

The effects of welding parameters on butt joints using robotic gas metal arc welding

ABSTRACT

Robotic gas metal arc welding (GMAW) is one of the most popular welding methods in the manufacturing industries. The main focus of this paper is how welding parameters affect the joining process. The butt joint will be used in this study to identify suitable welding parameters for welding voltage, welding current and welding speed. The experiment involves using a specimen of low carbon steel A1008 as base metal and AWS ER 70S-6 as the filler metal in the butt joint process. The joint was tested to determine the tensile strength, which is identified as the main characteristic of the weld, and the hardness of the weld is also recorded. The results show that a welding voltage of 24 volts, current of 200-220 ampere, and speed of 45-50 cm/min gave the highest tensile hardness of 239.05 MPa (180HV).

Keyword: Robotic gas metal arc welding; Butt joint; Low carbon steel; Tensile strength