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Electric Discharge Drilling of Ti-6Al-4 V with O_2 as Dielectric Medium

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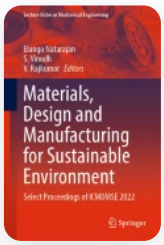

Materials, Design and Manufacturing for Sustainable Environment

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Abstract

Surface finish of the product refers to quality of machining operation, while production rate refers to machining performance. These two parameters are

most-wanted parameters in industries, as they lead to the maximum profit. The current research utilizes oxygen (O_2) as dielectric that supports the electrical discharge machining (EDM) of Ti-6Al-4 V material and where discharge current (I), gap voltage (V), pulse-on time (T_{ON}) and oxygen (O_2) pressure (P) were selected based on Taguchi method. Experimental results were analyzed, and quadratic regression model was derived. Analysis through ANOVA revealed that the discharge current is the dominant factor in affecting the material removal, while O_2 pressure is the dominant factor on surface roughness. Validation result has confirmed that the prediction results are within the allowable limit.

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