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Effect of Pulse Duration and Current to the EDM Process on Allegheny Ludlum D2 Tool Steel

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Abstract : An experimental work on the effect of different current and pulse duration on performance of EDM process of Allegheny Ludlum D2 Tool Steel (UNS T30402). The effect of varying the machining parameters on the machining responses such as material removal rate (MRR), electrode wear rate (EWR), and surface roughness (Ra) have been investigated. In this study, triangular shape and circular shape of copper was used as an electrode with surface area of 100 mm^2. The experiments were repeated for three different values of pulse duration (100 µs, 200 µs and 400 µs) with combination of three different values of discharge current (12 A, 16 A and 24 A). It was found that the pulse duration and current have significant effect on MRR, EWR and Ra. An increase in the pulse durations causes an increase in the MRR and Ra, but a decrease in the EWR. Meanwhile, the effect of currents on EDM performance shows that the increasing currents lead to an increase in the MRR, EWR and Ra.

Keywords : allegheny ludlum D2 tool steel, current, EDM, surface roughness, pulse duration
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