

## Studying the Possibility to Weld AA1100 Aluminum Alloy by Friction Stir Spot Welding

**Authors :** Ahmad K. Jassim, Raheem Kh. Al-Subar

**Abstract :** Friction stir welding is a modern and an environmentally friendly solid state joining process used to joint relatively lighter family of materials. Recently, friction stir spot welding has been used instead of resistance spot welding which has received considerable attention from the automotive industry. It is environmentally friendly process that eliminated heat and pollution. In this research, friction stir spot welding has been used to study the possibility to weld AA1100 aluminum alloy sheet with 3 mm thickness by overlapping the edges of sheet as lap joint. The process was done using a drilling machine instead of milling machine. Different tool rotational speeds of 760, 1065, 1445, and 2000 RPM have been applied with manual and automatic compression to study their effect on the quality of welded joints. Heat generation, pressure applied, and depth of tool penetration have been measured during the welding process. The result shows that there is a possibility to weld AA1100 sheets; however, there is some surface defect that happened due to insufficient condition of welding. Moreover, the relationship between rotational speed, pressure, heat generation and tool depth penetration was created.

**Keywords :** friction, spot, stir, environmental, sustainable, AA1100 aluminum alloy

**Conference Title :** ICWET 2017 : International Conference on Welding Engineering and Technology

**Conference Location :** Paris, France

**Conference Dates :** September 21-22, 2017