10 minutes with…Laurent Carme, CEO of McPhy Energy SA

By Stephen Harrison | 5 March 2020

Hydrogen energy is at a turning point. Start-ups of the past decade are transitioning from R&D driven organisations to embrace industrialisation. Independent players are partnering with power companies or industrial gases majors to bring their technologies to international markets.

McPhy is an example of a company managing this transformation as it prepares for a profitable future with a purpose. **gas**world spoke with Laurent Carme, CEO of McPhy, in an exclusive interview to find out how the company is navigating the dynamics in the high pressure, high growth hydrogen energy sector.

Thanks for taking 10 minutes out with gasworld. First of all, please tell us, what is the history of McPhy?

Our former CEO founded the company in 2008. The original idea was solid state storage of hydrogen in metal hydrides, branded McStore. We were a pure R&D outfit at that time. As markets evolved and technologies developed, we had to take the brave decision to transfer our focus from the original concept to work more closely with hydrogen electrolysers and fuelling stations. Thanks to this diversification, we now offer customers an integrated offer of hydrogen production and distribution equipment.

Hydrogen as a source of clean energy is the common thread that has defined our journey.

So, what corporate developments are planned?

Our product lines are now well defined, and proven. The next stage of the journey is what we refer to as 'industrialisation'. We are focusing on standardisation of our products and alignment of our supply chains to their requirements. Scale will grow and costs will fall.

That means that zero-carbon hydrogen, produced by electrolysis from renewables, will become more affordable – accelerating the roll-out of competitive, high-performance zero-carbon hydrogen ecosystems. In fact, I joined McPhy a few months ago to oversee this transition.

How do PEM and alkaline electrolyte electrolyser technologies compare?

That's a great question. The reality is that hydrogen energy is still a comparatively new area and there have not been many instances where a true like-for-like comparison has been possible on a commercial scale.

However, one of our latest Power-to-Gas projects, Jupiter 1,000, will enable this. It has an installed capacity of 1MW split equally across an alkaline electrolyte system and a PEM electrolyser. Ask me this question again a year from now, and I will be able to give you a very precise answer!

Source: McPhy Energy SA

Tell us more about the team working at McPhy…

Since our foundation in France, in 2008, we have grown organically and through various acquisitions in Germany and Italy. Our commercial reach is global, and our industrial base is strongly anchored in Europe. In France, we have the capacity to produce more than 25 filling stations per year. And in Italy, we can turn out up to 300 MW of electrolyser capacity annually. So, we are an internationally diverse team.

What binds us together is our mission and purpose. Our strategy centres on helping customers in the industrial, mobility and energy sectors to successfully transition to business models based on zero-carbon hydrogen, reconciling economic performance and corporate social responsibility.

So, what kind of skills do your people need, in addition to passion?

Indeed, passion and purpose are not enough. We need deep curiosity and a taste for challenge to design innovative solutions in a fast-evolving environment; as well as a solid foundation of classical industrial and engineering skills.

EDF is a major stakeholder in McPhy and that is certainly at its core. Furthermore, as we industrialise our operations, a focus on the supply chain is essential. We want to achieve significant cost reductions through scale and efficiency. This will make our business more profitable and will mean that hydrogen can compete with conventional fossil fuels on an economic basis in addition to offering environmental benefits.

Talking about scale, what is the biggest project McPhy has been involved in?

Well, that's good timing! We have just announced our participation in an EU-backed consortium to build a 20 MW electrolyser at the heart of a chemical park in Delfzijl, the Netherlands. The funding will be from the Fuel Cells and Hydrogen Joint Undertaking (FCH JU) and Waddenfonds. In addition to McPhy, the consortium involves five other partners (Nouryon, Gasunie, De Nora, Bio MCN and Hinicio) with a diverse range of expertise.

We feel proud that our products have come through the rigorous evaluation process which placed a major emphasis on safety.

Coming onto hydrogen filling stations, how do you see the future?

For heavy duty applications with buses garbage trucks, trains and boats, we see a great future for hydrogen mobility. In the private vehicle domain, we see a mix of battery power and hydrogen emerging. Across this range, our products meet the needs of all scales of operation. For example, a train might take on 100kg to 200kg of hydrogen in a single fill at 350 bar. On the other hand, trucks take on 40 to 50 kg. Cars need smaller quantities of hydrogen, but the trend is for higher pressure at 700 bar to ensure that the hydrogen fuel tank fits neatly into the vehicle.

Are your two main product ranges complimentary?

Indeed. We are seeing more and more demand for hydrogen filling stations with integrated hydrogen electrolysers. The alternative is to receive deliveries of hydrogen in trucks and store the gas at the filling station. In-situ production means less distribution of bulk hydrogen.

Finally, what potential do you see for hydrogen?

Well, the Delfzijl example above takes us into chemical synthesis. Hydrogen is also used extensively on refineries to produce clean fuels. In the fossil fuel sector, it will also see increasing penetration to replace natural gas in our pipeline grids. Hydrogen is also increasingly being used for direction reduction in steelmaking. These types of applications are already on the radar.

Beyond that, we believe that hydrogen will be also used to enable the decarbonisation of cement and ammonia production.