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Machinability investigation on Nimonic C263 alloy in electric discharge machine

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Citations (3) References (21)

Abstract

Nickel based alloys, are difficult to machine with conventional machining approach at precision level. However, these alloys can be machined up to good accuracy and preciseness with non-conventional machining process such as electrical discharge machining (EDM) process. In the present study, EDM of Nimonic C263 work piece, a nickel based super alloy, has been carried out with three tool materials viz. copper, copper-tungsten and tungsten. Box-behnken design is used to plan the experiments. Consequences of different electrode material, voltage, duration of spark and discharge current are studied on machining performance of the process viz. material removal rate (MRR) and surface roughness. The influence of parameters on each response is analyzed by means of analysis of variance (ANOVA). It is observed that discharge current, electrode material and voltage have significant effect on the performance measures. Proposed study is useful for tool engineers working on aerospace and aviation industries manufacturing various aircraft components up to desired accuracy.

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... They also observed the reduction in nickel and iron, as it was flushed with the dielectric fluid during the process. Renu K.shastri et al. [11] chose three electrodes namely copper, Tungsten and copper-tungsten electrode for machining Nimonic C263 alloy using wire EDM. Authors suggested the use of copper electrode in industries because of its high MRR and tungsten electrode for precise machining work, as it provides smooth surface finish. ...

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... Shastri et al. [40] examined EDM of nimonic C263 with three instrument materials viz. copper, copper-tungsten and tungsten. ...

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