International J. of Engg. Research & Indu. Appls. (IJERIA). ISSN 0974-1518, Vol.6, No. II (May 2013), pp 119-127

OPTIMIZATION OF ARC METAL WELDING PROCESS OF LOW CARBON STEEL (304) USING TAGUCHI APPROACH

MAJID HAMEED ABDULMAJEED

Materials Eng. Dept. /University of Technology, Baghdad, Iraq.

Abstract

This work includes an investigation of the effect and optimization of welding parameters on the tensile strength in the arc metal welding process. The experimental studies were conducted under varying welding currents, Wire diameters, and heat input. The settings of welding parameters were determined by using the Taguchi experimental design method. The level of importance of the welding parameters on the tensile strength is determined by using analysis of variance (ANOVA). The optimum welding parameter combination was obtained by using the analysis of signal-to-noise (S/N) ratio. The tensile strength model was formulated based on Analysis of Variance (ANOVA) using Minitab® statistical package. The experimental results confirmed the validity of the used Taguchi method for enhancing the welding performance and optimizing the welding parameters in the arc metal welding process.

Keywords: Arc metal welding, tensile strength, optimization, modeling.

© http://www.ascent-journals.com