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Impact of the heat treatments on the microstructure of the aluminum alloys 7075 T6 welded by the friction stir welding process

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Abstract : The welding process of the aluminum alloys 7075 T6 is increasingly used in the aeronautical industry. The use of the friction stir welding process (FSW) requires a good understanding of the microstructure generated by the rapid temperature rise in the heat affected zone and the thermomechanically affected zone of the used alloy. By applying the process of welding FSW, the characterization of the microstructure, because of the diversity of its components in terms of size and nature, requires the use of multiple techniques of investigations such as the use of optical microscopy and scanning electron microscopy for local approaches. It also requires the use of the impact strength test to assess the quality of the weld, to characterize the interaction between the material and the welding process, and to provide quantitative data on the welded joints behavior.

Keywords : Aluminum alloys 7075 T6, Friction stir welding process (FSW), heat treatment, microstructure, Impact strength test.