

ABSTRACT

Friction Stir Spot Welding (FSSW) is a derivative of the friction stir welding (FSW), novel variant of the "linear" FSW process. It creates a spot, lap-weld without bulk melting with vertical movement of a non-consumable tool during the welding operation on overlapping sheet metal with small range of thickness for soft metal like aluminium. It has been used in the production of aluminum doors, engine hoods, and deck lids in the Japanese automotive industry, aerospace, transportation, and automotive industry globally ^[2]. It has the benefits of operation and investment cost savings, weight reduction, high repeatability and consistence, low maintenance, better work environment, environmental metal joining and recyclability versus other aluminum spot joining method ^[2]. This dissertation Final Year Project on Friction Stir Spot Welding (FSSW) reports the experimental study on strength of overlapping Aluminum 1100 sheet metal which applies the welding method. CNC Mazak Integrex 200-III is used to fabricated tool steel while CNC Mazak Variaxis 530 5-X is used for implementing the welding technique. Pull to break test is used to obtain maximum load (N) before break for the overlapping sheet correspond to lap-shear force. Overall result obtained shows that the lap-shear strength of overlapping sheet decreases by increasing or decreasing tool rotational speed and penetration rate beyond the optimum combination.

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