



1 Machining of carbon fiber reinforced plastic (CFRP) workpiece with application of cutting fluid.

2 Dry machining of CFRP.

APPLICATION OF CUTTING FLUID IN THE MACHINING OF FRP

Motivation

Fiber reinforced plastics (FRP) present a challenge to users due to their abrasive nature during machining and inhomogeneous material properties. The machining of these materials is associated with significant tool wear, which in turn decreases the quality of the workpiece as seen in increased levels of delamination and fraying. Possible consequences of this are the costly repair or replacement of the machined part. Furthermore, the processing parameters are limited due to potential mechanical or thermal damage to the component. In addition, the uncontrolled and in some cases harmful dust, particularly in the case of carbon fiber reinforced plastics, poses a potential risk for employees and machines alike. One approach to address these challenge is the use of a cooling or lubrication concept.

Customer Benefits

Through the use of cutting fluids in the machining of FRP, tool wear and machining time can be reduced, machining quality improved, heat-induced damage eliminated and dust controlled. The cost advantages of longer tool life, improved machining quality and reduced processing time are clear and elimination of airborne dust improves workplace safety for employees and assists in extending machine life.

Our Services

- Investigation of quality and tool life in FRP machining with and without cutting fluids
- Verification of the cutting fluid's chemical compatibility with the component material
- Development of new cooling and lubrication mediums and methods
- Optimization of the processing parameters for FRP machining with cutting fluids

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