester's system is all you need to satisfy your total heating and hot water requirements. However, your local installer will advise on your individual situation.

Can I keep my existing radiators?

Ideally, for maximum benefit and efficiency, a heat pump is best used with underfloor heating, but oversized radiators are also an option.

How is the efficiency of a ground source heat pump measured?

The Coefficient of Performance (COP) is generally accepted as the method of measuring efficiency and relates to the amount of energy extracted from the ground for each unit of energy used to run the pump. A heat pump could provide between 3-5kW of heat for each kW of electricity used. The return varies according to the temperature of the heat collected and the heat required to heat your property. For example: 3kW of heat is provided by the pump and 9kW of heat is provided by the ground source, making a total of 12kW. To calculate the COP, divide the total (12kW) by the amount provided by the heat pump (3kW). This gives a COP of 4.

Is there any government funding available?

From time to time the Government provides grants for the installation of renewable technology products. To find out more visit: www.berr.gov.uk

For details of grants available under the Government's Low Carbon Buildings Programme visit: www.lowcarbonbuildings.org.uk

www.worcester-bosch.co.uk



The Council for Registered Gas Installers



In partnership with



The mark of quality for domestic heating

Worcester, Bosch Group is a brand name of Bosch Thermotechnology Ltd.

*This leaflet is accurate at the date of printing, but may be superseded and should be disregarded if specification and/or appearances are changed in the interest of continued improvement. The statutory rights of the consumer are not affected.

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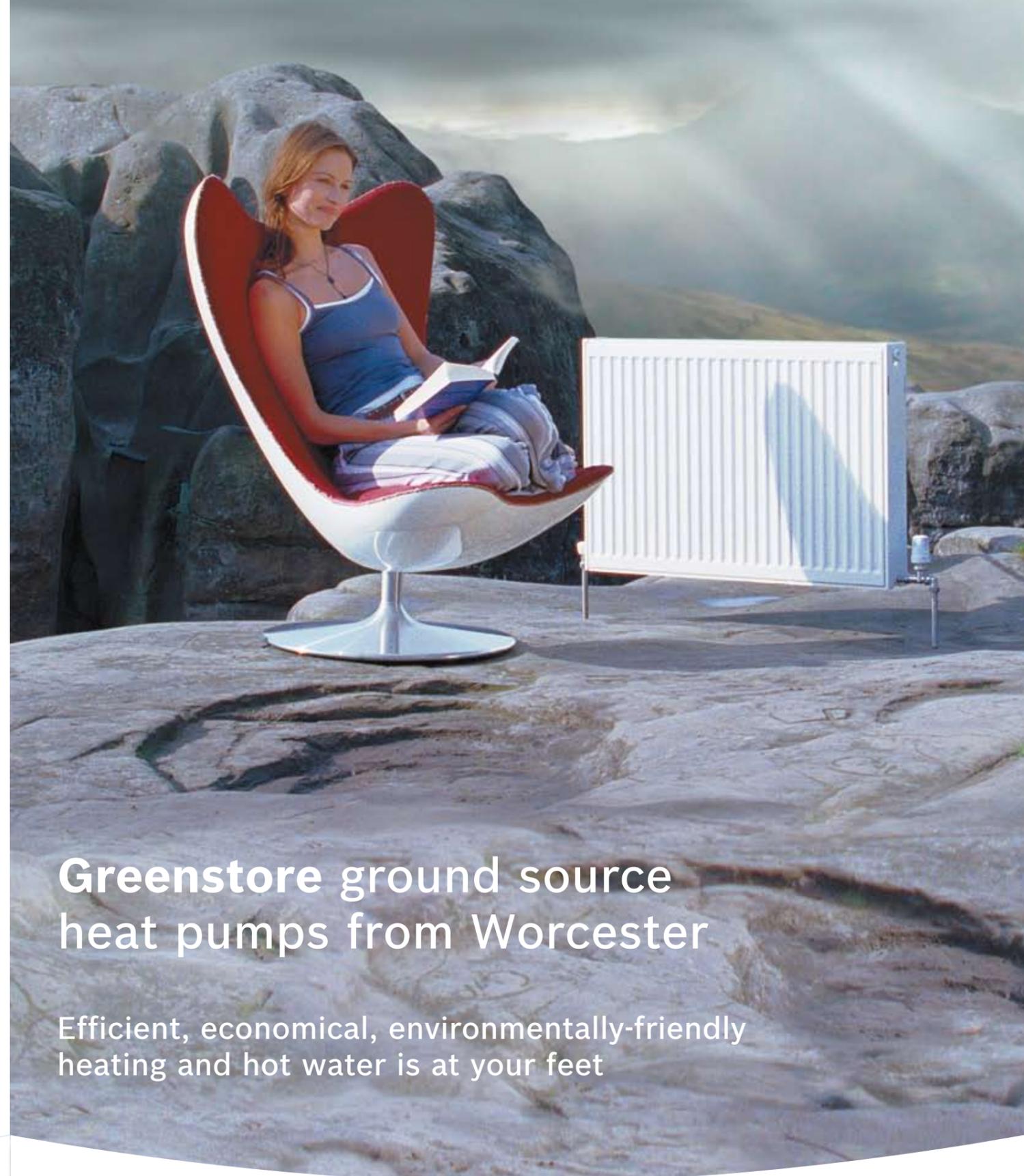
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Worcester, Bosch Group,
Cotswold Way, Warndon,
Worcester WR4 9SW
Tel: 01905 754624 Fax: 01905 754619



