عنوان مقاله:

Numerical analysis of material flow during friction stir spot welding

محل انتشار:

سومین کنفرانس ملی و اولین کنفرانس بین المللی پژوهش هایی کاربردی در مهندسی برق، مکانیک و مکاترونیک (سال: 1394)

تعداد صفحات اصل مقاله: 6

نویسنده:

Moosa Sajed - *Mechanical Engineering Department, Azarbaijan Shahid Madani University, Tabriz, Iran*

خلاصه مقاله:

Finite element method (FEM) is used for simulation of material flow during friction stir spot welding (FSSW). Point tracking technique is applied to specify flow direction of each part of workpiece materials during welding. Simulation has been done using DEFORM-3D commercial software. Points has been taken under pin back surface in three layers. Top surface of upper sheet, interface of two sheets and deep in lower sheet. Material flow is analyzed both in radial and tool plunge direction. Results indicates that material flow is complicated and it differs in different zones. Generally, upper sheet materials displacement is more than lower sheet. Materials that are on top surface of upper sheet move up to bottom of keyhole and then be extruded upward. Materials that are deep in lower sheet have minimum flow and then minimum effect on mixing and welding. Interface materials flow is like surface material with lower displacement. On Interface, materials of lower sheet move upward and mix with upper sheet material.

کلمات کلیدی:

FEM, Point tracking, Material flow, FSSW, DEFORM-3D