

SCHRI CASE STUDY

Beattock Hall Heatpump Project

(South West Scotland)



Introduction

Beattock is a community of around 200 households close to the A74 in Dumfries & Galloway. The Hall Committee wanted to replace the old, expensive and inefficient radiant electric heaters, fed by a pound coin meter, with a cost-effective, efficient, user-friendly system. The hall is used a lot by a wide variety of community groups. The hall is solid stone and hard to heat, feeling cold throughout the year. It badly needs insulating.

The Kirkpatrick-Juxta Community Council contacted the Energy Agency in September 2003 in response to their mailshot promoting the SCHRI. The community owns a 5 acre field behind the Hall and they were keen to use whatever resources they could to improve the Hall's facilities.

The Hall, classed as an unincorporated association or club, received £20,000 from the SCHRI grant fund, just over 50% of the total project cost.

Aims & Objectives

The aim of the project was to provide a cost-effective heating system with low maintenance, low running costs and simple operation. A heatpump using three horizontally-buried groundloops for their heat source, is expected to provide this solution, delivering heat through a newly installed 'over-size' radiator system and the domestic hot water system incorporating toilets and a kitchen.

The Hall is an important building in the village and the use of renewable energy to heat it will raise the profile of this heating option amongst local people.

South West Scotland is very short of examples of modern heatpump installations and this one will provide a useful case study as interest in this technology grows.

Who was involved?

Beattock Hall Committee	Promoter
Energy Agency (SW Scotland's Energy Efficiency Advice Centre)	Adviser
Eco Heatpumps Ltd	Supplier & Installer
Armstrong Groundworks Ltd	Groundloop Installer
East West Haulage Ltd	In-kind groundwork and materials supplier
Dumfries & Galloway Council	Funder
Energy Saving Trust	Funder
Scottish Executive (Local Capital Grants Scheme)	Funder
Johnstone & Clark Ltd	Radiator Installer

The approach

Initially the Committee considered, with the assistance of the local SCHRI Development Officer, the main sustainable heating options open to them, ie. wood pellet, woodchip

and heatpump systems. Alternative system designs and quotes were requested for all three options. The Committee were most attracted to heatpumps for their ease of use and low maintenance requirements. The availability of the field behind for horizontal groundloops was an important factor in the decision.

Offers of funding were obtained, with the assistance of the Dumfries & Galloway Council's Community Funding Officer as well as the Energy Agency, from the Council, the Local Capital Grants Scheme and the SCHRI. The Community Council and the Hall Committee were also able to make significant contributions and a local firm, East West Haulage, generously gave some in-kind assistance with landscaping.

Eco Heatpumps were chosen to supply the system which would have a thermal output 'in excess of 17kW'. They supplied specifications for the three 200m groundloops and the group realised that this was a job too specialised for the local landscaping contractor. The SCHRI Development Officer put them in touch with Armstrong Groundworks Ltd of Wigtown, who had experience of a couple of such installations behind them, and they were duly employed.

Following Eco Heatpumps' recommendations a local heating company, Johnston & Clark, installed a set of oversized radiators to make best use of the relatively low flow temperature from the heatpump.

The digging of the trenches needed to be coordinated with the development of the Beattock Heritage Park. Once the groundloops were installed Eco Heatpumps connected, tested and commissioned the system.

Results

The system, which incorporates a 150litre mains-pressure hot water store, is now working well. As at August 2005 the group is still getting to know it and expect to make some adjustments. They are considering incorporating a room thermostat within the main hall as it seems particularly insensitive to variations in outdoor temperature. It may be that once the fabric of the building has thoroughly dried out after a period of constant heating, as opposed to the periodic short-term heat provided by the old radiators, and so has less of a 'damping effect' from moisture in the walls, the weather compensating thermostat will be sufficient.

The heatpump supplier recommended installing several ceiling fans to prevent stratification of the heated air in the very high hall, thereby increasing the efficiency of the system, and the group is now saving up the £1,000 quoted for this.

Lessons Learned

The group found that employing a project manager with engineering experience was very worthwhile, that the heatpump supplier did require them to organise a substantial amount of the work themselves, namely the groundworks and plumbing connections and that, to avoid problems, the former was best carried out by specialists with heatpump experience. The only unforeseen expense was that of extending the three-phase electricity supply from the hall's distribution board to the heatpump itself.

For further information:

Beattock Hall Committee contact:
Martin Brown
e: martin@lochhousefarm.com
t: 01683 300451

SCHRI Development Officer contact:
Carola Menzel
SCHRI Development Officer, Energy Agency, Donald Hendrie Building,
Auchincruive, Ayr, KA6 5HW
t: 01292 521896
e: carolamenzel@energyagency.org.uk
w: www.energyagency.org.uk

Scottish Community and Householder Renewables Initiative – General Enquiries
T: 0800 138 8858,
E: schri@est.org.uk
W: www.est.org.uk/schri



Radiators in the main hall



Inside the heatpump, showing the 150ltr tank, the expansion vessel and flow and return pipes from the manhole (not yet fully lagged).



Manhole behind hall with header with flow and return to the three ground loops