FLEXIBILITY ANALYSIS OF CHEMICAL PLANTS USING FUZZY THEORY

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The problem of chemical plant optimization under uncertainty has received increasing attention in the literature (Takamatsu et. al. 1973, Grossman a Sargent 1978, Halcmane and Grossman 1983, Swancy et. Al. 1985, Talazolgu and Arkum 1987 and G.M. Orlovsky et. Al. 1994). These are the following sources of uncertainty in the problem: (1) an initial inaccuracy of coefficients in the mathematical models (2) a chance of some coefficients in mathematical models during plant operation (3) variations in ambient condition. Apart from this the chemical plant faces conditions like harm to environment, preservation of a specified capacity, absence of breakdowns, etc.

Since almost all the constraints involved in this problem are uncertain, ambiguous and imprecise it can be tackled using fuzzy theory. We transform the problem into a fuzzy design problem and obtain good approximations to the expected solutions.