# Modeling and analysis of a steam reformer with different thermal conditions

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Steam reformers are devices for efficient conversion of fossil fuel to syngas, and the reformed fuel could be used for electricity generation by solid oxide fuel cell (SOFC). A compact planar steam reformer directly connected with SOFC stack could be affected by heat from surroundings, and the heat has effects on dominant chemical reactions in the steam reformer. To examine the effects of thermal conditions on performance of the steam reformer, numerical calculations were performed considering reforming reactions, momentum, species and energy transport. The predicted results show that the thermal boundary conditions have a significant influence on temperature distribution within the reformer and the increased reforming reaction rates lead to improvement in hydrogen production.

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