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High Performance PEM Electrolyser for Cost-effective Grid Balancing Applications



HPeM₂GAS-Deliverable report

D4.2 Report on final MEA performance and stability properties

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Publishable summary

HPEM2Gas targets to develop advanced membrane-electrode assemblies for PEM water electrolysis with ultra-low PGM loading ($\leq 0.5 \text{ mg}_{\text{PGM}}/\text{cm}^2 \text{ MEA}$), a high performance ($1.8 \text{ V}/\text{cell} @ 3 \text{ A}/\text{cm}^2$) and low degradation ($< 5 \text{ } \mu\text{V}/\text{h}/\text{cell}$).

The final MEA precursors and composition is based on previously reported single cell test results and results reported in the present report. The latter includes dynamic test, long-term single-cell, 3-cell stack test results, as well as post-operation MEA characterisation. The project performance targets, with respect to catalyst loading and performance, were obtained for MEAs based on the Solvay membrane Aquivion® E98-09S, stabilised Solvay ionomer (D98-06ASX), and optimised catalysts developed by CNR-ITAE (cathode 40% Pt on C and anode: $\text{Ir}_{0.7}\text{Ru}_{0.3}\text{O}_x$).

Selected test results are available in the public D4.5 HPEM2Gas report.