

Written Evidence Submitted by Hydrologiq Ltd

(HNZ0067)

Summary

For hydrogen to really take off, many small trials need to be funded to enable as many end users and operators to become familiar with hydrogen technologies. This will then ultimately help drive both sides of the demand supply equation. It will drive the uptake of hydrogen offerings, which increases demand. Which enables more hydrogen producers, which then lowers the cost of hydrogen. Which enables further demand growth.

Introduction to Hydrologiq

I am one of the co-founders of Hydrologiq, a company started to help grow the commercial applicability of hydrogen and the hydrogen market. We help users and operators transition from diesel to hydrogen for off-grid power. So replacing diesel gensets in the non-road mobile machinery (NRMM) industry

Observed problem and suggested solution

I have spent the last three years modelling and studying the economics and market forces within the hydrogen industry and I feel that one particular point of intervention could make the largest difference: funding many small trials of hydrogen in the short term to overcome the initially high price of hydrogen.

By enabling many users to become familiar with and test hydrogen offerings, in the area we look at to test HFC generators, it accelerates the increase in ability for people to adopt, and thus the levels of adoption.

We have come to this realisation through many conversations with end users and operators who desperately would like to deploy HFC generators, to become familiar with the technology and reap the benefits of not only low to zero carbon. But also to gain the benefits of zero emissions, no noise pollution, no vibrations, lower maintenance costs.

There is also another flow of logic which arrives at this same conclusion.

The steps to reaching net-zero



Mass adoption

To truly make a big impact on Net Zero changes need to reach high levels of adoption.

This requires

Scale and Cost efficiency

For services or products to be adopted on a mass basis they need to be cost effective and have reached a level of scale in manufacturing or service delivery.

This depends on

Demand

Only by there being enough demand will the level of cost reductions and scale be reached.

Demand only comes when there are

Offerings

End users require offerings, products or services (in the case of NRMM products and hydrogen), which provide the value. But offerings must be developed.

Breaking dependencies

There are two dependency cycles that must be broken for the hydrogen industry to take.

This leads us to a cycle of dependencies that is only broken very slowly over many years of incremental changes or requires external intervention to break the cycle to achieve rapid change.

- The development of an offering (product, service, or new technology) requires money. To get money investors are needed.
- To get investors proof of demand or viability is needed.
- To prove demand and viability trials and tests are needed.
- But to test a thing requires a thing, an offering (and money).



And hence we have the first cycle.

The second cycle needs no diagram. It is the dependency between supply and demand. Without cheap hydrogen (supply) applications/ offerings cannot shift to hydrogen. Without applications (demand) hydrogen prices can't come down.

However, there are now a small number of offerings on the market in terms of a usable final product HFC generator, but the cost of hydrogen is currently too high for almost all end users to be able to trial and test.

We have talked with councils, construction firms (small and multinational), festivals, rental companies and more. And with all, the main hurdle for adoption is the cost of hydrogen, even for just running a trial.

Yet hydrogen can be, and is currently produced, at the price point needed (sub £10/kg). But only if you buy very large volumes. Hence, it is possible to see that if there were many more of these small users comfortable with using hydrogen, then you would have enough small demand to aggregate to match the larger supply volumes where price points start to work. It just takes many smaller users to be comfortable with using hydrogen to equal the volumes needed to make it commercially work.

Thus, we see the solution being the funding of small-scale trials, covering the cost gap between the price of low-volume hydrogen (which is needed for trials) and the lower-cost price point of high-volume hydrogen. If this were possible, then we know from the 10s of conversations we've had that

many trials would be going ahead. And thus the loop to driving adoption broken. Trials can happen and thus proof is gained, investors are happy that risk is lower and can put in money, which in turn leads to more offerings (products, services, technologies or hydrogen supply).

This then leads to enough proof for people to be willing to adopt. Which then increases demand, leading to scale and cost efficiency and ultimately mass adoption.



It doesn't take many (maybe as little as 10) low-volume users (10-100kg H2 per day) to be aggregated before they would be consuming the volumes of high-volume hydrogen supply (1 tonne /days or week) to achieve the high volume price point of less than £10/kg.

Lastly, a note should be made on, and the case for, clear and stable policy will also significantly help the adoption of any new technology as it provides stable assumptions of the market. Which leads to stable business cases, which help lower investors risk, which then helps break the cycle above.

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