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Steady State and Accelerated Decay Rate Evaluations of Membrane Electrode Assembly of PEM Fuel Cells

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Abstract : Durability of Membrane Electrode Assembly for Proton Exchange Membrane Fuel Cells was evaluated in both steady state and accelerated decay modes. Steady state mode was carried out at constant current of 800mA / cm2 for 2500 hours using air as cathode feed and pure hydrogen as anode feed. The degradation of the cell voltage was 0.015V after such 2500 hrs operation. The degradation rate was therefore calculated to be 6uV / hr. Accelerated mode was carried out by switching the voltage of the single cell between OCV and 0.2V. The durations held at OCV and 0.2V were 20 and 40 seconds, respectively, meaning one minute per cycle. No obvious change in performance of the MEA was observed after 10000 cycles of such operation.

Keywords : durability, lifetime, membrane electrode assembly, proton exchange membrane fuel cells
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