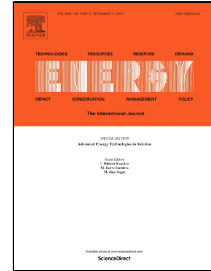


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Exergetic and exergoeconomic evaluation of an SOFC-Engine hybrid power generation system

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Abstract

An SOFC-Engine hybrid power generation system is evaluated using exergetic and exergoeconomic analysis methods to determine measures for improving its efficiency and cost effectiveness. The system is a combination of a solid oxide fuel cell and an internal combustion engine; the engine burns the anode offgas and produces additional power, thus improving the electrical efficiency of the overall system.

The exergetic analysis, on the SOFC-Engine hybrid system, identifies the location, magnitude, and sources of thermodynamic inefficiencies (exergy destructions and exergy losses) in the system; the largest exergy destruction takes place within the internal combustion engine, followed by the heat exchangers, and the SOFC stack. Through the exergoeconomic analysis, the cost structure of the SOFC-Engine hybrid system is revealed, and the exergoeconomic factor of each

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