

عنوان مقاله:

Application of Taguchi Method Grey Analysis and ANOVA in Optimization of Titanium Alloys Milling

محل انتشار:

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خلاصه مقاله:

Milling is one of the most important machining operations in industrial production systems. Since a long time ago, Multiobjective optimization of milling according to the inherent complexity of process is a competitive engineering issue. This act determines the necessity of applying combination techniques in multi-objective optimization of process. In this paper using Taguchi Method Grey Analysis (TMGA), multi-criteria optimization of milling was performed. Material Removal Rate (MRR), Tool Life (TL) and Surface Roughness (SR) of machined parts are considered as productivity goals and cutting speed, depth of cut and feed rate of cutting tool as the process controllable variables. Optimal process parameters are determined by the grey relational grades obtained from the grey generation for multiple performance characteristics obtained from taguchi Design of Experiments (DOE). In addition, effect of parameters on each objective was evaluated using Analysis of Variance (ANOVA). This study demonstrates that proposed method can be used for high precision optimization and variable's effect evaluation. Result obtained by .TMGA match closely with ANOVA and it's concluded that the feed rate of cutting tool is most affecting milling factor

کلمات کلیدی:

ANOVA; Design of experiments; Milling; Multi-objective optimization; Taguchi Method Grey Analysis

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