عنوان مقاله:

Process Simulation of Syngas Purification Using Membrane

محل انتشار:

شانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1397)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

Steady-state simulation of a gas membrane separation system for syngas purification and CO2 separation is performed. An asymmetric hollow fiber membrane with cocurrent flow is applied for a gas upgrading system. The permeance of CO2 and CH4 is respectively 311.4×10-10 and 12.4×10- 10 mol/s.m2.Pa. Three different two-stage module arrangements with/without recycle flow are implemented. The optimal number of fibers in the single-stage module is determined. The multi-stage configuration with no recycle flow in spite of achieving a good methane fraction in retentate (98.5% (v/v)) shows the highest methane loss (10 %). Using recycle flow from the first module leads to minimum CH4 loss percentage, and concentration which is not demanded. Whereas, recycle flow from the second module has acceptable CH4 purification (98.0% (v/v)) and loss (8.1%).

کلمات کلیدی:

Simulation; syngas purification; Hollow Fiber Membrane; Optimal Design