CHAPTER I

INTRODUCTION

1.1 Background of the Study

Continues galvanizing line (CGL) machine is a machine that produces galvanized iron (GI) by immersing strip of coil into zinc alloy liquid. The galvanizing process of CGL machine in PT XYZ use *continuous* hot dip galvanizing as the coating process. The process convert cold roll coil material into galvanized iron coil. As the name implies, continuous hot-dip coating involves the application of a molten coating onto the surface of steel sheet in a *non-stop process* (GalvInfo Center, 2007).

To make sure that the galvanizing process in CGL runs continuously, a *welding machine* is equipped to join the tail end of the preceding coil and the head end of the succeeding coil. CGL machine uses two decoilers side by side called Pay of Reel. The pay off reel receives coil from coil car and hold the coil to feed the line. When the preceding coil is almost run out, the succeeding coil is ready to be processed.

When the line is stopped for welding, the preceding coil strip being cut at the double cut shear and the tail end of preceding coil is threaded to the welder and clamped. Then the head end of the succeeding coil is threaded to the welder, lapped and clamped. The two ends of the coil are welded by the *welding wheel*.

Double pass system is applied from the pay off reel to the welder to feed the material coils continuously. To keep the strip continues to run in the next process at CGL machine while the strip is stopped in the entry section for welding, there is delivery

looping car system. Delivery looping car system will stock some length of strip for the next process while the entry section is stopped for welding. After the strip welded in entry section, the stock of strip in delivery looping car that used at welding restored its length to be used in the next welding process.

If the welding processes fails and the stock of strip in delivery looping car runs out, then the operation in CGL machine that supposed to be continuous will be stopped. The consequences if CGL machine stopped in the middle of operation is very high, the strip that still in the middle of CGL machine (annealing furnace, zinc pot, post treatment) is defect and will be classified as scrap. The time to recover and install a new strip inside the CGL machine is long enough, and it will ruin the entire schedule that has been made until Finishing Line, the impact is like chain effect that will cost PT XYZ a lot.

The welding wheel that used in welding machine, when used it will erode bit by bit until the diameter is too small to be used. So the welding wheel needs replacement when the condition is not appropriate again to produce a good quality of welding. The original welding wheel itself purchased from Japan, the price is very expensive and the lead time to buy the material takes few months to be delivered, moreover the producer in Japan consider not to produce that type of welding wheel anymore by the end of year 2010. This condition need to be solved because the welding activity is very essential to make the process in CGL machine runs continuously, without an appropriate welding wheel in welding machine the CGL machine cannot be run.

Finally, the purpose of this research is to make a new welding wheel that suite the welding machine qualification to substitute the welding wheel that produced in Japan and eliminates the issue that mentions above. So, how to make a welding wheel that suite the welding machine and other parameters that make the new welding wheel electrode have the same performance with the original Japan's made welding wheel electrode is the question that need to be answered in this research.

1.2 Problem Statement

Based on the background of the study, the problem statement of this research can be defined as follow:

- 1. How to make a domestic welding wheel electrode that can substitute the original Japan made welding wheel electrode?
- 2. Define the quality and performance of domestic welding electrode compared to the original Japan made welding electrode!
- 3. Define the price of domestic welding electrode compared to the original Japan made welding electrode!

1.3 Objectives of the Research

- 1. To make a domestic welding wheel electrode that can substitute the original Japan made welding wheel electrode.
- 2. To define the quality and performance of domestic welding electrode compared to the original Japan made welding electrode.
- 3. To define the price of domestic welding electrode compared to the original Japan made welding electrode.

1.4 Significance of the Research

After this research is done, it will give significance benefit as stated below:

- 1. The company can replace the original Japan made welding electrode with domestic welding electrode.
- 2. The quality and performance of domestic welding electrode compared to the original Japan made welding electrode is defined.
- 3. The price of domestic welding electrode compared to the original Japan made welding electrode is defined.

1.5 Scope of the Research

The scope of the research will be stated as follows:

- 1. The research placed in PT. XYZ at Continuous Galvanizing Line machine.
- 2. The welding wheel electrode design and parameter subjected to welding machine in Continuous Galvanizing Line Machine.
- 3. The welding machine made specifically to weld strip of coil.
- 4. The data gathered from January 27, 2010 until February 26, 2010.

1.6 Outline of the Research

In order to get a well structured research report, hence the research outline will be continued as follows:

CHAPTER II LITERATURE REVIEW

This chapter contains the basic theory and the theoretical review of the research problem, explanation about the basic concepts about the topic and support to the research performed, and the related works.

CHAPTER III RESEARCH METHODOLOGY

This chapter contains a detailed series of steps of the research, research variable, research procedure, data collecting method, data processing method, and analysis method.

CHAPTER IV DATA COLLECTING AND PROCESSING

Explain about the data of the research, processing the data using the methods that detemined by the analysis result to get the final answer.

CHAPTER V DISCUSSION

This chapter contains result, analysis and interpretation about the data processed.

CHAPTER VI CONCLUSION AND SUGGESTION

This chapter consists about the summary of the research study that has been done, the recommendation for the company and for further research study.

