

PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 1 GRANT LASTING 12 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT THE DEPARTMENT OF MANAGEMENT, INFORMATION AND PRODUCTION ENGINEERING OF THE UNIVERSITY OF BERGAMO (ACADEMIC RECRUITMENT FIELD 09/B1 – MANUFACTURING TECHNOLOGY AND SYSTEMS - ACADEMIC DISCIPLINE ING-IND/16 – MANUFACTURING TECHNOLOGY AND SYSTEMS.

announced with decree of the Rector Rep. no. 294/2017 of 23.05.2017 and posted on the official registry of the University on 23.05.2017

RESEARCH PROJECT

“Analysis of the process parameters on the mechanical and metallurgical properties of FSW joints on aluminium sheets type 2000, 6000 and 7000”

Research Project

The aim of the present project is to study the FSW (Friction Stir Welding) joining process applied to aluminum sheets class 2000, 6000 and 7000, analysing the mechanical and metallurgical properties of the obtained joints.

The FSW technology is a solid state joining process particularly suitable for the welding of aluminum alloys and for the metals that are difficult to be welded by conventional technologies. The FSW exploits the lowering of the yield strength of metallic materials as the temperature increases and the consequent increase in the formability. FSW is currently widespread in the marine, aviation, automotive and aerospace.

This project intends to look closely at the correlation between process parameters and characteristics of the joint, especially in the case of combination of different materials (7075-2024, 7075-6062, 2024-6062), with particular attention to issues such as mechanical resistance, metallurgy of the joints and susceptibility to corrosion.

Simulations of the process based on the use of a finite element code will be also executed. The previously collected experimental data will be used for the validation and the optimization of the FEM model. The simulations should contribute to increase the information about the flow of heat within the weld zone.