

## Peningkatan kualitas hasil proses laminasi di industri packaging dengan menggunakan metode Six Sigma = Quality improvement of lamination process results in the packaging industry by using the Six Sigma method

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### Abstrak

Produksi kemasan plastik yang kualitas sangat penting bagi perusahaan untuk mendapatkan keuntungan jika produk yang dihasilkan sesuai dengan standar yang sudah ditentukan. Penelitian ini bertujuan untuk mengurangi kerugian yang terjadi karena adanya produk cacat pada produk kemasan Agar-agar. Metode Six Sigma melalui tahapan DMAIC (Define, Measure, Analyze, Improve, dan Control) dipakai untuk mencari solusi dan memperbaiki kualitas produk. Berdasarkan perhitungan terhadap data produk cacat, diketahui bahwa cacat Tonjolan Pinggir, cacat Keriput, dan cacat Pitch Unstd merupakan tiga jenis cacat dengan jumlah dan persentase tertinggi. Pada tahap measure didapatkan nilai DPMO (Defects Per Million Opportunities) sebesar 32707,271 unit defect dengan nilai sigma sebesar 3,34. Failure Mode and Effect Analysis (FMEA) digunakan untuk mengetahui risiko potensi kegagalan dari faktor yang mendapat bobot nilai tinggi.

Setelah dilakukan perbaikan, nilai DPMO turun menjadi 7272,111 unit defect dan nilai sigma naik menjadi 3,94 sigma. Perubahan nilai sigma yang terjadi sebesar 0,60. Tahap control dapat dilaksanakan dengan adanya rancangan perbaikan serta sebuah pemeriksaan setiap prosesnya agar jumlah cacat produk terus berkurang. Rancangan perbaikan pendekatan 5S berupa standar kerja check sheet maintenance pada Mesin Tandem Laminasi dan standar kerja work station di proses laminasi. Setelah dilakukan perbaikan, hasil menunjukkan penurunan jumlah dan pesentase defect, dimana sebelumnya mencapai angka sebesar 5,89% menuju 1,31%.

*The production of quality plastic packaging is very important for companies to gain benefits that can be obtained if the quality of the product complies with the prescribed standards. This study aims to reduce losses that occur due to the presence of defective products in Jelly packaging products. Six Sigma methods through DMAIC stages (Define, Measure, Analyze, Improve, and Control) are used to find solutions and improve product quality. Based on the calculation of defective product data, it is known that Uneven surface defects, wrinkled defects, and Pitch Unstd defects are the highest number of defects. In the measure phase, the DPMO (Defects Per Million Opportunities) value were 32707.271 defect units with a sigma value of 3.34. Failure Mode and Effect Analysis (FMEA) is used to determine the potential risk of failure from a factor that gets a high value.*

*After repairs, the DPMO value drops to 7272.111 defect units and the sigma value rises to 3.94 sigma. Changes in sigma values that occur amounted to 0.60. Control can be done with the inspection and checks in each process so that the number of defects can continue to decrease. Improvements use the 5S approach in the form of a work standards check sheet maintenance on the Tandem Lamination Machine and work standard of work station in the lamination process. After improvement, the results show a decrease in the number and percentage of defects, which previously reached a number of 5.89% towards 1.31%.*