

# **OPTIMIZATION OF SHIELDED METAL ARC WELDING (SMAW) PARAMETERS IN 1G POSITION ON THE BENDING STRENGTH OF ASTM A36 STEEL.**

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## **ABSTRACT**

*This study aims to optimize the effect of Shielded Metal Arc Welding (SMAW) parameters on the joint strength of ASTM A36 steel. Two main parameters were used in this research: welding current (90A, 110A, 130A) and electrode type (E6013, E7016, E7018), while the constant parameters included welding position (1G) and groove type (V-groove). The testing was conducted using the Destructive Test (DT) method, specifically the bending test, to evaluate the weld joint strength. The results of the study indicate that variations in welding current and electrode type have a significant effect on the joint strength. The most influential welding parameter combination was found at 130A current using the E7018 electrode, producing the highest average joint strength of 14.76 KN. Conversely, the lowest average joint strength was obtained at 110A with the E7018 electrode, yielding a value of 12.95 KN. These findings provide important insights for welding practitioners in optimizing parameters to achieve strong joints with minimal deformation in welded connections.*

**Keywords:** SMAW, Bending Test, Current, Electrode Type, Taguchi.