

The effect of current collector geometry on ohmic resistance

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In order to directly measure the cathode current collector ohmic resistance contribution to the total cell resistance, contact resistance measurements are typically made. In addition to starting cell resistance contributions, these tests provide data regarding resistance changes over time for interpretation of performance degradation. However, the geometries of the current collection used during this testing are often not directly representative of operational fuel cells. Thus, an experimental study was initiated to investigate the effect of various interconnect geometries and their influence on Area Specific Resistance (ASR). These tests were performed with both gold and coated ferritic stainless steel (FSS) current collectors. The changes in ohmic ASR over ~4,000h of testing appear to be independent of interconnect geometry. Results also indicate that the ASR evolution for FSS current collectors follows a power law, in agreement with anticipated thermally grown oxide providing interfacial resistance.

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