

Micromilling of Titanium Alloy: Tool Wear

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Abstract. Micromachining is a key technology in contemporary society, due to the new requirements of the modern industry. The need of higher accuracy and precision, even for details on the finished product (which may also have very small dimensions), can be fulfilled only with micromechanical machining. Among this family of technologies, micromilling is one of the most important and widespread: the potential of this process is due to the great precision level that can be obtained, when machining high strength materials too. One of the main challenges launched by micromilling concerns the understanding of the processes that generate breakages and deterioration of the tool, and the study of their causes, that are usually different from those observed in conventional milling processes, for which the definition and the prediction of the tool-life are regulated by the ISO-8688 standard (part 1 and 2). This standard is not referred to micromilling and a dedicated regulation has not been compiled yet. In this article the results of an experimental campaign, made to investigate the tool wear in micromilling process, are presented. The aim of the work is to provide fundamental knowledge for the development of a future standard that can fill the normative gap.