

**ANALYSIS OF THE EFFECT OF VARIATION OF WELDING CURRENT  
(GTAW) ON ALUMINUM 5083 ON WIDE HAZ  
AND TENSILE STRENGTH**

*Supervised (Cahyaning Nur Karimah, S.Pd., M.T)*

**Aksal Syah Nadani**

*Study Program of Automotive Engineering*

*Majoring of Engineering*

**ABSTRACT**

*Welding is a technique of joining two or more metal materials using heat energy. The tensile strength of the welded metal is greatly influenced by the heat input that occurs during the welding process, so it will affect the tensile strength of the weld. The heat input that occurs is the effect of using current during the welding process. So it is necessary to choose the right current to get good and strong results. This research discusses the effect of variations in GTAW welding current on 5083 aluminum on HAZ width and tensile strength. The type of filler used is ER 5356 (2.4 mm) with varying currents of 110, 120, and 130 amperes with a welding position of 1 G. The highest value in the tensile test results was the highest current strength, namely 130A with a tensile strength value of 146.40 N/mm<sup>2</sup> and a strain of 19.9%. The higher the current used, the higher the tensile strength value increased. This is because the heat from the strong current affects the weld results where the welding penetration blends perfectly so that the weld results are stronger. Meanwhile, when observing the width of the HAZ, the largest width was found at a current of 130A with a width of 19.57 mm<sup>2</sup> and a cross-sectional area of 57.21 mm<sup>2</sup>, where the greater the current used, the greater the width of the HAZ created, this is because the greater the current used, the higher receiving heat input.*

*Key Words : GTAW, Aluminum 5083, ER 5356, macrostructure, tensile strength, HAZ width.*