

عنوان مقاله:

The effect of process variables on mechanical properties and microstructure of Al6061 and Al7075 in friction welding
(connection (FSW

محل انتشار:

دهمین همایش مشترک و پنجمین کنفرانس بین المللی انجمن مهندسی مواد و متالورژی و انجمن علمی ریخته گری ایران (سال: 1395)

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خلاصه مقاله:

Friction stir welding because of its solid-state nature compared to the fusion welding has more desirable properties, less confirmation of heat on the base metal, less and economical intermetallic compounds. In this paper, connection of Al6061 to Al7075 is investigated by stir welding. Cylindrical tools with a 0.8 mm aperture was designed and after welding with 1000Rpmrotational speed and 80 mm/min progressive speed and the resulting a weld without flaw, it was chosen as the tool for the job. Al7075 alloy went under annealing to improve flexibility, reduce stiffness and facilitate dissimilar connecting to Al6061. Butt joints of Al6061 and Al7075 was done with different rotation speed and progressive speed that in the pair of 80 1 1000./ mmminrpm and 100 11000 ./ mmmin rpm and 80 11250./ mmmin rpm rotation and progressive speeds structure was of good quality and weld area was free of metallurgical and structural defects. Deposits Mg₂Si and MgZn₂ was determined using metallography and image recording by optical microscope in microstructure and SEM was used to prove it. Increase of input heat caused deposits at the intersection of joint, TMAZ and HAZ, the size of particles increase and reduction of hardness. Reduction and enlarging .of deposits along with the size of grain increasing, in the HAZ area caused viewing point of failure in this area

کلمات کلیدی:

Welding, Friction Stir Welding, Aluminum alloy, HAZ, TMAZ

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