

Experimental study of machinability of GFRP composites by end milling

Abstract

This article describes an experimental investigation on end milling of glass fiber reinforced polymer (GFRP) composites using uncoated tungsten carbide tool. A series of experiments were carried out to evaluate the machinability of GFRP composites in terms of tool wear, tool useful life, machining quality, and machining forces. Machinability data were evaluated in the form of Taylor's equation in order to predict the tool performance while machining this composite material. The useful life of the cutting tool was found to be well described by the Taylor's equations. The cutting speed was identified as the key parameter in influencing the tool life followed by feed rate and fiber orientation. Machining force variations were constantly monitored during end milling tests, which are mainly attributed to the growth of tool wear and fiber orientation.