

Sustainable vehicle technology

H2X is already building its Warrego utility in a plant in Sale, Victoria – a Ford Ranger with the diesel engine replaced by an H2X hydrogen fuel cell drivetrain.



Harnessing hydrogen to bypass batteries

The automotive industry is on the verge of a major transition away from fossil fuels and towards electricity as it struggles to shrug off its reputation as one of the biggest sources of CO2 pollution and, therefore, a major factor in climate change.

The transition is going slowly as would-be customers wrestle with new concepts such as the relatively limited range of battery electric vehicles, their high cost compared with regular vehicles, and the hours-long recharging times needed.

But one new Australian company, H2X Global, is planning to short-circuit the transition to electricity by navigating around the battery issues and going straight to on-board electricity generation using hydrogen fuel cells. A fuel cell consumes hydrogen and oxygen in a chemical process that produces only electricity, heat and water.

H2X Global has developed a hydrogen fuel cell powertrain incorporating supercapacitors that will be used to power its range of delivery vans and other work vehicles from 2024.

The system is already being used in buses being made in Malaysia and Vietnam under partnership arrangements.

"The advantage we've got is the delivery vehicle can be refilled with hydrogen in three minutes and then it's capable of running for around 700 kilometres – double or more the range of a battery electric delivery vehicle," says H2X Global co-founder and chief executive Brendan Norman.

"It means professional drivers can drive the vehicle all day without having to put it in storage for eight hours while it recharges. That's the benefit of our system."

The supercapacitors are a major aid to efficiency because they can be charged extremely quickly, allowing them to recoup about 75 per cent of the energy created during regenerative braking as the vehicle slows.

Regular EVs recoup less than 20 per cent of this energy because the batteries cannot absorb it as quickly.

H2X is currently finishing development of its own three fuel cell electric vehicles (FCEV) in conjunction with Austrian motorcycle and sports car manufacturer KTM and is planning to launch the Darling delivery van in Europe late in 2024.

Norman says H2X is planning to manufacture a right-hand drive version of the delivery van in Australia when hydrogen becomes more freely available.

The company will use a radically different and much cheaper production method than is currently used in vehicle manufacture so that a production rate of about 20,000 vehicles a year could be profitable.

"There's still enough skills around in Australia that we think we can put together a pretty good production team."

In fact, H2X is already manufacturing its Warrego utility in a plant in Sale, in Victoria. However, the Warrego is not an in-house design. It is actually a Ford Ranger with the diesel engine replaced by an H2X hydrogen fuel cell drivetrain.

The right-hand drive Warregos are being made here more as demonstration vehicles to show the efficiency of the H2X fuel cell system.

H2X may make as many as 25 units for supply to companies that are in the hydrogen industry or

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markets with the proper after-sales set-up and take care of customers properly."

The other promising markets are in South-East Asia, where H2X will be building bus factories in Malaysia and Vietnam. The Malaysian operation will be in Sarawak, where there is a surplus of hydroelectricity, some of which will be used to make green hydrogen.

Similarly, in Vietnam, an individual investor is planning to build three hydrogen plants and is a partner in that bus project.

Although H2X was only formed three years ago, its team of executives and engineers have decades of experience with hydrogen fuel cells, and the design and mass production of vehicles.

"The beautiful thing is our team. They have already sent out a few thousand fuel cell buses and trucks in China before joining H2X. They did the development on some units for a couple of other manufacturers," says Norman.

"So we've got lots of experience and our team is still maintaining those vehicles on the road. We know what can go wrong with them – we've solved all the issues already."

Norman is also an automotive industry veteran. He was previously chief financial officer of Volkswagen Shanghai and held senior management positions at BMW, Audi and Infiniti in Europe, Africa and Australia.

Other executives at H2X have held top design positions at Fiat, Nissan Europe and VW and senior design and engineering positions at Lotus, Maserati and Volvo Truck.

"We have the ability to do cars from end to end," Norman says.

just keen to assess the viability of the FCEV system.

The company will also make about 200 left-hand drive Warregos in the Netherlands, where significant subsidies will make it competitive, Norman says.

"We are also part of a program in Scandinavia, in Sweden, where there will be 28 hydrogen stations by the end of next year. And that's where we are focused on. We have to focus on where the hydrogen is. And we have to develop those



True progress is sustainable

H2X Global is an Australian automotive company developing hydrogen Fuel Cell Electric Vehicles.

For those who drive.

www.h2xglobal.com