Meadow Well Community Centre (Terra Nostra) North Shields, Newcastle.

HEAT FROM THE EARTH

Meadow Well Community Centre. Terra Nostra, meaning 'Our earth,' located on the housing estate of Meadow Well in North Shields, is a sustainable community centre founded and operated by residents. The visionary "eco" centre, built on the site of the previous community centre, has risen from the ashes in more ways than one. The old centre it replaces was burned to the ground in the Meadow Well Riots of 1992.

The centre itself aims to be a centre of excellence for renewables with a rainwater recovery system, wind turbines, solar thermal, borehole water recovery and a Ground Source Heat Pump. The centre aims to be carbon neutral by the end of 2008.

An important element is to provide training for young residents and the project also operates an advisory service and job skills training partly via an IT suite. Once all the technologies have been put in place they will be monitored through the IT Suite. The suite will have a building management system to track usage and cost and the centre also houses a joinery workshop for young people that will be heated by a wood burning stove.

The Manager and research team for Meadow Well asked Revolution Power to size up a Ground Source Heat Pump for heating and hot water requirements. After much thought and planning and confirming design we specified a Dimplex SI 50 ME 50KW GSHP.

The project took three months to complete and the Meadow Well community are delighted with the results. As well as the carbon saving, the costs for the centre's heating will be drastically reduced. The project was completed in March 2008.

The above picture is the installed Dimplex 50KW Ground Source Heat Pump with hot water cylinder and a solar buffer tank.

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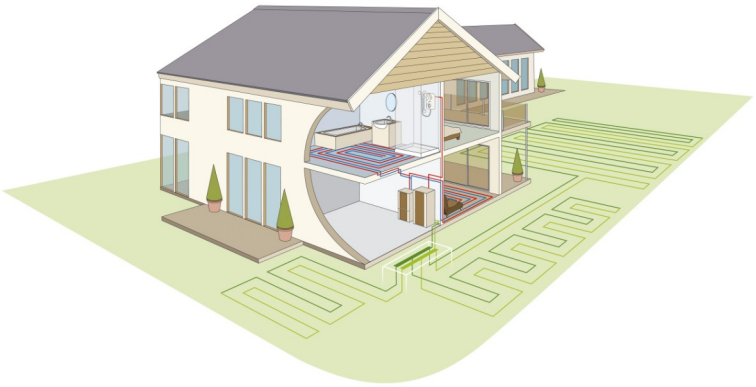
How does it work?

The earth stores an enormous amount of solar energy from both solar radiation and rainfall. To extract this energy, ground collectors consisting of flexible poly ethylene pipes are buried in the earth, either horizontally or vertically. A mixture of water and anti-freeze is then circulated through the pipe loops, attracting the heat energy and transferring it to the heat pump.

The Ground Source Heat Pump is a 50KW Dimplex and the Geothermal pipes were laid out in a large trench (cleared area and 1.2m in depth) to take heat from the ground. The pump works like a refrigerator but it is the heat that is harnessed rather than the cooling effect. Some heat pumps can also be used in the summer for comfort cooling in a building. The heat pump then uses this energy to heat up water in the radiators and domestic hot water in the cylinder. As the centre is open six days a week and has a lot going on the demand for water is high.



If a large enough land area is available, horizontal ground collectors provide an effective method of extracting heat from the ground. The pipework is buried at a depth of approximately 1.2m and spaced 0.75m apart. The land area required is dependent on both the capacity of the heat pump and heat conductance of the soil type in which the pipes are buried.

Environmental impact!

A ground source heat pump of this size will save thousands of kgs of CO^2 emissions, compared to heating with gas, if powered by mains electricity. We expect the centre's heating bills to reduce by 50%.

The above picture is of the official ground works opening ceremony on the 28th January 2008. Pictured are from left Dr Matt Hogan (Revolution Power Director), Gavin Hill (Terra Nostra Manager), Cllr John Sterling and Carole Bell MBE (Meadow Well Centre Manager).

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Further information

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