

## Abstract Details

**Title** Multi performance characteristics optimization for hybrid-wedm utilizing taguchi and utility function

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**Abstract** The objective of this study was to check overall performance, which considered the relative commitment of surface roughness, cutting rate and residual stresses the quality attributes for Hybrid-WEDM. Ultrasonic vibration assistance in WEDM was used to meet the necessary discharge condition requirements efficiently and economically. In the accompanying, a system in light of utility idea and Taguchi strategy a philosophy has been proposed for deciding the ideal settings of process or parameters for multi-reaction/multi-qualities Hybrid-WEDM process. The multi- response streamlining of value attributes of Hybrid-WEDM has been completed in the accompanying areas. The main emphasis was given to optimize the precision and accuracy of the presented process for machining of High Carbon/High Chrome Tool Steel- AISI D3 materials. The present study has been carried out on the influence of four design factors: Continues/Discontinues vibration, Amplitude of vibration, Pulse-on time, Pulse-off time, Peak current and Wire feed rate. These were the most relevant parameters to be controlled for a normal Wire-EDM process. In this case, L27 Taguchi standard orthogonal array was chosen due to the number of factors and their levels in the study. The most favourable process parameters for the envisaged range of optimal Residual stress Surface roughness and Cutting rate were established.

**Keywords:** Please provide a maximum of five keywords that describe the paper best.