

An Investigation on Material Removal Rate of EDM Process: A Response Surface Methodology Approach

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Abstract : In the present work response surface methodology (RSM) based central composite design (CCD) is used for analyzing the electrical discharge machining (EDM) process. For experimentation, mild steel is selected as work piece and copper is used as electrode. Three machining parameters namely current (I), spark on time (T_{on}) and spark off time (T_{off}) are selected as the input variables. The output or response chosen is material removal rate (MRR) which is to be maximized. To reduce the number of runs face centered central composite design (FCCCD) was used. ANOVA was used to determine the significance of parameter and interactions. The suitability of model is tested using Anderson darling (AD) plot. The results conclude that different parameters considered i.e. current, pulse on and pulse off time; all have dominant effect on the MRR. At last, the optimized parameter setting for maximizing MRR is found through main effect plot analysis.

Keywords : EDM, electrode, MRR, RSM, ANOVA

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