

# Experimental Analysis of High Speed Milling Using a Ceramic Tool

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**Abstract.** In last decades, the developments in cutting tools made possible to machine the various components in their hardened state. Consequently, a substantial reduction of production costs, lead time and number of operation was obtained, with a significant improvement on the surface finishing on the manufactured material. Modern ceramic tools are more and more widely used since their particular mechanical properties that allow to extent the commonly used machining parameters in order to reach superior machining speeds. Moreover, nowadays in literature there are relatively few researches that concerns the employment of ceramic tools in machining processes. The present paper outlines an experimental study to analyze the effects of a ceramic tool milling process on a difficult-to-cut alloy. The worked material was an Inconel 718 superalloy (43 HRC), it was milled under extreme cutting parameters and the effects of the milling process were evaluated in terms of the main macro-scale and micro-scale surface modifications that characterize the surface integrity of the workpiece.