

***PERFORMANCE OF CARBURIZING LEAF SPRING CUTTING TOOLS ON SURFACE ROUGHNESS IN TURNING ALUMINIUM 6061***

*Name* : Muhammad Rifaldi  
*Nim* : 2204201266  
*Lecturer* : Sunarto, S. Pd., MT.

***ABSTRACT***

*This research discusses the performance of cutting tool made from leaf spring material that has undergone a carburizing process on the surface roughness of turning results on Aluminum 6061 material. This research aims to determine the effect of cutting variables such as cutting speed ( $V_c$ ) 30, 50, 70 m/minute, depth of cut ( $a$ ) 1.0 mm, and feed movement ( $f$ ) 0.19 mm/rev on the surface roughness of the turning results. The carburizing process is carried out to increase the hardness of the turning tool, thereby improving the quality of cutting results on Aluminum 6061. The results of the research show that cutting with ( $V_c$ ) 30 m/min achieves an average surface roughness value of 2.37  $\mu\text{m}$ , cutting with ( $V_c$ ) 50 m/min achieves an average surface roughness value of 2.50  $\mu\text{m}$ , and cutting with ( $V_c$ ) 70 m/min achieves an average surface roughness value of 3.81  $\mu\text{m}$ . It is hoped that this research can contribute to the development of more effective and efficient cutting tools in the manufacturing industry.*

***Keywords:*** *Cutting Tool, Cutting Speed ( $V_c$ ), Surface Roughness ( $\mu\text{m}$ ), Depth of Cut ( $a$ ).*