

Creative Energy Homes

Dwellings in the UK account for 27% of the UK total of CO₂ emissions through the burning of fossil fuel for heating, lights and appliances. This includes both combustion on the premises and combustion in power stations to produce the electricity used in homes.

Space heating accounts for 57%; water heating a further 25%; cooking 5% and lights and appliances 13%. The demand for energy to run heating/hot water systems and other home appliances such as refrigerators, cookers, lighting, etc is expected to be 13% higher in 2010 than it was in 1990.

If CO₂ emissions targets are to be achieved, it will be necessary to develop better construction techniques and new and renewable energy technologies for building applications. In this project the University of Nottingham, with its industrial partners, is demonstrating new ways to provide the affordable, environmentally sustainable housing that is needed to meet these targets.

The Creative Energy Homes (CEH) project is a showcase of innovative state-of-the-art energy-efficient homes of the future. Six homes are being designed and constructed to various degrees of innovation and flexibility to allow the testing of different aspects of modern methods of construction (mmc) including:

- *layout and form,
- *foundations,
- *building services systems,
- *acoustics,
- *cladding materials,
- *glazing materials,
- *renewable energy technologies,
- *water supply
- *roof structures,
- *thermal performance,
- *lighting systems,

Several companies including: Stoneguard, Roger Bullivant Ltd, E.ON, SIG, BASF, Tarmac, Saint-Gobain are funding elements of the project. Construction started in Autumn 2006 with the Steel House. A construction workforce of undergraduate students worked on the build and PhD students are undertaking a number of research studies associated with the construction.

A key feature of the CEH project is that the houses are fully instrumented and lived in. This enables the project team to accurately analyse how they perform after construction as well as learn more about how homeowners interact with their properties.

The houses provide an ideal test site for related technology and research projects. For example the 2016 house built in partnership with E.ON will be used to test aspects of the EPSRC funded CALBRE project that the Midlands Energy Consortium is leading.

The BASF house built on the University of Nottingham campus to demonstrate how BASF raw materials can be used to create an energy efficient and affordable home.



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