

Performance study of WEDMed on Inconel 718 by using response surface methodology

Abstract

The demand of high accuracy aerospace parts become important which is reflected by the machining process performances. Inconel 718 is a well-known superalloy in aerospace industries especially in turbine fabrication. The aim of this research is to study the performance of Wire-EDM process in term of material removal rate (MRR) and surface roughness. The constraints of the research focused to five parameters; pulse duration, pulse interval, peak current, servo voltage and flushing pressure. The relationship between MRR and surface roughness is presented which exhibit the behavior of the WEDM process. The MRR is calculated based on the measurement of kerf width and time. Surface roughness is measured using surface roughness tester in mean arithmetic roughness (Ra). The experiment data are analyzed using ANOVA in Response Surface Methodology (RSM). The result shows that the most significant parameter is pulse duration.

Keywords

Response surface methodology; Wire electrical discharge machining