

Article Abstract

Title:	Experimental investigations on machining characteristics of Al 6061 hybrid metal matrix composites processed by electrical discharge machining
Author(s):	C. Velmurugan ^{1*} , R.Subramanian ² , S.Thirugnanam ³ , B.Ananadavel ⁴
Address(es):	^{1*} Department of Mechanical Engineering, Kumaraguru College of Technology, Coimbatore, INDIA ^{2,4} Department of Metallurgical Engineering, PSG College of Technology, Coimbatore, INDIA ³ Department of Mechanical Engineering, Valliammai Engineering College, kattangulathur, INDIA *Corresponding Author: e-mail: c_velmurugan16[AT]yahoo.co.in, Tel +91-422-2669401, Fax. +91-422-2669406
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Abstract:	Metal matrix composites, in particular, Aluminium Matrix Composites are gaining increasing attention for applications in aerospace, defence and automobile industries. The use of nonconventional machining techniques in shaping aluminum metal matrix composites has generated considerable interest as the manufacturing of complicated contours such as dies. Electrical discharge machining (EDM) appears to be a promising technique for machining metal matrix composites. The objective of this work is to investigate the effect of parameters like Current(I), Pulse on time(T), Voltage(V) and Flushing pressure(P) on metal removal rate (MRR), tool wear rate(TWR) as well as surface roughness(SR) on the machining of hybrid Al6061 metal matrix composites reinforced with 10% SiC and 4% graphite particles. Composite was fabricated using stir casting process. A central composite rotatable design was selected for conducting experiments. Mathematical models were developed using the MINITAB R14 software. The method of least squares technique was used to calculate the regression coefficients and Analysis of Variance (ANOVA) technique was used to check the significance of the models developed. Scanning Electron Microscope (SEM) analysis was done to study the surface characteristics of the machined specimens and correlated with the models developed.
Keywords:	Electrical discharge machining, Metal matrix composites, Response surface method, Hybrid composites, Aluminium composites, stir casting process.