

***EFFECT OF VARIATIONS IN GTAW WELDING CURRENT STRENGTH
ON THE TENSILE AND BENDING STRENGTH OF ASTM A36 STEEL
WELDED JOINTS***

Supervised By (Ir. Dwi Djoko Suranto, MT)

Abdul Gafur
*Study Program Of Automotive Engineering
Majoring Of Engineering*

ABSTRACT

This research aims to evaluate the effect of variations in GTAW welding current strength on the tensile strength and bending strength of welded joints in ASTM A36 steel plates. The experimental method was used with GTAW welding using ER 308 L filler using a V seam angle of 90°, and current strengths of 100A, 110A and 120A. The research results show that variations in GTAW welding current strength have a significant influence on tensile strength and bending strength. The specimen with a bearing angle of 90° with a current strength of 120A has the highest stress and strain values, namely 338.89 N/mm² and 28.25%. Then followed by variations in current strength of 110A with stress and strain values of 332.99 N/mm² and 26.88%. On the other hand, the specimen with a current strength of 100A has the lowest stress and strain values, namely 328.30 N/mm² and 26.49%. The highest bending strength was found in the specimen with a bending angle of 90° with a current strength of 120A, which reached 1065.20 N/mm². Followed by the specimen with a current strength of 110A, with a value of 1022.96 N/mm², and the lowest bending strength was recorded in the specimen with a current strength of 100A, namely 939.57 N/mm². Variation of 120A current strength using a 90° bending angle produces the highest tensile and bending strength while 100A current strength produces the lowest tensile and bending strength. The results of this research can be used as a guide in selecting optimal welding parameters in ASTM A36 steel plate welding applications.

Key words: GTAW, ER 308 L, current strength, tensile strength, bending strength