

Inquiry Response

Friday 12th June 2020



The UK hydrogen sector's role in our economic recovery

The Energy and Utilities Alliance (EUA) provides a leading industry voice helping shape the future policy direction within the sector. Using its wealth of expertise and over 100 years of experience, it acts to further the best interests of its members and the wider community in working towards a sustainable, energy secure and efficient future. EUA has seven organisational divisions - Utility Networks, the Heating and Hotwater Industry Council (HHIC), the Industrial & Commercial Energy Association (ICOM), the Manufacturers of Equipment for Heat Networks Association, the Hot Water Association (HWA), the Manufacturers' Association of Radiators and Convectors (MARC) and the Gas Vehicles Network (GVN).

Hydrogen could play a major role in helping the UK to meet the all-important net zero emissions target. Many sectors which are proving to be the most challenging to decarbonise, such as heat and transport, could benefit from utilising hydrogen. Hydrogen clearly has great potential to create a zero carbon gas grid and carbon-free gas appliances which would transform domestic energy use. The end user would require new appliances but regulating so that hydrogen-ready appliances are sold would prime the system ready for conversion. It could also play a significant role as a zero carbon transport fuel, particularly in hydrogen fuel cells; there are additional challenges with this and a hydrogen fuel for combustion engines may be needed for heavier vehicles if biomethane cannot fully replace diesel by 2050.

Developing a zero carbon hydrogen gas grid and appliances which can run on 100% hydrogen could, if made a national infrastructure priority, make the UK a world leader in this technology which would benefit the economy and domestic expertise. Hydrogen boilers, which are already in development, could offer a cost-effective and minimally disruptive solution for the more than 85% of households which currently use natural gas to heat their home. Unlike other alternatives, hydrogen boilers would be very familiar and would slot into a central heating system that consumers understand, like and know how to control. They would require minimal, if any, changes to existing heating systems and would be maintained in much the same way as natural gas boilers but legislation will be required at the appropriate time to ensure all gas products sold are hydrogen-ready.

CCS will be critical to producing so-called 'blue hydrogen' from steam methane reformation (SMR) whilst meeting the 2050 target. It is likely that we would be able to produce blue hydrogen on a larger scale due to the availability of natural gas versus excess renewable electricity. 'Green hydrogen' production could utilise renewable electricity when grid demand is low. As we are seeing currently due to the pandemic, excess supply can present a challenge for grid operators.

The Hy4Heat project is demonstrating the safety of raising hydrogen blends in the grid and has shown promising results. We can also learn some lessons from the usage of town gas which had a 50% hydrogen content. Polyethylene gas mains, as are now commonplace due to the ongoing Iron Mains Replacement Program (IMRP), and suitable for hydrogen distribution, could transport

the gas and the exemplary safety record and expertise within the UK gas industry would ensure a safe transition.

The UK is currently at the forefront of establishing hydrogen as a fuel for the heating sector. We have an opportunity to be a world leader in hydrogen technology and to export it to the rest of the world, but only if the Government is supportive and moves quickly unlike the prevarication over CCS which squandered the opportunity to be a leader in that technology. Germany have published hydrogen strategy and so has the EU. Currently, these strategies are not as ambitious as the UK's but they soon will be.

We have one of the most advanced and extensive gas infrastructures globally, one that could be transformed into a hydrogen network, but the Government needs to publish a comprehensive hydrogen strategy detailing how it will develop a hydrogen economy. This will unlock a significant amount of private investment and will transform the UK's energy infrastructure. However, without clear Government signals that investment may well go to other countries and we will lose our competitive advantage.

A fully-realised hydrogen economy in the UK could both safeguard existing expertise and high-skilled jobs in the gas industry and also create additional opportunities as hydrogen becomes more widely used in other sectors such as transport and industrial processes. The same cannot necessarily be said for alternatives, such as heat pumps, which are overwhelmingly manufactured abroad and would not see all jobs currently in the gas industry replaced.

Government investment so far has been a positive influence in kick-starting research into the feasibility, safety and processes of hydrogen as a low carbon fuel source. It has also given certainty to industry that the Government considers hydrogen to be a potential low carbon fuel for the gas grid and that it wants to explore its feasibility. For a transition to a hydrogen economy to occur, we will need full suite of policy support from the Government including: subsidies for low carbon hydrogen production, strategic oversight of increasing hydrogen blends in the gas grid and phased switching of individual areas to 100% hydrogen, investment in, and support for, carbon capture and storage, and also mandating hydrogen-ready appliances when natural gas appliances are replaced.

In the first instance, funding is required for the H100 project which will construct a hydrogen network and supply 300 homes in order to prove the use of hydrogen at scale. Further work would be required for industrial processes, but conversion to a full hydrogen network is possible with the necessary funding. The sector can deliver a full hydrogen economy but would need the green light from government to unlock the full investment which would allow it to happen.

Government would need to invest in carbon capture and storage (CCS), a critical technology, to ensure it reaches commercial viability, not only for hydrogen but for many other industrial processes. They will also need to support the development of hydrogen production, both renewable and SMR, until it reaches the point of being commercially viable.