

City Talk



A fuel cell module.



A full fuel cell unit with cooling system.

HYDROGEN REVOLUTION IS ALREADY UPON US

I was invited to join a delegation to gauge rapid developments in the use of hydrogen fuel cells for goods vehicles in Foshan, Guangdong, and was left most impressed by the success.

Hydrogen fuel is widely accepted to have many advantages over diesel and electric vehicles.

In comparison with the former, the advantages are an enormous reduction in pollution and no carbon dioxide, nitrous oxide and particulate emissions, significantly improving roadside air quality.

With EVs and their huge batteries adding to payloads, the much lighter weight of fuel cell vehicles offers far better efficiency and longer ranges that are most welcome by commercial operators.

Hydrogen, as applied to vehicles, uses fuel cells that convert it to electricity, working like a reverse action battery.

The power thus generated drives motors that provide traction power and allows for smooth speed control.

Electric drives do not need gearboxes and clutch systems as the motor can provide large torque, even at close to zero speed, significantly reducing weight and maintenance costs.

The factory I visited was equipped to make a complete line of equipment, from fuel cells all the way to container tractors and stationary power supply units.

All critical components are made in house, ensuring quality and no production interruptions from supply constraints.

The basic components of the cells, including the application of graphite coatings on the base plates used as electrodes, are all manufactured in clean rooms.

The plates are then assembled and ancillaries such as a small cooling system and power connections are added, and enclosed in semi-sealed units, ready for installation in container tractors, a range of other good vehicles such as street cleaners and stationary power supply sources.



Nuts and bolts

Edmund Leung



The hydrogen is stored in multiple cylinders.



The factory manufactures some 30,000 fuel cells a year, and it, together with factories in Inner Mongolia, Chongqing and Zhejiang, produces the lion's share of the entire Chinese market's needs.

From 2018, they had been manufacturing hydrogen-powered buses, which is already widely used in Foshan.

We had the opportunity to travel around the factory in a hydrogen bus and were most impressed.

Since 2021, the factory also started making container tractors for goods transport and now produces 5,000 a year.

They have found wide applications in many parts of China, moving container loads of goods across provinces.

With a proven service record of over 200 million kilometers of reliable operation over the past two years, they are often seen on highways and will soon replace the conventional diesel engine variant.

I have always been keen to see hydrogen fuel cell vehicles replace internal combustion engine vehicles, but seeing is believing.

Observing the factory, touching the gleaming new trucks and seeing them running is a most satisfying experience.

Even more gratifying was seeing such new products put to widespread applications, not only for vehicles but also for supplying power to remote communication stations, data centers and many other applications that require clean power.

The hydrogen future is already at our doorsteps, and we should embrace it to provide a cleaner and more efficient transport system for the benefit of all.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over features of modern life