

A REVIEW ON OPTIMIZATION OF CYLINDRICAL GRINDING PROCESS PARAMETERS USING TAGUCHI METHOD

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ABSTRACT

In the manufacturing sector, producing products with good quality surface finish along with dimensional accuracy and close tolerances plays an important role. Cylindrical grinding is one of the important metal cutting processes used extensively for finishing operations of cylindrical objects such as shafts, axles, spindles, studs etc. In the present study, Taguchi method along with L9 orthogonal array has been used to optimize the effect of cylindrical grinding parameters such as work speed (rpm), feed (mm/min.), depth of cut (mm) on the surface finish and material removal rate of En24 steel. En24 steel is readily machine able and combines a good high tensile steel strength with shock resistance, ductility and wear resistance. Surface roughness and material removal rate measurements were carried out during the machining process on the work piece. ANOVA is used to determine the most significant control factors affecting the surface roughness and material removal rate. From result for surface roughness the optimized parameters for surface roughness are work piece speed 145 rpm, feed rate 220 mm/min. and depth of cut 0.01 mm. And for that of material removal rate are work piece speed 145 rpm, feed rate 220 mm/min. and depth of cut 0.015 mm.

KEYWORDS: Cylindrical grinding, surface roughness, material removal rate, signal-to-noise ratio, ANOVA