

Investigation of methane-steam reforming in fluidized bed membrane reactors

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Résumé / Abstract

The theme of this work is to investigate the performance of cocurrent and countercurrent fluidized bed membrane reactors for steam reforming of methane. A mathematical model is used to simulate the experimental data and to explore the potential application of high flux membranes to enhance the methane conversion in fluidized bed membrane reactors. It has been shown that complete conversion of methane is achieved by implementing high flux membranes. The influence of some key parameters on the reactors performance has been reported. It was found that in most cases of large bed lengths, the countercurrent configuration is superior to cocurrent configuration and more sensitive to the parameters changes. However, for short bed lengths at relatively low temperatures the cocurrent configuration is superior to countercurrent configuration.

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