Materials and Manufacturing Processes

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/immp20

A Methodology for Cutting Force Prediction in Side Milling

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Accepted author version posted online: 20 May 2014.

To cite this article: Mehmet Aydın , Mehmet Uçar , Abdulkadir Cengiz , Mustafa Kurt & Barkın Bakır (2014): A Methodology for Cutting Force Prediction in Side Milling, Materials and Manufacturing Processes, DOI: 10.1080/10426914.2014.912315

To link to this article: http://dx.doi.org/10.1080/10426914.2014.912315

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A Methodology for Cutting Force Prediction in Side Milling

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Abstract

This article describes a methodology based on force distributions for predicting cutting forces in side milling 7075-T651 aluminum. The methodology includes a practical mechanism for gathering experimental data. Milling forces on each disc are measured by experimentally dividing cutter into discs for determining milling coefficients. Force distributions are characterized as functions of cutting and edge forces, including cutter geometry and cutting parameter effects. In contrast to previous researches, the coefficients are determined considering relations between load and shear. Due to its high performance, this methodology can be effectively used to improve the machining accuracy in side milling.

KEYWORDS: Aluminum; Forces; Design; Milling; Parameters; Processes; Simulation; Tooling.