

عنوان مقاله:

Optimization of the surface roughness in the machining of hot work steel ۱.۲۳۴۴ by using Taguchi method

محل انتشار:

هفدهمین همایش ملی و ششمین کنفرانس بین المللی مهندسی ساخت و تولید (سال: 1399)

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خلاصه مقاله:

Regarding Taguchi method as the optimization procedure, the machining process of hot work steel (۱.۲۳۴۴) was investigated. Carbide inserts coated with Al_2O_3 was considered as the cutting tool material. Surface roughness is one the initial indicators of the quality characteristics in turning processes. In addition, since, the turning parameters, influencing process, are a lot and more complicated, thus, it is so difficult to determine the effects of all process parameters on surface roughness. Surface roughness of steel (۱.۲۳۴۴), usually working in higher temperatures, hasn't inspected by anyone so far and hence, this paper considers it because of importance of its surface condition in higher temperatures. Due to the mentioned reasons, finally, the multiple performance measures including cutting speed, feed rate and depth of cut with each three levels were selected as the controllable factors. Experiments have been carried out in the dry condition using L_9 orthogonal array. The signal to noise ratio and ANOVA were applied to optimize the machining factors. The surface roughness is the respond in the current paper and all authors attempts are to optimize it. The results elucidated that as the feed rate rises, the value of the surface roughness increases. While by increasing cutting speed, the surface roughness drops. In addition, ANOVA outcomes revealed that the feed rate has the main role in the respond followed by the depth of the cut and final factor affecting the surface roughness is the cutting speed.

کلمات کلیدی:

Surface roughness Optimal condition Taguchi method Hot work steel

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