

## Article Abstract

Title:	Investigation and validation of optimal cutting parameters for least surface roughness in EN24 with response surface method
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Journal:	<i>International Journal of Engineering, Science and Technology</i> , Vol. 3, No. 6, 2011, pp. 146-160
Abstract:	Amongst the most critical quality measures that define the product quality surface roughness plays a vital role. This paper has attempted in developing an empirical second order model for the predicting the surface roughness in machining EN24 alloy steel using Response Surface Method. The experiments were conducted by varying cutting speeds, feed rates, and depths of cut in Kirloskar-Turnmaster 35, under dry cutting condition. The set response variable namely the surface roughness was measured using SurfTest Mitutoyo as per Japanese standards. The cutting parameters were analyzed and optimized using Box Behnken procedure in the DESIGN EXPERT environment. The effect of process parameters with the output variable were predicted which indicates that the highest cutting speed has significant role in producing least surface roughness followed by feed and depth of cut. The optimized parameters are verified and validated through a validation experiment, which concurs with the predicted optimal value in the design of experiment and also inline to the previous researches.
Keywords:	Design of Experiment (DoE), Response Surface method (RSM), ANOVA, Box Behnken Design (BBD), Central Composite Design (CCD).