

Optimization for methanol synthesis Process using Steam CO₂ Reforming with Stranded Gas

임성수, 홍기훈, 양은혁, 노영수, 안병성, 이관영¹, 문동주[†]
한국과학기술연구원; ¹고려대학교
(djmoon@kist.re.kr[†])

A two step process design and simulation for the methanol synthesis from stranded gas were studied using commercial process simulator, PRO/II v9.1 and Aspen HYSYS v8.6. simulation studies were performed by using Gibbs equation and the stranded Gas with 10% CO₂. The operating condition for Steam-CO₂-Reforming(SCR) and Methanol synthesis respectively are with high pressure and Temperature, and methanol synthesis at 250°C with 50 bar. Recycle ratio for the process productivity, Product separation by distillation column were also studied.

Analysis for methanol synthesis process are focused on mainly process volume, matched heat integration and economical factor. For detail, steam-CO₂-reformer and methanol synthesis reactor are simulated by plug flow reactor using commercial catalysis kinetics. This evaluation and process behavior become the main measure of offshore plant design and reactor operating limitation condition.