

CHAPTER I

INTRODUCTION

The introduction for this research contains background, the formulation of the problem, research objectives, the benefits of research, problem definition and assumptions to be done in this research.

1.1 Background

The development of the industrial world today bringing a change to economy matters of countries and to prosperity of workers. The use of modern equipment on the one hand will provide convenience to the process of production and productivity of workers. But on the other hand have the possibility to increase worker health and safety risks arising from the employment relationship (Joseph, 2013).

Technological development in the construction sector which is more advanced can not be separated from the welding because it has an important role in the engineering and metal repair. Construction with metal at the present time involves a lot of welding, especially the construction design sector for welding joints is one of making connections that technically requires high skills of the welding in order to obtain a connection with good quality (Joseph, 2013).

The scope of the use of welding techniques in the construction of a very broad include shipbuilding, bridges, steel structures, pressure vessels, transportation, rail, pipelines etc. Factors affecting the welding is the welding procedure that is a plan for the implementation of the research which includes how to manufacture welding construction in accordance with plans and specifications specify all the necessary things in the implementation.

Based on the background that has presented, research to be conducted that is in laboratory using factorial Completely Random Design (CRD) Design Of Experiment. Researcher want to see the influence of independent variables on the dependent variable is whether the types of cooling (X1), types of groove welding (X2) and welding currents (X3) affect to distortion of welding (Y).

1.2 Problem Formulation

The formulation of the problem formulated by the researchers as follows:

1. What is types of cooling affect to distortion of welding.
2. What is types of groove welding affect to distortion of welding.
3. What is welding currents affect to distortion of welding
4. What is types of cooling and the types of groove welding affect to distortion of welding.
5. What is types of cooling and welding currents affect to distortion of welding.
6. What is types of groove welding and welding currents affect to distortion of welding.
7. What is types of cooling, the types of groove welding and welding currents affect to distortion of welding.

1.3 Research Objectives

The aim of the research are:

1. To know magnitude contribution factor types of cooling, types of groove welding, and welding currents affect to distortion of welding.
2. To determine a combination of factors types of cooling, types of groove welding, and welding currents, to produce optimum results welding on the welding process, so as to minimize any defects in welding.

1.4 Benefits Of Research

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

1. Knowing the magnitude of the contribution factor types of cooling, welding groove types, and welding currents affect to distortion of welding.
2. Determine a combination of factors types of cooling, welding groove types, and welding currents, to produce optimum results welding on the welding process, so as to minimize any defect distortion in the welding.

1.5 Limitations

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

1. Do not discuss costs during the welding process.
2. The material used is the type of ST 37 steel plate length of 85 mm, width 50 mm, and a thickness of 5 mm.
3. The electrodes used to use a diameter of 2,6 mm.
4. Type seam welding is used seam V.

1.6 Assumptions

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

1. The machine and operator in good condition during the machining process.
2. Measuring instrument used in proper condition and calibrated.
3. The room temperature is considered same.