

عنوان مقاله:

Investigating the Effect of TIG and FSW Joint Design on the Mechanical Properties of the AA5083 Aluminum Alloy in Welding Processes

محل انتشار:

مجله مهندسی مکانیک و صنایع میپتا، دوره 4، شماره 2 (سال: 1399)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

The 5083 aluminium alloy is one of the alloys of the 5xxx series that is widely used in defence and shipbuilding industries. In this study, the 5083 aluminium alloy plates were evaluated through two friction stir welding and tungsten inert gas welding (TIG) by a double groove weld with a 30° angle and a 2mm gap for TIG and a simple butt weld for FSW. In this study and in addition to examining the samples' mechanical properties, the microstructure changes and the hardness were also reviewed. The results show that the FSW weld has better mechanical properties than the TIG weld due to fast welding speed. However, by preparing the pieces, the mechanical properties of TIG get closer to those of FSW. In the FSW welding in the weld nugget, the grains have a fine and co-axial structure, and an increase in the advance rate will reduce the inlet heat and make the grains smaller. Nevertheless, in TIG welding at high speeds, the grains become more extensive with increased inlet heat.

کلمات کلیدی:

FSW Welding, TIG Welding, 5083 Alloy, Mechanical Properties, Microstructure

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