

عنوان مقاله:

Enhancement of methanol production as a hydrogen source for fuel cells in a hydrogen perm-selective membrane reactor effect of flow type

محل انتشار:

دومین کنفرانس ملی هیدروژن و پیل سوختی (سال: 1391)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

A comparison of co-current and counter-current modes for a hydrogen permselective membrane reactor in methanol synthesis is investigated. The synthesis gas is fed to the shell side of the reactor and its effluent is recycled, compressed and passed through the inner tube in a co-current mode or counter-current mode with reacting gas. The reacting gas is cooled simultaneously with recycle gas in tube and saturated water in outer shell. The Pd/Ag layer on inner tube allows hydrogen to penetrate from the tube side to the reaction side. The results show that a more favorable temperature profile along the reactor is achieved in counter-current configuration due to effective heat transfer. Consequently, the reactor in the counter-current configuration is operated with higher product yield, longer catalyst life and lower environmental impact due to lower CO_x emission than the other ones. The results suggest that utilizing of this configuration for methanol production could be feasible and beneficial

کلمات کلیدی:

Methanol production, Pd/Ag membrane reactor, Co-current mode, Counter-current mode

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