



ENERGY HOUSE 2.0

CASE STUDY



A part of



Barratt Redrow

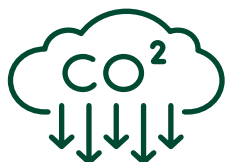
Energy House 2.0



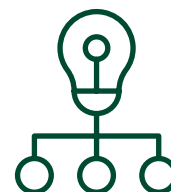
The £16m Energy House 2.0 **replicates global weather extremes** to trial future-proof housing innovations



Controlled chambers allow for the delivery of months of performance data in just weeks



Research is **guiding the industry** on cutting emissions, costs and water use



The project is fostering open knowledge sharing between academia, manufacturers and homebuilders, **driving sector-wide progress towards net zero**



An industry-leading project

With rising energy costs, water shortages and the need to cut carbon emissions, Barratt has partnered with The University of Salford, Bellway Homes and leading product manufacturer, Saint-Gobain, to create an industry-leading project that tests the effects of climate change and look at ways that the homes of the future can withstand more extreme weather conditions.

Known as Energy House 2.0, the specially built climate chamber recreates temperatures ranging from -20°C to $+40^{\circ}\text{C}$, as well as simulating wind, rain, snow and solar radiation to replicate the climate in 95% of the earth's environments.

Energy House 2.0 features two chambers, each big enough to fit 24 double decker buses and will research and test, in tightly controlled conditions, new ways of powering heating and insulating homes, whilst cutting water usage. They are informing the sector about achieving a significant reduction in carbon emissions for new build homes.

The homes feature a range of new technologies, each of which could contribute to lowering the amount of carbon produced when a home is built, and the carbon footprint of the people who live in the home.

Energy House 2.0 is a £16 million project part-funded by the European Regional Development Fund. Its launch comes at a time when both cost of living and climate change are impacting on everyone's lives. The project's findings will uncover the most effective ways to reduce carbon and to control running costs in our homes.

The data - tracked by sensors and kilometres of wires - will help to inform how the wider housebuilding sector and supply chain can build homes that are future-proof, whilst cutting bills for consumers.



Tackling the effects of climate change on housing

Extreme heat in recent years has broken records around the world, bringing raging wildfires across Europe, Australia and the US. Large parts of the globe have suffered droughts and three-quarters of the world is predicted by the UN to suffer regular droughts by 2050.

In the UK, we've experienced the 10 hottest years on record since 2002. The hottest-ever day - exceeding 40 °C - was recorded in 2022, leading to red weather warnings for heat.

The built environment accounts for 40% of the UK's carbon footprint. Achieving the Government's carbon reduction targets will require a step-change in the design of new homes. Barratt, Saint-Gobain, Bellway and The University of Salford are working together to create a blueprint for future homes, including working in partnership with the supply chain to develop new low carbon products, such as the use of timber and render.

Usually, it would take months or years to collect the data needed to evaluate the performance of a new design or technology, but because researchers can precisely control the environment to within half a degree they can gather that data in a few weeks.

That means that accurate results can be achieved quickly and accelerates the innovation process. In addition, the research will understand the impact of multiple technologies in the homes giving a better understanding of how the homes will perform in the real world.

Andy Burnham, Mayor of Greater Manchester, said: "This is a world-leading facility and we are proud that it is based right here in Salford. "Credit to the University of Salford for having the vision and ambition to deliver such a valuable and innovative asset. This will help make Greater Manchester a global leader in green construction and energy systems, as we look to find solutions to the climate and cost-of-living issues we face."

Adam Graveley, Head of Technical and Innovation at the **Future Homes Hub**, said: "If we are to improve the sustainability of new homes, it's important for homebuilders to understand how aspects of the design are performing under real world conditions. Energy House 2.0 and the collaboration between industry and academia will evaluate the as-built performance of many of the technologies and fabric specifications that will be needed to meet the Future Homes Standard and provide an important reference point for others embarking on a similar journey.

"At a tour of the facility co-hosted by Barratt and Future Homes Hub, it was extremely encouraging to see this knowledge shared so willingly. The Barratt team's openness to share both the successful and challenging aspects of the project sets a vital precedent and supports other homebuilders and the Hub's mission to accelerate the sector's transition to a sustainable future."



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