

**THE EFFECT OF THERMAL LOAD ON SURFACE  
ROUGHNESS ON DRY TURNING OF ALUMINIUM ALLOY  
6061 USING A CHISEL CARBIDA ALUMINIUM FRAMES  
TITANIUM NITRIDA (TiAlN)**

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**ABSTRACT**

*Metal cutting activities are activities carried out in the manufacturing industry to convert basic metals into machine components by using machine tools. Some cutting variables will also determine the quality of the product in the form of surface roughness including cutting speed ( $V_c$ ). The use of cutting speed variations results in different thermal load values, and has a large influence on the cutting temperature.*

*This research was conducted using a CNC Turning machine, the metal used is aluminum 6061 with a dimension of length 210 mm, diameter 48 mm, variations in cutting speed ( $V_c$ ) used 200 m/min, 270 m/min, 340 m /min, depth of cut ( $a$ ) 1.0 mm, feed motion ( $f$ ) 0.1 mm/round. From the research results obtained the smallest roughness value at 340 m/minute cutting speed ( $V_c$ ) with a cutting temperature of 167,288°C, obtained an average surface roughness value of 1.60  $\mu\text{m}$ . an increase in cutting speed affects the temperature rise, the roughness value is increasingly small (smooth) in the dry cutting of Aluminum 6061 material along with increasing the cutting speed ( $V_c$ ) parameter.*

**Keywords:** *Surface roughness, cutting temperature, cutting speed ( $V_c$ ).*