

**THE INFLUENCE OF SINGLE V-GROOVE ANGLE VARIATION AND
MIG WELDING CURRENT VALUES ON THE TENSILE AND BENDING
STRENGTH OF ST 37 STEEL MATERIAL**

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ABSTRACT

This research aims to evaluate the influence of variations in the V-groove angle and MIG welding current strength on the tensile and bending strength of welded joints in ST 37 steel plates. An experimental method was employed using MIG welding with ER 70S-6 filler metal at V-groove angles of 60° and 90°, as well as welding currents of 100A and 120A. The research results indicate that variations in the V-groove angle and MIG welding current strength have a significant impact on tensile and bending strength. Specimens with a 90° V-groove angle and 120A welding current exhibited the highest values of stress and strain at 480.85 N/mm² and 30.08%, but had the lowest elastic modulus at 15.98 N/mm². Conversely, specimens with a 60° V-groove angle and 100A welding current had the lowest stress and strain values at 471.46 N/mm² and 26.16%, but had the highest elastic modulus at 18.02 N/mm². The highest bending strength was observed in specimens with a 90° V-groove angle and 120A welding current, reaching 1209.66 N/mm², followed by specimens with a 60° V-groove angle and 120A welding current, with a value of 1182.29 N/mm², and specimens with a 90° V-groove angle and 100A welding current at 1171.88 N/mm². The lowest bending strength was recorded in specimens with a 60° V-groove angle and 100A welding current, at 1135.25 N/mm². Variations with a 90° V-groove angle and 120A welding current resulted in the highest tensile and bending strengths, while a 60° V-groove angle and 100A welding current produced the lowest tensile and bending strengths. The findings of this research can serve as a guide for selecting optimal welding parameters for ST 37 steel plate welding applications.

Keywords : *Bending strength, Bevel angle, tensile strength, Welding,
Welding current.*