

Transforming the 1930s house into an energy efficient home of the future

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The 1930s semi is an icon of its age. Three million were built and they are still a major part of our current housing stock. Now a three year research project is about to start at The University of Nottingham that will help people living in these properties meet the Government's ambitions to reduce CO₂ emissions from homes.

This joint project with the energy firm E.ON aims to learn energy efficiency lessons for the future from the failings of houses in the past.

Special planning permission was granted for a 1930s style house to be built in the grounds of the University. Building work is now complete and researchers are about to move in. Over the next three years they will investigate how a typical suburban home can be upgraded to help reduce CO₂ emissions and bring it into line with the carbon neutral status which the Government is seeking for all new homes after 2016.

Using the latest technology to monitor the environmental conditions, energy and water consumption, the project team will assess the benefits of low carbon technologies which can be fitted to existing homes, and how to make best use of natural resources such as the sun, wind and rain.

Dr Mark Gillott, Research and Development Manager for Creative Energy Homes, said: "This project is a unique test bed for us to trial and evaluate both simple energy-saving steps and innovative approaches and technologies. It will expand our teaching and research facilities in the University's School of the Built Environment to address climate change

issues and give our students the opportunity to work with state-of-the-art technologies and techniques for improving existing buildings. The results of our work will be relevant to the millions of householders in the country who are facing economic pressures from ever increasing fuel costs."

The original 1930s house was designed with open fires, single glazed windows, inefficient gas or electric water heating and no insulation. In the first year the E.ON 2016 House will be used as a typical 1930s semi, providing 'starting point' data relevant to the three million properties of the era.

For the next two years the house will be lived in by Changhong Zhan a research fellow at The School of Built Environment and his wife and daughter. They are expected to move into the property in the next few weeks. Changhong Zhan and his family, who come from Heilongjiang Province in north east China, have never been to this country before.

The E.ON 2016 House bristles with more than 100 sensors to monitor energy use, temperature and humidity, making it one of the most sophisticated research houses in the world. It will be the most comprehensive 'big brother' study of its kind. Even the occupants themselves will wear the latest tracking devices to provide data on their associated energy costs and emissions as well as understand how the living space is used and how it changes as the property is upgraded.

At present 60 per cent of the total CO₂ emissions from UK homes arise from heating and cooking using natural gas, and from electricity drawn from power stations for lighting and domestic appliances.

Dave Clarke, Head of Research and Development at E.ON, said:
"Building our 1930s house is the first stage in this process. Many old homes lose energy through poor design and insulation but we can use this

test facility to see exactly what improvements can be made now and for the future. Millions of us live in homes like this. Our homes are responsible for almost a third of the CO₂ emitted in the UK, so any benefits we identify here could go on to lower the bills and the carbon footprint of millions of families. Most of the UK housing stock of 25 million properties will still be occupied in 2050. This project will identify some of the low carbon measures we can retrofit to these homes to significantly reduce our carbon emissions."

Source: University of Nottingham

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