

GeoPura's Hydrogen Power Unit uses a hydrogen fuel cell to provide zero-emissions power. Picture credit: GeoPura

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PLATINUM ON LOCATION

Demand for carbon-free power generation in stationary applications is growing, and platinum-based technologies are providing a solution

Platinum-based proton exchange membrane (PEM) electrolyser capacity is estimated to increase to 5.5 gigawatts this year (compared to around 1 gigawatt in 2022), while deployment of PEM hydrogen fuel cells for stationary – as opposed to mobility – purposes is set to increase by 25 per cent to 566 megawatts. On a combined basis, this could result in 24 per cent growth in platinum demand from these applications.

Film and television production companies are exploring how green hydrogen and stationary hydrogen fuel cells can help them to reduce their carbon footprint. Netflix is making big changes to how it powers its productions, reducing its reliance on fossil fuels and diesel generators which are frequently used. For example, when filming season two of its hit series 'Bridgerton' at a location where grid power was not available, the streaming service piloted the use of a hydrogen power unit (HPU), equipped with a hydrogen fuel cell and fuelled by green hydrogen. According to Netflix, the HPU had the added bonus of being silent, which is helpful for filming.

Similarly, the BBC has pioneered the use of a green hydrogen-fuelled HPU in the making of its 'Springwatch' and 'Winterwatch' broadcasts as part of its efforts to achieve net zero in terms of its greenhouse gas emissions by 2030. The BBC

estimates that by avoiding the use of a diesel generator it has saved seven tonnes of CO₂ from being released into the atmosphere. It is sharing its findings with the wider television industry to help drive positive change.

Both the green hydrogen and the HPUs used by Netflix and the BBC were supplied by UK-based GeoPura, in collaboration with Siemens Energy, which is building a model that encompasses the generation, storage and supply of green hydrogen from electrolysis – powered by carbon-free renewable energy – to fuel its custom-built HPUs. The HPUs use a hydrogen fuel cell to generate zero-emissions electrical power that charge the unit's batteries, which then manage variations in power demands, with water as the only by-product.



Distributed energy and storage

Elsewhere, green hydrogen generation and storage is being twinned with stationary hydrogen fuel cells to support the roll-out of charging infrastructure for battery electric vehicles (BEVs), overcoming the problem of grid power capacity constraints by providing distributed energy and storage systems. PEM technology business Plug Power has recently unveiled a new high-power stationary hydrogen fuel cell system for charging commercial BEV fleets, such as delivery vans, and rental car companies.

It estimates that by 2030 there will be an estimated 48 million BEVs on the road in the US, of which 10 per cent will comprise fleet vehicles, which often need to be recharged at a specific location in large numbers at any one time, requiring a significant increase in power from the grid. Under Plug Power's proposal, its high-power stationary hydrogen fuel cell can be used in combination with its green hydrogen network to produce zero emissions power where and when it's needed.

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