

# Experimental and numerical investigation of the effect of spray cutting fluids in high speed milling

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## Abstract

In high speed milling process of wrought aluminium alloys, it is usual to observe the presence and growth of built up edge. In its presence, the lubrication and cooling of the edges are factors of great importance. Two techniques are used to avoid this problem: emulsion of oil in water, and spray of oil micro-drops in air.

This technical communication refers to two aspects of these techniques. First, the efficiency of minimum quantity of lubricant (MQL) is assessed when compared to the inefficiency of emulsion techniques. This fact is assessed through computational fluid dynamics (CFD) simulation and experimental evidence.

Second, the influence of the position of the injection nozzle in relation to the feed direction is experimentally studied. The possibility of minimising the consumption of cutting oil has also been analysed.

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