

ABSTRAK

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Program Studi : Teknik Industri
Judul Laporan Skripsi : Analisis Produktivitas Mesin *Knitting* Dengan Pendekatan Metode *Reliability Centered Maintenance* (RCM) dan *Maintenance Value Stream Mapping* (MVSM) (Studi Kasus PT. Mulia *Knitting Factory*)
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Peningkatan kinerja perusahaan merupakan aspek krusial untuk mempertahankan daya saing di industri yang semakin kompetitif. Namun, upaya perbaikan sering kali mengakibatkan efisiensi perawatan hanya 33,3% pada pergantian jarum, 37,5% pembersihan Singker, 57,7% pergantian Singker, 64,9% pergantian *Tooth Belt*, 69,4% pergantian *Needle Bed*, 55,6% pembersihan *Needle Bed*, 70,3% pergantian Oli *Gear*, dan 62,1% pembersihan Oli *Gear*, karena gagal mengatasi akar permasalahan. Penelitian ini bertujuan mengidentifikasi tindakan pemeliharaan yang tepat pada mesin *Knitting* K12 menggunakan pendekatan *Reliability Centered Maintenance* (RCM) dan *Maintenance Value Stream Map* (MVSM). Pertama, komponen mesin dianalisis menggunakan *Failure Modes Effect Analysis* (FMEA) untuk menentukan komponen prioritas berdasarkan tingkat risiko kegagalan. Hasil analisis FMEA menunjukkan bahwa Singker memiliki nilai *Risk Priority Number* (RPN) sebesar 228, Jarum 192, dan *Needle Bed* 184, yang semuanya menunjukkan risiko kegagalan signifikan dan memerlukan perhatian khusus. Tindakan perawatan yang direkomendasikan meliputi inspeksi rutin, pelumasan, dan penggantian komponen secara periodik. Penggunaan RCM Decision Worksheet membantu dalam menentukan (*scheduled on condition task*) dan (*scheduled on restoration task*). MVSM mengidentifikasi dan mengurangi aktivitas *non-value added*, menunjukkan peningkatan efisiensi pada pergantian jarum 8,4%, pembersihan Singker 14,2%, pergantian Singker 15,1%, pergantian *Tooth Belt* 17,9%, pergantian *Needle Bed* 12,3%, pembersihan *Needle Bed* 6,3%, pergantian Oli *Gear* 12%, dan pembersihan Oli *Gear* 14,2%, serta penurunan *Maintenance Mean Lead Time* (MMLT). Penelitian ini merekomendasikan pengoptimalan jadwal pelatihan dan program pelatihan intensif bagi operator dan mekanik untuk meningkatkan efisiensi dan efektivitas proses merajut *Knitting*.

Kata Kunci : Peningkatan Kinerja Perusahaan, RCM, MVSM, FMEA

ABSTRACT

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Title Thesis : *Productivity Analysis of Knitting Machines Using Reliability Centered Maintenance (RCM) and Maintenance Value Stream Mapping (MVSM) Methods (Case Study of PT. Mulia Knitting Factory)*
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Improving company performance is a crucial aspect to maintain competitiveness in an increasingly competitive industry. However, improvement efforts often result in maintenance efficiency of 33.3% in needle changes, 37.5% in Singker cleaning, 57.7% in Singker replacement, 64.9% in Tooth Belt replacement, 69.4% in Needle Bed replacement, 55.6% in Needle Bed cleaning, 70.3% in Gear Oil replacement, and 62.1% in Gear Oil cleaning, due to failure to address the root cause. This study aims to identify appropriate maintenance actions on the K12 Knitting machine using the Reliability Centered Maintenance (RCM) and Maintenance Value Stream Map (MVSM) approaches. First, the machine components are described using Failure Modes Effect Analysis (FMEA) to determine priority components based on the level of risk of failure. The results of the FMEA analysis show that Singker has a Risk Priority Number (RPN) value of 228, Needle 192, and Needle Bed 184, all of which indicate significant risk of failure and require special attention. Recommended maintenance actions include routine inspection, lubrication, and periodic component replacement. The use of the RCM Decision Worksheet assists in determining (scheduled on condition tasks) and (scheduled restoration tasks). MVSM identified and reduced non-valueadded activities, demonstrating efficiency improvements in needle changes of 8.4%, Singker cleaning of 14.2%, Singker changes of 15.1%, Tooth Belt changes of 17.9%, Needle Bed changes of 12.3%, Needle Bed cleaning of 6.3%, Gear Oil changes of 12%, and Gear Oil cleaning of 14.2%, as well as a reduction in Maintenance Mean Lead Time (MMLT). This study informs the utility of training schedules and intensive training programs for operators and mechanics to improve process efficiency and effectiveness including Knitting.

Keywords : *Improving Company Performance, RCM, MVSM, FMEA*