ABSTRAK

Industri pengecoran logam di Indonesia menunjukkan pertumbuhan yang terus meningkat seiring dengan tingginya kebutuhan pasar terhadap produk logam cor. Kondisi tersebut menuntut perusahaan untuk mampu menjaga kelancaran proses produksi agar target produksi dapat tercapai secara optimal. Namun, peningkatan permintaan pasar juga diikuti dengan meningkatnya downtime pada mesin shotblast sebesar 76,2 jam selama periode Juni hingga Agustus 2025. Tingginya downtime memberikan dampak yang signifikan terhadap proses produksi, baik dari aspek material, ekonomi, sumber daya manusia, maupun waktu operasional. Oleh karena itu, diperlukan strategi perawatan yang tepat guna meminimalkan terjadinya downtime dan meningkatkan keandalan mesin.

Penelitian ini bertujuan untuk menganalisis penyebab downtime pada mesin shotblast serta menentukan strategi perawatan yang sesuai untuk mengurangi frekuensi dan durasi kerusakan mesin. Metode yang digunakan dalam penelitian ini adalah Failure Mode, Effects and Criticality Analysis (FMECA) dan Reliability Centered Maintenance II (RCM II). Penelitian dilakukan melalui beberapa tahapan, yaitu identifikasi mode kegagalan, perhitungan Time to Failure (TTF) dan Time to Repair (TTR), penentuan distribusi kegagalan, hingga penentuan interval perawatan yang optimal untuk meminimalkan downtime.

Hasil penelitian menunjukkan bahwa terdapat 4 komponen dengan tingkat kritikalitas tinggi, 3 komponen dengan tingkat kritikalitas sedang, dan 7 komponen dengan tingkat kritikalitas rendah. Berdasarkan hasil analisis downtime pada setiap komponen, diperoleh interval maintenance yang mampu menurunkan downtime secara signifikan hingga 86%, yaitu dari 76,2 jam menjadi 11 jam. Penerapan interval perawatan tersebut diharapkan dapat mengurangi frekuensi kerusakan dan durasi downtime, meningkatkan efisiensi operasional, menjaga keandalan mesin shotblast, serta mendukung kelancaran dan keberlangsungan proses produksi perusahaan.

Kata kunci: RCM II, FMECA, *downtime, maintenance*

ABSTRACT

The metal casting industry in Indonesia continues to experience significant growth along with the increasing market demand for cast metal products. This condition requires companies to maintain smooth production processes in order to achieve production targets effectively and efficiently. However, the increasing market demand is also accompanied by a rise in downtime on the shotblast machine, reaching 76.2 hours during the period of June to August 2025. The high level of downtime has a significant impact on the production process, particularly in terms of material usage, economic losses, human resources, and operational time. Therefore, an appropriate maintenance strategy is required to minimize downtime and improve machine reliability.

This study aims to analyze the causes of downtime on the shotblast machine and determine an appropriate maintenance strategy to reduce the frequency and duration of machine failures. The methods used in this research are Failure Mode, Effects and Criticality Analysis (FMECA) and Reliability Centered Maintenance II (RCM II). The research was conducted through several stages, including failure mode identification, calculation of Time to Failure (TTF) and Time to Repair (TTR), determination of failure distribution, and establishment of optimal maintenance intervals to minimize downtime.

The results of the study indicate that there are four components with high criticality levels, three components with medium criticality levels, and seven components with low criticality levels. Based on the downtime analysis of each component, the proposed maintenance intervals are capable of reducing downtime significantly by up to 86%, from 76.2 hours to 11 hours. The implementation of these maintenance intervals is expected to reduce the frequency of failures and downtime duration, improve operational efficiency, maintain the reliability of the shotblast machine, and support the continuity and smoothness of the company's production process.

Keywords*: *RCM II*, *FMECA, downtime, maintenance