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IE 470

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Lab 6 Pre-Lab

The first objective of this lab is to get a baseline understanding of the types of mills and milling operations. Then, the experimental objectives start. The main objective is to understand the effect of certain independent milling variables on other dependent milling variables. Those milling variables include surface roughness, MRR, feed, and tool shape. Another objective is to conversationally program a CNC mill. The final objective is to analyze the lab through the analysis portion of the lab.

I’ve never used a CNC mill before, so I expect to get a base of knowledge through this lab. First, I expect to learn the various types of milling and milling machines. Secondly, I expect to learn how certain milling variables affect other variables. I expect to learn how a mill works in practice and make observations on that. I expect to learn about up-milling and down-milling. Finally, I expect to learn how to conversationally program a mill.

First, for the tools we will use in this lab, a Fryer CNC mill will be used for milling operations. It will run Siemens Sinumerik software. Surface roughness measurements will be made with the Mitutoyo stylus measuring device. Calipers will be used to measure the width of the milling slots.

As a general summary of the experimental process, the origin of the mill will be established. Then, a variety of straight line and arc cuts will be made on the part. Then, various measurements will be taken such as surface roughness and slot width. MRR will be calculated. Lastly, the results will be analyzed.