

Abstract Details

Title: Analysis of electrode wear rate on edm of o1 tool steel using electrolytic copper electrodes

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Abstract : EDM is efficiently employed to manufacture complex and delicate shapes, machining of hard materials, machining deep holes while maintaining close tolerances. However, inappropriate machining parameter selection results in slow rate of MRR (material removal rate), excessive electrode wear and poor surface finish. This paper aims to generate a mathematical model for analysing the effects of current, pulse-on time and pulse-off time on electrode wear rate. The study was carried out on Electronica-S50 CNC machine using Taguchi's experimental configuration. Regression models for non-linear environment were generated to determine the impact of machining variables on the EWR of copper while machining O1 Tool Steel material. The application of ANOVA on the formulated regression models revealed critical information about levels of variability and forms the basis of tests of significance.

Keywords: Electrode wear rate(EWR), Pulse-on rate(Ton), Pulse-off rate(Toff), current (I), Taguchi, ANOVA