

The future of hydrogen

There are many people heating their homes with gas who hope that the gas suppliers will develop hydrogen to replace natural gas, or to dilute it sufficiently in their networks to satisfy those who wish to drive to net zero. People are told modern gas boilers will take hydrogen with or without some modification, and will be cheaper and easier than a heat pump. Some hope that direct drive nitrogen vehicles as developed at the big end by JCB will be available instead of electric vehicles. Toyota has developed hydrogen cars.

There is considerable interest in the idea that hydrogen could help solve the problem of interruptible wind energy. When the wind is blowing well green hydrogen could be made and stored, to be used on windless days when we are short of electrical power. It could even be burned in generating stations. Various governments as a result of these developments are spending taxpayer cash on experiments and trials in the hope that they could push these matters forward.

Meanwhile there are customers who do not want to end their use of traditional gas boilers and petrol cars on the grounds that they are affordable and work well. There are rather fewer consumers who buy fully into the green revolution and wish to buy a heat pump and an electrical car. There are many others willing to be persuaded that a hydrogen or electric answer to their heating and transport problems will work well, but think improvements need to be made before they will be ready to buy one.

The governments that are driving the transition have to accept they are falling behind in getting in the capacity it needs to change the way most people travel and heat their residences. Grids and power stations cannot meet the potential demand if a serious number of people decide to shift. One of the reasons they are finding it difficult to get in the capacity is the doubts and options over which is the best system or combination of systems to displace petrol for cars and gas for homes. It will take a huge infrastructure of gas production, storage and pipes if we go for hydrogen, and a huge grid and cable expansion if we go all electric. Lots of countries are carrying out limited scale experiments, some overlapping with others. No country has yet come out wanting a hydrogen solution to the main demands. Several countries have backed wind and solar energy but still have not cracked how to store and spread the power from hot and windy days to nights and windless hours.

Do you have any advice for those who are designing away to find a road to net zero? What role is there for hydrogen, and how can renewable power be stored? Who should pay the costs of experimentation and investment in the roll out of any of the answers?