

Advantages of Vibration in the GMAW Process for Improving the Quality and Mechanical Properties

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Abstract : Since 1920, the industry has almost completely changed the rivets production techniques for the manufacture of permanent welding joint production of structures and manufacture of other products. The welding arc is the process more widely used in industries. This is accomplished by the heat of an electric arc which melts the base metal while the molten metal droplets are transferred through the arc to the welding pool, protected from the atmosphere by a gas curtain. The GMAW (Gas metal arc welding) process is influenced by variables such as: Current, polarity, welding speed, electrode, extension, position, moving direction; type of joint, welder's ability, among others. It is remarkable that the knowledge and control of these variables are essential for obtaining satisfactory quality welds, knowing that are interconnected so that changes in one of them requiring changes in one or more of the other to produce the desired results. The optimum values are affected by the type of base metal, the electrode composition, the welding position and the quality requirements. Thus, this paper proposes a new methodology, adding the variable vibration through a mechanism developed for GMAW welding, in order to improve the mechanical and metallurgical properties which does not affect the ability of the welder and enables repeatability of the welds made. For confirmation metallographic analysis and mechanical tests were made.

Keywords : vibration, joining, weldability, GMAW

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