

MULTI-PARAMETER ANALYSIS AND MODELING OF AISI D2 IN ELECTRO DISCHARGE MACHINING

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Abstract

Whereas the efficiency of traditional cutting processes is limited by the mechanical properties of the processed material and the complexity of the workpiece geometry, electrical discharge machining (EDM) being a thermal erosion process, is subject to no such constraints. Very little work has been carried out to evaluate the Tool wear ratio and Radial over cut. This paper highlights the development of a comprehensive mathematical model for correlating the interactive and higher order influences of various electrical discharge machining parameters like current (Ip), Spark on time (Ton), Spark off time (Toff), and Gap voltage (V) through response surface methodology (RSM), utilizing relevant experimental data as obtained through experimentation of Tool wear ratio (TWR) and Radial over cut (G). The adequacies of the above proposed model have been tested through the analysis of variance (ANOVA).

Keywords: EDM, Response surface methodology, Central composite design.