SUMMARY

ARYO APRIANTO , Department of Mechanical Engineering, Faculty of Engineering Universitas Brawijaya, December 2017, Effect of Depth of cut Against Aluminum Surface Roughness 6061 on Process End Milling with Permanent Magnetic Damping , Supervisor: Achmad As'ad Sonief, Ir., MT., Dr and Ari Wahjudi, Ir., MT

Along with technological developments in manufacturing (manufacture product), manual machining process has been replaced by machining process automatic. Although in Indonesia manual machining process is more often used as a result of the cost effect. Automated machining is more widely used by scale industries big demanded the speed of production and precision of the production, but there is wrong one obstacle that must be faced, namely the vibration of machining that occurs on the chisel (machine tool) or also called chatter . Chatter on machining process caused by direct contact of the chisel with the surface of the material or workpiece. On the process machining milling , the vibration caused by the cutting force that occurs periodically. Improved chatter phenomenon results in surface workpiece results which is rough and bumpy even until the occurrence of geometric changes significant undesirable. One method of chatter control is to use a magnetic field generated by a permanent magnet mounted near the chisel of milling . The magnetic field can reduce the amplitude of the chatter so as to improve the quality from the surface of the product and produce a more uniform snarl.

End milling is a chisel on a frais process that usually rotates on that axis perpendicular to the workpiece surface. The chisel can be angled to produce angled surface. In the process of metal machining there are obstacles such as vibration which occurs on a common chisel called a chatter . This study was conducted to find out the influence of the dept of cut and the use of a harvester magnet as a vibration damper on the process end milling against surface roughness of al-6061. The specified machining parameters in this research is spindle speed 700 rpm and feed rate 70 mm / minute. The variations used are depth of cut 5, 10, and 15 mm and magnetic field strength 0 Gauss and 14.3 Gauss. Step pemakanannya direction of Y axis. Measurement of surface roughness done by using surface roughness tester . Vibration is measured on the Y axis with vibration meter

The results showed that the depth of cut affect the roughness surface, where increasing depth of cut then surface roughness will be increased. The lowest surface roughness is produced at a depth of cut of 5 mm ie without magnets 0.493 μm and with magnets of 0.458 μm, while the highest surface roughness produced at a depth of cut of 15 mm on a magnetic 0,591 μm and with a magnet of 0.557 μm. The use of magnets as a damper on the end milling process with variations of depth of cut reduces the chatter and reduces surface roughness

Kata kunci: *End Milling, Surface roughness, depth of cut, Permanent Magnet, Chatter.*