

## ABSTRACT

*One of the common metal joining processes has been carried out one of them using the spot welding method. This welding method can be found in the industrial field using such as the automotive industry, household appliances, crafts and spacecraft engineering. Development of welding points by welding inert tungsten gas (TIG). The study was conducted to study the characteristics of the TIG Welding spot connections which differed between Stainless Steel 304 and Aluminum 1100 by testing shear tensile, challenge and microstructure. In this study SS304 and aluminum steel plates with dimensions of 175 mm x 25 mm x 1 mm. The current used 110 A, 120 A and 130 A by using the welding time of 2 seconds and 3 seconds. Mechanical testing used is shear tensile testing using the standard ASTM E8M-09 and intelligence testing used is microstructure testing.*

*Tensile test results show that the comparison of tensile load values will increase with increasing current and welding time. The highest value of the load capacity at a current of 130 A with a welding time of 3 seconds with an average tensile load capacity of 1699.14 N. The results of the highest safety assessment on the weld material are in accordance with the weld area Rapidly enlarge by  $\pm 212$  HV on SS404 material and  $\pm 44.3$  HV in aluminum material. The microstructure observed in SS304 contained austenite and carbide phases while in aluminum showed a pure aluminum  $\alpha$  phase and a dendritic columnar phase formed in the weld area of the two materials. In the research carried out the parameters of current variation and welding time are crucial to the characteristics of spot connections, different TIG welding materials.*

**Keywords:** *Spot TIG, dissimilar metal, Stainless Steel 304, Alumunium 1100, shear strength, hardness, microstructur.*