

DESIGN OF HDA REACTOR NETWORKS USING ATTAINABLE REGION

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ABSTRACTS

The HDA (Toluene Hydrodealkylation Process) is industrial processes that have been served like experimental workbench for countless investigations of process project and control process. Treat about a complex and integrated process, that contain a reactor (where hydrogen react with toluene, forming one of its sub products biphenyl and methane), equipments heat transfer, equipments of fluids transfer, separator liquid-vapor, and distillation column. The reactor industrially used is a PFR (plug flow reactor).

The synthesis of reactor networks has been studied using a variety of approaches. The attainable region approach addresses reactor network feasibility based on geometric properties and allows one to identify feasibility, but not optimal reactor sequences for production of desired product. For a given system of reactions with given reaction kinectis, the attainable region is defined from a given fed composition by any combination of reaction and mixing.

The objective of this work is the application of the technique of the attainable region to verify if the utilization, like is made on industrial practice, of PFR is the better choice or if could be a CSTR (continuous stirred tank) or a CSTR with by pass. Other analyzed alternative was the PFR in series with the feed divided between them.

The conclusion is that the method of attainable region is a good method to a preliminary project, that PFR is the better alternative and that the feed can be divided. So is necessary utilize a optimize method to decide which is the number or reactors in series and how dived feed.