

Hanover Community Centre, 33 Southover St, Brighton BN2 9UD



OVERVIEW

Type: Detached community hall

Age: 1870

Accommodation: 2 large halls, one at ground floor, one at first, plus meeting rooms and storage.

Walls: brick; 5 courses with infill at ground floor, 3-4 at first floor

Area: 340 m²

Usage: Heavily used by community groups/classes and for events

FEATURES

- + Draughtproofing
- + Energy monitoring
- + LED lighting
- + Low water goods
- + Lowered and highly insulated ceiling for upper hall
- + Secondary double glazing (low cost)

Introduction and approach

In recent years, Hanover Community Centre has become a hub for education about energy saving measures via Hanover 10:10, part of a wider community group Hanover Action for Sustainable Living (HASL).

The Centre itself is a former school, built around 1870 as a church like structure, with massive brick walls, high ceilings and a vaulted timber framed roof. This poses challenges in heating, with heavy losses via the solid walls, uninsulated roof, and large window areas.

Acting on a detailed energy audit, a plan has been drawn up to address these issues. Volunteers have already installed cheap secondary double glazing, draughtproofing and fitted part loft insulation. Lighting is being converted to low energy lamps and a new highly insulated ceiling has been fitted in the upper hall.

This is a work in progress and further measures are planned, subject to funding, to make the hall progressively more efficient and reduce its carbon emissions.

Energy efficiency measures

Heating and hot water

Space heating is mostly via large wall mounted gas warm air heaters,

which have a reasonable efficiency of 85% and are effective. However, these are very elderly and the unit in the upper hall was recently condemned, which has made the issue of a replacement system a priority.

At present CityZen are investigating the possibility of installing a biomass boiler for the whole building. This is a particularly attractive option as the government's Renewable Heat Incentive scheme would give annual payments to effectively offset the cost of financing the project.

Biomass in this instance would probably be wood pellet and the impact on emissions would be huge, as wood fuel is largely carbon neutral.

The common parts and toilets are heated via a boiler and radiator system, with an efficiency of 78%. A compromise option would be to replace this boiler with a condensing one, thereby raising efficiency to 90%.

Insulation

The main insulation currently fitted is DIY secondary glazing panels on the large windows on the Western and Southern facades, which has proved very effective. This has halved window heat losses, lowering the U value from around 5.0 to 2.5 W/m²K. There are a number of types, with the oldest being glass panes in timber frames, plus some acrylic panes fitted with magnetic strips and even

a few slimline double glazed panes. The final phase will be acrylic and wooden frames, which seems the most cost effective.

The upper hall was previously highly vaulted and infra red surveys revealed heavy heat loss via the uninsulated roof. Work was undertaken in 2013 to fit a much lower suspended ceiling, insulated with natural sheep's wool, Thermafleecce. This has greatly reduced the heated volume, stopping the tendency for heat to accumulate uselessly above the usable area and has cut heat loss conducted via the roof by around 80%. The work was funded via grants from LEAF, EDF Sustainability competition and Southern Co-op, whose contractor carried it out at cost. Previously, two gas heaters were unable to heat the upper hall, but after the work one was disconnected, as the remaining one was found to be adequate. However, as previously mentioned, that heater has had to be disconnected and a new heat source will have to be found.

Volunteers have also fitted 150mm of mineral wool loft insulation above the first floor meeting rooms.

The massive brick walls have a surprisingly low u value of 1.2W/m²K, due to their sheer bulk. It may even be lower, as building work has revealed voids in the infill, which would tend to improve insulation. However, unlike houses, where the buffering effects of thermal mass

can smooth out heating, the walls here can act negatively to drain heat from the spaces, although the high rate of occupation tends to mitigate this effect. As soon as funds allow, the plan is to insulate the walls internally, creating highly usable spaces that can respond quickly to heating, with greatly reduced heat loss.

As a first step, it had been hoped to insulate the very cold toilet block in 2013. However, the project had to be postponed as the technical difficulties made it too costly. Plans are afoot to experiment with solid wall insulation in less challenging areas, with the aim of applying it throughout the building in the long term.

Draughtproofing has been tackled by teams of volunteers working on the various leaky doorways and openings. This was particularly important as ventilation losses were identified as one of the biggest areas of heat loss.

The suspended timber floor is coming to the end of its life and at the time of replacement underfloor insulation will be fitted underneath.

It has proved invaluable having John Smith of CityZenDesign analyse energy use and monitor work free of charge.

Electricity

Low energy LED lighting has been installed in the two small rooms and upper hall. Movement sensitive lighting is in the stairways and toilets.

The tungsten spotlights in the main hall are due to be replaced with low energy fittings, but this will require scaffolding.

Renewables

The community centre is occupied under a lease from the council with less than 20 years to run, which is shorter than the lifetime of

the Feed in Tariff or the Renewal Heat Incentive. Plans are afoot to substantially lengthen the lease to enable these government incentives to be considered in the continued development of the project.

Monitoring

All energy and water use is monitored continuously via an EWEGCO unit, installed with a grant from Brighton University. Outputs are being analysed for research by their students.

Carbon emissions

At the beginning of 2012, the Centre's energy use was identified as being roughly double that of a typical community hall at around 40,000kWh Gas and 8,000kWh Electricity. This is due in part to the building's high patterns of use, resulting in high heat demand.

Insulation of the upper hall has sharply cut gas use. Electricity use will also fall when all of the lighting is switched to low energy units. In the medium term, conversion of the heating system to biomass will have a major impact by reducing emissions.

Other sustainable measures

Natural materials

Sheep's wool insulation was used in the roof space.

Water conservation

Water conserving fittings are used throughout to conserve water and minimise use.

Community Vegetable garden

Despite limited space, the area next to the centre has been developed as a community vegetable garden. There are raised beds where food can be cultivated and Volunteers

can work together each week sharing skills and learning how to produce food sustainably in their own garden spaces. Workshops and seed swaps provide an opportunity to meet and connect with like minded people. See website for info: <http://www.hasl.org.uk/veg.html>.

Information panels

A low energy monitor in the entrance hall scrolls through information about what has been done to the hall and similar measures that can be applied to houses. Printed information panels throughout the building highlight individual measures and have QR links to web based information.

Lessons learned

Heat accumulates at high level in the hall; a fan or some kind of downward ventilation (?) needs to be installed to direct heat down to where it is needed.

More information

Hanover Action for Sustainable Living (HASL) and Hanover 10:10 - <http://www.hasl.org.uk/> and <http://hanovercommunity.org.uk/environment/>

Professionals

Energy Audit and advice: CityZenDesign LLP. <http://cityzendesign.com/>

Building: Total Design, Eastleigh. <http://totaldesignshopfitting.com/>