

Why GSHP's?

Used in the right properties Ground Source Heat Pumps (GSHP) can provide heating (& hot water) at a lower cost to the landlord (capital & operating) and to the tenant whilst also providing environmental benefits through reduced carbon emissions (e.g. vs. oil systems). We felt that this was an option worth promoting!

The 'Breaking New Ground' Project

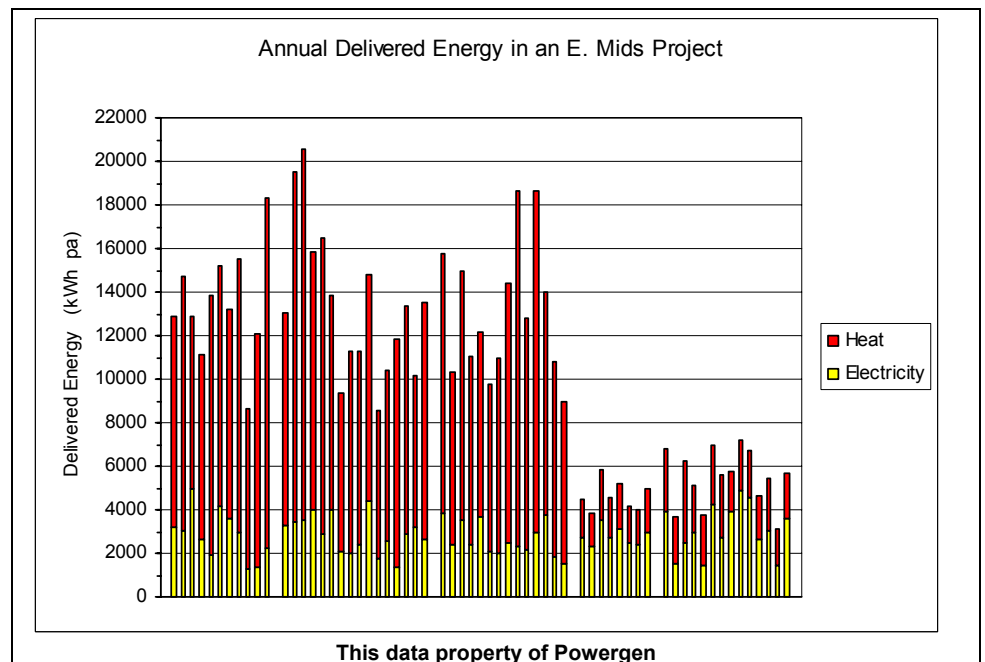
Funding was obtained from the Energy Saving Trust's (EST) Innovation Programme (IP), to work with Penwith Housing Association (PHA) to show what can be achieved using GSHPs together with energy efficiency measures. PHA have actually retrofitted GSHPs in some of their properties. The project was also supported by Geoscience, Powergen & Earth Energy Engineering (*many thanks*).

GSHP technology is proven, it is a 'standard', commonplace option in other countries (e.g. the USA and parts of Scandinavia). There are relatively few GSHP installations in this country, though there are market developments which are now making the use of GSHP technology viable here in the UK. Part of the Breaking New Ground project was to show that there is a place for GSHPs in UK social housing and that this role could include retrofitting GSHP into some existing properties.

How Much Can Heat Pumps

Save? This graph shows the energy used for heating (red) and that for lights and appliances (yellow) in 5 groups of bungalows in the East Midlands. The three groups on the left are developments with gas condensing boilers, the two on the right have GSHPs.

This graph shows how much less energy is used in those properties with GSHPs. This is raw data and there are important issues to be considered, but this graph does illustrate the potential of GSHPs.



A specific case study on these installations is currently being produced, and there may also be a more technical paper analysing this data (contact Powergen details below).

What types of properties are they suitable for? The most obvious place for GSHPs is in new build developments which are off-gas. However, within the Breaking New Ground project we have been focussing on existing (off gas properties) and we have also been supporting an urban new build development where gas is available. GSHP technology is most economically viable where there is a relatively low heat loss. This will typically be the case with new build houses; in existing properties it is usually the case that a package of energy efficiency measures will be required to reduce the heat loss down to a viable level. Groups of 6 or more properties at one location help to reduce the unit costs of boreholes.

What next? We are bidding for further funding from EST so that we can do more to show the benefits of this solution in UK social housing. Powergen are developing their 'HeatPlant,' package, driving down costs and simplifying the installation process. There is capital funding for GSHPs via 'Clear Skies' (50% of eligible capital cost up to a £50k max). Use the contact details below to find out more about how heat pumps might work for you!

Case Study – Penwith Housing Association, GSHP Retrofit.

Penwith Housing Association has pioneered the retrofitting of properties with ground source heat pumps in the United Kingdom. They installed GSHPs in fourteen bungalows in Ludgvan, Cornwall, replacing the existing coal heating. The objective of the project was to deliver clean and affordable central heating and hot water to residents and to bring them into compliance with the Decent Homes Standard and the Association's Affordable Warmth Strategy.

The Chy An Gweal estate is a development of primarily elderly persons bungalows built in the 1960's. The PHA technical team had known for some time that a number of residents had difficulty coping with the existing solid fuel systems and that they were too expensive to run to provide Affordable Warmth.

A public meeting was held with residents to discuss the options for heating system improvements - both conventional systems (oil fired boilers and heating systems) and the renewable alternative of GSHPs. With the majority of residents in favour of GSHPs, further work commenced.



Prior to the installation of the GSHP, the bungalows received structural improvements under PHA's refurbishment programme. This included cavity wall insulation, loft insulation and upvc double glazing in order to reduce the heat demand of the properties.

The new systems consisted of a Powergen HeatPlant GSHP kit for each unit connected to a radiator system for each property. Boreholes were drilled for each property; these were then connected to the heat pump located in an external store. The project was carried out by Penwith Housing Association in partnership with Earth Energy Systems and with additional support from Powergen. Financial assistance was received from the DTI's Clear Skies Programme and Penwith District Council.

2004/2005 was the first winter for which the systems were installed, and Penwith HA has recently carried out a tenant survey to gain feedback. One tenant commented that, "This will mean the end of ash and mess from anthracite and coal...there is only a small disruption to the gardens during the work and considerable CO₂ reduction".

Further Information

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