FRICTION STIR WELDING ON T-JOINTS: RESIDUAL STRESS EVALUATION

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ABSTRACT

The main goal of this work is to characterize the residual stress field in T-joints welded by Friction Stir Welding. The T-joints were composed of two aluminium AA6056 sheets in the flanges and an aluminium AA7075 sheet in the web. The results obtained show that the residual stress field from the transition zone between the thermo-mechanically affected and heat affected zones may be modeled by a logarithmic curve. The maximum tensile stresses obtained were in the order of 100 MPa while the compressive ones reached the value of -40 MPa. Both values were obtained in the flanges as the stresses in the web are much lower than these ones. There are no significant differences between the advancing and retreating sides of the work pieces while between the welding and root ones no conclusions could be effectively made.