ABSTRAK

Mesin Ripple Mill merupakan salah satu mesin penting di Pabrik Kelapa Sawit Adolina yang berfungsi untuk memecahkan biji sawit (nut) agar inti (kernel) terlepas dari cangkangnya. Gangguan pada mesin ini berdampak langsung pada throughput stasiun kernel dan efektivitas produksi pabrik secara keseluruhan. Selama ini, pola pemeliharaan mesin lebih banyak bersifat corrective maintenance, yaitu perbaikan dilakukan setelah kerusakan terjadi, sehingga mengakibatkan downtime tinggi, biaya perbaikan meningkat, dan efektivitas mesin menurun. Oleh karena itu, diperlukan pendekatan yang lebih terstruktur dalam penyusunan jadwal perbaikan mesin.Penelitian ini menggunakan metode Failure Mode and Effect Analysis (FMEA) untuk mengidentifikasi dan memprioritaskan potensi kegagalan mesin berdasarkan nilai Risk Priority Number (RPN), serta metode Overall Equipment Effectiveness (OEE) untuk mengukur efektivitas mesin dari aspek availability, performance, dan quality. Data penelitian diperoleh melalui observasi langsung, wawancara dengan teknisi, serta pencatatan downtime dan kerusakan mesin. Hasil analisis FMEA memberikan gambaran komponen kritis yang memiliki risiko kerusakan tertinggi, sedangkan perhitungan OEE menunjukkan sejauh mana kerugian terbesar terjadi pada proses produksi. Integrasi kedua metode ini digunakan sebagai dasar dalam merancang jadwal perawatan preventif dan prediktif yang lebih sistematis dan berbasis data. Diharapkan penelitian ini dapat membantu Pabrik Kelapa Sawit Adolina dalam menurunkan downtime tidak terencana, meningkatkan efektivitas mesin Ripple Mill, serta memberikan rekomendasi strategi perawatan yang mampu memperpanjang umur komponen dan menekan biaya pemeliharaan jangka panjang.

Kata kunci: Ripple Mill, FMEA, OEE, Jadwal Perbaikan, Efektivitas Mesin.

ABSTRACT

The Ripple Mill machine is one of the crucial machines at the Adolina Palm Oil Mill, functioning to crack palm nuts so that the kernel is separated from the shell. Disturbances in this machine have a direct impact on the throughput of the kernel station and the overall production effectiveness of the mill. To date, the machine maintenance pattern has predominantly been corrective maintenance, in which repairs are carried out only after failures occur. This condition results in high downtime, increased repair costs, and decreased machine effectiveness. Therefore, a more structured approach is required in developing a machine maintenance schedule. This study employs the Failure Mode and Effect Analysis (FMEA) method to identify and prioritize potential machine failures based on the Risk Priority Number (RPN), as well as the Overall Equipment Effectiveness (OEE) method to measure machine effectiveness in terms of availability, performance, and quality. Research data were obtained through direct observation, interviews with technicians, and records of downtime and machine failures. The results of the FMEA analysis provide an overview of critical components with the highest risk of failure, while the OEE calculation indicates where the greatest losses occur in the production process. The integration of these two methods is used as a basis for designing a more systematic and data-driven preventive and predictive maintenance schedule. It is expected that this study can assist the Adolina Palm Oil Mill in reducing unplanned downtime, improving the effectiveness of the Ripple Mill machine, and providing maintenance strategy recommendations that can extend component lifespan and reduce long-term maintenance costs.

Keywords: Ripple Mill, FMEA, OEE, Maintenance Schedule, Machine Effectiveness.