# SUMMARY

**NOVIA ALVIN NUR ANNISA**, Department of Industrial Engineering, Faculty of Engineering, University of Brawijaya, June 2014, *Lean Six Sigma Approach to Reduce Waste on Brown Paper Production Process*, Academic Supervisor: Sugiono and Ceria Farela Mada Tantrika.

PT Kertas Leces (Persero) is a manufacturing company engaged in the production of pulp and paper. In the production process, waste are found. Waste is defined as activity that does not add value in the process of transforming inputs into outputs along the production process. This study focuses on brown paper production because this product is the most routinely produced and become the superior product in the company. This study aims to identify the types of waste that occurs along brown paper production process, to determine the critical waste in each identified waste, to determine causes of the waste and to provide recommendations for improvement to reduce waste.

The method used in this study is Lean Six Sigma that is a combination of Lean and Six Sigma. Its purpose is identifying and eliminating waste or non-value-added activities through continuous improvement to achieve six sigma levels. Steps taken on this study based on define, measure, analyze and improve (DMAI) cycle. In the define phase, seven wastes are identified in the production process. Measure phase is conducted by making Pareto chart to determine the critical waste then calculating defect's DPMO and sigma level. After that, in analyze phase fishbone diagram is made to analyze the factors that cause the occurrence of waste. In the improve phase given improvement recommendations are generated to reduce waste that occurs in production process. Improvement recommendations proposed to company are generated to reduce prioritized critical wastes that occur in production process. Prioritized critical wastes are selected based on FMEA's RPN values.

The result of this study shows that five of waste types are identified in brown paper production process, i.e.: defects, waiting, unnecessary inventory, inappropriate processing, and excess transportation. Improvement recommendations in this study are generated based on the analysis of waste critical causes. The first improvement recommendation is replace current material handling by using an escalator to send roll of paper with expectation that it can reduce the RPN value from 350 to 196. The second improvement recommendation are given to reduce paper defect that has RPN value of 300 can be decreased to 192 by doing periodic replacement of Wire Part components and putting on warning labels on the Control Room. Last recommendation is given to reduce unnecessary inventory by evaluating the performance of suppliers and performing supplier selection that consider important factors in supplier selection so that the expected value of RPN can be decreased from 270 to 168.

Keywords: Lean Six Sigma, waste, fishbone diagrams, FMEA