A study of dynamic model for DME synthesis reactor

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A reactor is one of the most important parts in a new process development and is one of the core technologies of the process. To model a reactor, it is required to analyze a kinetic model of the reactions and the behavior of the reactor. So Computer simulation using various numerical method is applied for the purpose.
DME(Dimethyl Ether), the simplest ether, is considered as one of the most promising candidates for the substitute of LNG and diesel fuel. because physical properties of DME are similar with them of LPG and its cetane nember which evaluates the efficiency of diesel engine is higher than diesel fuel.
In this study, we analyze a dynamic model of a lab scale reactor for DME synthesis from syngas, using ACM(Aspen Custom Modeler). The reactor is supposed a isothermal reactor and the simulation is considered DME synthesis reactions, mass transfer and the effectiveness factor of the catalyst in the reactor.