

## OPTIMIZATION OF TURNING PROCESS PARAMETERS FOR EN-31 STEEL USING TAGUCHI METHOD

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### ABSTRACT

Productivity play significant role in today's manufacturing market. The current state of economy and consequent market pressure has forced manufacturers to simultaneously improve the surface finish and increase the metal removal rate. The manufacturing industries are continuously challenged for achieving higher productivity within lesser time. This research investigates the effect of process parameters during the machining of EN-31 steel using Taguchi method. In this Speed, feed and doc are considered as the process parameters. Here Taguchi L27 orthogonal array is selected as for machining EN-31 and tungsten carbide inserts are used as the tool. Signal to noise ratio and ANOVA are used to identify the optimum parameter combination for getting better surface finish and MRR.

The conclusion drawn from this study is that the optimum condition for getting better surface finish is the spindle speed with level 3 (2250 rpm), feed rate with level 1 (0.15 m/min) and depth of cut with level 2 (0.6 mm) and for MRR, the optimum condition for getting larger MRR is spindle speed with level 3 (2250 rpm), feed rate with level 3 (0.25 m/min) and depth of cut with level 3 (0.8mm). From ANOVA it is concluded that the feed rate is the most significant factor affected on surface roughness and spindle speed is the most significant parameter affected on MRR.

**KEYWORDS:** ANOVA, MRR, Taguchi Design, Turning, Surface Roughness