

ABSTRACT

PT. Toa Galva Industries is one of companies that produces electrical goods with sound and communication specialization. In order to be able to meet the market demand, it is needed the machines which support the production process, such as plastic injection machine and manual spinning machine. Both machines have significant role in the production process, so if the machines are failed, the company will lose its revenue. Based on the historical data in 2013, corrective maintenance for plastic injection machine is 16% from total corrective maintenance of all production machine, whereas corrective maintenance for the spinning machine is 14%. It happens because the machines often get the sudden damage. Maintenance Manager can't calculate the maintenance cost requirements for assuring the machine performance because he can't predict the machines condition. On the other hand, aging machinery and the increased hazard rate will happen, the calculations of retirement age of machine and the optimal number of maintenance crew are important to do.

This research uses Markov Chain method to know the machine condition for the next years so that the maintenance cost can be calculated. In addition, it also uses Life Cycle Cost method for determining the optimal retirement age of machine and number of maintenance crew.

Based on the result of data processing using Markov Chain, this reasearh obtains the total of maintenance cost for 5 years for plastic injection machine is Rp 607,335,692.62 and total of maintenance cost for manual spinning machine is Rp 302,480,000. Based on life cycle cost calculations, the lowest total of LCC for plastic injection machine is Rp 5,287,581,342.10 which produces 1 maintenance set crew/shift and 10 years life of engine. Whereas, the lowest total of LCC for manual spinning machine is Rp 1,434,002,591.21 which produces 1 maintenance set crew/shift and 3 years life of engine.

Keyword: *Maintenance Management, Maintenance Cost, Markov Chain, Life Cycle Cost.*