

High-Speed Cutting of Inconel 625 Using Carbide Ball End Mill

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Abstract : Nickel-based superalloys are an important class of engineering material within the aerospace and power generation, due to their excellent combination of corrosion resistance and mechanical properties, including high-temperature applications Inconel 625 is one of such superalloys and difficult-to-machine material. In cutting of Inconel 625 superalloy with a ball end mill, the problem of adhesive wear often occurs. However, the proper cutting conditions are not known so much because of lack of study examples. In this study, the experiments using ball end mills made of carbide tools were tried to find the best cutting conditions out following qualifications. Using Inconel 625 superalloy as a work material, three kinds of experiment, with the revolution speed of 5000 rpm, 8000 rpm, and 10000 rpm, were performed under dry cutting conditions in feed speed per tooth of 0.045 mm/ tooth, depth of cut of 0.1 mm. As a result, in the case of 8000 rpm, it was successful to cut longest with the least wear.

Keywords : Inconel 625, ball end mill, carbide tool, high speed cutting, tool wear

Conference Title : ICAMAME 2018 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering

Conference Location : Sydney, Australia

Conference Dates : December 03-04, 2018