



UNSUNG CARBON SAVINGS

Platinum's use in PEM electrolyzers could enable delivery of over 10 per cent of global CO₂ emissions-reduction targets by 2030

Platinum is key to proton exchange membrane (PEM) electrolyzers which, when powered with renewable energy, generate 'green' hydrogen. Zero emissions green hydrogen is an energy carrier that can be used in a wide range of applications to replace fossil fuels. For example, green hydrogen can be used as a feedstock in the production of fertilisers instead of natural gas and it can be used as a fuel to power hydrogen fuel cell electric vehicles.

Recent research* indicates that, given proposed PEM electrolyser build-out, platinum's role in enabling the achievement of global decarbonisation targets could be highly significant. In fact, green hydrogen produced by platinum-based PEM electrolyzers could, if solely used to displace the burning of natural gas, deliver over ten per cent of global CO₂ emissions-reduction targets as set out in the Paris Agreement, by 2030.

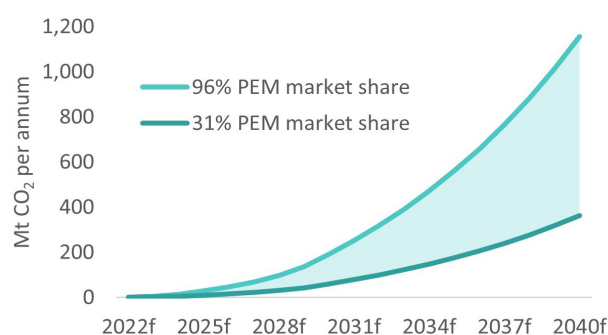
Under the Paris Agreement, which has been signed by every country in the world bar four, it is understood that emissions must reduce by an average of 7.6 per cent each year between 2020 and 2030 to limit global warming to 1.5°C, or by a less-than-optimal average of 2.7 per cent per year to limit warming to 2°C. Global CO₂ emissions totalled 34.2 gigatonnes in 2020, meaning that, by 2030, respective CO₂ reductions of 18.7 gigatonnes

or 8.2 gigatonnes will need to have been made if either target is to be achieved.

CO₂ savings

With the volume of electrolyser projects currently planned, and assuming the PEM market share of these ranges from 31 per cent to 96 per cent, between 9 million tonnes and 29 million tonnes of platinum-enabled green hydrogen could be produced by 2030. Should this green hydrogen be used to displace natural gas in, for example, heating and industrial end-uses, it would equate to cumulative CO₂ savings of anything from 182 million tonnes up to 573 million tonnes from now until 2030.

Potential annual CO₂ emissions avoided thanks to green hydrogen produced by platinum-containing PEM electrolyzers



Source: IEA, WPIC Research

At the lower end of this range, this equates to 1 per cent of the savings needed to meet the Paris Agreement's targets of limiting warming to 1.5°C, while at the top end of the range it equates to over 10 per cent of the reductions needed to limit warming to 2°C.

However, the pace of electrolyser capacity additions is expected to accelerate through the 2030s, and annual CO₂ savings associated with PEM electrolysers could increase to more than 1 billion tonnes per annum by 2040.

To put this into context, every megawatt of PEM electrolyser capacity – when powered by renewables – can displace 10 thousand tonnes of CO₂ emissions, assuming a 48.8 per cent load factor and an operating life of 20 years for the PEM electrolyser. In terms of annual platinum demand, this equates to between 400 koz and 1.3 moz in 2030, depending on PEM electrolyser market share.

**WPIC Platinum Perspectives, August 2022*

Contacts:

Brendan Clifford, Institutional Distribution, bclifford@platinuminvestment.com

Trevor Raymond, Research, traymond@platinuminvestment.com

Edward Sterck, Research, esterck@platinuminvestment.com

Vicki Barker, Investor Communications, vbarker@platinuminvestment.com



DISCLAIMER: WPIC, WORLD PLATINUM INVESTMENT COUNCIL and the WORLD PLATINUM INVESTMENT COUNCIL logo are trademarks of the World Platinum Investment Council and are registered in various territories. The World Platinum Investment Council is not authorised by any regulatory authority to give investment advice. Nothing within this document is intended or should be construed as investment advice or offering to sell or advising to buy any securities or financial instruments and appropriate professional advice should always be sought before making any investment. Images are for illustrative purposes only. More detailed information is available on the WPIC website: <http://www.platinuminvestment.com>