

Rock Hall School Rock, Alnwick, Northumberland.

HEAT FROM SUN AND EARTH—GROUND SOURCE HEAT PUMP



The School was founded in 1984 to provide a thorough grounding and preparation for secondary education in either the independent or maintained sectors for boys and girls 3 - 13 yrs.

This main objective was to provide heating and hot water for the new hall building and integration into the under floor heating system.

A Ground Source Heat Pump was the only viable option given that alternatives were oil and lpg, thus saving a third of the running costs. Also the GSHP is perfect for under floor heating as both systems work more efficiently at lower temperatures.

The project was funded under the Low Carbon Building Programme Phase 2.



Above: shows the complete installation of the Dimplex 22kW set in the boiler room.

Rock Hall School

Rock Hall School is located in the peaceful, picturesque village of Rock, five miles from Alnwick and ideally situated to serve the whole area of North Northumberland.

The Hall itself, which has been in the Bosanquet family for two centuries, is a former Jacobean manor house with two wings added by the noted Victorian architect John Dobson. It stands in its own grounds of 5 acres and is the principal building of the village. The school is run by a Charitable Trust which has a long lease on the building and surrounding grounds

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 polyethylene 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 22KW 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.

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.



Above: showing the manifold chamber where all the ground pipes are connected up to the manifold and then feed to the flow and return pipes (in blue) to the heat pump.



Above: a cleared area 1.2m deep with the pipe work installed and covered in sand to protect the pipes.

The Benefits!

- Low cost heating bills
- Minimal servicing required
- Reduced Carbon Emissions

Further information

www.revolutionpower.co.uk or (01325) 320910 / 07823 771234

www.rockhallschool.com or (01665) 579224

www.lowcarbonbuildings.org.uk/home/

The Low Carbon Building Programme (Phase2)

At the time we installed this system in 2007 the LCBP (ph2) was 35% of the cost of the heat pump installation. As from 1st April 2008 the grant scheme has been increased to 50% for Schools, Community Centres and any non-profit making companies/organisations.