The Effect of Electrode Movement Variations and SMAW Welding Positions on Twisting and Bending Strengths in ST 41 Steel Solid Cylinders

Dicky Adi Tyagita, ST, MT *as Chief Conselor*

Ahmad Rizal Efendi
***Studi Program of Automotive Mechanical Engineering Department* Politeknik Negeri Jember**
ahmadrizale57@gmail.com

ABSTRACT

This research aims to determine the effect of variations in electrode movement and SMAW welding position on ST 41 steel solid cylinders. The electrode used in this welding method is E6013 with a diameter of 2.6 mm. The selection of electrode movement and welding position is needed to produce an optimal welded joint. The variations of electrode movement used are zig-zag, spiral, and straight with 1G and 2G welding positions. The specimens that have been made are then tested in the form of torsion test and bending tests. The variation of the movement and welding position obtained torsional test results with the highest shear stress value of 19.85 MPa with a torsion moment value of 66.19 Nm up to an angle of 680⁰ in the variation of the zig-zag motion of 1G position. The bending test obtained the highest result of 1541 MPa at the same variation and position. So that it can be seen that the results of a strong welding join have a higher bending strength value than those without welding. While the torsion test has a value below it because there is a welding defect at the time of testing.

Keywords: Solid cylinder steel, electrode movement, welding position, torsion test, bending test