I. INTRODUCTION
Electromagnetic joining (EMF) is a high speed joining process with high electrical conductivity as an effective and affordable alternative to conventional joining processes based on mechanical forces, structural adhesives, welding and mechanical crimping in processes with die/punch tools. This technology is used in various processes to join metal and composite material and offers potential to foster new applications allowing joining dissimilar materials and metal to plastic or metal to rubber welds and mechanical crimping in presses with die/punch tools. This technology is based on electromagnetic compression processes, namely on a magnetic field or on an electric current that generates the forming process. It is used in various processes to join metal and composite material.

II. OBJECTIVES
The objective of this work is to investigate the interference-fit joining of aluminium tubes with high electrical conductivity against a mandrel to identify the major process parameters with the aim of identifying potential to foster new applications in the assembly of lightweight tubular structures at room temperature. The work investigates the main parameters that influence the interference-fit joining strength.

III. JOINING BY ELECTROMAGNETIC FORMING
The joining by electromagnetic forming (EMF) is a high speed joining process with high electrical conductivity as an effective and affordable alternative to conventional joining processes based on mechanical forces, structural adhesives, welding and mechanical crimping in processes with die/punch tools. This technology is used in various processes to join metal and composite material and offers potential to foster new applications allowing joining dissimilar materials and metal to plastic or metal to rubber welds and mechanical crimping in presses with die/punch tools. This technology is based on electromagnetic compression processes, namely on a magnetic field or on an electric current that generates the forming process. It is used in various processes to join metal and composite material.

IV. INTERFERENCE-FIT JOINING BY EMF
Interference-fit joining is an effective and affordable alternative to conventional joining processes based on mechanical forces, structural adhesives, welding and mechanical crimping in processes with die/punch tools. This technology is used in various processes to join metal and composite material and offers potential to foster new applications allowing joining dissimilar materials and metal to plastic or metal to rubber welds and mechanical crimping in presses with die/punch tools.

V. MANUFACTURING AND TESTING OF JOINTS
Tubing and Mandrel Preparation
AA6082-T4 was tubing joined on mandrels made of AISI 1020. AA6082-T6 and AA6082-T15 were tested with different surface roughnesses. The outer diameter of the tube was used as 15 mm with a wall thickness of 1 mm.

VI. RESULTS
V. RESULTS

VI. CONCLUSIONS
The strength of interference-fit joining AA6082-T4 tubes produced by EMF was studied considering the influence of process parameters. The process main parameters were analysed in a gradual manner regarding the joint strength and failure modes. The results demonstrated that the joint strength can be improved by increasing the discharge energy and applying a field shaper to the tube. The effectiveness of the field shaper was compared to the strength of the aluminum AA6082-T4 tube as reference.

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