# FINITE ELEMENT SIMULATION OF THERMAL HISTORY DURING FRICTION STIR WELDING OF DISSIMILAR ALUMINUM ALLOYS AA 6061 AND AA7075.

M. Vignesh Kumar[#], S Shri ram[a], P Shankara Varma[b], P Shane nathanaiel[c],
D Siddharth Chakaravarthy[d]
[#] Assistant professor, [a,b,c,d] U.G Scholar
Department of mechanical engineering, KCG College of Technology

A proper understanding of the heat transfer and material flow during the Friction Stir Welding process can help in the elimination of defects like flash, voids and cracks during the welding process. In this paper, the transient temperature distribution during dissimilar friction stir welding of Aluminum alloys AA 6061 and AA 7075 is simulated using the Finite Element method. A Three dimensional Finite element Heat transfer model is developed using 8 - node thermal brick elements. The model is used to study the transient temperature distribution and the effect of tool rotation speed, tool traverse speed on the thermal history. The numerically determined temperature fields match well with the experimental data and the maximum temperature during the FSW is at the weld line and within the tool shoulder. Temperature distribution is affected by both, the tool rotation speed and welding speed and the maximum temperature increases with increase in tool rotation speed and decrease in Tool traverse speed. The maximum temperature determined from the simulation is 759 K, which is significantly less than the melting temperature of the plates.

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