

ABSTRAK

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 Judul : **Usulan Peningkatan Efektivitas Mesin Graffir Mini CNC Routhier 3018-Pro Menggunakan Metode Overall Equipment Effectiveness Dan Fault Tree Analysis Di PT. LABBERU INTERNASIONAL JAKARTA**

Dosen Pembimbing : Ir. Yenny Widianty, M.T., IPU., ASEAN_Eng.

Dalam era globalisasi persaingan industri semakin ketat, salah satu faktor perusahaan dapat memenangkan persaingan adalah mempertahankan produktivitas perusahaan dan selalu menjaga kepercayaan konsumen, PT Labberu Internasional Jakarta merupakan perusahaan yang bergerak di bidang industri manufaktur dan jasa pembuatan panel listrik merespon ini dengan cara meningkatkan efektifitas dan efisiensi mesin melalui peningkatan performa mesin untuk mempertahankan produktivitas perusahaan. Peningkatan performa mesin dilakukan pada salah satu mesin produksi yaitu mesin graffir *mini CNC Routhier 3018-Pro* yang merupakan mesin utama di lini produksi komponen *name plate panel* dengan priode waktu pengambilan data mesin pada bulan oktober dan november 2023. Penelitian ini bertujuan untuk mengetahui besarnya nilai *Availability ratio*, *Performance ratio*, *Quality ratio*, dan nilai *Overall Equipment Effectiveness* pada mesin gaffir *mini CNC Routhier 3018-Pro* di lini Produksi komponen *Name Plate* PT Labberu Internasional Jakarta, menganalisa *Six Big Losses* terkait masalah yang ada pada perusahaan PT Labberu Internasional Jakarta untuk kemudian mengidentifikasi akar penyebab permasalahan rendahnya nilai *OEE* dibandingkan nilai idealnya dan penyebab yang mendominasi dari penyebab yang ada serta memberikan usulan perbaikan guna meningkatkan performa mesin gaffir *mini CNC Routhier 3018-Pro*. Upaya peningkatan performa mesin menggunakan pendekatan metode *Overall Equipment Effectiveness* serta *Fault Tree Analysis*. Dari hasil penelitian diketahui nilai rata - rata *Availability ratio* 93.60%, *Performance ratio* 84.30%, *Quality ratio* 99.06%, dan *Overall. Equipment Effectiveness* mesin graffir *mini CNC Routhier 3018-Pro* adalah 78.14%, nilai *OEE* ini dapat dikatakan wajar tetapi lebih baik dilakukan penelitian lebih lanjut dan melakukan *improvement* karena secara umum standar nilai *OEE* kelas dunia idealnya adalah 85%. Setelah dilakukan penelitian menggunakan metode *Overall Equipment Effectiveness* ditemukan akar permasalahan *Six Big Losses* yaitu *reduce speed* dengan nilai rata-rata 20.15% , kemudian diteliti akar permasalahan dari *reduce speed* menggunakan diagram sebab - akibat dan ditemukan faktor mesin adalah penyebab utama dari *reduce speed*, maka dilakukan analisis dengan *Fault Tree Analysis* pada faktor mesin untuk memberikan usulan perbaikan agar performa mesin meningkat dan efektifitas mesin menjadi optimal. Adapun usulan perbaikan yang diberikan adalah melakukan *upgrade software*, memasang komponen *controller offline* pada *controller board*, *upgrade* kabel *USB connector*, membuat SOP pemasangan mata *cutters*, membuat jadwal perawatan mata *cutters*.

Kata Kunci: *Overall Equipment Effectiveness*, *Six Big Losses*, Diagram Sebab - Akibat, *Fault Tree Analysis*, Usulan Perbaikan.

ABSTRACT

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In the era of globalization, industrial competition is getting tighter, one of the factors companies can win the competition is maintaining company productivity and always maintaining consumer confidence, PT LABberu Internasional Jakarta is a company engaged in the manufacturing industry and electrical panel manufacturing services to respond to this by increasing effectiveness and efficiency. engine through increased engine performance to maintain company productivity. The engine performance improvement was carried out on one of the production machines, namely the Roucher 3018-Pro mini engraver machine, which is the main machine in the name plate panel component production line with the machine data collection time period in October and November 2023. This study aims to determine the value of Availability ratio, Performance ratio, Quality ratio, and Overall Equipment Effectiveness value on the mini CNC Roucher 3018-Pro gaffir machine in PT LABberu International Jakarta's Name Plate component Production line, analyzing Six Big Losses related to problems that exist in the company PT LABberu Internasional Jakarta to then identify The root cause of the problem is the low OEE value compared to the ideal value and the dominating cause of the existing causes and provides recommendations for improvements to improve the performance of the CNC Roucher 3018-Pro mini gaffir engine. Efforts to improve engine performance use the Overall Equipment Effectiveness method approach and Fault Tree Analysis. From the research results, it is found that the average value of Availability ratio is 93.60%, Performance ratio is 84.30%, Quality ratio is 99.06%, and Overall Equipment Effectiveness of mini CNC Roucher 3018-Pro is 78.14%, this OEE value can be said to be reasonable but it is better to do research. further and make improvements because in general, the ideal world-class OEE value standard is 85%. After conducting research using the Overall Equipment Effectiveness method, the root cause of the Six Big Losses problem was found, namely reduce speed with an average value of 20.15%, then the root cause of reduce speed was examined using a cause-effect diagram and found that engine factors were the main cause of reduce speed, so it was done analysis with Fault Tree Analysis on engine factors to provide recommendations for improvements in order to increase engine performance and optimal engine effectiveness. The improvement proposals given are upgrading the software, installing offline controller components on the controller board, upgrading the USB connector cable, making SOP for eye cutters, making eye care schedule for cutters.

Keywords: Overall Equipment Effectiveness, Six Big Losses, Cause and Effect Diagram, Fault Tree Analysis, Proposed Improvement.