

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the study

The company is increasing its market share in automotive products. The existing competitors also have various strategies to pull and maintain customers. The automotive manufacturer is focusing on many areas to compete in the market. Each improvement and implementation of tools to support a competitive strategy affects to market competitiveness. This thesis presents the improvement of a section - material handling - in an automotive manufacturing company.

The customer comes first, is a well-known sentence which the provider understands as fast delivery to serve the customer's need. Improvements in the material handling system including warehouse area are useful in increasing material flow process efficiency benefiting product delivery.

A warehouse in the industrial site is the area used to store the materials or goods or both and it mostly is a part of the manufacturing plant. The traditional warehouse is usually large and stores a high quantity, including long-term stock and buffers. Today, the concept of warehouses is declining due to the concept of Just-In-Time (JIT), the reduction of investment, reduced processes in inventory, and the improvement of lead time. Therefore, a warehouse is an area which is minimized. Warehouses in the automotive manufacturing can be defined as non value-added areas because of long term storage and buffer quantity including the cost and effect of expired material.

A philosophy focusing on the customer, value-added activities and eliminating waste is implemented in the manufacturing process to increase productivity and efficiency in automotive production. Therefore, to synchronize the appropriate and efficient warehouse design with the automotive material handling process, waste elimination in warehouse design can be achieved.

In this case the automotive manufacturer's name is "ABC Company". The company is an automotive assembly plant. The two production lines are product A and product B.

The production process is separated into 3 main parts; the Body shop (Pressing and Welding), the Paint shop (Painting), and the Assembly plant (Trim and assembly). The markets are both domestic and foreign. The ultimate goal for the company is customer satisfaction.

Material handling is one of the departments in this company whose responsibilities include the warehouse management. The current business of the material handling department is operating the movement of raw materials and information flow.

The warehouse of the ABC Company can be divided into 5 areas.

- 1) Body shop – Product A
- 2) Body shop – Product B
- 3) Press shop
- 4) Assembly shop – Product A
- 5) Assembly shop – Product B

In this case, product A, assembly shop area is selected to study due to its high amount of SKUs and the various models produced.

## **1.2 Statement of the problem**

The problem statement can be divided into two parts. First, current material storage space for run-out models has been occupied by materials for other product production and future model, in order to improve and offload materials quality guarantees for the product B production line. Second, the existing warehouse condition can not support the vehicle models proliferation and other purpose in the future. The study is how to design a warehouse and processes in order to utilize the existing warehouse to serve this expansion and adapt the design for handling projected requirement.

### **1.3 Objective of the study**

The objective of this study is to design a warehouse to support expandable stock keeping unit on the existing site which improves efficiency and effectiveness of plant material/information flow in the physical configuration and in the operation processes.

### **1.4 Scope of the study**

The scope of this study is to design a warehouse both physically and operationally for the automotive business in the example company. The study includes material handling for raw materials movement and flow of information in unloading, inspection, checking and put-away operations. Sample product 'A' general assembly was chosen as the sample section in this study.

### **1.5 Expected benefits**

This thesis study is expected to provide the knowledge to the author and academics in order to adapt warehousing concepts in other parts of manufacturing and is expected to be a useful source of warehouse design information to gain a reference model of warehouse design for better utilization and operation procedures which aligning to manufacturing.

The expected benefits from this thesis are expected to contribute to the company the following.

- 1) Improvement to movement of materials and information flow.
- 2) Developed warehouse design to be a reference warehousing model in the automotive business or related industries.
- 3) Improve efficiency and effectiveness in the warehouse.
- 4) Improvement of customer and user satisfaction.

## 1.6 Study procedure

The method of the study is planned into 6 procedures and schedules as follows:

### Step 1: Data collection and requirement analysis

- 1) Collect and study data from the related materials regarding the industrial warehousing and implementation.
- 2) Collect the base line data from the automotive warehouse and analyze the required information in warehousing design.

### Step 2: Development of the warehousing design

- 1) Study the tools to be used in this thesis from a warehouse perspective.
- 2) Develop the methodology that will be use to improve the current situation.

### Step 3: Introduce the developed design to users

- 1) Introduce and clarify methods of warehousing design.
- 2) Implement action to the case study company.

### Step 4: Evaluation of warehouse design

- 1) Gather the output data and evaluate the results.
- 2) Compare the improved method to the previous method.
- 3) Develop the control plan to maintain the improved result

### Step 5: Conclusion and recommendations

- 1) Summarize the study
- 2) Formulate suggestions

### Step 6: Thesis report preparation

- 1) Thesis writes up.
- 2) Prepare for presenting and final report