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Some Consideration on the Optimization of a Chemical Process

Teruyoshi SUZUKI*

Recently, the purpose of automatic control systems has come to the over-all optimization of the process. In this case, optimum criterion is chosen for example so that the yield of final products may be maximum and the cost of the over-all process minimum.

Described in this paper is the over-all steady state optimization of the synthetic process of ethyl acetoacetate, which is supposed to be a continuous process composed of four stages. As every manipulating-variable should be regarded as dependent each other under conditions of the over-all optimization of the process, the optimal policy of them must be decided from the over-all viewpoint. To attain this, it becomes necessary to introduce a computer to control systems. But before proceeding into computer control, we must analyze the process completely. Then, analysis, mathematical model and local optimization are made for each stage. And the policy of over-all optimization is investigated as compared with the basis of the local optimization of each process. Furthermore, the possibility of applying S. Katz's method to this model is discussed. Some results calculated are presented.

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