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One Dimensional Reactor Modeling for Methanol Steam Reforming to Hydrogen

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Abstract : One dimensional pseudo-homogenous modeling has been performed for methanol steam reforming reactor. The results show that the models can well predict the industrial data. The reactor had minimum temperature along axial because of endothermic reaction. Hydrogen productions and temperature profiles along axial were investigated regarding operation conditions such as inlet mass flow rate and mass fraction of methanol, inlet temperature of external thermal oil. Low inlet mass flow rate of methanol, low inlet temperature, and high mass fraction of methanol decreased minimum temperature along axial. Low inlet mass flow rate of methanol, high mass fraction of methanol, and high inlet temperature of thermal oil made cold point forward. Low mass fraction, high mass flow rate, and high inlet temperature of thermal oil increased hydrogen production. One dimensional models can be a guide for industrial operation.

Keywords : reactor, modeling, methanol, steam reforming
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