

Performance Evaluation of a H₂/O₂ Fuel Cell Stack under Pressurized Conditions

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Polymer electrolyte membrane fuel cells (PEMFC) have been briskly studied as a main power supplier for private vehicles as well as for military transports because they have high thermodynamic efficiency and rarely emit any pollutants. In order to be used as a main power supplier which may replace the conventional internal combustion engine, the PEMFC must meet the technical requirements such as high durability and reliability. In this study, a PEMFC stack was designed for use in a particular operating environment. The stack consumes pure hydrogen and oxygen as the fuel and the oxidant, respectively, and can be operated at a high gas inlet pressure up to 3 atm. To verify the design and the components that constitute the stack designed, a 10kW-class PEMFC stack was fabricated and its performance was evaluated.