REDUCING MAJOR LEAN WASTE IN PT. ASIA FORESTAMA RAYA WITH LEAN SIX SIGMA APPROACH

A THESIS

Submitted in Partial Fulfillment of the Requirement for the Bachelor Degree of Industrial Engineering

FREDDY SUHENDRA

14 14 08062

INTERNATIONAL INDUSTRIAL ENGINEERING PROGRAM

DEPARTEMENT OF INDUSTRIAL ENGINEERING

FACULTY OF INDUSTRIAL TECHNOLOGY

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IDENTIFICATION PAGE

A THESIS ON

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DECLARATION OF ORIGINALITY

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I hereby declare that this research entitled "Reducing Major Lean Waste in PT. Asia Forestama Raya with Lean Six Sigma Approach" is based on my own intellectual work. I declare that to the best of my knowledge and belief, this thesis has not been published or written by another person, except those literarure review which is clearly cited and referenced according to department requirements.

In addition, I also declare that I understand and abide the rule and conduct stated by the Ministry of Education and Culture The Republic of Indonesia, subject to the provisions of "Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 17 Tahun 2010 tentang Pencegahan dan Penanggulangan Plagiat di Perguruan Tinggi". I appreciate any false claim may result in disciplinary action in accordance with the government and regulations.

Yogyakarta, April 16, 2018

Freddy Suhendra

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ABSTRACT

Competition among manufacturing industry has been intensified in recent years, every manufacturing organization contends on the ability to satisfy the growing complexed needs of its customers. The similar condition also applies for wood processing industry, especially in Southeast Asia as one of the major supplier of hardwood products in international market. PT. Asia Forestama Raya is a wood processing company located in Pekanbaru, Indonesia that mainly produces raw plywood for local and international market. There are several lean wastes generated by production process observed such as transportation, overprocessing, defect, motion, and inventory. In order to gain competitive advantage in Southeast Asia region, the company must be able to fulfill demand with competitive price and superior quality by reducing major lean waste in the production system.

The objectives of this case study are to select major lean waste in plywood production and implement solutions in order to reduce the major lean waste. This study is executed using Lean Manufacturing which focuses on selecting major lean waste using the Analytic Hierarchy Analysis (AHP), followed by Six Sigma DMAIC to reduce the major lean waste.

Obtained results from AHP analysis indicate that the major lean waste being selected by the management team is defect (43%) based on its influence. The focus of systematic DMAIC phase is reduction of uneven core thickness as the most dominant defect in 2.7mm LFE raw plywood. The uneven core thickness defect percentage has reduced significantly by 3% from 29.58% to 26.58% after implementation. Similarly, reject rate of 2.7 mm LFE raw plywood has also decreased by 0.88% from 3.04% to 2.15%.

Keywords: Lean manufacturing, Six Sigma, DMAIC, Analytic Hierarchy Process