

tec the Environment Centre (tec)

Ground Source Heat Pumps

What are Ground Source Heat Pumps?

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, 3-4 units of heat are produced.

How do they work?

Heat from the ground is absorbed at low temperatures into a fluid inside a loop of pipe (a ground loop) buried underground. The fluid then passes through a compressor that raises it to a higher temperature, which can then heat water for the heating and hot water systems of the house. The cooled ground-loop fluid passes back into the ground where it absorbs further energy from the ground in a continuous process, for as long as heating is required. Normally the loop is laid flat or coiled in trenches about two metres deep.

What are the costs and savings?

Installing a typical GSHP system costs around £13,000-£20,000*. Running costs will depend on a number of factors including the size of your home and how well insulated it is. GSHPs are eligible for the Renewable Heat Incentive (RHI).

Existing System to be replaced	Fuel Bill Savings by replacing the old system** (£ per year)	Carbon Dioxide Savings by replacing the old system** (kg CO ₂ per year)
Gas older (non-condensing)	£440 - £660	2,100 – 3,300 kg
Electric (old storage heaters)	£790 - £1,425	6,700 – 11,700kg
Oil older (non-condensing)	£130 - £220	3,000 – 4,700kg
LPG older (non-condensing)	£960 - £1,500	2,800 – 4,500kg
Coal	£590 - £990	7,600 – 12,100kg



Sources:

*The Energy Saving Trust, 2014

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