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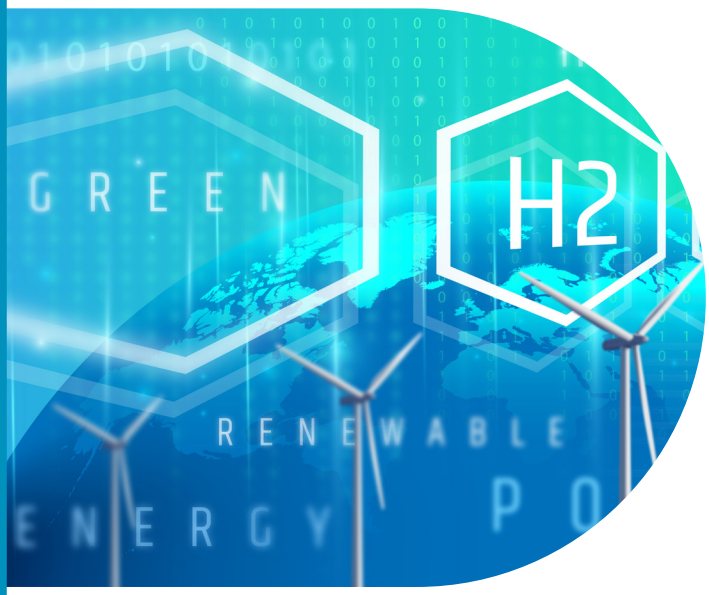

PLATINUM IN THE HYDROGEN SWEET SPOT

Not only does platinum facilitate the hydrogen economy due to its use in fuel cells for fuel cell electric vehicles; it is also used in the production of 'green' hydrogen

Recent months have seen talk of a hydrogen revolution turn to action, with a series of spending commitments and investments pointing to a future where hydrogen will be a mainstream source of sustainable fuel. According to the Hydrogen Council, 18 countries have now produced road maps or strategy documents setting out their intentions in this regard.

Germany alone has announced a US$7.9bn plan to invest in its renewable hydrogen economy, with the European Union (EU) setting out ambitious plans to develop renewable hydrogen production, with the aim of generating ten million tonnes of renewable hydrogen, annually, across the region by 2030. The EU's goal is for renewable hydrogen technologies to reach maturity and be deployed at large scale from 2030 to 2050.

Hydrogen – the most abundant element on earth – is already used as a fuel source in certain industries. As it contains no carbon, it produces zero emissions, only water. However, its credentials as a truly sustainable fuel source rest on the way in which it is produced. Green hydrogen is completely carbon free as its production does not involve the use of any fossil fuels.

The most well-known way of producing hydrogen is by the electrolysis of water. During this process, an electric current is used to separate water into its component elements – hydrogen and oxygen. When the electric current is derived from a renewable source – solar photo voltaic panels or a wind turbine – it is known as green hydrogen.

Platinum catalysts

Platinum also plays a significant part in this environmentally-friendly way of producing hydrogen; it is used during the electrolysis process as a catalyst to provide the performance and durability necessary for commercial scale systems.

At present, only a small proportion – less than one per cent – of hydrogen produced is green hydrogen. The remainder is made by stripping hydrogen from fossil fuels such as methane, natural gas or coal. If the carbon dioxide emitted in the process is captured and buried underground in a process known as carbon capture and storage (CCS), some of its harmful environmental effects are mitigated.

World Platinum Investment Council

Hydrogen produced from this method is called blue hydrogen. It is expected that blue hydrogen will continue to be used as a stepping-stone to achieving longer-term green hydrogen goals while renewable energy production is ramped up and infrastructure developed.

Looking ahead, the potential growth of green hydrogen in the world's energy system is significant. Its long-term energy storage capabilities could help to decarbonise transport, heating and industrial processes. The International Renewable Energy Agency estimates that the world will need 19 exajoules of green hydrogen by 2050, or between 133 million and 158 million tonnes a year, should green hydrogen replace the current use of fossil fuels in these sectors.

Platinum in fuel cells for fuel cell electric vehicles is already a small, but growing, demand source for this precious metal. With the global hydrogen economy predicted to be worth US$2.5 trillion and supporting 30 million jobs by 2050, platinum's dual role in unlocking green hydrogen and its uses places it in the sweet spot, making it a major beneficiary as the green hydrogen revolution moves us closer to the hydrogen economy.

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