

ABSTRAK

PT Mega Andalan Kalasan adalah produsen yang aktif di dalam maupun luar negeri, dan salah satu produknya adalah *electric bed* TRG 23 yang diproduksi setiap bulannya. Hasil pengamatan menunjukkan bahwa produksi di departemen *welding* memiliki tingkat kecacatan tinggi dan jenis *rework* tertinggi berupa *rework* bolong. Keadaan ini menyebabkan lambatnya alur produksi pembuatan *electric bed* TRG 23. Penelitian ini bertujuan untuk mengetahui hasil analisis investasi penerapan *six sigma* dan *quality loss function* untuk menurunkan *rework*.

Penelitian ini menggunakan metode *six sigma* yaitu *define, measure, analyze, improve, dan control* (DMAIC) serta metode *Failure Mode and Effect Analysis* (FMEA). Analisis kelayakan investasi usulan perbaikan menggunakan parameter *net present value* (NPV), *internal rate of return* (IRR), *profitability index* (PI), dan *discounted payback period* (DPP). Identifikasi nilai kerugian yang ditimbulkan dari aktivitas *rework* dengan metode *quality loss function*.

Hasil penelitian adalah penerapan *six sigma* dan *quality loss function* untuk investasi usulan perbaikan *part* tambahan dengan nama jig anti salah layak untuk dilakukan. Hal tersebut dilihat dari nilai NPV sebesar Rp3.460.380.006,79, persentase IRR sebesar 16,7%, nilai PI sebesar 1,97, dan DPP selama 2,529 tahun. Hasil tersebut menunjukkan penggunaan jig anti salah dapat menurunkan persentase *rework electric bed* TRG 23 dari 2,369% menjadi 1,628%. Biaya kerugian kualitas menurun sebesar Rp45.573,45 dari rata-rata bulan sebelum perbaikan. Keadaan ini menunjukkan bahwa hasil perbaikan telah menurunkan jumlah *rework* yang terjadi dan mengurangi biaya kerugian kualitas.

Kata kunci: *six sigma, quality loss function, analisis investasi, NPV, IRR, PI, DPP*

ABSTRACT

PT Mega Andalan Kalasan is an active manufacturer at home and abroad, and one of its products is the TRG 23 electric bed which is produced every month. The results showed that production in the welding department had a high defect rate and the highest type of rework was in the form of hollow rework. This situation causes the slow production flow of making TRG 23 electric beds. This study aims to determine the results of investment analysis of the application of six sigma and quality loss function to reduce rework.

This research uses six sigma method, namely define, measure, analyze, improve, and control (DMAIC) and Failure Mode and Effect Analysis (FMEA) method. Investment feasibility analysis of proposed improvements using net present value (NPV), internal rate of return (IRR), profitability index (PI), and discounted payback period (DPP) parameters. Identify the value of losses arising from rework activities with the quality loss function method.

The result of the study is the application of six sigma and quality loss function for investment, the proposed repair of additional parts with the name jig anti-false is feasible. This can be seen from the NPV value of Rp 3,460,380,006.79, the percentage of IRR of 16,7%, the PI value of 1.97, and DPP for 2,529 years. These results show that the use of an anti-false jig can reduce the percentage of TRG 23 electric bed rework from 2.369% to 1.628%. The cost of quality loss decreased by Rp45,573.45 from the average month before repair. This situation shows that the results of the improvement have decreased the number of rework that occurs and reduced the cost of quality loss.

Keywords: six sigma, quality loss function, investment analysis, NPV, IRR, PI, DPP