

Analysis of a Centrifuge System with Inspection on Rest, Halt and Failure

RAJEEV KUMAR

Department of Mathematics, M.D. University, Rohtak-124001(Haryana) INDIA
Email: drrajeevmdu@gmail.com

POOJA BHATIA

Department of Mathematics, M.D. University, Rohtak-124001(Haryana) INDIA
Email: chandbudhi@yahoo.com

SUMMARY

The paper deals with a stochastic model developed for a centrifuge system employed at Thermal Power Plant, Panipat, (India) on the basis of the collected data. In the system it was observed that there may be occurrences of various minor, major and neglected faults. The occurrence of a minor fault leads to degradation whereas occurrence of a major fault leads to failure of the system. Some faults are neglected during operation of the system until it goes either to rest or to complete failure that are considered as neglected faults. The observations that the system undergoes periodic rest and brought to a halt on occurrence of minor fault for repair/replacement are also incorporated. Further it is also considered that the repairman carry out the inspection of the system whether the faults are repairable or non-repairable on complete failure, rest and halt. Various measures of system effectiveness such as MTSF, expected uptime of the system, busy period of the repair are obtained using Markov Processes and regenerative point techniques. The conclusions regarding MTSF and cost of the system are drawn on the basis of the graphical studies.

*Keywords and phrases:*Centrifuge system, neglected faults, mean time to system failure (MTSF), expected uptime, cost function, Markov process and regenerative point technique.

2010 Mathematics Subject Classification: 90B25, 62N05