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# **A Survey on Cutting Parameter and Tool Path on Tool Deflection of Ti-6Al-4V Alloy in High-Speed Milling**

Thesis Provided for **Master of Engineering**  
Mechanical Engineering – Manufacturing

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**Abstract:**

Spherical inclined surfaces are sometimes experienced in the machining of segments in enterprises, for example, aircraft, aerospace, automotive, and accuracy apparatus assembling. Tool path, created by various cutting techniques, result in different cutting forces and deflection values that may prompt poor surface quality and dimensional deviation. In modern manufacturing producing, it is useful to make known their impacts on machinability. In this thesis, ideal cutting parameter values in ball end-milling processing of Ti-6Al-4V with three covered cutters has been investigated. The parameters thought about are cutting velocity, feed rate, cutting speed, and tool path style. The second point of the study is to decide the impacts of tool movement styles in ball end processing of inclined surfaces. Thus, the best parameter inside the chose cutting parameters and cutting styles for both inclined surfaces and distinctive coatings was venture over. As far as instrument coatings, the most quickly falling apart covering was TiC covering for cutting strengths in both inclined surfaces and for device deflection in spherical inclined surface. Moreover, the results showed that by measuring tool deflection different problems such as dimensional deviation could be controlled.

**Keywords:**

Tool deflection, cutting force, tool geometry, milling machine



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