

## Parameter study of tubular Solid Oxide Fuel Cell based on numerical analysis

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Solid oxide fuel cell (SOFC) is a promising energy system, except for some problems of heat-resisting materials, difficult manufacture and functioning. For, an intermediate temperature SOFC, it is possible to use low-cost materials with less heat resisting property, which prolongs lifetime and decreases electric conductivity. Due to high temperature operation and a large-scale equipment, theoretical analysis have attracted researchers' interest in academia and industry for its efficiency, safety and facility. Thus, numerical simulation on tubular SOFC has been carried out in this study under various conditions. We have chosen anode-supported cell, which offers higher cell performance due to thinner thickness compared to cathode-supported or electrolyte-supported cell. Effects of operating temperature, pressure, amount of fuel, ratio of hydrogen, and geometry have been scrutinized. Lower temperature decreases the performance, so high ratio of hydrogen in the fuel, longer length of cell, and wider reaction area are suggested. More detailed numerical results will be shown in the conference.