

ABSTRACT

Gus Gianto, 2019 :Effect of Current Strength on the Tensile Strength of St 37 Carbon Steel Using Metal Arc Welding Shield

The use and utilization of steel in the industrial world is very broad in use because steel has unique properties, especially because of the strength it has. This is one of the factors that causes steel to be widely used for the manufacture of tool steel equipment and the main components of various machine tools in machining. All of this tooling equipment cannot be separated from the engineering process and repairs in the event of damage ie by welding. One procedure that must be considered in welding is the selection of the right current based on material thickness and electrode diameter. However, many welders in the field do not pay attention to current selection standards based on the thickness of the material and the diameter of the electrode. The purpose of this study was to determine whether there was an influence of the welding current on the tensile strength of the ST 37 carbon steel produced by Shield Metal Arc Welding (SMAW).

This research is an experimental research that analyzes the tensile strength of Shield Metal Arc Welding (SMAW) welding results against ST 37 carbon steel using variations of five welding currents, namely: 120 A, 150 A, 180 A, 220 A and 250 A. The specimens used from material in the form of ST 37 steel plate with a thickness of 8 mm that has been welded using E 6013 electrodes with a diameter of 4 mm.

The results of the research have shown that the average value of tensile strength of control specimens is 42.835 kg / mm², then the average value of tensile strength using 120 A current is 46.236 kg / mm², 150 A current is 44.536 kg / mm², current is 180 A is 45,067 kg / mm², 220 A current is 44,004 kg / mm² and 250 A current is 44,748 kg / mm². The results of welding with E 6013 electrodes having an ideal tensile strength are with a welding current of 180 A, this is because the current 180 A is the current entering the standard welding current for objects thickness of 8 mm.

Keywords: Current Variations, Tensile Strength, Welding, E 6013, Las SMAW