

CHAPTER I

INTRODUCTION

This chapter explains about research background, formulations of problem, research objectives, advantages of study, limitations of research, assumptions of the problem and the systematics of research-writing.

1.1 Background

The industries growth in Indonesia creates a tighter competition between corporates, especially on automotive manufacturing industries. In every year, the number of the sale always increase The next data obtained from GAIKINDO (The Association of Indonesia Automotive Industries) about car sales in 2015 until 2018 show:

Table 1.1 Summary of car sales in Indonesia

Total of Vehicles (Units)			
2015	2016	2017	2018
1013513	1062694	1077365	1151291

(Source: GAIKINDO, 2019)

Table 1.1 shows that car sales in every year has improvement with average increase in each year 4,4%. As many demands on car sales force car manufacturing company to fulfill the demands. To fulfill the demands car company has several company partners to make parts of car one of them is rims.

PT. XYZ is one of the companies which produce car rims. This company become supplier for some car manufacturers. The company founded in 2001 still has constraints in fulfilling production targets. For example in Casting Department, this department works for casting rims in LPDC machines which used to make rims. It can be seen from production reports from May to July in the year 2018 below:

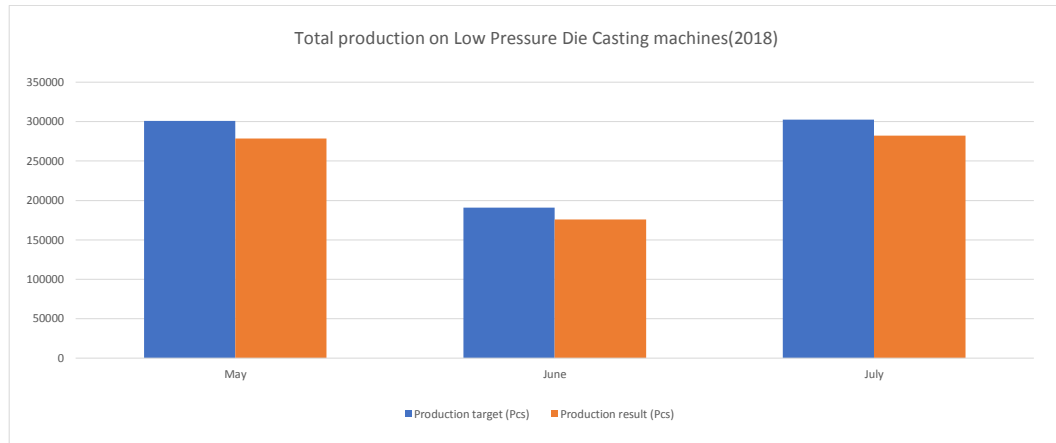


Figure 1.1 Total production on LPDC in three months

Figure 1.1 shows the number of total production from Low Pressure Die Casting (LPDC) machines in three months. In May the company has target to reach 300.891 units rims but the result is 278.627 units only 92% target reached, in June the company has target to reach 190.987 units rims but the result is 176.069 units only 92% target reached and in August the company has target to reach 302.568 units rims but the result is 282.166 units only 93% reached. This results come from several factors one of them is from LPDC machine factor such as the length of downtime, the length of maintenance or many replacement on mold. LPDC machine is main machine in Casting Department because this machine used to make rims, its mean if the machine has problem it will disrupt production process.

In addition, to the problems of production target, the percentage of LPDC machines downtime can also make the company suffered losses. The next is a downtime recapitulation on all LPDC machines for twelve months:

Table 1.2 Downtime recapitulation on LPDC machines for twelve months

Time		Downtime (Minutes)								Total Time (Minutes)	Downtime Percentage
Month	Year	Autonomous maintenance (5R)	Break	Preventive Maintenance	Change Type	Breakdown	Setting	Briefing	Material		
August	2017	20010	120060	10020	9439	8120	629	20010	16831	205120	21.36%
September		20700	124200	10380	9093	8400	606	20700	16216	210295	21.16%
October		21390	128340	10740	9701	8680	647	21390	16216	217103	21.15%
November		15870	95220	7980	9556	6440	637	15870	16953	168526	22.12%
December		20010	120060	10020	7773	8120	1036	20010	14067	201096	20.94%
January	2018	20700	124200	10380	9410	8610	627	20700	16788	211416	21.28%
February		19320	115920	9660	8825	7840	588	19320	15737	197211	21.27%
March		21390	128340	10740	9935	8901	662	21390	17718	219077	21.34%
April		20700	124200	10380	9459	8570	631	20700	16781	211421	21.28%
May		20700	124200	10380	9535	8500	636	20700	16917	211567	21.29%
June		13800	82800	6900	6049	5600	403	13800	10703	140055	21.14%
July		21390	128340	10740	9644	8825	643	21390	16937	217910	21.22%

