KE Awards 2022 – Ecrofit

Category: Net Zero Partnership of the Year

Describe the nature of the partnership, how the collaboration came about and the scope (or potential) of the partnership. (200 words max)

The UK Government has identified 6 million energy-inefficient homes and has initiated various schemes aiming to retrofit 600,000 homes.

Dr Shadi Basurra and a research team led an Innovate UK-funded project called Retrofit Plus, which digitised the process of deep energy retrofit, carried out on 3 council-owned houses and 12 flats in the West Midlands. They also supported the development of 'TCosy, which used innovative techniques to eliminate heat loss and making the buildings draught free.

The BCU research team developed an automated calibration mechanism on the basis of past energy bills, using AI algorithms such as k Nearest Neighbour (k-NN) and sensitivity analysis to create a retrofit survey using 3D scanning to generate simulation models which help plan the best way to achieve a net-zero carbon rating.

The researchers also developed realistic human behaviour modelling that aimed to estimate occupants' behaviour related to energy consumption, considering the number of people in the household, age and occupancy.

Describe the role that the KE team/professional played in establishing the partnership and implementing the initiative (100 words max)

With the Government introducing new policies on green infrastructure and energy efficient homes, BCU looked to work with a forward-thinking company where they could collaborate and create more efficient, sustainable and successful ways of retrofitting houses.

Describe the significance to the institution and partner organisation (e.g. the benefits that the partnership has delivered/will deliver – societal, civic or economic). (100 words max)

By using a hybrid construction scheme, Beattie Passive was able to considerably speed up the time of Retrofit installation, as constructing the panels off-site in factories made the retrofit less dependent on weather conditions thus reducing costs.

The success of the Retrofit Plus project with BCU and partners led Beattie Passive to set up a Flying Factory scheme, whereby housing associations, local authorities, social enterprises and property developers can partner with Beattie Passive, which enables housing providers to utilise a local labour force or train unskilled people, thus delivering social and economic benefits for the community.

Describe what the partner has brought to the collaboration. (100 words max)

Beattie Passive is a forward-thinking and innovative company that is passionate about all things Passivhaus, a tried and tested solution that gives a range of proven approaches to deliver net-zero ready new and existing buildings optimised for a decarbonised grid and augmented for occupant health and wellbeing. They were able to provide this expertise to the collaboration, empowering the academic expertise and state-of-the-art facilities BCU were able to offer. They also provided insight into their working practices, visits, access to facilities and more.

Describe how the partners have worked together to find solutions to any challenges that have been faced, and how they were overcome. (100 words max)

The research into the optimal design and manufacturing of a retrofit system for energy-inefficient houses responded to the UK Governments desire to address the poor energy efficiency of homes. As a result of the work with Beattie Passive the research has resulted in a change in Beattie's policies and practices, helping to reduce costs and address the construction skills shortage through involving local housing providers in the building process. It has improved the health and well-being of residents, as well as had an impact on the environment through a reduction in energy use of around 85%.