

Comprehensive analysis and study of the machinability of a high strength aluminum alloy (EN AW-AlZn5.5MgCu) in the high-feed milling

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ABSTRACT

This article is focused on studying and analysing the efficiency of the machinability of a high strength aluminium alloy (EN AW-AlZn5.5MgCu) in the high feed milling. The introduction of the article provides a brief description of high feed milling technology and presents best known research regards to the subject. The research of the time efficiency and economic efficiency of high feed milling of aluminium alloys consists of realization of two groups of experiments. The first group consists of four experiments carried out by progressive technology of high feed milling, and the second group contains one experiment conducted using conventional milling technology. The assessment of efficiency consists in determining the overall time and economic efficiency and also in comparison to the machining of aluminium alloys by high feed milling technology with conventional machining technology. The best results were obtained when the machining parameters were: cutting speed of 550 m/min, travel speed of 10600 mm/min, and feed per tooth of 0.85 mm. The material was removed in the contour roughing phase with a 42 mm plunge-cutting router. Using this cutter, it is possible to produce 19 pieces of components in a hour, which is more than half of the specified requirement. The production of components under the conditions and with this type of high feed milling cutter is more than 75 % shorter than production by a conventional method.

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