**Optimization of surface roughness in turning of LM9 aluminum casting alloy**

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**ABSTRACT**

This study is based on optimizing the turning process under different machining parameters by Taguchi method to improve the surface finish of the product which decreases the machining time, increases the production rate and decreasing the product manufacturing cost. Taguchi optimization methodology is applied to optimize cutting parameters in turning of LM9 Aluminum casting alloy under dry cutting conditions. Medium duty lathe of spindle power 2 kW was used for experiments based on the Taguchi design of experiments (DOE) with orthogonal L9 array. The Taguchi method is an important statistical tool, adopted experimentally to analyze the surface roughness by cutting parameters such as cutting speed, feed and depth of cut. The orthogonal array, signal to noise ratio (S/N) and Taguchi method were employed to find minimum surface roughness. From the Experimental result of Taguchi method it is found that Depth of cut is most significant, spindle speed is significant and feed rate is least significant factor effecting surface roughness.

***Key words:*** *Aluminum alloy, turning, surface roughness, Taguchi approach.*