Finite Element Modeling and Process Performance of Micro End-Milling of Aluminum 6082-T6 - DTU Orbit (27/12/2018)


This study investigates the micro end-milling process by using a 3D finite element modeling (3D FEM) approach. The FE model is developed for contouring up-milling operation to predict chip flow, burr formation and cutting forces. Different cutting conditions were simulated in order to investigate the influence of process variables that might be difficult or even impossible to follow in the physical experiments, particularly at this scale. 3D simulations of chip flow and temperature distribution are compared in various cutting conditions. The results of the burr formation and cutting forces predictions are compared against the experiments. The correlations were observed in terms of burr dimension trends and force profile shapes and magnitude.

General information
State: Published
Organisations: Department of Mechanical Engineering, Manufacturing Engineering, Polytechnic University of Milan
Contributors: Davoudinejad, A., Tosello, G., Annoni, M.
Number of pages: 2
Publication date: 2017

Host publication information
Title of host publication: Proceedings of the 17th International Conference of the European Society for Precision Engineering and Nanotechnology
Publisher: The European Society for Precision Engineering and Nanotechnology
ISBN (Electronic): 978-0-9957751-0-7
Keywords: 3D finite element modeling, Micro End-Milling, Cutting force, Chip formation, Burr formation
Research output: Research - peer-review | Article in proceedings – Annual report year: 2018