Independent Fuel Cell Hybrid Modeling Based on Best Published Data

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Fuel cell hybrid systems have been shown, in previous modeling, to exhibit very high electrical efficiencies, up to 70% or more. However, most of these results have been presented by fuel cell developers, who present best results on their own technologies, using advantageous assumptions.

This work attempts to use published industry data for performance of fuel cell stacks to develop hybrid models using a variety of fuel cell technologies (especially SOFC and MCFC) and hybrid configurations (pressurized and atmospheric). Models have been developed using Simulink that allow variable fuel cell size, fuel utilization, current density, and turbine performance to be factored into the analysis.