



# FUEL CELL ELECTRIC VEHICLES IN CHINA

China is committed to developing the platinum-based fuel cell electric vehicle (FCEV) market, targeting one million FCEVs on its roads by 2030

Recent changes to the Chinese government's New Energy Vehicle programme have shifted the focus away from the subsidies awarded to battery electric vehicles towards FCEV roll-out and, importantly, the development of the country's hydrogen refuelling infrastructure.

The new subsidy policy does not signal a change in direction, rather it re-emphasises the importance the government is placing on FCEV adoption as part of its strategic vision under both the 'Made in China 2025' and '13th Five-Year Plan' initiatives, which are aimed at economic transformation and social development.

Commenting on the updated New Energy Vehicle programme, Mr Wan Gang, Chairman of the China Science and Technologies Association, a non-profit, non-governmental organisation of scientists and engineers, said:

"Fuel cells have always been an important part of China's plans for new energy vehicles, and the fuel cell era is already well underway as we see the adoption of fuel cell vehicles across the transport mix - from long-distance vehicles and public transport to fuel cell cars."

FCEVs combine the emissions-free driving of battery electric vehicles with the quick refuelling times and range of a traditional gasoline or diesel car. Unlike battery electric vehicles, they also have

the advantage of providing 'high load capacity', meaning that FCEVs maintain a consistent power output even as the load increases, for example when going uphill or towing.

A comprehensive FCEV roadmap has been drawn up by the Society of Automotive Engineers of China in support of these initiatives which envisions 50,000 FCEVs on the road by 2025 and one million by 2030. Crucially, there are also plans to roll-out a network of hydrogen refuelling stations, infrastructure that is essential if FCEV adoption targets are to be achieved.

In addition to government-led policies for stimulating FCEV growth, local governments in cities like Rugua, Foshan, Suzhou, Taizhou and Yunfu are taking a lead and have set up hydrogen energy town projects to promote the development of an integrated fuel cell and hydrogen industry.

## What does this mean for platinum?

In a platinum-based hydrogen fuel cell, hydrogen and oxygen are combined to generate electricity, with heat and water as the only by-products. Molecules of hydrogen and oxygen react and combine using a proton exchange membrane (PEM) which is coated with a platinum catalyst.

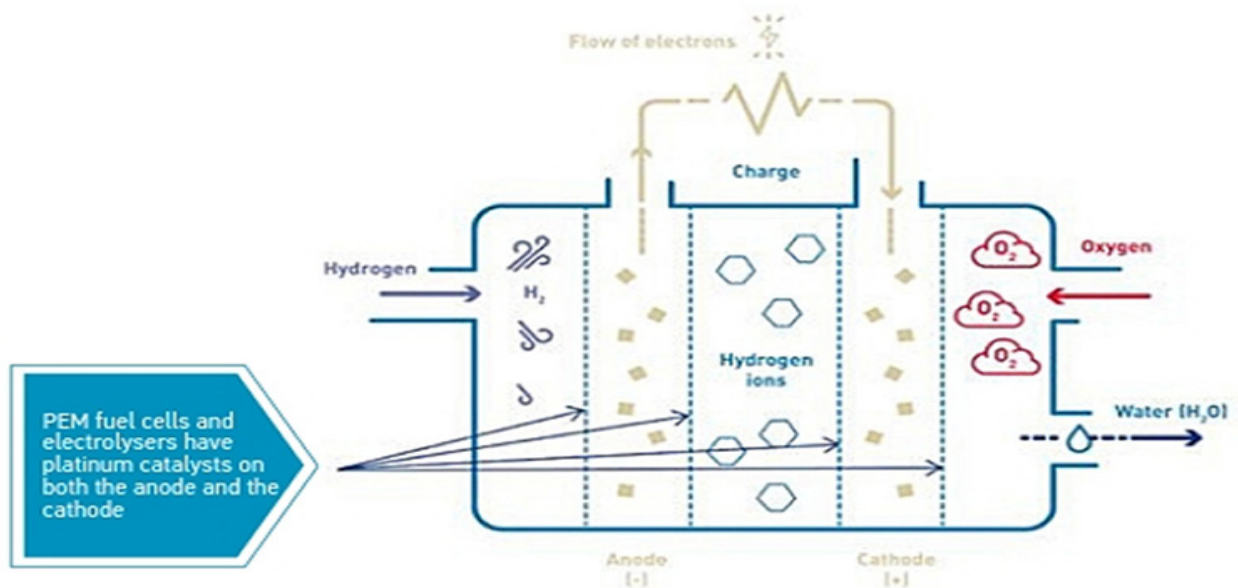
Platinum is especially suited as a fuel cell catalyst as it enables the hydrogen and oxygen reactions

to take place at an optimal rate, while being stable enough to withstand the high electrical current density and complex chemical environment within a fuel cell, performing efficiently over the long-term.

Platinum-based hydrogen fuel cells are expected to be an important future demand driver for the metal, and, according to estimates, China's plans alone could cumulatively require 320,000 oz of platinum by 2030.

The World Platinum Investment Council is hosting its inaugural Platinum and Hydrogen Industry Summit on 24 May 2019 in Shanghai, bringing experts and business leaders together to explore developments and opportunities for platinum investment in China's fast-growing hydrogen economy. For further details contact [china@platinuminvestment.com](mailto:china@platinuminvestment.com).

## Inside a platinum-based fuel cell



Source: Graphic from Airliquide Proton Exchange Membrane

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