

The Midlands: powering the UK's clean energy revolution



Clean heat at Keele University



CASE STUDY

Keele University is a hub for innovation in clean heat. The expansion of its district heating network shows how needs can be met over the short-term while laying the foundations to achieve long-term ambitions, while HyDeploy was a groundbreaking trial, opening up a pathway to a low-carbon hydrogen economy.

Vital Energi oversaw the expansion of Keele University's heat network at its Horwood Energy Centre, helping it to continue reducing energy usage and carbon emissions, while integrating low-carbon, sustainable energy technology to meet the needs of an expanding campus.

Vital Energi designed a 70m L-shaped wraparound extension mechanical plant layout to house additional plant and equipment, while future-proofing the scheme by leaving space for further plant to be added at a later date. It built the extension over 12 weeks, and installed the plant, equipment, electrics and building management controls over the course of seven weeks.

The original centre was installed in 2015, housing a 125kWe combined heat and power (CHP) engine and boilers to meet demand, whilst the extension features two 1.3MW boilers and a new district heating pumping system, as well as the aforementioned extra space for future expansion.

Keele University has hosted another innovative scheme in the form of HyDeploy between 2019 and 2021, which was the UK's first live pilot to inject zero-carbon hydrogen into an existing gas network to heat homes and buildings. The injection of up to 20% of hydrogen by volume into the University's existing natural gas network supplied 100 homes and 30 University buildings.

Over 18 months, laboratory tests were carried out on a range of gas appliances, with extensive research undertaken into the effects of hydrogen on different materials found in the gas network and appliances. From this, the HyDeploy trial was able to conclude that blended hydrogen up to 20% by volume does not have a negative impact on existing materials used in infrastructure, such as network pipes, or in homes and businesses, such as boilers, hobs, cookers and meters.

This paved the way for a second phase of HyDeploy - a larger 10-month trial in Winlaton near Gateshead, where 668 houses, a school, several small businesses and a church were supplied with a 20% hydrogen blend, further strengthening the case for such a blend.

Credit: <https://www.vitalenergi.co.uk/our-work/keele-university/>

<https://www.keele.ac.uk/sustainable-futures/ourchallengethemes/providingcleanenergy/reducingcarbonemissions/hydeploy/#:~:text=The%20UK%27s%20first%20live%20pilot,a%20low%2Dcarbon%20hydrogen%20economy.>

<https://hydeploy.co.uk/project-phases/#phase-1-keele>