Increased Material Removal Rate to Improve Machining Performance

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ABSTRACT
High speed machining has a lot of advantages as it has a potential to improve the machining performance by increasing material removal rate which reduces machining time, increases productivity, decreases cutting forces and power consumption, lowers surface roughness and improves fatigue life. High cutting speeds and feed-rates above the standard values currently used in industry will be investigated. Due to problems encountered in machining difficult-to-cut metals, it is very important to choose the right kind of tool, appropriate cooling and lubrication method to improve machinability in high speed machining of difficult-to-cut metals. The current research work is focused to investigate the effect of different cooling strategies on cutting force components, tool wear and surface roughness in peripheral milling of difficult-to-cut metals under high speed machining, during up-milling and down-milling operations, using uncoated multi-flute bull-nose helical carbide end-mill.

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