

REAL

June 2023

Torque

Hydrogen FCEV

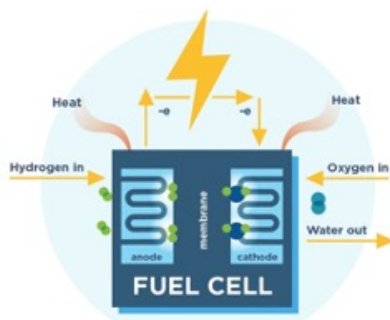
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Recently we delivered our very first Hydrogen Fuel Cell Electric Vehicle, also known as a FCEV. This is exciting new technology which will help our journey towards a greener future. The FCEV we delivered was a Hyundai Xcient which is out working with NZ POST.

What is a Hydrogen Fuel Cell and how does it work?

Simply put, a Hydrogen Fuel Cell converts the chemical energy of hydrogen and oxygen into electrical energy. The fuel cell uses hydrogen as fuel and oxygen from the air to create an electrochemical reaction that generates electricity leaving just water and a small amount of heat as the only by-products.

The electrical energy is then distributed to the electric motor which then propels the truck.



Source: Fuel Cell & Hydrogen Energy Association

This is one of the two fuel cells used to power the truck.



How is a FCEV different from a battery electric truck?

An FCEV and a battery electric truck are both electrically powered, but they differ in terms of the technology they use to generate electricity. A FCEV generates electricity using a fuel cell. On the other hand, a battery electric truck uses a rechargeable battery pack to store and supply electricity to its electric motor.

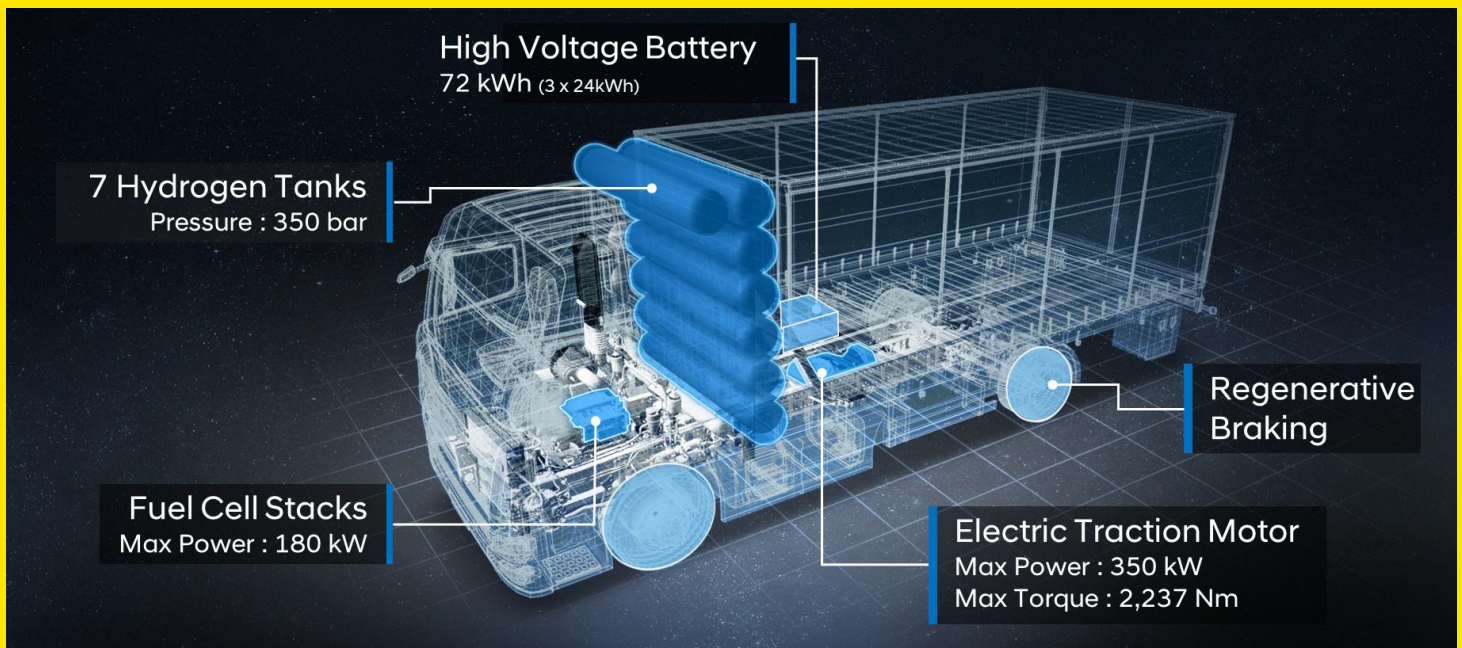


ELECTRIC MOTOR
FUEL CELLS



ELECTRIC MOTOR
THE GRID

The flow of energy



Hydrogen gas is stored in tanks behind the cab.



The Hydrogen gas enters the fuel cell where it combines with oxygen to produce electricity.



After the fuel cell, and depending on the driving conditions, the electricity is distributed directly to the motor or to the on-board battery where it is stored and used when required.

We deliver a lot of vehicles each year at TR Group but this one was unique. To ensure a successful delivery here are a few things we had to work through:

Fuelling – We needed to understand what the current fuelling infrastructure was and what is coming. Being able to refuel is critical to maximising the utilisation of this truck.

Driver Training – A lot of work was done with Hyundai and our own Driver Training Team to understand the capabilities and the key points to be aware of.

Maintenance – Being such new technology there are different schedules that needed to be set up. We also spent time understanding what parts are available and may be required. We spent time understanding and meeting the trained technicians that will be maintaining this truck.

Monitoring – Now that the truck is out working, we are tracking and evaluating its performance. No better way to learn and understand something than when it's out working.

The Numbers

- ▶ Two fuel cells produce a combined 180kw of electrical power.
- ▶ One 470HP electric motor sends power to the rear wheels via an automatic gearbox.
- ▶ Seven equally sized hydraulic tanks filled to 350 Bar.
- ▶ One 630v, 72kWh high voltage battery.
- ▶ Up to 400km of range .
- ▶ 31kg of hydrogen on board when full.

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