ABSTRACT

Surface roughness, diameter size and costs in the Wirecut EDM are affected by parameters used in process. Costs are minimalized during process, where still regarding roughness surface and cylinder diameter size as the quality judgements.

In this research, 10 mm thick aluminum plate is used during the process and the parameter variations are on time, off time and flush pressure. Response surface is used to determine the affect of parameters versus responses sistematically. First response is cost as the primary response that later would determined its optimum value. Surface roughness and cylinder diameter size are secondary responses that used as constraints to gain minimum cost.

Final research reveal that cost, surface roughness and cylinder diameter size are individually affected by on time, off time and flush pressure. Surface roughness is affected by repeated interaction of flush pressure and flush pressure, interaction between on time and flush pressure, interaction off time and flush pressure. Cylinder diameter size is affected by all repeated interactions, and interaction between on time and flush pressure. Parameter values that produce minimum cost on the 3.897\mu Ra surface roughness, 5mm cylinder diameter size are 7.461 ms on time, 12 ms off time and 40 flush pressure, with the value of surface roughness, cylinder diameter size and cost respectively 3.967 \mu Ra, 5.003 mm and Rp 1806.34.

Keywords: Wirecut EDM, Cost, Surface Roughness, Diameter, On Time, Off Time, Flush Pressure, Response Surface Method