



# HyDeploy

Demonstrating non-disruptive carbon savings through hydrogen blending

## Project overview

The HyDeploy project seeks to demonstrate how blending hydrogen into the natural gas grid can lower CO<sub>2</sub> emissions without disruption to households.

The first stage of the HyDeploy project saw blending hydrogen into the live gas grid at Keele University between October 2019 and March 2021, providing a hydrogen blend to 100 homes and 30 university buildings.

## Project structure



The nationwide rollout of hydrogen blending at 20 vol% would deliver carbon savings equal to removing 2.5 million cars from the road, safely and without customers requiring any changes in their homes. Blending will allow a significant hydrogen supply chain to be developed whilst providing a platform for wider hydrogen adoption.

## Project highlights

HyDeploy has successfully demonstrated for the first time in UK history that natural gas-hydrogen blends can be safely distributed and used within live gas networks. Key HyDeploy project outcomes have been:

1. Successful achievement of the **first regulatory approval** from the HSE to operate a live gas network above the current hydrogen limit of 0.1 vol%. The approval allowed blending up to 20 vol%.
2. **Development of the technical and procedural precedents** to generate evidence for review by the HSE, which have informed subsequent safety case submissions through HyDeploy2 and the wider hydrogen safety case industry.



“It works. There’s been no impact in terms of us, we’ve not lost gas at all, there have been no issues with heating whatsoever to the house”.

**RESIDENT COMMENT AT THE END OF THE HYDEPLOY TRIAL**

- The design, fabrication, installation and operation of the **UK's first hydrogen grid entry unit**.
- Integration of novel hydrogen production and blending technologies to create the **first hydrogen delivery system**, based on electrolytic generation into a live gas grid.
- Safe delivery of the UK's first hydrogen blend trial to **100 homes and 30 faculty buildings**.  
The trial delivered over 42,000 cubic metres of hydrogen and abated over 27 tonnes of CO<sub>2</sub>.



"I'm contributing by doing nothing. Where else do you get to do that?"

**RESIDENT COMMENT ABOUT THE HYDEPLOY TRIAL**

"If the science is saying that it's going to work and it's good for us, and it's better for the planet. Then, absolutely, I'd be so ready for 100%".

**RESIDENT COMMENT AT THE END OF THE HYDEPLOY TRIAL**

- Collaboration with appliance and equipment providers** to build a robust evidence base to demonstrate equipment suitability.
- Evidencing the **suitability of hydrogen blends with domestic appliances** as well as larger commercial appliances including catering equipment and boilers up to 600 kW.

- Evidencing the **suitability of hydrogen blends with medium and low-pressure distribution systems**, relating to key performance metrics such as: pressure control; odour intensity and uniform gas compositions.
- Promotion of supply chain innovation** through facilitating trials to develop gas detection and analysis technologies.
- Establishing a robust social science evidence base to **understand the attitudes and experience of consumers actually using hydrogen blends**.

HyDeploy has been a hugely successful project that has delivered on its objectives and enabled the UK to take the first practical steps of demonstrating the safety and operational feasibility of hydrogen blends.

**Natural gas demand profile and blend percentage**

