

Public Abstract

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Department:Mechanical & Aerospace Engineering

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Title:Investigation of the Effect of Tool Materials and Process Parameters on Dry Drilling of Ti-6Al-4V Alloy

The performance of un-coated and TiAlN-coated carbide tools were investigated when dry drilling Ti-6Al-4V alloy. The investigation had been performed in order to find the best tool material performance when dry drilling Ti-6Al-4V. The effect of spindle speed and feed rate on thrust force, torque, dimensional tolerance, and surface roughness were reported. Response surface methodology (RSM) based on central composite design (CCD) is used to perform the investigation. In addition, RSM based on CCD integrated with desirability function is used to determine the optimum input conditions that produce the most desirable quality characteristics (minimum tolerance and surface roughness) with good productivity. Analysis of variance (ANOVA) is used to detect the relative significance of the input factors on each response.