

Experimental Studies on the Effect of Rake Angle on Turning Ti-6Al-4V with TiAlN Coated Carbides

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Abstract : In this paper, the effect of cutting speed, feedrate and rake angle in tool geometry on cutting forces and temperature generated on the tool tip in turning were investigated. The data used for the investigation derived from experiments conducted on precision lathe according to the full factorial design to observe the effect of each factor level on the process performance. During the tests, depth of cut were kept constant and each test was conducted with a sharp coated tool insert. Ti-6Al-4V was used as the workpiece material. The effects of cutting parameters and tool geometry on cutting forces and tool tip temperature were analyzed. The main cutting force was observed to have a decreasing trend and temperature found to be increasing trend as the rake angle increased.

Keywords : cutting force, tool tip temperature, rake angle, machining

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