



INTRODUCING A LOW-CARBON HOME

OUR WONDROW TRIAL



OUR WONDRWALL TRIAL INTRODUCING A LOW-CARBON HOME

As part of our drive to become a net-zero business, and to explore our options to meet new building regulations being introduced in 2025, we're piloting a gas-free, low carbon home in West Yorkshire. The three-bedroom detached Oxford Lifestyle home is enabled with Wondrwall Energy technology. It uses artificial intelligence and renewable energy to turn the house into a more sustainable, energy efficient home. It's being lived in by a family of four who will help us understand how the technology could impact potential future Redrow homeowners.

We are collecting data on the home's overall energy efficiency and thermal performance and will evaluate its carbon footprint against a control house next door – one of our standard homes – for 12 months. In addition, we are meeting with the homeowners every three months to ask about their experience of living in the house. This combined quantitative and qualitative research offers us the chance to assess and understand the viability of the technology and its ease of use, should we decide to offer it to future home buyers. It also shows our commitment to exploring different ways of reducing the carbon intensity of our heating and hot water systems, while reducing energy bills even further for our customers.

As a business, we've made a commitment to achieve science-based net-zero emissions by no later than 2050 across our operations, homes and supply chain. This trial is one of several underway with the aim of improving the energy efficiency of Redrow homes and bringing our customers' energy consumption and bills down.





KEY FACTS

Gas-free heating and hot water

including infrared heating panels and intelligent hot water system, solar PV and battery storage solution

Intuitive system

using voice control technology and a mobile phone app to automatically control heating, lighting, security, safety, and entertainment

Intelligent home

learning and understanding homeowners' behaviour, observing how they live, which rooms they spend most time in and how they use heating and lighting, and adapting to their daily routine



THE TECHNOLOGY

Our aim is to promote clean energy and ensure future Redrow homes provide energy flexibility and emit less carbon. Adding Wondrwall technology means our homes can generate green, renewable energy from solar panels. The intelligent energy management system is fully automated and designed to enhance our homeowner's lifestyle. It uses artificial intelligence to reduce consumption and maximise the use of renewable energy, with the aim of lowering energy bills, providing a comfortable living environment and, ultimately, creating a net-zero energy home.

Full Home Automation:

The home uses a pioneering intelligent living system that automatically controls heating, lighting, security and safety, with voice control technology to override default settings at any time. The home learns from and works around the homeowners, observing how they actually live, which rooms they spend the most time in and how they use heating and lighting. In doing so, the system can seamlessly and intelligently adapt and enhance the living environment without homeowner input.

The Wondrwall technology uses an energy management platform to gather data from light switches, battery and solar panels. The Wondrwall light switch includes 13 different sensors covering temperature, humidity, power, motion, luminosity and sound.

We are working with Wondrwall to collect data relating to both regulated energy (space heating, hot water and lighting) and unregulated energy (appliances, external lighting, cooking, audio-visual equipment etc) to get a full picture on the homeowner's energy use.

The internal temperature data will also help us identify if any overheating occurs and when the most comfortable temperature levels in the home are achieved, based on current Government guidance.

Gas-free heating and hot water:

Due to be introduced by the Government in 2025, the Future Homes Standard will require all new builds to be ‘future-proofed’ with low carbon heating and world-leading levels of energy efficiency and deliver affordable gas-free homes. Adding Wondrwall technology to our homes would deliver an intelligent, all-electric heating and hot water system that could enable us to meet this standard. Infrared heater panels heat each room individually and work alongside artificial intelligence controls, making them up to 50% more efficient than traditional radiators.



Generation and Storage:

Wondrwall can help to deliver net-zero homes by generating energy from renewable solar sources. The energy management platform uses data from the Wondrwall light switches, batteries, solar panels and other sources to intelligently “time shift” consumption to maximise the use of renewable energy. Residents then benefit from the use off-peak energy for any additional requirements and deliver a localised smart micro grid that can disconnect from the main power grid. This has the potential to reduce our homeowners’ annual energy costs by 90%.





LIVING IN THE WONDRWALL HOME

The home at Langley Grange in Scissett is lived in by Louise and Holly Sandow and their children Jack, 14, and Beau, aged four. They've moved from a big old house in nearby Clayton West to a very modern Oxford Lifestyle, which gives them three double bedrooms, each with its own bathroom.

They moved into their new home in February 2022 and, have been astounded by how low their bills have been during the summer months.

Holly explained: "During the summer months (from May to August) our bills have averaged less than £20 per month. We haven't experienced a full winter here yet, but we know we will be paying a lot less than many households, and we feel very fortunate for that."

