

The Effects of Current Variations on Tensile Strength, Hardness and Micro Structure of SMAW Welding Joints with V Seam in Low Alloy Steel

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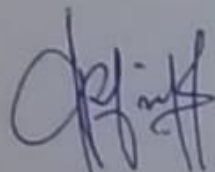
Abstract

Technology development in the increasingly advanced construction field cannot be separated from welding because it has an important role in metal engineering and repair. The construction of metal construction at this time involves a lot of welding elements, especially in the field of design because the welding connection is one of the processes which technically requires a high skill for the welders to obtain a good quality connection. The scope of using of welding techniques in construction is very broad including shipping, bridges, steel frames, pressure vessels, transportation facilities, rails, pipelines and so forth.

The purpose of this study is to prove the effect of welding current variations on the tensile strength of weld joints and to get good welding currents in low alloy steel welding with SMAW welding. The tensile test showed that low alloy steel with a current variation of 100 Ampere is better and more efficient because it produces a higher tensile strength compared to current variations of 60 Ampere and 80 Ampere. In the Rockwell 100 Ampere hardness test, the result is 53.5 HRC. The results of the photo micro current structure of 100 Ampere in the area of raw material has a fine grain microstructure, the HAZ area has a coarse grain micro structure, the weld area has a coarse grain structure and coagulate.

Keywords: SMAW welding, physical and mechanical properties, low alloy steel

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