



Optimization of Electroplating Parameters for Surface Quality of Copper Coated Graphite Electrode in EDM Process

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Abstract. In Electrical Discharge Machining (EDM) process, electrode surface roughness affect the EDM processed work piece. It's known that the machining condition with EDM process is electrode material and surface roughness. This research aims to identify factors that influenced the surface quality of the copper electroplating onto the graphite electrode with electroplating for the EDM process. The experiment has been conducted using Taguchi method with L18 array. The experiment's parameters were varied, The current density was designed 3 levels of 0.00037 A/mm², 0.00185 A/mm², 0.0037 A/mm² respectively. The electrolyte concentration was designed 3 levels start from 0.1 mol, 0.5 mol and 1.0 mol respectively. The electroplating time was designed 600 seconds and 1800 seconds. The result of Ra from coated surface as highest coming from current density. Which current density of 0.0037 A/mm² and electrolyte concentration of 1 mol giving the best result of surface roughness Ra 0.266 μm. On the other hand, the plating time had less impact on surface roughness.

Keywords: EDM; copper electroplating; graphite electrode; surface roughness