On table 1.2 is downtime recapitulation on all LPDC machines. From the table it is known that average downtime on all machines give 20% influence from total working time. Two important aspects of productivity are effectiveness and efficiency. Effectiveness is an attempt to obtain a goal, outcome or expected target with a predetermined time without cost calculating (Zandin, 2004). Efficiency is an ability for how to get more results from the most minimum input amount (Gaspersz, 1998). This research is only focusing on effectivity machines measurement as base productivity machines improvement because this research is about achieving the production target that has been set on the LPDC machines.

Productivity problem on LPDC machine can be solved with use Overall Equipment Effectiveness (OEE) method to solve this case and to uncover the roots of the problem. OEE method is well known as main gauge of Total Productive Maintenance which gives information about how effectively the machine or equipment (O'brien, 2015). This method is part of the maintenance system implemented by the company in Japan, namely the Total Productive Maintenance (TPM) (Boris, 2006). The reliability of this method has been demonstrated from several studies raised in international journals. Bi-Objective Multiple Criteria Data Envelopment Analysis combined with the OEE: An application in an automotive company written by Aneirson Francisco Da Silva is an example of research that using the method of OEE.

Based on explanation it can be concluded that not fulfilled production target on LPDC machines caused by the decrease of productivity. The author decides to make research is entitled “The Measurement of OEE Score on LPDC Machines as Basic Productivity Improvement in PT. XYZ”.

1.2 Problem Formulation

Referring to research background then the problem will be discussed is the measurement of OEE score on LPDC machines which the OEE score used as basic productivity improvement. There are three problems to accomplish in this research:

1. What score of OEE on LPDC machines?
2. What is the main factor that cause losses on OEE score?
3. What is the recommendation to improve OEE score?

1.3 Research Objectives

The aims of the research can be explained as follows:

1. Measure the OEE score on LPDC machines.
2. Assess six big losses on LPDC machines.
3. Provide proposed improvement to increase machine OEE score.

1.4 Research Benefits

The research benefits of the research has two sides coming from academic and companies that can be explained as follows:

a. Academic

The advantages obtained for academic base on this research can be explained as follows:

1. The author can apply the existing sciences to the world of education with the problems that exist in the industries directly.
2. The results can be used as a reference or information on further research.

b. Company

The advantages obtained for company base on this research can be explained as follows:

1. Deliver productivity measurement information on LPDC machine.
2. Provide information from the root of the problems faced.
3. Give the proposed improvements of the case.

1.5 Limitations

The limitations that can be gained through this research are as follows:

1. This research focuses only on LPDC machine.
2. The study not discuss about the total cost.
3. Data taken in this study is secondary data for one year on LPDC machines.

1.6 Assumptions

The assumptions of the research to be conducted can be explained as follows:

1. Within the observation period, there is no problem on raw materials supply.
2. Within the observation period, it is assumed that working process is in normal condition.

1.7 Writing Systematics

Systematic of writing used by the author in this study can be explained as follows:

CHAPTER I INTRODUCTION

Chapter one is an introduction that describes the background of the research, problem formulations, research objectives, the benefits of the research, the limitations and systematics research writing.

CHAPTER II LITERATURE REVIEW

Chapter two about literature review that describes the basic theory is used in the study. In this chapter also describes the previous research has in common from research that has been done.

CHAPTER III RESEARCH METHODOLOGY

Chapter three of research methodology that describes the about the variables of research, time and place of research, the object of research and flowchart of research.

CHAPTER IV RESULTS AND DISCUSSION

Chapter four aims to find out the results and discussion on research in the form of data processing and analyze the results of data processing.

CHAPTER V CONCLUSIONS AND SUGGESTIONS

Chapter five explain the conclusions that can be taken by author to the results of data processing and provide advice for the company and further research.