THE EFFECT OF VARIATION OF GROVE ANGLE AND TYPE OF ELECTRODE ON BENDING STRENGTH AND HARDNESS OF SMAW WELDING JOINTS ON AISI 1050 STEEL LEAVE SPRING

Dicky Adi Tyagita, S.T., M.T *as Chief Counselor*

Kukuh Yuono
Study Program of Automotive Engineering
Departement of Engineering
Politeknik Negeri Jember
kukuhyuonoo@gmail.com

ABSTRACT

Shielded metal arc welding is with wrapped electrodes in the process of joining two or more pieces of metal using a heat energy source from electricity to form a permanent connection. Leaf springs are pieces of medium carbon steel that are heated in the form of sheets that function to dampen vibrations when the vehicle experiences shocks due to uneven roads or carrying heavy loads. The selection of the large knuckle angle and the type of electrode is a parameter that is quite important to produce a perfect welded joint strength. This study aims to determine the effect of variations in the embedding angle and the type of electrode on the bending and hardness of smaw welded joints on AISI 1050 steel leaf springs. The large variations of the joint angles used are 80°, 70° and 80°. The various types of electrodes used include AWS E7018, AWS E7016 and AWS E7018-G electrodes with a diameter of 3.2 mm. The specimens that have been made are then tested including bending testing and hardness testing. From the results of the bending test , strength value was found bending at a joint angle of 80° with the AWS E7016 electrode type with an bending of 5685 Mpa, while the highest average hardness value was at an 80° joint angle with the AWS E7018 electrode type. -G with an average hardness value of 238.0 HV. So that it can be seen the influence of variations in the seam angle and the type of electrode where the greater the seam angle and the type of electrode selected based on the tensile strength, the greater the bendingas the greater the seam angle and the greater the current based on the specifications for selecting the type of electrode that has been determined, the greater will be also the hardness value.

Keywords: *Welding, grove angle, type of electrode, bendingtest, hardness test.*