Dedicated to heating comfort





Converting energy in the ground into low-cost heating and hot water for your home



Greenstore ground source heat pump

A ground source heat pump is an electrically powered system that taps the natural energy stored in the earth to heat your home. The systems that Worcester, Bosch Group supply utilise energy from the ground to provide all the heating and hot water your home requires. The principle is simple, and the result is low-cost comfortable heating that uses sustainable energy and causes no direct emissions or other damage to the environment.

For every single kilowatt of electricity used to power the ground source heat pumps, this system could generate four kilowatts or more in energy for your home!

What's more, it also helps to conserve the earth's dwindling supplies of non-renewable fossil fuels – coal, gas, and oil.

Install a Worcester Greenstore system and start reaping the rewards!

Purchase a Greenstore ground source heat pump and have it installed by 30th November 2008 by a Worcester Accredited Installer and you'll qualify for a £2,000 householder cash-back*.

For more information visit our website at www.worcester-bosch.co.uk

*Terms and conditions apply.

The different types of ground source heat pump collectors



Horizontal collector



Compact collector



Bore hole collector

Worcester's commitment to using sustainable energy

For more than 40 years Worcester has led the way in energy-saving heating and hot water systems and is one of Europe's leading manufacturers of high-efficiency gas- and oil-fired boilers.

As part of the worldwide Bosch Group, Worcester is totally committed to developing cleaner and more efficient domestic heating systems. Increasingly, systems which utilise renewable and sustainable energy are coming to the fore, and new Worcester ground source heat pumps are a natural progression from Worcester Greenskies solar water heating.

The Worcester Greenstore ground source heat pump range is designed and manufactured to the highest quality standards, for which Worcester and Bosch are renowned.

A choice of 8 heat pump units are available which includes both System and Combination models, with outputs ranging from 6-11kW.

There are also 180 and 280 litre solar compatible cylinders available for use with the System models to provide a large store of hot water.



Greenstore Cylinder

Worcester, Bosch Group quality assurance

Only the finest materials and components are used in the manufacture of all Worcester products. Combined with advanced technology and innovative design, this ensures that your Greenstore ground source heat pumps will give many years trouble-free service and excellent long-term value for money.

Global responsibility for nature and the environment

In the light of global warming and climate change, developing sustainable energy resources has never been more important.

As a leading European boiler manufacturer, Worcester, Bosch Group is leading the way in the search for renewable and sustainable energy solutions which can benefit customers and the environment.

The Bosch Group operates worldwide and has been committed to environmental protection for more than 30 years. Every Bosch location around the world prioritises product development in the interests of the safety of people, the economical use of resources, and environmental sustainability.

