South Africa advances green hydrogen economy with BMW trial

By Lindsey Schutters

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Anglo American Platinum (Amplats), Sasol and BMW used the 2023 Green Hydrogen Summit as a platform to launch a trial of hydrogen fuel cell vehicles. This initiative is a result of a collaboration between these companies to explore the viability of new energy vehicles (NEVs) in the country and expand the domestic green hydrogen economy, according to the Minerals Council South Africa.

Green hydrogen is emerging as a pivotal fuel to help curb greenhouse gas emissions and combat climate change.

South Africa is the world's largest supplier of platinum group metals (PGMs) that are used in the electrolysis of water to split hydrogen and oxygen, and in hydrogen fuel cells to generate electricity. In this capacity the country can play a crucial role in global decarbonisation.

The trial could potentially stimulate a demand for up to 5 million ounces of PGMs annually if hydrogen fuel cells find application in 10% of the global car market. This development promises to bolster job security for the 175,000 individuals employed in the PGM mining sector.

South Africa's production of PGMs in 2022 amounted to 269.5 tonnes, 5.5% lower than the 285.3 tonnes recorded in 2021. Export volumes for the entire basket of the six metals that comprise PGMs fell by nearly 13% to 230.7 tonnes in 2022 from 264.6 tonnes the year before. Local sales volumes were 15.7 tonnes in 2022, a 24% increase from 12.6 tonnes in 2021.

Understand the role of the mining industry

The Minerals Council and its members are engaged in the early stages of a project to understand the role the local mining industry can play in South Africa's emerging green hydrogen economy and to encourage the use of PGMs.

The Amplats, BMW and Sasol project is an important development for the automotive and mining industry. BMW will provide its recently launched iX5 Hydrogen to evaluate how these NEVs perform in real-world conditions in South Africa.

Amplats will provide the PGMs used to make hydrogen and convert it to electricity and Sasol will provide the green hydrogen and the mobile refuelling system.

This project comes soon after the launch of the world's largest mine haul truck with a 290-tonne payload by Anglo American at the Mogalakwena platinum mine in Limpopo. Sasol produced its first green hydrogen at its Sasolburg facility in June.

Accelerate transformation in the mobility sector

"Hydrogen is a versatile energy source that has a key role to play in the energy transition process and therefore in climate protection. After all, it is one of the most efficient ways of storing and transporting renewable energies. We should use this potential to also accelerate the transformation of the mobility sector," said Oliver Zipse, chairman of the board of management of BMW AG, at the launch of the iX5 Hydrogen in February.

The powertrain of this vehicle can produce a maximum output of 295kW from its electric drive train. It also uses regenerative braking to feed power back into a high-performance battery.

Gaseous hydrogen required to supply the fuel cell is stored in two 700-bar tanks made from carbon-fibre-reinforced plastic (CFRP). Together, they hold six kilograms of hydrogen, giving the BMW iX5 Hydrogen a range of 504km in the WLTP cycle.

Refuelling the hydrogen tanks takes only three to four minutes, which addresses many of the problems associated with electric drivetrain vehicles.

ABOUT LINDSEY SCHUTTERS

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