Reducing CO2 emissions from a Coal Fired Power Plant by Using a Molten Carbonate Fuel Cell

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Abstract:

A Molten Carbonate Fuel Cell (MCFC) is demonstrated to decrease CO2 emissions from a Coal-Fired Power Plant (CFPP) by integrating it into the flue gas stream of the coal boiler. Key benefits of this approach include increased overall electrical output from the hybrid system, lower CO2 emissions, and enhanced system efficiency. The MCFC model is presented and detailed. Findings indicate that implementing an MCFC can achieve a 56% reduction in CO2 emissions, resulting in a relative emission rate of 288 kgCO2 per MWh.

Keywords:

MCFC, CO2 emissions, hybrid system, system efficiency.