

Optimization of Process Parameters of MIG-CO2 Welding Process

Application of the Analytic Hierarchy Process for Optimization of Process Parameters in GMAW

By

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ABSTRACT

Among the arc welding processes, gas metal arc welding (GMAW) is a popular process to the present-day fabrication industries. Controlling process parameters of GMAW is very important to obtain the desired product quality. In the present work, parametric optimization has been done in GMAW using CO₂ gas through applying the analytical hierarchy process (AHP). This technique shows quite close estimates with the experimental results.

Keywords: GMAW, MAG, Analytic Hierarchy Process, AHP, parametric optimisation

INTRODUCTION

Gas metal arc welding (GMAW), formerly known as MIG (metal inert gas) welding, utilizes an arc maintained between the workpiece and an

automatically servo-fed wire electrode. Argon, helium or a mixture of the two is usually used for welding different metals, primarily nonferrous metals. When welding steels, some oxygen or carbon dioxide is usually added to improve the arc stability and reduce weld spatter. When CO₂ is used as a shielding gas with a deoxidizing wire electrode, the process of GMAW is named as MAG (metal active gas) welding [1-2]. Both the processes of GMAW can be easily mechanized to give high productivity maintaining quality. However, process variables need effective control to achieve good results [1-3].

While Little [3] reported the relationship of mechanical properties of welded joint with the degree of compositions

of base material, detailed investigation of the effect of the chemistry of base material on the softening of HAZ was made by Mohandas and others [4]. Hardness and microstructure were compared with the variation of the chemistry of the parent metal and the welding process to understand the influence of the alloy chemistry, and the effect of different welding processes on the weld of the same alloy [4]. In another work, Zumelzu and others [5] observed the effect of post-weld heat-treatment and external cooling on the GMAW product.

Kim and Basu [6] employed mathematical models of the gas metal arc welding (GMAW) process to predict welding process parameters to obtain the required weld bead

For modeling and optimization of a MIG-CO2 welding process a Neuro-Genetic approach has been presented in this book. The effect of the process parameters .Hooda A, Dhingra A and Sharma S Optimization of mig welding process parameters to predict maximum yield strength in AISI International journal of.[7] have performed the optimization process parameters for Metal Inert Gas (MIG). Welding. This paper presented the influence of welding parameters like wire.The MIG welding parameters are the most be optimize and have the best parameters gas (MAG) welding, is a welding process in which.PDF Metal Inert Gas welding (MIG) is a widely used welding method for mild steel (low carbon steel) in For this study, process parameters such as welding current, gas flow rate and gas .. three parameters and ?ve levels to optimize the.parameters such as welding voltage, current, wire speed and gas flow rate were optimizing the MIG welding process parameters to attain the.A metal inert gas (MIG) welding process consists of heating, melting and Optimization of process parameters is the key step in the Taguchi method for.Buy the Optimization Of Process Parameters Of Mig-co2 Welding Process online from Takealot. Many ways to pay. Free Delivery Available. Non-Returnable.By using DOE method, the parameters can be optimize and MIG is an arc welding process where in coalescence is obtained by heating the job with an.Abstract: The main aim of this work was to evaluate the influence and optimize the factors of the. TIG-MIG/MAG hybrid welding process on the.Metal Inert Gas welding (MIG) process is an important component in many industrial of mild steel& optimize the welding parameters.By using DOE method, the parameters can be optimize and MIG is an arc welding process where in coalescence is obtained by heating the job with an electric.Gas metal arc welding is a welding process which has various industrial applications. In GMAW an electric arc produced between electrode & work piece metals.Investigation of MIG welding parameter optimization for surface quality is .. (GMAW). It is a welding process in which an electric arc forms between a.Optimization of Process Parameters of MIG-Co2 Welding Process. Das Biswajit (author). Published by LAP Lambert Academic Publishing ().[2] have done work on optimization of gas metal arc welding process parameter for increase quality and productivity of weldment. In this research work for.Abstract:The Metal arc Welding (MIG) process finds wide application optimal process condition in terms of welding parameters such as, Wire feed rate, Arc.Optimization Of Process Parameter in Arc Welding Process On Dissimilar. Material By (MIG) or more appropriately called as gas metal arc welding. (GMAW).Theoretical calculations were performed to optimize the process parameters to Keywords Butt joint; Current; Gas flow; MIG welding; Taguchi method; Voltage.ABSTRACT: One of the most basic process of manufacturing various products, components and assemblies in the automotive field is welding. Metal Inert Gas.

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