

An Optimization of Machine Parameters for Modified Horizontal Boring Tool Using Taguchi Method

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Abstract : This paper presents the findings of an experimental investigation of important machining parameters for the horizontal boring tool modified to mouth with a horizontal lathe machine to bore an overlength workpiece. In order to verify a usability of a modified tool, design of experiment based on Taguchi method is performed. The parameters investigated are spindle speed, feed rate, depth of cut and length of workpiece. Taguchi L9 orthogonal array is selected for four factors three level parameters in order to minimize surface roughness (Ra and Rz) of S45C steel tubes. Signal to noise ratio analysis and analysis of variance (ANOVA) is performed to study an effect of said parameters and to optimize the machine setting for best surface finish. The controlled factors with most effect are depth of cut, spindle speed, length of workpiece, and feed rate in order. The confirmation test is performed to test the optimal setting obtained from Taguchi method and the result is satisfactory.

Keywords : design of experiment, Taguchi design, optimization, analysis of variance, machining parameters, horizontal boring tool

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