

CHAPTER 1

INTRODUCTION

1.1. Background

A manufacturing industry was aware about its products especially products that dealing directly with costumer. The main point of manufacturing industry succeeds the customer satisfaction then making quality control is one of the ways to test the characteristic and reliability of a product. Accompanied by good quality of product is expected that a product is capable to conserve in the market as well as to be safe to use.

Therefore, the use of scientific methods has been increased to identify risk and prevent failure of the project. Managing risk has become fundamental to successful project management, however techniques and tools for risk management that have developed and used to increase the chances of project success are not yet widespread or generally applied. The existing methods of risk assessment are appropriate for assessment hazards and their results can be used for management and decision making without concerning about control and the decrease of its consequences.

In consequences, quality control responsibility ensures the reliability of product which starts from design product. On the other hand, with regard to the construction project which is very expensive, the use of these methods will play an important role in performing better. One of the most famous methods is Failure Modes and Effects Analysis (FMEA). FMEA technique, systematically identifies activities which can reduce or eliminate the chance of potential error occurrence and will manage on the implementation and documentation of these activities. FMEA is a widely used evaluation method for both the automobile industry and other organization employing six sigma techniques and problem solving approaches. Properly applied, an FMEA can be a useful tool in organizing and pinpointing areas of highest concern and then for focusing effort and documenting result. (Crites, Kittinger, Des, & Drive, 2009). Based on Căndea, Kifor, & Constantinescu, 2014 FMEA is also a powerful and documented method used to define, identify and eliminate known and/or potential failures, problems and errors from the system, design, process and/or service before they reach the customer, even before they reach the mass production.

PT. Hyundai Indonesia Motor (PT. HIM) is one of honored automotive industry from South Korea which is producing cars. Their products are divided into two kinds of distribution. Products are sent to local and overseas customer. Actually, the biggest demand of production comes from overseas customer especially Thailand. For that reason, PT. HIM should provide the products of cars which are dependable and trustworthy. The comparison of demand both domestic and non-domestics will be shown in histogram Figure 1.1.

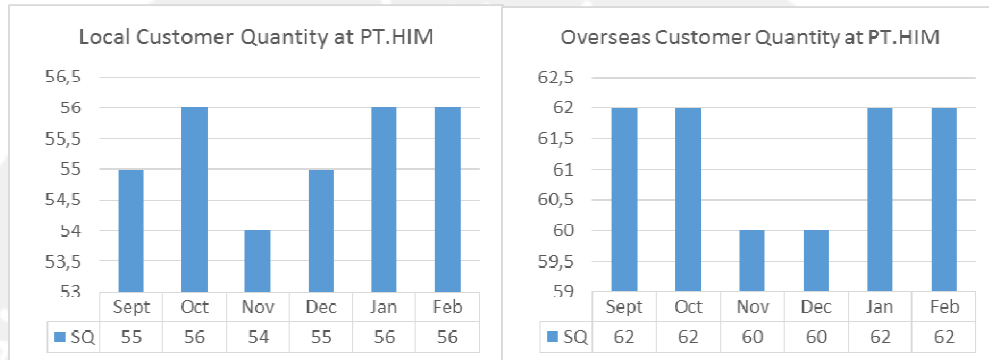


Figure 1.1. Comparison Selling Quantity between Import and Export Distribution (Sept'15 – Feb'16)

In the obtained internship occasion, unexpectedly there is any complains from customer that should be answered at that time. The complains is email from distributor from Thailand which complain about one important part of Hyundai H-1 named Identification Number Plate (ID Plate). Furthermore, the foreign products have a special part which is called as ID Plate. ID Plate is a critical piece of information for identifying the exact car that customer have. The information is consisting of vehicle identification number (VIN), engine type, transmittion type, axle type, paint type, service vehicle contract type, model vehicle number, and mode vehicle date release. VIN is an automotive equivalent of human DNA. According to (Pandian & Ali, 2014) VIN characters may be capital letters A through Z and numbers 1 through 0; however, the letters I, O and Q are never used in order to avoid mistakes of misreading. No signs or spaces are allowed in the VIN. The position of each letter or number in the VIN code reveals important information about where and when your car was made, the type of engine it has, the models or series of the car, various equipment/attributes and its production sequence. ID Plate position is in the left side of vehicle Hyundai H-1 especially in the bottom between first left door and second left door. Figure 1.2 expresses the position of ID Plate in vehicle Hyundai H-1. Because the products will be sent to

foreign countries which have different regulation, it makes PT. HIM should represent the information clearly.



Figure 1.2. The position of ID Plate in Vehicle Hyundai H-1

In an effort to expand the product of PT. HIM has cooperative relationship with foreign country such as Thailand. PT.HIM also makes Indonesian product that can be accepted on the foreign country with proper foreign standardization. The numbers are assigned based on an ISO 3779 - 1983 standard which allows for universal identification worldwide. In hoping for the production to be appropriate with the customer satisfaction. Therefore, this research will describe about how to minimize those failures especially in the process and design of making ID Plate then identifying the minimum failure of ID Plate part that may occur. Failure modes, effects of failures, and the cause of the failure of the analyzed using Failure Mode and Effects Analysis (FMEA), with based on a sequence the value of the Risk Priority Number (RPN) to limit certain value (Shebl, Franklin, & Barber, 2012).

1.2. Problem Formulation

In order to specify the background that any complain about defective products occur in part ID Plate, there are two problem statements that should be answered in this research. The first question is how to investigate main problem in ID Plate

part by using design and process FMEA method and the second question is what corrective action needed in specify increasing quality of ID Plate.

1.3. Objectives

There are three objectives to accomplish both problems formulation statement that represent the problem background relating to eliminate failures mode by using design and process FMEA. First is identifying effect, causes, and currently detection of failure mode part ID Plate. Taking an action to reduce failure mode discovered unexpectedly becomes the second objective. The last is making comparison before and after implementing FMEA.

1.4. Scope and Limitation

Some scopes which are to limit the discussion and the objectives of this research are in the following:

- a. The object of the research which is part ID Plate with the main product of Hyundai H-1 that has phantom black (PB) color. They produced by PT.HIM which is located at Jl. KH Wahab Affan Bekasi,
- b. Observation activity which is specified to the design and process done on July 2015 – October 2015 and continued on February 2016 – March 2016,
- c. PT.HIM limited the sample of data is only 10% from the existing population,
- d. FMEA consensus consisting of one student, unit staff of Quality Assurance PT.HIM (1 Dept. Head, 1 Inspector, 1, Auditor) and is supervised by thesis supervisor,
- e. Research object taken is ID Plate part which only provided for export product because it has higher selling and has any complain directly from many customer on Thailand, and
- f. The method used is only limited to the Failure Method Effect and Analysis (FMEA) especiallt focuses on design and process FMEA type.