

Low carbon retrofit creates cosy home



To meet government targets CO₂ emissions have to be reduced in existing housing. With the help of the Technology Strategy Board's Small Business Research Initiative (SBRI), Energy Action Devon in conjunction with North Devon Homes, plans to be one of the first Retrofit projects to refurbish two semi-detached houses in Exmoor National Park. The project will transform the 1930s semi-detached houses in the village of Barbrook, with work starting in September 2010 and completing in February 2011.

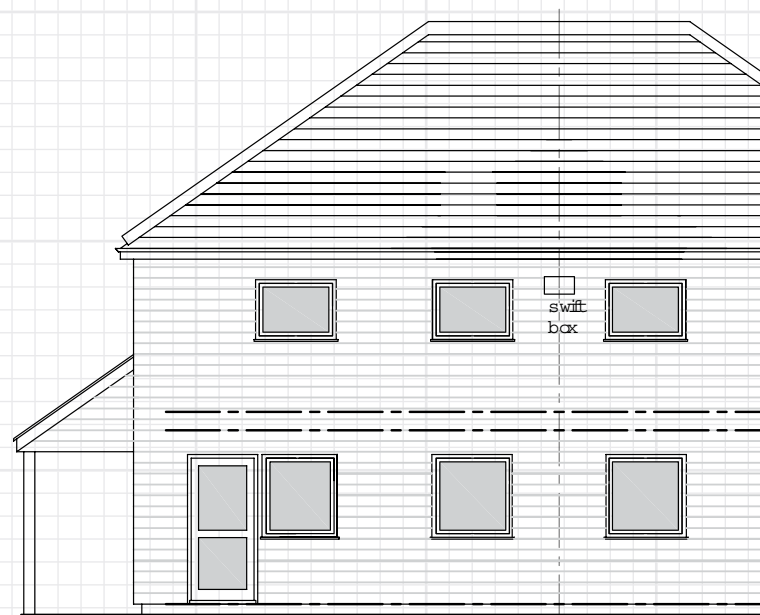
PassivHaus

This project is part of the SBRI Retrofit for the Future competition and the aim is to exceed the competition's 80% CO₂ reduction target by using the PassivHaus standard. The Passivhaus standard is globally recognised for energy efficient buildings.

They are designed and built using well thought out solar strategies, high levels of insulation, excellent levels of airtightness and good indoor air quality, to achieve exceptionally low running costs and high levels of comfort.

Carbon footprint

Housing contributes substantially to carbon emissions: 27% of total UK CO₂ emissions come from domestic housing. Nearly 60% of all the heat lost from an uninsulated home is lost through the loft space and walls. The amount of heat lost in homes annually through uninsulated lofts and cavity walls is enough to heat over 1.6 million homes for a year according to the Energy Saving Trust.



west elevation



Technology Strategy Board

Driving Innovation

Saving energy

The fabric of the building itself rather than renewable energy will make the homes warmer, more comfortable to live in and cheaper to run.

A mechanical ventilation and heat recovery system will be installed to provide pre-warmed fresh air, and Warmcel insulation (made from recycled newspapers) will be applied to all external walls and roofs to reduce the demand for heating.

The houses will look like neighbouring properties in Barbrook with a concrete rendered finish but they'll be wider and taller as wall widths will be increased and roofs will be raised to accommodate the insulation.

Existing solid walls will store heat and keep temperature fluctuations stable. The internal temperature should not fall below 16°C. Triple-glazed windows and doors increase air tightness and low energy lighting and appliances will also play their part. It's an important consideration when some social housing residents struggle to afford to heat their homes properly.

The Barbrook Passivhaus Project represents a challenge to Energy Action Devon because the houses lie in a steep, deeply shaded and wooded valley and so can make little use of solar energy. But the company is confident of producing an innovative, low carbon social housing solution, which could then be rolled out across the UK.

'The SBRI programme has done exactly what was needed: getting people to think about different approaches to tricky housing issues. There's no doubt that it will create jobs in the construction industry, which will have to go through a steep learning curve, but the potential is very large.'

DAVID FLETCHER, CHIEF EXECUTIVE, ENERGY ACTION DEVON
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COMPETITION

Home improvements

The SBRI Retrofit for the Future competition was launched by the Technology Strategy Board as part of the Government's target of saving 80% of CO₂ emissions by 2050. With the support of the Department of Communities and Local Government, the Department of Energy and Climate Change and the Homes and Communities Agency more than 190 organisations each received up to £20,000 to carry out feasibility studies. Eighty-seven projects were then chosen to test low carbon building technology, including Energy Action Devon, which received £150,000 as well as funding from North Devon Homes, the owners of the two Barbrook houses, and Exmoor National Park Sustainable Development Fund. The completed homes will be monitored for two years by the Energy Saving Trust and the data will be available online.

The SBRI scheme is one of the tools that the Technology Strategy Board uses to drive innovation. SBRI competitions use the power of Government procurement to:

- provide innovative solutions to public sector challenges
- and business opportunities for technology companies.

KEY FEATURES

- Competition is demand driven by a defined challenge
- Stimulates the creation of innovative new products or services
- Operates under EU pre-commercial procurement guidelines
- Fully-funded development contract – not a grant
- Fast-track, simplified process
- Particularly suitable for small and medium-sized businesses
- Government department acts as the lead customer
- Intellectual property is retained by the company

The Technology Strategy Board is a business-led executive non-departmental public body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve the quality of life. It is sponsored by the Department for Business, Innovation and Skills (BIS). T: 01793 442700 www.innovateuk.org