

ABSTRAK

Kinerja mesin produksi yang optimal sangat dipengaruhi oleh sistem pemeliharaan yang tepat, terutama dalam meminimalkan terjadinya *downtime* yang berlebih. PT. Formitra Multi Prakarsa mengalami suatu masalah dimana terjadinya *downtime* pada mesin produksi terjadi sebanyak 60 kali dengan berbagai macam mode kegagalan seperti pada sistem penghalusan dan juga beberapa proses penggantian suatu komponen. Oleh sebab itu diperlukan penerapan strategi perawatan yang bisa mengidentifikasi komponen kritis dan mampu menentukan interval perawatan. Penelitian ini menggunakan metode *Reliability Centered Maintenance* (RCM) dan *Age replacement*. Metode RCM digunakan untuk mengidentifikasi fungsi sistem, kegagalan fungsional, konsekuensi kegagalan melalui analisis *Failure Mode and Effect Analysis* (FMEA) dan *Logic Tree Analysis* (LTA), setelah didapat hasil analisis tersebut, ditentukan tindakan perawatan yang paling pas dengan mode kegagalannya. Setelah itu metode *Age replacement* digunakan sebagai acuan penentuan interval waktu penggantian/perawatan. Hasil analisis *Failure Mode and Effect Analysis* (FMEA) menghasilkan beberapa komponen kritis diantaranya bodem, *bearing*, dan *jaw crusher*. Nilai RPN tertinggi komponen bodem sebesar 216. Ketiga komponen mendapatkan hasil *Logic Tree Analysis* (LTA) dan *task selection* didapatkan tindakan perawatan yang sesuai untuk setiap kegagalan. Interval waktu perawatan komponen bodem sebesar 720 jam atau 30 hari, komponen *bearing* 970 jam atau 40 hari. Interval pemeriksaan komponen *jaw crusher* sebesar 263 jam atau 11 hari. Berdasarkan perhitungan *downtime* didapat selisih antara *downtime* sebelum usulan dan sesudah usulan dimana nilai *downtime* usulan mengalami penurunan dari nilai *downtime* sebelumnya. Penelitian termasuk kedalam SDGs 9, SDGs 12, dan SDGs 8 dengan peningkatan mutu dan keandalan sistem.

Kata Kunci: *Reliability Centered Maintenance* (RCM), *Age replacement*, interval penggantian, *downtime*

ABSTRACT

The optimal performance of production machines is greatly influenced by the right maintenance system, especially in minimizing the occurrence of excessive downtime. PT. Formitra Multi Prakarsa experienced a problem where downtime in the production machine occurred 60 times with various failure modes such as in the smoothing system and also several processes of replacing a component. Therefore, it is necessary to implement a maintenance strategy that can identify critical components and be able to determine the maintenance interval This study uses the Reliability Centered Maintenance (RCM) and Age replacement methods. The RCM method is used to identify system functions, functional failures, and failure consequences through Failure Mode and Effect Analysis (FMEA) and Logic Tree Analysis (LTA) analysis, after obtaining the results of the analysis, the most appropriate maintenance action for the failure mode is determined. After that, the Age replacement method is used as a reference for determining the time interval for replacement/maintenance. The results of the Failure Mode and Effect Analysis (FMEA) analysis produced several critical components, including the bodem, bearing, and jaw crusher. The highest RPN value of the bodem component is 216. The three components received the results of Logic Tree Analysis (LTA) and task selection was obtained for appropriate treatment actions for each failure. The maintenance time interval of bodem components is 720 hours or 30 days, bearing components 970 hours or 40 days. The interval of inspection of jaw crusher components is 263 hours or 11 days. Based on the calculation of downtime, the difference between the downtime before the proposal and after the proposal is obtained where the proposed downtime value has decreased from the previous downtime value. The research is included in SDGs 9, SDGs 12, and SDGs 8 with improved system quality and reliability.

Keywords: *Reliability Centered Maintenance (RCM), Age replacement, replacement interval, downtime*