PROFIT EVALUATION OF A SINGLE UNIT CC PLANT WITH SCHEDULED MAINTENANCE

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ABSTRACT

A continuously operating single unit CC plant is analyzed for obtaining various reliability measures. Real down time data of a CC plant have been collected for the purpose. Three types of failures seen into the data which are categorized as: repairable failure, replaceable failure, and reconditioning / reinstallation failure. The failure types as depicted in the data are embedded into the model. The production facility under consideration consists of a 300 ton electrically operated overhead traveling (EOT) crane which is an operating single unit. The concept of online scheduled maintenance is introduced to reduce the breakdown frequency, while keeping the system operational. The plant is analyzed using semi-Markov processes and regenerative point technique. Reliability measures such as plant availability, busy periods of respective repair types, expected number of visits by the repairman, expected number of replacements, expected number of scheduled maintenance are obtained numerically. The expected total profit is also evaluated and the graph pertaining to analysis are plotted to demonstrate the results.

KEYWORDS: Continuous Casting plant (CC plant), Reliability, regenerative process, scheduled maintenance, failure.