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Could hydrogen-powered fuel cell vehicles be the PGM industry of tomorrow?

May 30, 2022 | Emma Davies

- **Metals Focus's flagged that PGM demand is set to grow with green hydrogen**
- **Platinum is also a major component within hydrogen fuel cells for**
- **WA projects could be well placed to benefit as the world looks for ethical sources**

There's been a political shift this year towards renewable energy adoption and energy security – exacerbated by Russia's invasion of Ukraine.

This has led to a spotlight on the hydrogen sector, especially green hydrogen produced by renewable energy.

And some of this is expected to spill over into demand for platinum group elements (PGMs). An ongoing supply deficit and increased catalytic convertor demand has seen prices, especially for palladium, soar since 2019.

Metals Focus flagged in its Platinum Group Metals Focus 2022 report that the International Energy Agency (IEA) has estimated that hydrogen electrolyser capacity may exceed 300MW and that 350 projects in development that could bring as much as 54GW capacity on stream by 2030.

“If realised, this could result in existing electrolyser demand of a few thousand ounces of PGM demand becoming several hundreds of thousands by the end of the decade,” the report said.

Primarily used in ye olde internal combustion engines

Right now, the primary use of platinum and palladium is as catalysts to clean nitrous oxides out of internal combustion engines (ICE).

But with the EU banning new ICE car sales by 2035, there'll be a new role for platinum in the hydrogen sector via the the proton exchange membrane (PEM) electrolyser – which requires a compound of iridium on its anode and platinum on its cathode.

“Currently, the largest consumer of PGMs within the hydrogen sector is stationary and portable fuel cells, used to power buildings, temporary encampments, as an emergency power source, or interruptible power supply for data centres,” Metals Focus says.

Demand could be stretched between two worlds

Platinum is also a major component within hydrogen fuel cells for potentially zero carbon emission vehicles – and could be a viable alternative to battery electric vehicles.

Metals Focus says that by end-2030, the transport sector could account for over half of PGM demand from hydrogen applications, predominantly using fuel cell technologies, but potentially also in hydrogen combustion engines.

And Podium Minerals (ASX:POD) MD Sam Rodda reckons that, as electric vehicles and hydrogen fuel cell vehicles take over some of the automobile market, PGMs could be stretched to supply both old and new vehicles.

“If combustion vehicles stay around longer then it'll put pressure on PGM supply to service both old technology and new technology in vehicles,” he said.

“If we ramp up hydrogen fuel cells, then the requirements particularly for platinum as the major use will be stretched, because currently, the forecast use of PGMs in a hydrogen fuel cell vehicle could be up to 10 times the amount used currently as a catalyst in combustion vehicles.” “Nickel has always been the main game for Panoramic, but Panton was only 70km up the road from their Savannah operation. They were looking at it as a potential supplementary feed source for that existing mill.

Heavy duty hydrogen transport will be the bulk of demand

PGM-based fuel cells are already in continuous development for automotive, train, marine and aviation industries – and heavy-duty transport will likely be where the bulk of demand comes from.

“Taking the bulk of demand within transport, though, will be heavy-duty trucks, which boast a significant payload capacity advantage over their battery electric counterparts and are less reliant on an ad-hoc refuelling network as is required by personal vehicles,” Metals Focus says.

“By end-2030, heavy duty trucks are currently forecast to require over a quarter of a million ounces of platinum, with most demand being seen in China.

“With regards to the light duty industry, Japan will dominate, but the total global ounces will be a fraction of heavy duty, forecast in the magnitude of tens of thousands of ounces.”

Ethical sources will be top of mind, 'cos Russia

Russia produces about 40% of global supplies of palladium and 10% of platinum, and Rodda says it's likely consumers will veer towards more ethical/non-conflict supplies of PGMs.

“We've already seen the UK put some restrictions on Russian-sourced PGMs and base metals recently, and I think also a lot of end users and downstream users of PGMs are sourcing socially responsible PGMs globally.

“We expect to see some pressure in that area and that's why I think Australia is well placed with its growing source of PGM exploration companies and exploration projects, to service that demand for socially responsible PGMs.

WA projects could be well placed to benefit

Talking about Australian PGM players, Rodda reckons WA in particular has an opportunities to develop a solid PGM industry.

“With Podium, Chalice (ASX:CHN), Future Metals (ASX:FME), and even recently, Galileo's (ASX:GAL) exciting exploration results, means we're well positioned to service future gaps in this market and provide inputs into our own Australian-based hydrogen economy,” he says.

“If we can get to a position where WA can source its own PGMs from WA or Australia through one of our many PGM stories, that it's a good end to end story that the state can look forward to the next eight years or so.”

POD is drilling to extend its PGM resource at Parks Reef – which currently has 2.8 million ounces in inferred resource, more than half of which is platinum.

“We’re looking to double our resource in the coming months,” Rodda said.

“Then we’ll look towards the study work and metallurgical test work required to support studies towards developing Australia’s first PGM operation.

Source: <https://stockhead.com.au/resources/could-hydrogen-powered-fuel-cell-vehicles-be-the-pgm-industry-of-tomorrow/>