

SUMMARY

Muhammad Isna Zakariya, Department of Mechanical Engineering, Faculty of Engineering, University Of Brawijaya, December 2017, *Effect of Depth Of Cut and the Tool L/D Ratio in Surface Roughness Tester on Up Milling Process*, Academic Supervisor: Dr.Ir. Achmad As'ad Sonief, MT, Ir. Ari Wahjudi, MT.

Slot milling is a process to make a gap in a workpiece which is the length of the workpiece is bigger than mill diameter. Up milling or usually known to conventional milling, where's the direction of feeding have different direction with direction of cutter teeth, when teeth cut the workpiece. This way purposed to reduce the ammount of material every feeding in cutting process, so that we can increase the quality of product. the one of method to get the result of quality product is by see the surface roughness of product. surface roughness also affected by vibration of tool or chatter. The way to reduce the viration of tool or chatter, is by adjust the distance between tool holder towards workpiece (reduce overhang tool). This research purposes to know the effect depth of cut and L/D ratio to surface roughness AL-6061 in the process up milling.

The variabel are depth of cut 3;3,5;4 mm and ratio L/D=3;4;5;6 and 8 mm end mill diameter, 50 mm/min feed rate, 720 rev/min spindle speed. In this research the data that we get is amplitude using vibration meter wich is connected in a softwere then reconnected to Labview softwere application in PC whit Microsoft Excel helped, then plotting to be a grafic. After the amplitude data we have been get and up milling process is finish, we measure the surface roughness with surface roughness tester. Processing ampliude data and surface roughness, then make a grafic analysis and the is make conclusion of data research that we get.

This research show that, bigger depth of cut and L/D ratio, is bigger the result of surface roughness also. The highest surface roughness value resulted with 4 mm depth of cut qith overhang 6 is 4,03725 μm and the lowest value relusted by depth of cut 3 mm, 3 overhang with value 0,36875 μm , data analisys amplitude vibration show that became a large dept of cut and L/D ratio in up milling process, became a large amplitude vibration also.

Keywords: *Up Milling, Depth Of Cut and L/D Ratio, Chatter, Overhang, Surface Roughness.*