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

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

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Deliverable Title	Root cause analysis performed upon any early MEA failures	
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## Publishable summary

This report forms Deliverable D6.3, root cause analysis performed on any early MEA failures, and details work carried out in work package 6 (WP6) of the DEMCOPEM-2MW programme, specifically task 6.3. Task 6.3 requires an assessment of early MEA failures in stack build and commissioning at Nedstack (NFCT), and in operation in the DEMCOPEM-2MW power plant.

Early in MEA production, a number of non-functioning of MEAs were delivered to NFCT, which were not detected by JMFC's quality control systems. This report analyses the reasons the MEAs were non-functioning, and traces them back to the aspects of MEA production where the errors may have occurred.

In early operation in the DEMCOPEM-2MW power plant at the chlor-alkali facility at Ynnovate, the MEA performance has declined at a faster rate than observed when operating in the more controlled conditions of the NFCT/AkzoNobel plant at Delfzijl. On receipt of the returned MEAs, Johnson Matthey Fuel Cells' analysis identified a reduced ion exchange capacity (IEC), but no significant cationic contaminants left in the membrane in analysis. Despite this, there is evidence of ammonia and caustic soda contamination of the fuel cells. This and the loss in IEC and reversible decay in performance indicate that the stacks' lifetime may become limited if the contamination is not addressed.

Recommendations for MEA improvements will be documented in deliverable D6.4, along with any further investigations into MEA decay and possible failure.

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### Disclaimer

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