

**IMPROVING THE EFFECTIVENESS OF THE RECTIFICATION AREA IN
PT. XYZ BY DEVELOPING VEHICLE PRIORITY SIGN, RECTIFICATION
REPORT AND FEEDBACK LOOP**

By

STEVE YUWONO
1-1407-003

BACHELOR'S DEGREE
in

INDUSTRIAL ENGINEERING
FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

SWISS GERMAN UNIVERSITY


SWISS GERMAN UNIVERSITY
The Prominence Tower
Jalan Jalur Sutera Barat No. 15, Alam Sutera
Tangerang, Banten 15143 - Indonesia

AUGUST 2018

Revision after the Thesis Defense on 20th July 2018

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Steve Yuwono

Student

Date

Approved by:

Ir. Setijo Awibowo, MM

Thesis Advisor

Date

Edo Suryo Pratomo, S.T., M.Sc.

Thesis Co-Advisor

Date

Dr. Irvan Setiadi Kartawiria, S.T., M.Sc.

Dean

Date

Steve Yuwono

ABSTRACT

IMPROVING THE EFFECTIVENESS OF THE RECTIFICATION AREA IN PT. XYZ BY DEVELOPING VEHICLE PRIORITY SIGN, RECTIFICATION REPORT AND FEEDBACK LOOP

By

Steve Yuwono

Ir. Setijo Awibowo, MM, Advisor

Edo Suryo Pratomo, S.T., M.Sc., Co-Advisor

SWISS GERMAN UNIVERSITY

This research is based on the case study in a global automotive manufacturer especially in the rectification area. It focuses on how working efficiency in the certain area can be optimized by developing several numbers of new systems and constructing visualization management in order to eliminate waste happened in the area. Based on daily report and initial analysis in the factory, there are a large numbers of activity which have not been effective yet. After analysis and discussions, this ineffectiveness is understood to be due to 3 main reasons such as number of cars in this area is overload and stuck in this area, no databases to support this area and no well-implemented prioritization system in this area. Therefore, those major problems are solved by using 3 different improvements which is planning and implementing vehicle priority system, constructing rectification report in Microsoft Access and developing a feedback loop system from rectification area to trimming and mechanical line. This thesis was conducted by using Root Cause Analysis for whole improvements. However, there are other tools to support this project which are PDCA Cycle for priority vehicle sign and Waterfall Methodology for Rectification Report and Feedback Loop.

Keywords: Rectification Area, Lean Manufacturing, Waterfall Methodology, Visualization Management, Root Cause Analysis, Microsoft Access



© Copyright 2018
by Steve Yuwono
All rights reserved

SWISS GERMAN UNIVERSITY

DEDICATION

*I dedicate this thesis
to God for turning every difficulties and obstacles to convenience,
to my beloved parents for their support,
to my lecturers for their guidance and advices,
and finally my lovely friends for the support, motivation and their helping hands.*



ACKNOWLEDGEMENTS

Firstly, I would like to thank God because without His helping hand, neither the research project nor this thesis report can be done and finished. I have done this internship from September 2017 until June 2018. Meanwhile, this report is finally done in the end of June 2017.

Special thanks to my beloved parents and sister for always continuously give me support with motivation and prayer.

Moreover, I would like to thank and appreciate all my colleagues especially to these several names, Mr. Wahyu Riccardo and Mr. Mukti Hartono as my supervisors, Mr. Marcelus Ismunandar as head of Production and Mr. Januar Mauludi as supervisor in the rectification area, for giving me the opportunity to conduct internship and let me work with their group, provide me with all of the information needed, and leading me working on this project.

I would like to express my sincere gratitude to all lecturer in Industrial Engineering at Swiss German University especially my thesis advisor, Ir. Setijo Awibowo, MM, and my thesis co-advisor, Edo Suryo Pratomo, S.T., M.Sc., for the guidance, immense knowledge, patience, enthusiasm and advices in order to support this research. Their helping hands really important and valuable for me.

Last but not least, I would like to appreciate all my friends and colleagues in PT. XYZ Indonesia which are Kenny Ardynata, Heinrich Putra, Felix Siswanto Lie, Ronaldi and Juan Teguh Tjahjadi for supporting me throughout good and hard times in conducting this project. Furthermore, I would like to thank all members of Industrial Engineering 2014 for all the unforgettable moment we spent together.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	9
LIST OF TABLES	11
CHAPTER 1 – INTRODUCTION	12
1.1. Background.....	12
1.2. Research Problems.....	13
1.3. Research Objectives.....	14
1.4. Significance of Study.....	14
1.5. Scope and Limitation.....	14
1.6. Thesis Structure	15
CHAPTER 2 – LITERATURE REVIEW	17
2.1. Lean Manufacturing.....	17
2.2. Automotive Industry	19
2.2.1. Assembly Line.....	19
2.2.2. Rectification Area in an Automotive Industry	20
2.3. Productivity Measures	20
2.4. Defect Analysis.....	21
2.4.1. Fishbone or Ishikawa Diagram.....	21
2.4.2. Pareto Chart.....	22
2.5. Kaizen	22
2.6. Plan-Do-Check-Act	23
2.7. Root Cause Analysis.....	24
2.8. Digitalization and Integrated Manufacturing Database	26
2.9. Standard Operating Procedure (SOP)	26
2.10. Waterfall Methodology.....	27
CHAPTER 3 – RESEARCH METHODS	29
3.1. Problem Identification	30
3.2. Literature Review	30
3.3. Describe the Problem.....	31
3.4. Breakdown the Problem.....	32
3.5. Set the Target	32
3.6. Analyze the Root Cause.....	32

3.7.	Develop Effective Solutions	33
3.8.	Implement the Solutions	33
3.9.	Track and Monitor Solutions	35
3.10.	Standardize and Share Success	35
3.11.	Implementation Process Summary	35
3.12.	Conclusion and Recommendation	36
CHAPTER 4 – EXISTING PROBLEMS AND ANALYSIS.....		37
4.1.	Company Profile	38
4.2.	Define the Root Cause Problem.....	39
4.2.1.	Increment Number of Vehicles in Rectification Area.....	41
4.2.2.	Vehicle Priority Issue	42
4.2.3.	Processing Time to Produce Daily and Monthly Report.....	44
4.2.4.	ISTK Problem.....	46
CHAPTER 5 – SOLUTIONS AND IMPLEMENTATIONS.....		51
5.1.	Vehicle Priority Sign	51
5.2.	Rectification Report	61
5.3.	Feedback Loop.....	71
5.4.	Track and Monitor Solutions	78
5.5.	Standardize and Share Success	80
5.6.	Implementation Process Summary	82
5.6.1.	New Prioritizing System (Vehicle Priority Sign).....	83
5.6.2.	Databases, Daily Report and Monthly Report (Rectification Report)	85
5.6.3.	Frequency of ISTK Problems and Overtimes (Feedback Loop).....	87
CHAPTER 6 – CONCLUSIONS AND RECCOMENDATIONS		91
6.1.	Conclusions.....	91
6.2.	Recommendations.....	92
6.3.	Further Improvements.....	92
REFERENCES		94
APPENDICES		96
APPENDIX A - Working Instructions		97
APPENDIX B - Coding for Rectification Report and Feedback Loop		139
APPENDIX C - Training Video Content (Rectification Report)		145
APPENDIX D - Training Video Content (Feedback Loop)		155
APPENDIX E – Relationship Diagrams.....		161
CURRICULUM VITAE.....		163