Whole energy system

Case study

HYCOMPACT

HyCompact

Hybrid heating systems have the potential to play a pivotal role in the decarbonisation of heat. Our Freedom Project investigated just this, and delivered valuable insight and learning regarding customer acceptance, installation skills and hybrid equipment costs.

HyCompact now seeks to develop and demonstrate a solution that meets customer requirements and explore a system that delivers least disruption and cost to the homeowner.

A HYCOMPACT UNIT INSTALLED

FACT FILE

- In the UK, domestic energy use is responsible for more than a quarter of national Greenhouse Gas (GHG) emissions and 75% of household energy use is for space and water heating.
- The ENA/Navigant 'Pathways to Net Zero' report also highlights the importance of hybridisation with hydrogen and biomethane, with 22 million domestic hybrid systems in use by 2050 – single unit hybrids enable quick progress in this area.

Need

HyCompact builds and expands on the Freedom Project which investigated the implication of deploying high volumes of grid enabled hybrid heating systems on the broader energy system.

The project incorporates feedback gained through Freedom, whereby customers required a separate system attached to their house or stood in the garden. HyCompact seeks to deliver what customers want aesthetically, whilst providing a lowest cost solution. It seeks to capitalise on the recent advances in hybrid heating technology through the introduction of a low cost, integrated unit which has the potential to further enhance the decarbonisation of heat.

Approach

With UK Power Networks, we will examine the potential for single-unit hybrid heating systems in seven homes, where the heat pump is contained within the boiler unit, which is wall hanging and only slightly larger than a standard boiler-only unit.

This project will be a technical demonstration of a single unit hybrid heating system that is tested with the advanced controls deployed in Freedom. By integrating PassivSystems' advanced, grid enabled smart controls with a 'HyCompact' unit, we will gather in home performance data and demonstrate aggregated domestic demand response (dDSR) simulations.

Through the installations, we will gain insights into the means of balancing the interests of the consumer, supplier, and network operators when seeking to deliver a cost effective national decarbonisation strategy, where 'Hybrids First' is one scenario to achieve this transition.

Benefits

HyCompact will test simpler and integrated hybrid technology, demonstrating this as being an acceptable installation to households, meeting customer needs and highlighting its capability to meet net zero carbon emissions. Critically, it overcomes the huge skills challenge for heat pumps, since these systems can be installed by Gas Safe Registered engineers.

It will assist in identifying the next steps towards a commercial roll-out solution of smart, grid-aware, single unit hybrid heating systems. In addition to this we will better understand the customer journey required in such a rollout