A comparison with their old property isn't really fair, as it was much bigger, built in the 1600s, and didn't enjoy the modern standards of insulation, air tightness and double glazing of a new Redrow home; but their average monthly energy bills there were around £140 per month combined for gas and electric; plus £1,000 per year for wood for the two wood burners they used as they had no central heating downstairs.

Louise and Holly weren't particularly looking to live a more sustainable lifestyle – it was the house and the location they wanted – but, now settled, they've both become much more conscious about the environment and the impact they have on it. Louise said: "Being more energy efficient and taking part in the trial has made us much more mindful. We tell everyone – friends, family, colleagues – about our experience and how beneficial it is. It's exciting to be part of a trial that will influence how people live going forward."

They say the house's intelligent living system is unintrusive and that once they adjusted to the changes it's been like living in any other homes. Any monitoring via Redrow and Wondrwall is going on in the background via an app, so they don't even think about it. "We've had a few teething problems, like some 'white noise' from the light switches and sometimes the automatic light sensors can be too sensitive or not sensitive enough. However, the service from Wondrwall to sort anything out has been excellent – they treat us like VIPs," Holly said.



ENERGY PERFORMANCE AND MONITORING

We are monitoring both the Wondrwall enabled home and the control house next door for a period of 12 months to cover all the seasons.

Quantitative data is being collected on the overall energy efficiency of the Wondrwall home to evaluate its carbon footprint and assess the viability of us offering the technology to future Redrow home buyers. We've conducted regular interviews with the homeowners throughout the study to collect qualitative data and feedback about what it's like to live in their home.

Rose Sandell, Redrow's Group Communities Director, said: "This trial demonstrates our commitment to finding less carbon intensive solutions for heating and hot water as part of our drive to cut carbon emissions. Our customers are our priority, and we want to ensure that our improvements to the building fabric and the services in our homes provide the most effective way of reducing our customers' energy consumption and bills, and a comfortable living environment."

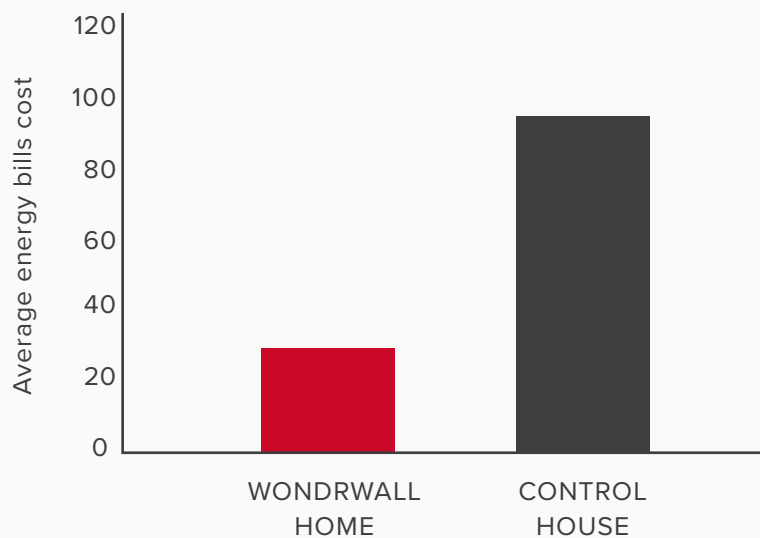


INITIAL INSIGHT

In the eight months to October 2022, CO2 emissions were 83% lower for the Wondrwall trial home, compared to the control house. Between March and October 2022, the Wondrwall-enabled home used net 1377 KWH of energy, generating net CO2 emissions of 169 KG in total. In comparison, our standard home next door used almost four times the amount of energy (5362 KWH) and emitted almost six times more carbon (992 KG). Energy bills for the Wondrwall home were also around 45% lower than the standard home, due to solar generation, use of imported electricity on an off-peak tariff and solar export revenue.

	WONDRWALL ENABLED HOME	STANDARD HOME
KWH OF ENERGY	1377KWH	5362KWH
CO2 EMISSIONS	169KG	992KG

The Wondrwall trial home was particularly efficient during the summer months and achieved net-zero usage for the five months from May to August inclusive. This means the home generated more energy than it consumed and, as a result, there were zero carbon emissions. Average energy bills during these warmer months were approximately £26.20 in the Wondrwall home, an average monthly saving of £70.20 when compared to energy bills in the control house.





TOWARDS ZERO CARBON HOMES

Our drive to cut carbon emissions continues at pace. The Wondrowall trial at Scissett will run until April 2023 and is helping shape our route towards delivering zero-carbon, gas-free Redrow homes. It is one of several trials underway to help us understand the practicalities of living with different technologies when, for decades, we've all been used to gas boilers. Whichever solutions we choose to adopt to reduce carbon, they must be easy to operate, affordable to run and enhance the customer's living experience.



