World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:9, No:08, 2015

Effect of Welding Parameters on Penetration and Bead Width for Variable Plate Thickness in Submerged Arc Welding

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Abstract : The heat flow in weldment changes its nature from 2D to 3D with the increase in plate thickness. For welding of thicker plates the heat loss in thickness direction increases the cooling rate of plate. Since the cooling rate changes, the various bead parameters like bead penetration, bead height and bead width also got affected by it. The present study incorporates the effect of variable plate thickness on penetration and bead width. The penetration reduces with increase in plate thickness due to heat loss in thickness direction for same heat input, while bead width increases for thicker plate due to faster cooling.

Keywords : submerged arc welding, plate thickness, bead geometry, cooling rate
Conference Title : ICRME 2015 : International Conference on Robotics and Mechanical Engineering
Conference Location : Paris, France
Conference Dates : August 27-28, 2015