World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Experimental Investigation and Hardness Analysis of Chromoly Steel Multipass Welds Using GMAW

Authors : S. Ramesh, A. S. Sasiraaju, K. Sidhaarth, N. Sudhan Rajkumar, V. Manivel Muralidaran

Abstract : This work presents the result of investigations aimed at determining the hardness of the welded Chromoly (A 4130) steel plate of 2” thickness. Multi pass welding for the thick sections was carried out and analyzed for the Chromoly alloy steel plates. The study of hardness at the weld metal reveals that there is the presence of different micro structure products which yields diverse properties. The welding carried out using GMAW with ER70s-2 electrode. Single V groove design was selected for the butt joint configuration. The presence of hydrogen has been suppressed by selecting low hydrogen electrode. Preheating of the plate prior to welding reduces the cooling rate which also affects the weld metal microstructure. The shielding gas composition used in this analysis is 80% Ar-20% CO2. The experimental analysis gives the detailed study of the hardness of the material.

Keywords : chromoly, gas metal arc weld (GMAW), hardness, multi pass weld, shielding gas composition
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020