## DEVELOPMENT OF PERFORMANCE EVALUATING MODEL FOR CO-SHIFT CONVERSION SYSTEM IN THE FERTILIZER PLANT

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## Abstract

This paper presents the development of performance evaluating model for the CO-shift conversion system in fertilizer plant. The system consists of four subsystems, A, B, C, D in series and parallel configurations. Taking constant failure and repair rates for all the subsystems, the mathematical formulation is done using the Markov birth-death process. An expression for steady state availability i.e. measure of performance is derived. After drawing transition diagram, differential equations have been generated. After that, steady state probabilities are determined. Besides, some decision matrices are also developed, which provide various performance/availability levels for different combinations of failure and repair rates of all subsystems. The availability analysis of performance model reveals that availability figure decreases with increasing failure rates, while operational availability improves with initial increase in repair rates for different sub-systems. Based upon various availability values obtained in decision matrices and plots of failure rates/ repair rates of various subsystems, performance of each subsystem is analyzed and then maintenance decisions are made for all subsystems.

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