Low Carbon Retrofitting of North East Domestic Properties

Project Background

By 2016, all new build in England will legally be required to be zero carbon, therefore, a major reduction in housing emissions is required. This is part of the UK's drive to reduce its carbon emissions by 80% by the year 2050 against a 1990 baseline.

The introduction of zero carbon homes is not enough on its own as approximately 66% of the housing stock to be occupied by the year 2050 is already built. In order to combat this problem, it is necessary to undertake a massive retrofitting programme to the existing housing stock, which makes up a total of approximately 26 million dwellings.

Project Outline

Groundwork, a national charity, works with local authorities, communities and other organisations to deliver sustainable projects.

Groundwork South Tyneside and Newcastle formed a partnership with Newcastle City Council and Your Homes Newcastle to improve the housing stock in Newcastle. They wanted to demonstrate that hard to heat homes can benefit from using low carbon technologies to reduce energy bills. This project looked at ways of tackling fuel poverty whilst exploring ways to reduce carbon emissions and provide training and employment opportunities to young people.

Groundwork objectives include:

- Tackling fuel poverty and reducing the impact of climate change;
- Improving the housing stock of Newcastle;
- Providing training and employment opportunities for local people;
- Raising awareness of activities that can reduce fuel poverty.

Project Summary

Narec Distributed Energy worked on behalf of Groundwork to calculate the optimum low carbon heating solutions for three typical single skin north east properties. This was based on the energy demands after the properties had been retrofitted with a range of measures designed by Fitz Architects.

As part of the project, Narec Distributed Energy carried out dynamic thermal modelling to calculate the energy demands before and after implementation, conducted feasibility studies of various renewable technologies, and produced wiring diagrams for the final product. Narec also provided on-site support during the installation of the technologies.

The three properties chosen were:

- A converted corner shop, end terrace in the Fenham area of Newcastle
- A first floor Tyneside flat in the Walker area of Newcastle
- A ground floor Tyneside flat in the Walker area of Newcastle

As part of the project, Narec Distributed Energy was responsible for the following:

- Calculating the energy demands of the three properties before and after implementing various energy efficient measures, which were designed by Fitz Architects
- Carrying out an energy strategy for retrofitting the three properties
- Designing the most suitable microrenewable energy system for its desired application

Project Outcomes

The properties were fitted with the following renewable energy systems and technologies:

Property in Fenham

- Internal wall insulation
- Drainback
- Solar thermal hot water system
- Air source heat pump

Tyneside Flats in Walker

- High efficiency boiler with flu gas recovery
- External wall insulation

Project funders:

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