

Ground Source Heat Pumps

At a glance



Producing up to three times more energy than they consume, ground source heat pumps are a cost-effective and low carbon means to provide 100% of a property's heating and hot water.

By taking advantage of the free renewable energy stored in the ground, ground source heat pumps (GSHP's) provide an energy efficient alternative to conventional heating systems, especially for rural homes and those not connected to the gas grid.

An established and proven technology, ground source heat pumps reduce both estimated annual heat pump running cost (£/ year) and CO₂ emissions.

Lower fuel bills

GSHP's produce 3-4kWh of heat energy for every 1kWh of electrical energy used, making them 300-400% efficient. Compare this to a typical boiler, which is just 90% efficient.

Lower emissions

Because a GSHP extracts so much "free" energy from the environment, this enables CO₂ emissions to be lower than any other type of heating system. GSHP's have 60-70% lower carbon emissions than a gas boiler.

Minimal maintenance

GSHP's don't require annual servicing or maintenance, and have an expected lifetime of 20 years.

Energy independence

With an individual ground source heat pump in each property, homeowners are in complete control of their own heating and energy bills, enabling easy energy tariff switching and payment only for the heat consumed by each property.

Year round supply

More than 1m below the surface the ground temperature remains a fairly constant 8-10°C all year round, ensuring your heat supply is constant and reliable; unlike air source heat pumps, which are impacted by external air temperatures causing higher bills and energy consumption when you need heat most.

How does it work?

A ground source heat pump provides heat to your home by absorbing solar energy stored in the ground and upgrading this to a higher temperature to provide your home with all the heating and hot water it needs.

A network of boreholes up to 200m deep collects large volumes of low-grade energy from the ground, the heat pump uses a refrigerant circuit to upgrade this into useful heat that is used to power radiators and the hot water cylinder. The boreholes deliver an efficient, secure and durable source of energy for the life of the property as energy taken through the winter is naturally recharged over the summer. The boreholes can last over 100 years with the heat pump expected to last over 20 years.

Ground source heat pumps are powered electrically, but because they are able to capture such a high proportion of "free" energy from the ground, they produce up to three or four times more energy than they consume, making them highly efficient compared with other forms of heating.

Kensa Heat Pumps



Kensa Heat Pumps is the UK's most popular brand* of ground source heat pumps with an award-winning heritage since 1999.

As the UK's sole manufacturer of the widest range of ground source heat pumps designed for British homes, every heat pump in the multi-award winning Kensa range has been designed and tested to exacting standards for optimum efficiency and ease of use.

The Shoebox Heat Pump

Small in size, big in space & cost savings



Multi-award winning.

The world's smallest & quietest GSHP.

Typically located inside an airing cupboard.

Temperatures up to 65°C.

Provides both space heating & hot water.

MCS accredited and ErP A+.

HxWxD (mm): 515x480x360 / 585x610x595 (3 / 6kW).

“ I love the technology – the idea of harnessing free heat from the ground is so simple and Kensa's kit is top of the range. I often show visitors our heat pump unit and they are blown away by the efficiency and simplicity of our heating system. I'm really pleased with how it's working. ”

Richard Waterstone, Homeowner

Estimated annual heat pump running cost (£/ year) & Savings

A ground source heat pump's inherent efficiency means it can deliver the lowest estimated annual heat pump running cost (£/ year) of any type of heating system.

	GSHP		LPG		Oil		Gas	
Space heating efficiency (%)	320%		90%		90%		90%	
DHW efficiency (%)	250%		90%		90%		90%	
Unit cost of fuel (pence/kWh)	16.5		6.2		5.7		4.2	
Unit cost of fuel (pence/litre)	-		41.3		55.6		-	
Annual standing charge (£/year)	£0		£80		£0		£80	
	2 Bed House	4 Bed House	2 Bed House	4 Bed House	2 Bed House	4 Bed House	2 Bed House	4 Bed House
Fuel consumption for heating & hot water (kWh/year)	1799	2732	5773	8937	5773	8937	5773	8937
Estimated annual running costs (£/year)	£296	£450	£438	£634	£328	£507	£322	£455

Based on a typical 2 / 4 bed house with 3,196 / 5,543 kWh/year space heating and 2,000 / 2,500 kWh/year DHW demand.
*Source: BSRIA 2019

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