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Field demonstration of large scale stationary power and CHP fuel cell system

GA No. 621256



Demonstration of a combined heat and power 2MWe PEM fuel cell generator and integration into an existing chlorine production plant

Deliverable No.	DEMCOPEM-2MW D6.5	
Deliverable Title	Report on strategy of volume product roll out, with recommendations for full platinum lifecycle (procurement through to recovery through to new product) and any potential cost reductions	
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Publishable summary

This report marks the completion of Task 6.5 of the DEMCOPEM programme, *Strategy of volume product roll out, with recommendations for full platinum lifecycle and any potential cost reductions*. Earlier in the project, Johnson Matthey Fuel Cells designed and produced a membrane electrode assembly (MEA) for a stationary PEM power plant, manufacturable at high volume in consistent, high quality. For consistency, only minor modifications to the fabrication processes for this MEA were permitted during the large-scale manufacturing campaign used for equipping the DEMCOPEM-2MW power plant. Later in the project, following further development work at Johnson Matthey Fuel Cells, prototypes of two improved MEA designs were delivered to Nedstack (NFCT). Both designs offer an opportunity to further reduce the cost of fuel cell power plants by significantly reducing platinum content, or by extending usable lifetime of the MEAs.

Although no end-of-life fuel cell stacks have yet been returned from the DEMCOPEM-2MW power plant, an assessment of the likely value of recovered and recycled platinum has been made, along with the potential savings which could be made by replacing the MEAs with lower Pt loading designs. The process for recovering the value of returned and recycled platinum is detailed; non-Pt components of the MEA are significantly more difficult to recycle, although JMFC have previously developed a process for recovering and recycling ionomer from the membranes and catalyst layers of an MEA.

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Disclaimer

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ⁱ UK Technology Strategy Board Project 101178

ⁱⁱ PGM MARKET REPORT FEBRUARY 2018 Summary of Platinum Supply & Demand In 2017, Johnson Matthey Precious Metals Management, <http://www.platinum.matthey.com/services/market-research>

ⁱⁱⁱ <http://www.platinum.matthey.com/prices/price-tables>