Supporting the sector scale up

Rotork is a market-leading global provider of mission-critical flow control and instrumentation solutions. **Steve Welch** spoke to **Danny Nicholas,** Business Development Manager, Hydrogen Equipment, to find out more about their work in the hydrogen sector

Danny Nicholas

Danny Nicholas joined Rotork in March 2022 as Business Development Manager, Hydrogen Equipment for EMEA. Before joining Rotork, Danny worked for Swagelok Manchester where he played a central role in the Technical Support and Business Development team, working with customers in the advancement of technology and design of equipment for use in the green hydrogen value chain. Danny also supported research work undertaken at Manchester Fuel Cell Innovation Centre (part of Manchester Metropolitan University) and at The University of Manchester's graphene facility.

Steve Welch: Could you provide a summary of Rotork's offering to the market?

Danny Nicholas: We provide critical flow control solutions to hydrogen equipment manufacturers and valve makers throughout the complete hydrogen supply chain. For over 60 years Rotork has supplied reliable, precise and efficient flow control products to a wide range of industries. As global leaders in flow control technology, we are perfectly placed as a partner in the supply chain of demanding and mission critical applications within hydrogen. Relevant products from our portfolio naturally include electric and pneumatic actuators, but also key instrumentation such as solenoid valves, switch boxes, needle and ball valves, pressure regulators and filter regulators. There are well known challenges with the production, storage, and distribution of hydrogen—and there can be safety issues if not managed correctly. Hydrogen is highly flammable when used as a fuel. It is difficult to detect leaks because it is odourless, colourless and tasteless. We have the knowledge and experience to reduce risk if we control all stages safely. I joined Rotork at a time of increased focus on hydrogen and the messaging of "Enabling a Sustainable Future". We are a member of the UK HFCA, meaning that we are at the heart of innovation surrounding the UK's hydrogen industry and manufacturing systems.

SW: Do you have a project you could provide some details of?
DN: Our CVL process control electric actuators were recently installed on green hydrogen electrolysis skids for French equipment manufacturer, AREVA H2Gen (now Elogen). Because electrolysis requires extremely precise control, actuators on the skids needed to provide accuracy, a fail-safe action and a high-duty cycle. The accuracy offered by all Rotork actuators meets these challenges; process control actuators in particular (like the CVL) offer precise modulating control and the repeatability necessary within electrolysis.

Each electrolysis skid has three CVL actuators mounted on globe valves to regulate the pressure and level of the water used for electrolysis. Many of our electric actuators offer essential safety certifications (CVLs are ATEX IIC certified) which is essential for environments where hydrogen is present, because of its volatility. Safety must always be the paramount concern within hydrogen applications and our actuators meet this challenge.

SW: What do you see as the key trends in the wider decarbonisation sector?
DN: Within decarbonisation as

a whole, there is not one single element to consider. All different decarbonisation approaches must combine together to have an overall positive impact. The positive impact of hydrogen and renewable energy is one of these multiple approaches, alongside carbon capture and storage, increased efficiency in industrial and domestic applications, and global emission reduction. All of these efforts combine to have a substantive effort on the necessary decarbonisation of the world.

There is an argument that we should not simply be thinking in terms of colours of hydrogen production, but in terms of overall carbon footprint of each production type. For example, blue hydrogen might be a bigger pull in the short term because of the existing infrastructure assets in place. Green hydrogen conversely is in the process of scaling up and we are not yet in a position where there is enough green hydrogen to cover our needs. We need to balance different ways of producing hydrogen. This balance is something the industry is still working out.

SW: What are the main challenges facing the hydrogen sector?
DN: The two main challenges I see at the moment are the issues of scaling up green hydrogen and of making the wider production/use of hydrogen cost-effective. The number of green hydrogen manufacturers is still relatively low and scaling up has to be done in a cost-effective way (both in terms of investment in production and in the price of the final product).

In terms of wider infrastructure, a lot of testing still needs to be done on existing gas networks, pipelines and systems. A clear danger of hydrogen is its flammability and its tendency to explode, so it is essential that production, storage and usage minimises or eliminates potential leaks. Therefore, the high degree of control in the management of hydrogen at all stages (including via flow control) is critical for safe production and utilisation.

A Rotork CVL actuator operating on an electrolysis skid

SW: What are your reflections on 2021?
DN: 2021 was a key moment in the direction of the future of hydrogen, low-carbon energy and wider decarbonisation. Throughout the year it became clear to me that industry, large organisations and governments were coming together to explore and magnify the messages of what the hydrogen industry is hoping to achieve. Governments around the world began to change their energy policies to include hydrogen. There were a huge number of roadshows, exhibitions and conferences regarding the importance of hydrogen, which was part of a significant acceleration in discussions of what the future of the industry will look like.

We also saw an increase in the number of smaller companies and start-ups emerging. They are on the smaller scale of hydrogen equipment and seem to be bridging the gap between where we are now and where we will be in the future (as bigger, longer-term projects are invested in and built). For example, companies that offer mobile hydrogen refuelling stations grew in 2021. They are scalable and mobile, perfectly suiting current needs.

SW: What are your objectives looking ahead through 2022 and beyond?
DN: We know that hydrogen is a rapidly moving sector. Our ultimate aim is to become a global player in the supply of mission critical flow control products to hydrogen applications and become recognised as a sustainability leader within our industry. Rotork is here to support the constantly evolving landscape for equipment manufacturers who are beginning to scale up their production and to increase the number of systems they are in the process of building. We are in a great position to do that because of the size of Rotork, because of our multiple strategic locations around the world and our history in providing safe, efficient flow control solutions.

www.rotork.com