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Guided By

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Project Title

ANALYSIS AND PARAMETRIC OPTIMIZATION FOR C-45 MATERIAL ON WEDM WITH MATHEMATICAL MODELING BY D.O.E. APPROACH

Abstract:

Wire-cut Electrical Discharge Machining (WEDM) is extensively used in machining of conductive materials producing intricate shapes with high accuracy. This study exhibits that WEDM process parameters can be altered to achieve betterment of Material removal rate (MRR), Surface Roughness (SR). The main goals of WEDM manufacturers and users are to achieve a better stability and higher productivity of the WEDM process, i.e., higher machining rate with desired accuracy and minimum surface damage. However, due to a large number of variables and the stochastic nature of the process, even a highly skilled operator working with a state-of-the-art WEDM is unable to achieve the optimal performance and avoid wire rupture and surface damage as the machining progresses.

In project work literature has been studied I context to optimization of Wire-cut EDM. In order to attain optimal 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 Wire-cut EDM performs to the optimization of the machining parameters of Wire-cut EDM machine to significantly improve optimum level of Material Removal Rate (MRR) and Surface Roughness (Ra) in the WEDM.

The work pieces of c-45 steel materials were used for experiment purpose. The optimum value has been determined with help of main effect plot and ANOVA table. The Regression equation for MRR and Surface Roughness (Ra) has been developed with the help of Minitab 17 Software.

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