ABSTRAK

Dalam era persaingan industri yang semakin ketat, pemeliharaan mesin menjadi aspek krusial untuk mencapai target produksi dan mengurangi risiko kerugian akibat kegagalan mesin. Penelitian ini dilakukan di PT Multiindo Mandiri, yang menggunakan mesin *filling sachet* 8L dan 16L dalam proses produksi detergen. Mesin *filling sachet* 8L mengalami frekuensi kerusakan komponen yang tinggi, sehingga mempengaruhi produktivitasnya. Untuk mengatasi masalah ini, digunakan metode *Failure Mode and Effect Analysis* (FMEA) dan *Reliability Centered Maintenance* (RCM). Hasil analisis FMEA menunjukkan komponen kritis dengan nilai RPN tertinggi, yaitu pisau *slitting*, *oilseal housing* pompa, *oring* piston pompa, dan *rotary*. Interval waktu perawatan dan penggantian komponen ditentukan menggunakan metode RCM, dengan tujuan menjaga mesin dalam kondisi optimal. Hasilnya, Interval waktu perawatan rutin mampu mengurangi frekuensi kerusakan, dan penurunan biaya perawatan mencapai Rp 2.007.249.340. Penelitian ini menyimpulkan bahwa penerapan metode FMEA dan RCM efektif dalam meningkatkan keandalan mesin *filling sachet* 8L serta mengurangi biaya perawatan secara signifikan.

Kata Kunci: FMEA, RCM, Pemeliharaan mesin, Keandalan, Biaya perawatan.

ABSTRACT

In the increasingly competitive industrial era, machine maintenance is crucial to achieving production targets and reducing the risk of losses due to machine failures. This research was conducted at PT Multiindo Mandiri, which uses 8L and 16L sachet filling machines in the detergent production process. The 8L sachet filling machine experienced frequent component failures, affecting its productivity. To address this issue, Failure Mode and Effect Analysis (FMEA) and Reliability Centered Maintenance (RCM) methods were applied. The FMEA analysis identified critical components with the highest RPN values, namely the slitting blade, pump oilseal housing, pump piston O-ring, and rotary. Maintenance and component replacement intervals were determined using the RCM method, aiming to keep the machine in optimal condition. The results showed that regular maintenance intervals reduced failure frequency, and maintenance costs decreased by Rp 2,007,249,340. This study concludes that the implementation of FMEA and RCM methods effectively enhances the reliability of the 8L sachet filling machine and significantly reduces maintenance costs.

***Keywords**: FMEA, RCM, machine maintenance, reliability, maintenance costs.*