



International Journal on Recent Researches In Science, Engineering & Technology

A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy.

It is an absolutely free (No processing charges, No publishing charges etc) Journal Indexed in DIIF and SJIF.

Research Paper

Available online at: www.jrrset.com

Chief Editors 1 : Dr. M.Narayana Rao, Ph.D., Rtd. Professor, NIT, Trichy.

(Engg.&Technology division)

2 : Dr. N.Sandyarani, Ph.D., Professor,

Chennai based Engg.College, (Science division)

ISSN (Print) : 2347-6729

ISSN (Online) : 2348-3105

Volume 2, Issue 10,

October 2014

DIIF IF :1.46

SJIF IF: 1.329

Performance of Electrical Discharge Machining Using Aluminium Powder Suspended Distilled Water

Jai Ganesh R, Mohan Raj, Manova Abraham and Dr.M.Prabhaha

Abstract - This paper presents the study investigations on addition of aluminium metal powder to dielectric fluid in electric discharge machining (EDM). As more emphasis is given nowadays to the green manufacturing concept, the present investigation uses distilled water mixed with aluminium powder as dielectric fluid instead of conventional hydrocarbon-based oils. The workpiece and electrode materials chosen for the investigation are W300 die-steel and electrolytic copper, respectively. Taguchi design of experiments is used to conduct experiments by varying the parameters peak current, pulse on-time, concentration of the powder, and polarity. The process performance is measured in terms of material removal rate (MRR), electrode wear ratio (EWR), average surface roughness (Ra), and white layer thickness (WLT). The experimental results indicate that the polarity significantly affects the machining performance. Signal-to-noise (S/N) ratio and the analysis of variance (ANOVA) are employed to find the optimal levels for the process parameters to achieve maximum MRR, low EWR, Ra, and WLT values.