The companies using hydrogen to decarbonise their industries

The Hydrogen Valley Programme is a vast initiative aiming to establish a vision and kickstart the hydrogen economy in the middle of England. Our advocates are already working tirelessly to explore how the technology can decarbonise their operations.

Hydrogen can be produced through a range of processes, some of which produce low carbon hydrogen. It is important that this method is standardised, to avoid the potential for greenwashing. In the UK, the Government has set a stringent LCHS (Low Carbon Hydrogen Standard) to ensure that all government subsidised hydrogen truly is low carbon and will therefore deliver decarbonisation. From food and drink to aviation, chemical production to industrial manufacturing, this low carbon hydrogen will play a big role in the future energy mix. The technology has a number of advantages:

- Low carbon hydrogen offers a pathway to decarbonisation in energy intensive processes, where electrification may be challenging or expensive. Low carbon hydrogen can be used to displace natural gas in combustion applications, such as heating furnaces and kilns which are needed in the ceramics and glass sector.
- Hydrogen can be used to help balance the intermittency of renewable power generation through offering a long energy duration storage pathway. When the sun is shining, or the wind is blowing, hydrogen can be produced via electrolysis using excess renewable energy and then stored in salt caverns. When renewable energy generation is low, this hydrogen can then be used in dispatchable power turbines, to ensure that the lights are kept on across the country.
- Hydrogen can be used in a wide array of products such as ammonia, SAFs (Sustainable Aviation Fuels) and e-methanol. These products can be used to decarbonise hard to abate sectors including aviation, shipping and industrial chemical processes in applications such as producing fertiliser.
- Its flexibility, behaviour, and cost-effectiveness makes hydrogen an attractive option for industries across the country. In the Hydrogen Valley region, our advocates have been exploring how hydrogen will revolutionise their industries in a more sustainable world.

What our advocates are doing

Recently, our team reached out to our advocates to learn more about how they're looking to incorporate hydrogen into their energy mix, locating new opportunities to advance and progress the wider Hydrogen Valley programme.

On the manufacturing side, Keeling & Walker have been seeking suitable alternatives for producing tin oxides and other chemicals for a variety of applications. The current process uses combustion, and hydrogen can provide a flexible alternative that could decarbonise their operations while retaining tried and tested manufacturing methods.

Another big topic of debate as we move closer to the UK's climate targets is how to decarbonise aviation. Air travel is becoming more popular, with billions of passengers travelling by air every year. The Government is looking to transition to Sustainable Aviation Fuels (SAF), enforcing a mandate for almost a quarter of all jet fuel to use SAF by 2040. Within this, the Government have set a sub-mandate for PtL (Power-to-Liquid) fuels that must be produced using low carbon hydrogen and carbon dioxide. Both these mandates increase in stringency over the next 25 years, showing the necessity of hydrogen to achieve cleaner flights. However, airports can play a more immediate role to help reduce emissions across the aviation industry.

In the Hydrogen Valley region, Birmingham Airport has big ambitions for the future of air travel, as they aim to reach net zero by 2033 for on-site direct emissions. The airport is currently working with the programme to explore the potential for hydrogen to replace high carbon fuels for use throughout the estate, from airport transport, to building heating provision. The airport believes the Hydrogen Valley Programme will identify and realise the potential which hydrogen brings to the development of the low carbon economy in Midlands and beyond.

Avara Foods, one of the UK's largest food businesses, is Hydrogen Valley's newest advocate. The organisation rears, processes, packages, and dispatches poultry products across the UK. The food and drink industry is another industry set to reap the benefits of hydrogen as they decarbonise their operations, and Avara Foods is no exception. Their business has a heavy reliance on heating and cooling, and temperatures must be kept consistent with a reliable energy supply.

The company has decarbonisation pathways and commitments and are scoping the technologies that will help them to achieve net zero emissions by 2040. As part of these plans, Avara Foods are investigating how hydrogen can improve the company's energy efficiency and replace high carbon fuels in areas of their supply chain that use high-quality heat and process cooling.

Research and development

In the public and third sector, our universities, consultants, and collaborators are working to support research and development for new technologies that will help these organisations to incorporate hydrogen within their energy mix. Cranfield University is collaborating with industries to trial hydrogen technologies on campus. The institution has also developed a Hydrogen Integration Research Centre, which provides solutions to help corporations explore how hydrogen can be used in place of higher carbon fuels.

CR Plus, one of our consultant advocates, are a lifeline for manufacturers and industries looking to navigate the transition to net zero in a cost effective, sustainable way. CR Plus have been instrumental at securing funding for their clients for new sustainable hydrogen initiatives. Alongside this, the consultancy also sits on the Industrial Decarbonisation Research and Innovation Centre Advisory Board, voicing the views of industrial clusters, and highlighting the requirements of various industries that will help them to unlock the potential for hydrogen use.

How to get involved

Hydrogen will lay a key role in decarbonising many of the UK's vital industries, and collaboration across the supply chain will be key to making this happen.

If you want to be at the forefront of kickstarting the hydrogen economy in the programme region and beyond, get in touch by emailing hydrogen.valley@talan.com.