The INOVYN Hydrogen story

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The debate is not really Betamax versus VHS; Hydrogen versus Electric or even Green Hydrogen versus Blue Hydrogen. In the fight to control global warming, climate change and improve air quality then as a society we are going to need a range of energy solutions.

The transition to a zero-carbon economy is going to need significant volumes of hydrogen to replace natural gas and diesel. Whilst Green Hydrogen, from the electrolysis of water using renewable electricity, is the most attractive option it is currently not feasible at the scale of energy required to replace our current energy use in the timescales projected without significant investment. We do not have 100% 'renewable' energy on our electricity grid today, to multiply this by a factor of 3 (or even 10 in winter) in the coming decades will be a major challenge. As part of the transition to a healthier, net zero economy then we will need GigaWatt scale electrolysis cellrooms to produce the associated hydrogen; given the challenges is easy to see why so much effort is needed to accelerate the proposed programmes providing both the energy needed, the infrastructure and ultimately the necessary electrolysis capacity to satisfy demand.

On a parallel path we have Blue Hydrogen, produced from the reformation of natural gas with the carbon capture and storage (CCS) of the resultant CO2. Many experts agree that it is likely that Blue Hydrogen will make up typically 80% of the total hydrogen needed by 2050. The natural gas industry is already well placed to deliver the quantity of energy required, at the flexible rates required, therefore, it is just a matter of transitioning this infrastructure to convert the gas to hydrogen along the way and capture the CO2.

As well as hydrogen having a key a role as an energy carrier for domestic, commercial and industrial heating the interest and potential for hydrogen in transport has grown significantly over the last few years. Hydrogen has a growing role to play not only in cars and Light Goods Vehicles but hydrogen can be a viable option for the heavier end of road transport, off-grid trains and also shipping. Whilst electric cars are starting to penetrate the market and provide a viable solution for domestic travel the commercial use of battery electric double decker buses, HGV's, trains and ships is far more problematic; with the weight of battery exceeding the payload, long charge (refuelling) times and vehicle range all significant challenges. This is an area where hydrogen powered vehicles can provide a key link in our transport chain, not replacing electric vehicles but part of the required range of solutions.

Delivering solutions to challenging problems is nothing new to INEOS and at INOVYN, part of the INEOS group, we have a long history and considerable experience (over 100 years) in the safe manufacture and handling of chemicals and gases including hydrogen. We have been operating chlor-alkali cellrooms that co-produce hydrogen across Europe and have been, storing, supplying and using hydrogen as a chemical feedstock and energy source for decades. So for us, hydrogen has always been a very important part of our portfolio and for many years used as a green energy source, for example in our manufacturing complex at Runcorn.

Whilst much of the focus is on the production of hydrogen a key element will be the storage of hydrogen, just as natural gas storage is essential to the domestic heating network, hydrogen storage will be essential to the future hydrogen economy and network. At INOVYN we are already looking at a range of hydrogen storage options in salt caverns at our site in Cheshire. A single salt cavern is capable of storing 50GWh of energy, as hydrogen, which is 400 times more than the largest Lithium Ion battery storage project in the world, and at a fraction of the cost.

At INOVYN Runcorn, as a member and supporter of a number of North West (NW) based hydrogen groups and projects, e.g. the North West Hydrogen Alliance and North West Net Zero we are keenly looking at how we are aligned to and can harness the strength of the NW to deliver and provide a viable network, multiple supply routes and a resilient system for the use of hydrogen to provide the clean, healthy energy of the future. The NW is ideally positioned to be a key hydrogen generation, storage and base for the successful deployment and transition to a hydrogen economy within the UK.