

### Effect of parameter uncertainty in distillation operation exploiting chance constrained programming

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This study investigates the effect of feed uncertainties on reboiler duty in distillation column. A normally distributed random feed is applied to see its effects on the reboiler duty. Furthermore efforts are made to optimize the considered stochastic system with chance constrained programming. During optimization violation of constraints are allowed by defining different confidence levels exploiting different design parameters and their effects on reboiler duty is measured. Conclusively the dependence of optimized results on different confidence level is obtained. Since confidence level is a user defined parameter higher confidence level reflects high reboiler duty which is not desired which leads towards deterministic approach. Thus the uncertainty in feed and its dependence on reboiler duty rely on proper selection of confidence level.

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