

Hydrogen has exciting implications for an energy-efficient future

For Tshwane-based specialised engineering company, RTS Africa Engineering, hydrogen-based technologies have exciting implications for a more energy-efficient future. The company is the sole agency for global hydrogen technology company NEL Hydrogen in sub-Saharan Africa.



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"Hydrogen is potentially the energy carrier of the future: by transforming electricity to hydrogen through water electrolysis, energy can be stored for later use. It is also considered one of the important fuels of the future as it provides clean and emission-free fuel for transport," says Ian Fraser, managing director of RTS Africa Engineering.

NEL Hydrogen, a Norwegian company, has been at the forefront of hydrogen production through water electrolysis since 1927. The company produces electrolyzers for large-scale hydrogen production, as well as for hydrogen storage of renewable energy and has installed more than 500 electrolyser units around the world.

In Africa, these include installations in Kenya, Egypt, Algeria and Nigeria. In South Africa, these include installations in Saldanha Bay and Sezela in KwaZulu-Natal.

Robust and reliable

These units are extremely robust and reliable, requiring almost no maintenance, according to Eric Dabe, sales director at NEL Hydrogen.

"Our hydrogen production plants have an extremely long life-cycle, 40 years or more. A case in point is the electrolyser that we installed for a leading sugar producer back in 1983, which runs for 24 hours a day and is still fully operational," says Dabe.

"The technology itself is very simple, stable and safe, providing a reliable, ongoing supply of hydrogen. The only 'maintenance' required is an overhaul of the electrolyser cells, which is recommended every eight years."

NEL Hydrogen, based in Notodden, Norway, started as part of Norsk Hydro, using electrolyser technology for large-scale hydrogen production for the company's ammonia fertiliser plants. In the 1970s, the company started selling its technology further afield, and became part of Norway's oil and gas giant Statoil in 2007.

In 2014, a group of Norwegian investors bought NEL Hydrogen, foreseeing massive potential for growth in the demand for hydrogen as an alternative fuel and as energy storage. A new listed company was formed, NEL ASA, which is a driving force in hydrogen-based technologies worldwide.

Refuelling stations

With the acquisition of the Danish company H2 Logic in 2015, NEL ASA plans to further develop the hydrogen refuelling station infrastructure in Norway and further afield. The company has also bought the rights to rotolyser technology (rotating electrolysers) which offers greatly enhanced efficiencies and footprint reduction. This technology is still in its research and development stage.

"NEL Hydrogen has entered into a very exciting phase with two main drivers: hydrogen production through global electrolyser plant installation; and a new focus on hydrogen refuelling stations through our acquisition of H2 Logic," says Dabe.

When it comes to hydrogen refuelling stations, Dabe notes that Japan, Germany, UK, Scandinavia and USA are currently at the forefront of infrastructural development. Iceland was, however, the site of the world's first public hydrogen re-fuelling station in 2003 and Norway lead the way with the first hydrogen road, connecting the west coast to Oslo in the south.

For Fraser, with major motor vehicle manufacturers making headway with hydrogen vehicles, the time is right for the development of a hydrogen infrastructure.

"With the ramping up of production of hydrogen cars, such as Toyota's Mirai, the hydrogen economy, globally and locally, is starting to come into its own. Hydrogen re-fuelling stations are starting to enter the commercialisation phase and we see exciting possibilities for the future in South Africa; such as in the bus and taxi industries, with the utilisation of a single refuelling base along a busy commuter route," he says.

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