

A SYSTEMATIC PROCEDURE FOR HEURISTIC SYNTHESIS OF REACTORS SYSTEMS

Lincoln K. Silva, Douglas C. Mariani, Pedro A. Arroyo, Mauro A. S. S. Ravagnani*
Universidade Estadual de Maringá – Departamento de
Engenharia Química
lincolnks@deq.uem.br
ravag@deq.uem.br

ABSTRACT

The problem of synthesis of reactors systems presents large complexity, when compared to other process stages, due to non-linear behavior of the reactions systems. In this work it was developed a systematic procedure for the reactors system synthesis considering a set of heuristics rules. For simple reactions the synthesis procedure is accomplished in a direct way, in a single step, just considering the peculiarities of each reaction. On the other hand, complex reactions are decomposed in branches corresponding to the characteristic reactions, as well as the selection of the reactors type is done for each branch. After this, the combination or recombination of the effects from each characteristic reaction is accomplished, using the heuristics rules for the final synthesis of this kind of reaction. A computational program with user-friendly interface, using Delphi, was developed using the proposed set of heuristics rules. To certify the efficiency of the program there were studied some classic cases from the literature, like Trambouze, Denbigh and Van de Vusse. Results shown that the heuristic systematic procedure and the developed program have great utility for the reactors systems synthesis.