

Feasibility Study of Submerged Arc Welding (SAW) on Mild Steel Plate IS 2062 Grade B at Zero Degree Celsius

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Abstract : A series of experiments has been carried out to study the feasibility of submerged arc welding (SAW) on mild steel plate of designation IS 2062 grade B. Specimen temperature of which is reduced to zero degree Celsius whereas the ambient temperature is about 25-27 degree Celsius. To observe this, bead on plate submerged arc welding is formed on the specimen plate of heavy duty mild steel of designation IS 2062 grade B, fitted on the special fixture ensuring zero degree Celsius temperature to the specimen plate. Sixteen numbers of cold samples is welded by varying the most influencing parameters viz. Voltage, wire feed rate, travel speed and electrode stick-out at four different levels. Another sixteen numbers of specimens are at normal room temperature are welded by applying same combination of parameters. Those sixteen numbers of specimens are selected based on the design of experiment of Taguchi's L16 orthogonal array with the intension of reducing the number of experimental runs. Different attributes of bead geometry of the entire sample for both the situations are measured and compared. It is established that submerged arc welding is feasible at zero degree Celsius on mild steel plate of designation IS 2062 grade B and optimization of the process parameters can also be drawn as a clear response of parameters are obtained.

Keywords : geometry of weldment, submerged arc welding, Taguchi's design of experiment, zero degree Celsius

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