

MULTIPLE OPTIMIZATION FOR MILD STEEL ON ELECTRIC DISCHARGE DRILLING BY TAGUCHI GREY RELATIONAL THEORY

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ABSTRACT

The main object of the present work was to optimize the quality characteristics like hole circularity hole dilation and overcut. Electrical discharge drilling (EDD) has become a widely accepted non-traditional material removal process for machining conductive and difficult to cut materials effectively and economically. In this research paper, the experiments have been conducted by well-planned orthogonal array L27 in the electrical discharge drilling of mild steel sheet. A brass rod of 2 mm diameter was selected as a tool material and 2mm thick sheet of mild steel as a workpiece material. The experiments generate output responses such as hole circularity, hole dilation and overcut, and best input parameters such as discharge current, pulse on time, pulse off time, and dielectric pressure. In this paper, the use of Taguchi based grey relational analysis approach for better quality parameters in mild steel sheet. Analysis of variance (ANOVA) shows the percentage contribution of the control factor in the machining of mild steel in EDD.

Keywords: Electrical Discharge Drilling, Hole Circularity, Hole dilation Overcut, Taguchi method, Grey relational analysis

