Northumbria University NEWCASTLE

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Northumbria partners in €4.8m EU housing energy efficiency project

Northumbria University has been chosen to participate in a €4.8 million project to tackle the issue of renovating residential buildings in Europe to make them more energy efficient.

More than three-quarters of European residential buildings were constructed before 1990. Many are thermal inefficient and of poor quality, and with the hot and cold extremes of European weather, making their homes thermally comfortable can leave residents in energy poverty.

The EU-funded RINNO project has been devised to find radical new ways to reduce the costs, timescales and disturbance involved in 'deep renovation' and triple the current rate of such renovations in Europe.

While a standard renovation can achieve energy savings of up to 30%, a deep renovation can reduce a building's energy use by more than 75%.

Over the next four years, the RINNO project will develop new ways to make it easier to increase a building's energy efficiency, environmental performance and occupant satisfaction.

The RINNO project will investigate novel technologies, processing and business models, to develop solutions to enable the construction industry to make significant improvements to energy inefficient buildings around Europe.

Researchers from Northumbria University will join experts from Austria, Denmark, Finland, France, Greece, Ireland, Italy, Poland and Spain to investigate new building systems, the use of robots and 'cobots' for assembly, artificial intelligence, augmented reality and Blockchain-enabled crowd equity funding to improve current processes relating to building renovation.

A multi-disciplinary team of researchers from Northumbria's departments of Mechanical and Construction Engineering and Computer and Information Sciences will be working to advance the development of state-of-the-art software systems that monitor the way buildings operate.

The team will use their Smart Connected Homes tool which shows how residents use electricity, light and move around their homes, as well as internal room temperatures and levels of humidity. The tool, which was developed in collaboration with BIM Academy and funded by Innovate UK, will help them to live more comfortably and be used to influence the design of buildings to better reflect the requirements of residents.

The Northumbria team will also develop a project collaboration platform that will integrate the actors and workflows involved in the deep renovation of buildings. This will build on the experience gained by Northumbria's researchers from their involvement in the BIM Toolkit, which was developed to enable a digital plan for work for the UK construction sector.

Mohamad Kassem, Professor of Digital Construction and Engineering, is leading Northumbria's work in this area. He said: "The EU's Green New Deal has a 32.5% target for energy saving, but based on the current rate of building renovation, it would take more than 100 years to achieve these energy efficiency and environmental ambitions.

"We are excited to work with leading partners from across the EU to develop and test latest innovations across product, processes and business models in the renovation sector.

"I am confident these innovations will not only have impact on the renovation markets but will also spill over to other construction sectors, including new-build."

Dr Kay Rogage, Senior Lecturer in Digital Living in Northumbria's Department of Computer and Information Sciences added: "RINNO gives researchers at Northumbria an excellent opportunity to apply their existing knowledge of buildings and data science to the retrofit market, whilst contributing to ongoing global climate and sustainability agendas around reducing carbon emissions."

The RINNO project will run for four years and is funded by the European Commission's Horizon 2020 programme. The solutions developed by RINNO will be demonstrated in four real-life renovation projects in France, Denmark, Greece and Poland.

Arianna Amati, RINNO's coordinator, said: "RINNO is a great opportunity to support the construction industry to accelerate the rate of deep renovation in energy inefficient buildings and to showcase the strengths and the tremendous contributions of Europe for and with users."

Click here for more information on the RINNO project.

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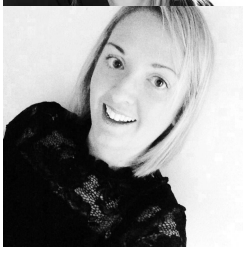

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