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Numerical Simulation of Temperature Distribution and Material Flow During Friction Stir Welding 2017A Aluminum Alloys.

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Abstract: Abstract.This study describes the use of fluid dynamic code, FLUENT to model the flow of metal in the AA2017A case around the welding tool pin (FSW). A standard threaded tool profile is used for the analysis of phenomena during welding such as heat generation and flow of the material are included. The main objective is to gain a better understanding of the flow of material around a tool. The model showed a large number of phenomena similar to those of the real process. The model has also generated a sufficient amount of heat, which leads to a good estimate of the junction temperature. These results were obtained using a viscosity which is near the solidus softening.

Keywords : Friction Stir Welding, 2017A aluminum alloy, Temperature distribution