# Article information:

Prediction of cutting force distribution and its influence on dimensional accuracy in peripheral milling - ScienceDirect  
<https://www.sciencedirect.com/science/article/abs/pii/S0890695502000160?via%3Dihub>

# Article summary:

1. An improved theoretical dynamic cutting force model for peripheral milling is presented, which includes the size effect of undeformed chip thickness, the influence of the effective rake angle and the chip flow angle.

2. The cutting force distribution in the cut-in process has a significant influence on the dimensional accuracy of the finished part.

3. Suggestions are given about how to select the cutter and cutting parameters to get an ideal cutting force distribution, so as to reduce machining error while keeping high productivity.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Prediction of Cutting Force Distribution and Its Influence on Dimensional Accuracy in Peripheral Milling” provides an overview of current research into cutting forces in peripheral milling and their effects on dimensional accuracy. The authors present an improved theoretical dynamic cutting force model for peripheral milling that takes into account size effects, effective rake angles, and chip flow angles. The model is calibrated with data from tests conducted by Yucesan [18] on a titanium alloy, and it is shown to be more accurate than previous models. Case studies are then presented to investigate the cutting force distribution in tests of the titanium alloy, with results indicating that this distribution has a significant influence on dimensional accuracy. Finally, suggestions are given about how to select cutters and parameters to achieve an ideal cutting force distribution while maintaining high productivity.

The article appears to be reliable overall; it cites relevant sources for its claims and presents evidence from case studies that support its conclusions. However, there are some potential biases worth noting: firstly, all of the data used in this study comes from tests conducted by Yucesan [18], which may limit its generalizability; secondly, only one type of material (titanium alloy) was tested in these experiments; thirdly, no counterarguments or alternative perspectives are explored; fourthly, no risks associated with using this model are discussed; finally, there is no discussion of any potential limitations or drawbacks associated with using this model or any other models mentioned in the article.

# Topics for further research:

* Alternative cutting force models
* Dimensional accuracy risks
* Cutter selection criteria
* Cutting force distribution effects
* Peripheral milling parameters
* Cutting force model limitations

# Report location:

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