

**PRODUCTION IMPROVEMENT THROUGH THE USE QUEST SIMULATION  
TECHNIQUE OF LAYOUT OPTIMIZATION SPECIFIC ON LABOUR  
OPTIMIZATION**

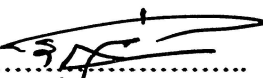
**MOHAMAD SUKRI BIN MOHAMED SHAMSUDIN  
(2007269312)**

**A thesis submitted in partial of requirement for the award of Bachelor Engineering  
(Hons.) Mechanical (Manufacturing)**

**BACHELOR ENGINEERING (HONS) MECHANICAL (MANUFACTURING)  
UNIVERSITI TEKNOLOGI MARA (UiTM)**

**MAY 2010**

“I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their source. This report has not been accepted for any degree and is not concurrently submitted in candidature of any degree.”

Signed:   
Date: 19/05/2010

**MOHAMAD SUKRI BIN MOHAMED SHAMSUDIN**

UiTM No: 2007269312

## **ACKNOWLEDGEMENT**

It is a pleasure for me to have a chance acknowledging those who have involved much with me in order to finish this final year project. Alhamdulillah. I am so thankful to Allah S.W.T for giving me the strength and health to finish this project in the exact given time.

Firstly, I would like to convey my phrase of gratitude to my dedicated project advisor, Zainoor Hailmee Bin Solihin on his untiring encouragement, guidance and inspiration that is really valuable throughout this project. I would also like to acknowledge Mr. Nizamri Basri who is a Production Manager for Propoly (M) Sdn. Bhd that giving the opportunity to study on their manufacturing production and not forget for all staff at Propoly (M) Sdn. Bhd.

A bunch of thanks also goes to my friend, Mr. Sheikh Omar bin Shk. Salim who has done the project together with me. Thank you very much too to all my friends that contributed to this project directly or indirectly.

I would like to address my special appreciations and thanks to both of my parents, that keep on supporting and encouraging me through all this year especially during my studies. There were a lot of things they had done for me since I was young until I almost graduated. They constantly burned my spirit to work hard and focus on success.

Thank you very much too entire people that helped me ever since I started this project. I am very sorry for not mentioning all the names, but it does not mean that I forget them. It is just the matter of limited spaces.

Thank you very much....

## **ABSTRACT**

This paper presents a layout study that used simulation technique to improve plant layout of the factory floor Propoly (M) Sdn. Bhd which involved the production of plastic injection molding machine to produce plastic part for automotive industry. In this study, the main aspects are to simulate and analyze the current plant layout and then improvement layout will be proposed in order to optimize production rate of the finish good, space utilization, material storage and handling, and also meaning optimization. Finally, the performance of the new layout will be evaluated and compared with that current layout performance. By using Delmia Quest software as a tool it will be able to help to achieve the objective of this study. Delmia Quest is a complete 3D digital factory environment for process flow simulation and analysis, accuracy, and profitability. In addition quality control tools (QC 7 tools) method will be applied for this study as a guide line and reference in collecting data and problem solving analysis in order to obtain the optimum result base on plant layout at research location. As a key result from this study, the production improvement increases the labor utilization percentage and decreases labor idle time in the production system if the factory adopted the improved layout. From these studies, it can be conclude that, an optimum floor layout configuration can be obtained by using simulation technique in order to achieve the objective.

## TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
PAGE TITLE	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
<b>CHAPTER 1            INTRODUCTION</b>	
1.0    General	1
1.1    Problem Identification	2
1.2    Rationale of the Research	3
1.3    Problem Statement	3
1.4    Research Question	4
1.5    Objectives	4
1.6    Scope of the Project	5
1.7    Limitation of the study	5
1.8    Benefit to the Country/Society/Organization	6
<b>CHAPTER 2            LITERATURE REVIEW</b>	
2.0    Manufacturing Overview	7
2.0.1    Manufacturing and Improvement	8
2.1    Quality Control (QC) Seven Tool	8
2.2    Simulation Overview	
2.2.1    Working Principle of Simulation	10
2.2.2    Simulation Approach	11