

CHAPTER I INTRODUCTION

I.1 Background

Indonesia's manufacturing industry is currently growing rapidly, marked by increasing industries in the same field. Industrial development in the same field makes every industry increasing performance to achieve goals. So every industry has their own competitive strategy so that goals can be achieved and companies can defend themselves. However, the growth of the manufacturing industry is often has increased and decreased over a period of time, this is due to the changing market needs keep up with the changing times. There is an industry that is out of business because it is considered to be no longer needed however, there are industries that are maintained and growing because their products are still needed in the market.

Ceramic industry in Indonesia has developed. This is due to the increasing number of property businesses in Indonesia. The development of the property business resulted in the need for ceramics such as Ceramic tile, tableware and sanitary. Based on the Asosiasi Aneka Industri Keramik Indonesia (ASAKI), in 2016 Indonesia was listed as the top ten producing countries of ceramic tiles. Compared with other ASEAN countries, Indonesia's ceramic tile production is still the highest. Can be seen in Table I.1 until the year 2016 recorded that production of Indonesian ceramic tile is the highest among other ceramic.

Table I.1 Indonesia's Ceramic Production 2016 (ASAKI, 2016)

Ceramic Commodity	2015	2016
Ceramic Tile	400 million m ²	350 million m ²
Tableware	290 million pcs	275 million pcs
Sanitary	5,4 million pcs	5,1 million pcs
Rooftile	120 million pcs	100 million pcs

PT XYZ is a company engaged in the production of ceramics located in Setia Mekar Street Km 38-39 East Bekasi. In 1993, PT XYZ officially started producing ceramic tiles with a production capacity of approximately 8000 m² / day. With the rapid

development of the world of ceramics, both in terms of design, applied technology is used and variations in the type of customer demand to encourage PT XYZ to keep abreast of these developments. PT XYZ has been producing ceramics with size 20 cm x 20 cm; 20 cm x 25 cm; 40 cm x 40 cm; 25 cm x 40 cm; 25 cm x 25 cm with surface type emboss and flat. Machines used to produce ceramic tile PT XYZ consists of five machines namely Press Hydraulic, Sorting Spiral, Ball Mill Glaze, Ball Mill Body, and Kiln.

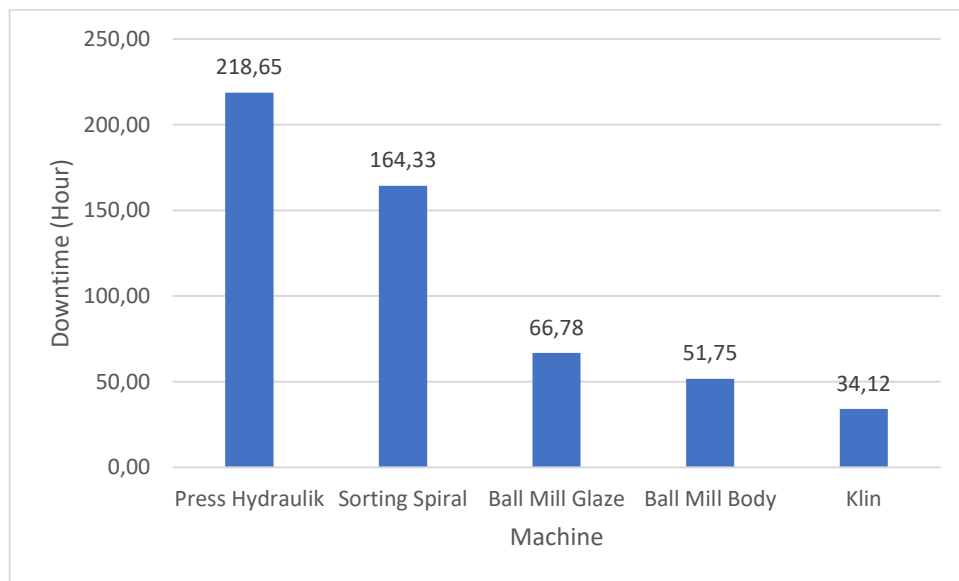


Figure I.1 Downtime Ceramic Machine (per Hour)

Figure I.1 describe the downtime of Ceramic Machine in PT XYZ from September 2015 – September 2017. Press Hydraulic has the highest downtime than the other machine and based on the maintenance team of PT XYZ, Press Hydraulic is one of the important and critical machines in ceramic production because if Press Hydraulic is failed then the production process stops. In general, if a device has used in the long term, their performance will decrease and require a maintenance program to keep the performance well with a reasonable level of reliability (Alhilman *et al.*, 2015). The high downtime caused by various things, one of them is the unavailability of a spare part in the warehouse. So based on that problem and Figure I.1, Press Hydraulic will be used for this research and use Reliability Centered Maintenance (RCS) and Inventory analysis to solve the problem.

Reliability Centered Spares (RCS) method is used to determine the right stocking level for each component required for maintenance and operational activities. By determining the right stocking level, then the company will be able to increase the effectiveness of purchasing spare parts and can reduce the inventory/purchase spare part that is not needed.

I.2 Problem Identification

The problem that will be discussed in this research are:

1. What are the critical components of Press Hydraulic machine at PT XYZ based on the analysis of Reliability Centered Spares (RCS)?
2. How many needs of each critical component of Press Hydraulic machine at PT XYZ?
3. How is inventory strategy and how much is the total inventory cost of each critical components of Press Hydraulic machine in PT XYZ?

I.3 Research Objectives

Based on the problem identification, the objective of this research are:

1. Determining the critical component of Press Hydraulic machine at PT XYZ using Reliability Centered Spares.
2. Determining the number of needs of each critical component of Press Hydraulic machine at PT XYZ.
3. Determining inventory strategy and total inventory cost of each critical component of Press Hydraulic machine at PT XYZ.

I.4 Research Limitations

The limitations of this research are as follows:

1. The data used is downtime data from September 2015 – September 2017 that found in PT XYZ.
2. The object of this research is the Press Hydraulic.
3. The output of this research will not be implemented to PT XYZ.

I.5 Research Benefit

Benefits of this research are:

1. This research can be used as an additional knowledge and its application of maintenance management based on the real problem.
2. PT. XYZ can get the information about a critical component in the Press Hydraulic Machine.
3. PT. XYZ gets the recommendation of inventory management activities spare on the critical component that appropriate for Press Hydraulic Machine.

I.6 Writing Systematic

In this chapter explains about systematics sequence of this research is as follows:

Chapter I Introduction

In this chapter contains background research, problem identification, research objectives, research limitations, research benefit, and writing systematics.

Chapter II Literature Review

In this chapter contains the literature and resources in accordance with the problems studied. Theories used in this study include the basic theory of recognizing maintenance, reliability, Reliability Centered Spares, Poisson process, and inventory policy.

Chapter III Research Methodology

This chapter describes the detailed stages of research on the problem under study. Stages of this study include the problem formulation, the collection of data required, data processing, and the last is the analysis phase of the results of data processing then made the conclusions.

Chapter IV Data Collecting and Processing

In this chapter discussed the data that have been collected, both historical data and interview data, which then processed to answer the purpose of this study.

Chapter V Analysis

In this chapter, an analysis of the results of data processing that has been done in the previous chapter using Reliability Centered Spares and Inventory methods.

Chapter VI Conclusion and Suggestion

In this chapter contains the conclusions of the research and suggestions for the company as well as for further research.