

A Full Factorial Analysis of Microhardness Variation in Bead Welds Deposited by the Process Cold Wire Gas Metal Arc Welding (CW-GMAW)

Authors : R. A. Ribeiro, P. D. Angelo Assunção, E. M. Braga

Abstract : The microhardness in weld beads is a function of the microstructure obtained in the welding process, and this by its time is dependent of the input variables established at the outset of the process. In this study the influence of angle between the plate and the cold wire, the position in which the cold wire is introduced and the rate in which this introduction is made are assessed as input parameters in CW-GMAW process. This paper looks to show that ordinary changes in the frame of CW-GMAW can improve microhardness, which is expected to vary as the input parameters change. To properly correlate the changes in the input parameters to consequent changes in microhardness of the weld bead, a full factorial design was employed. In fact, changes in the operational parameters improved the overall microhardness of the weld bead, which in turns can be an indication of improvement in the resistance to abrasive wear, constituting a cheap way to augment the abrasion wear resistance of welds used for cladding.

Keywords : abrasion, CW-GMAW, full factorial design, microhardness

Conference Title : ICME 2015 : International Conference on Mechanical Engineering

Conference Location : Montreal, Canada

Conference Dates : May 11-12, 2015