

عنوان مقاله:

Study of the effect of process conditions on the Methanol production

محل انتشار:

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خلاصه مقاله:

The production of Methanol from natural gas feedstock is one of the most important gas-to-liquid processes which can be divided into four main stages: feed purification, reforming, methanol synthesis and methanol purification. The light ends present in the raw methanol are removed in the topping column. The stabilized raw methanol consisting of methanol, water and minor amounts of higher alcohols is fractionated in the purification section to produce methanol grade AA. The optimization of the purification section is the subject of the present work. The goal is to maximize the amount of final MeOH of AA grade in which, the concentration of methanol is above ۹۹.۸۵(%wt). The simulation program Aspen Plus®, was used to construct the process model and optimize the product specifications. The effect of different parameters to optimize the columns of the purification section has been investigated, such as the change in reboiler duty, the feed stage and the off gas temperature for the topping column, while reflux ratio, side stream flow rate and reboiler duty are the variables which have been optimized in the recovery column. According to the simulation, the total methanol loss of ۴۳۲.۸۱۴ kg/hr was estimated and with optimum conditions the amount of methanol in the final product was ۲۰۹۱۵.۷۴ kg/hr. The optimized distillate rate and reboiler duty of the topping column are ۷۹.۸ (kmol/hr) and ۳۸.۸۳۴۸۱ (MMkcal/hr), respectively. The optimum reflux ratio of the recovery column was obtained which is ۲.۲۳.

کلمات کلیدی:

Methanol production, process conditions, optimization, simulation

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