

ANALISIS KINERJA MESIN *CORRUGATOR* DENGAN PENDEKATAN TPM DAN FMEA

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ABSTRAK

PT Muliaprima Packindo merupakan salah satu produsen *corrugated box*. Salah satu mesin produksi yang digunakan yaitu mesin *corrugator*. Mesin *corrugator* merupakan mesin utama yang memproduksi *corrugated sheet/board* yang digunakan sebagai bahan utama dalam produksi *corrugated box*. Meskipun mesin *corrugator* sudah melakukan perawatan setiap bulannya, mesin ini masih mengalami kerusakan (*breakdown*) pada saat jam kerja yang menyebabkan downtime setiap bulannya dengan rata-rata 5093,3 menit atau 84,8 jam dan rata-rata persentase 19,65%. Penelitian ini bertujuan untuk mengukur kinerja mesin *corrugator* dengan menghitung efektivitas mesin menggunakan metode *Overall Equipment Effectiveness* (OEE), mengetahui penyebab ketidakefektifan terbesar pada mesin menggunakan *Six Big Losses*, dan analisis menggunakan *Failure Mode and Effect Analysis* (FMEA) Untuk mengevaluasi dan menentukan prioritas perbaikan dengan tujuan menghilangkan potensi kegagalan. Hasil penelitian menunjukkan rata-rata nilai *Overall Equipment Effectiveness* (OEE) sebesar 68,98%, dengan *availability rate* sebesar 80,35%, *performance efficiency rate* sebesar 91,29%, dan *quality rate* sebesar 95,05%. Nilai tersebut masih dibawah standar OEE ideal sebesar 85%. Berdasarkan perhitungan *Six Big Losses*, diketahui bahwa *losses* tertinggi adalah *Equipment Failure Losses*, dengan rata-rata sebesar 12,13%. *Risk Priority Number* (RPN) tertinggi sebesar 392 pada bagian *mill roll stand*, dengan jenis kegagalan *bearing* aus yang menyebabkan terjadinya getaran dan mengurangi stabilitas mesin. Penyebab utama dari jenis kegagalan yaitu pemakaian yang lama, *bearing* kotor, kurangnya pelumas pada *bearing*, dan pemasangan *bearing* yang kurang tepat atau miring. Maka diperlukan diperlukan perbaikan dengan melakukan pengecekan pelumas, pemeriksaan suhu *bearing*, pemeriksaan poros dan tempat *bearing* dipasang, hingga penggantian *bearing*.

Kata kunci: *Total Productive Maintenance*, *Overall Equipment Effectiveness*, *Six Big Losses*, *Failure Modes and Effects Analysis*

CORRUGATOR MACHINE PERFORMANCE ANALYSIS USING TPM AND FMEA APPROACHES

ABSTRACT

PT Muliaprima Packindo is a corrugated box producer. One of the production machines used is a corrugator machine. The corrugator machine is the main machine that produces corrugated sheet/board, which is used as the main material for the production of corrugated boxes. Despite undergoing monthly maintenance, the corrugator machine still encounters breakdowns during working hours, resulting in a monthly downtime of approximately 5093.3 minutes or 84.8 hours, with an average percentage of 19.65%. This study aims to assess the performance of corrugator machines by utilizing the Overall Equipment Effectiveness (OEE) method to calculate machine effectiveness. Additionally, it seeks to identify the primary causes of inefficiency using the Six Big Losses approach and analyze them through Failure Mode and Effect Analysis (FMEA) to prioritize repairs and eliminate potential failures. The research findings reveal that the average OEE value is 68.98%, with an availability rate of 80.35%, a performance efficiency rate of 91.29%, and a quality rate of 95.05%. However, this value still falls below the ideal OEE standard of 85%. Through the Six Big Losses calculations, it is evident that Equipment Failure Losses account for the highest losses, averaging 12.13%. The mill roll stand section exhibits the highest Risk Priority Number (RPN) of 392, primarily due to bearing failure causing vibration and compromising machine stability. Prolonged use, dirty bearings, insufficient lubrication, and improper installation contribute to this type of failure. Therefore, repairs should involve checking the lubricant, bearing temperature, shaft, and installation location, as well as replacing the bearing.

Keywords: Total Productive Maintenance, Overall Equipment Effectiveness, Six Big Losses, Failure Modes and Effects Analysis

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