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Guided By

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Project Title

EXPERIMENTAL INVESTIGATION AND MATHEMATICAL MODEL OF EFFECT OF MACHINING PARAMETERS ON SURFACE ROUGHNESS & MATERIAL REMOVAL RATE (MRR) IN TURNING

Abstract:

In order to produce any product with desired quality by machining, proper selection of process parameters is essential. This can be accomplished by Full Factorial method. The aim of the present work is to investigate the effect of process parameter on surface finish and material removal rate (MRR) to obtain the optimal setting of these process parameters and the analysis of variance is also used to analysis the influence of cutting parameters during machining. L27 experimental runs based on an orthogonal array of full factorial method were performed. Additionally the analysis of variance (ANOVA) is also applied to identify the most significant factor. During the experimental process parameters such as speed, feed and depth of cut are used to explore their effect on the surface roughness (Ra) of the work piece. This work presents an experimental investigation of influence of the three most important machining parameters of Speed, Feed and Depth of Cut on surface roughness during turning of AISI D2 steel. In this work AISI D2 steel work pieces are turned on conventional all gear lathe by using carbide tool. The result indicated that the process parameter cutting speed feed rate and combination of both parameters have significant effects on surface quality of turning of AISI D2 steel. From ANOVA analysis surface roughness is mostly affected by cutting speed and feed rate so that surface roughness can be improve by decreasing the feed rate as well as increasing the cutting speed up to 66 m/min and after increasing cutting speed surface roughness decrease.

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