

Studies on the effects of the reaction rate on the fluid dynamics in the gas channel of MCFC

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By using Pheonics, each operating variable had effects on what kind of efficient of MCFC.

The basic structure of MCFC is made up of separate plate, fuel gas channel, cathode electrode, electro-catalyst plate, anode electrode, oxidizer gas channel, and separate plate.

About unit fuel cell (length 1cm, width 1.4cm), generation and consumption of CO₂ were calculated by using Pheonics.

In the simple form of MCFC, we supposed that consumption of CO₂ was happened by the electrode reaction at cathode and generation of CO₂ was happened at anode. As the counted results in Pheonics, amount of the consumption of CO₂ at cathode was counted according to the processing direction of gas. Amount of the consumption of H₂ and H₂O were counted according to the generation of CO₂.

According to the processing direction of gas, amount of CO₂ transition, distribution of pressure and temperature were counted at electric chemical velocity coefficient of surface K₁ and 10K₁.