ANALYSIS OF RESISTANCE SPOT WELDING FOR DIFFERENT PROCESSES

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Abstract

The continuously increasing demand of vehicle body structure often requires combination of dissimilar metals with different thickness. Thus the body weight can be reduced. Resistance welding processes viz. spot, seam, etc can conveniently join the sheet thickness used in vehicle. The spot welding of mild steel and stainless steel sheets (m.s. and ass type 304) play vital role in automobile body development. The said procedure enhances the performance of spot - welded joints of dissimilar metals of same or different thickness to obtain appropriate strength and quality of weld joints in automobiles. Experiments are carried out on spot-welding machine to determine strength of spot welded joint which welding dissimilar metals. The effect of welding parameters viz. welding current, welding time, welding force on weld quality neads to be checked. Empirical relationship is to be found out for weld quality depending on various process parameters. At presently most of the vehicles manufacturing industries are involved in the research of resistance welding of dissimilar metals of different thickness. The spot welding of dissimilar metals of medium range thickness (0.8 mm to 1.2 mm M.S. and S.S. sheets) is carried out by varying the variable welding parameters such as welding time, welding current and welding force. Tension shear test in analysis is carried out and finally the polynomial equation of first order to correlate weld strength with weld time, weld current and weld force is developed. The entire experiment is to be carried out based on the statistical method of factorial regression and analysis of variance and significances test are to be done to validity the results obtained.

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Key Words : *Resistance Spot Welding, Spherical tip electrode, Process parameters, Nugget diameter, Weld strength, Statistical correlation, Dynamic resistance.*