

A WORLD-FIRST SMART HYDROGEN HYBRID HEATING SYSTEM

The world's first smart hydrogen hybrid heating system has been successfully demonstrated in Pembrokeshire, heating a commercial building at the Port of Milford Haven, the UK's largest energy port. The trial was part of the UK Research and Innovation-funded Milford Haven Energy Kingdom project.

The smart heating system comprises of a boiler, an air-source heat pump and smart controls, designed by Passiv UK, which intelligently select between the boiler and the heat pump to lower energy costs and reduce carbon emissions.

During the trial period, the standard boiler was replaced with a Worcester Bosch hydrogen prototype boiler which was operated using 100% hydrogen, supplied via Kiwa's hydrogen appliance testing system. This clever solution enabled the trials to take place with minimal disruption. Within a hybrid heating system like this, the hydrogen can be used to boost heating during cold snaps, and to lessen demand on the electricity system during busy periods, or when there isn't enough renewable electricity available.

Trials were also conducted to demonstrate the operation of a standard natural gas boiler using natural gas blended with 20% hydrogen. Hydrogen will soon be injected into the gas grid, and this trial showed how hydrogen blending can reduce emissions from heating for homes and businesses.



WHY HYDROGEN? →

Why hydrogen?

Hydrogen is a clean fuel. The beauty of hydrogen as an alternative to natural gas is that it produces no carbon during combustion, making it the natural successor to fossil fuels as we transition our energy networks towards a net zero future.

The gas network can be adapted to transport hydrogen without prohibitive additional costs or disruption.

The hydrogen boiler was developed by engineers at Worcester Bosch, during the last three years, as part of the BEIS-funded Hy4Heat project, designed to help the country achieve its target of net zero emissions by 2050.



THREE WORLD FIRSTS FOR MILFORD HAVEN!

- 1 The first smart hybrid heating system in a commercial building.
- 2 The first smart hydrogen hybrid heating system combining an air-source heat pump and a hydrogen boiler.
- 3 The first retrofit of a hydrogen boiler into an existing building.

Project partners



Heating trial partners



READ MORE: www.pembrokeshire.gov.uk/mh2-energy-kingdom