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Guided By

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Project Title

ANALYSIS AND PARAMETRIC OPTIMIZATION OF PLASMA ARC CUTTING (PAC) WITH MATHEMATICAL MODELING

Abstract:

In last forty years there is tremendous research in machining and development in technology. With increase in competition in market and to attain high accuracy now a days the nonconventional machining are become lifeline of any industry. One of the most important non-conventional machining methods is Plasma Arc Machining. Its high accuracy, finishing, ability of machining any hard materials and to produce intricate shape increases its demand in market.

In project work literature has been studied in context to parametric Optimization of Plasma Arc Cutting Machine. In order to attain target and optimum results, Taguchi method employed. The appropriate orthogonal array has been selected as per number of factors and there levels to perform minimum experimentation. Experimental analysis of plasma cutting performs to the optimization of the machining parameters of Plasma Arc Cutting Machine to significantly improve optimum level of Material Removal Rate (MRR) and Surface Roughness (Ra) in the Plasma Arc Cutting

The work pieces of hot die tool steel (AISI H11 alloy steel) materials were used for experiment purpose. The optimum value has been determined with the help of main effect plot and ANOVA table. The Regression equation for Surface Roughness (Ra) and Arc gap has been developed with the help of Minitab 15 Software.

Grey Relational Analysis method used to find Optimum Parametric setting for PAC of H11. GRC and GRG value of experiment will find and its higher value of GRG shows that the optimum parametric Setting.

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