ABSTRAK

UD Cantenan merupakan industri rumahan yang bergerak di bidang pengecoran logam dan memproduksi berbagai produk turunan seperti panci, ketel, dan trophy logam. Produk *trophy* menjadi salah satu unggulan perusahaan karena permintaan yang stabil dari pelanggan luar daerah. Namun, proses produksinya menghadapi permasalahan berupa tingginya tingkat cacat (*defect*) yang mencapai rata-rata 20% dari total produksi bulanan. Kondisi ini menimbulkan pemborosan waktu, bahan baku, dan tenaga kerja, serta berdampak pada meningkatnya kebutuhan lembur akibat kegiatan *rework* dan *overproduction*.

Penelitian ini menggunakan pendekatan *Lean Six Sigma* dengan metode DMAIC (*Define, Measure, Analyze, Improve, Control*) untuk mengidentifikasi jenis pemborosan (*waste*) dan memberikan usulan tindakan preventif terhadap *defect* pada proses produksi *trophy*. Tahapan penelitian meliputi pemetaan proses menggunakan SIPOC (*Supplier, Input, Process, Output,* dan *Customers*) Diagram, identifikasi waste melalui *Waste Assessment Model* (WAM)**,** *Waste Relationship Matrix* (WRM)**,** dan *Waste Assessment Questionnaire* (WAQ). Analisis akar penyebab *defect* dilakukan dengan *Fishbone Diagram*, sedangkan prioritas tindakan pencegahan ditentukan melalui *Failure Mode and Effect Analysis* (FMEA)**,** dan hasilnya diformulasikan dalam bentuk usulan *Standard Operating Procedure* (SOP) baru.

Hasil penelitian menunjukkan bahwa *waste* paling dominan adalah *defect* dengan nilai 22,81%. Jenis cacat utama yang termasuk *Critical to Quality* (CTQ) meliputi penyusutan badan *trophy* sebesar 35,28%, keretakan sebesar 27,25%, dan cacat terak sebesar 21,65%, secara keseluruhan berkontribusi sebesar 84,18% dari total *defect*. Nilai sigma proses sebesar 3,24 menunjukkan bahwa proses belum sepenuhnya terkendali. Berdasarkan hasil *what-if analysis* terhadap pengendalian tiga CTQ defect utama (penyusutan, keretakan, dan *slag*), diperoleh estimasi bahwa efisiensi waktu produksi meningkat sebesar 87,5%. Peningkatan ini tercermin dari penurunan kebutuhan lembur yang semula mencapai total 104 jam 4 menit menjadi 16 jam 34 menit. Kondisi ini menghilangkan kebutuhan lembur, dan menjaga konsistensi kualitas produk secara berkelanjutan.

Kata kunci: DMAIC, identifikasi *waste*, *throughput time*, *defect*, *overproduction*

ABSTRACT

UD Cantenan is a home-based industry engaged in metal casting and the production of various derivative products such as pans, kettles, and metal trophies. The trophy product has become one of the company's main commodities due to stable demand from out-of-town customers. However, its production process faces issues related to a high defect rate, averaging 20% of the total monthly output. This condition causes waste in time, raw materials, and labor, as well as an increased need for overtime due to rework and overproduction activities.

This study applies the Lean Six Sigma approach using the DMAIC (Define, Measure, Analyze, Improve, Control) method to identify types of waste and propose preventive actions against defects in the trophy production process. The research stages include process mapping using the SIPOC (Supplier, Input, Process, Output, and Customers) Diagram, waste identification through the Waste Assessment Model (WAM), Waste Relationship Matrix (WRM), and Waste Assessment Questionnaire (WAQ). The root causes of defects were analyzed using the Fishbone Diagram, while preventive action priorities were determined through Failure Mode and Effect Analysis (FMEA), and the results were formulated into a proposed Standard Operating Procedure (SOP).

The results show that the most dominant waste is defect, accounting for 22.81%. The main types of defects categorized as Critical to Quality (CTQ) include body shrinkage (35.28%), cracking (27.25%), and slag defects (21.65%), which together contribute 84.18% of the total defects. The process sigma value of 3.24 indicates that the process is not yet fully under control. Based on the results of the what-if analysis on the control of the three main CTQ defects (shrinkage, cracking, and slag), it was estimated that production time efficiency increased by 87.5%. This improvement is reflected in the reduction of overtime requirements—from a total of 104 hours and 4 minutes to only 16 hours and 34 minutes. This condition effectively eliminates the need for overtime, and maintains consistent product quality sustainably.

Keywords*: DMAIC, waste identification, throughput time, defect, overproduction.*