

Turning experiment of Ti-6Al-4V by using uncoated carbide insert

Abstract

Titanium alloy Ti-6Al-4V is widely being used in the blades, discs, rings, airframes, fasteners, components, vessels, cases, hubs, forgings and biomedical implants. Nevertheless, the properties of titanium alloys which are low thermal conductivity, low modulus of elasticity and high chemical activity cause it very difficult to machine. Excessive elevated temperature due to low thermal conductivity of these alloys make it favorable for tool wear. In this paper, an experiment using orthogonal array L4 is conducted to explore the effect of cutting parameters e.g. cutting speed, depth of cut and feed rate in terms of surface roughness and tool wear. The cutting tool uncoated carbide is used in performing orthogonal cutting of Ti-6Al-4V in this study. It is found low cutting speed, feed rate and high depth of cut is favourable in producing good Ra and minimum flank wear.