



# DIGEST

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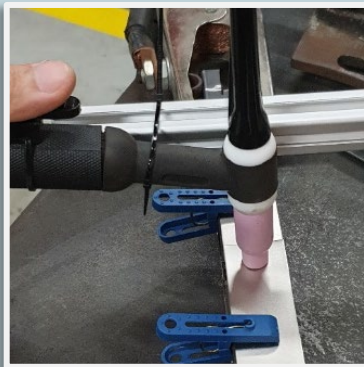
This research addresses the critical issue of optimizing joining methods for electric vehicle (EV) battery interconnects, focusing on the unique application of micro-TIG welding. Unlike conventional joining methods, such as laser welding or ultrasonic bonding, micro-TIG welding is explored for its potential to enhance the mechanical, microstructural, and electrical properties of lap joints in nickel-plated steel, commonly used in EV battery packs.

The results of this research demonstrate that varying the micro-TIG welding process parameters, particularly increasing current modulation, significantly influences the mechanical strength, microstructure, and electrical resistance of the welded joints. Higher current modulation, specifically at 25A, consistently yields superior performance in terms of ultimate tensile strength,

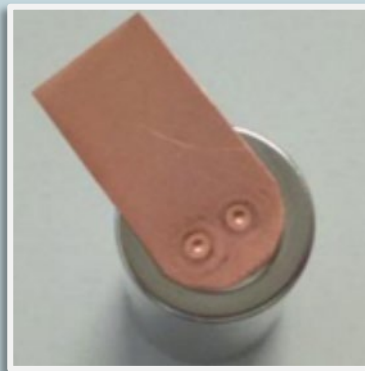
yield strength, and Young's Modulus. The low K Factor associated with this condition indicates reduced electrical resistance, a crucial factor for efficient battery interconnects.

The significance of these findings lies in their potential to optimize micro-TIG welding as a joining method for battery interconnects, contributing to the development of safer and more efficient electric vehicles. By improving mechanical strength and electrical conductivity, the research directly addresses challenges related to EV battery pack integrity and safety. Furthermore, the study's broader impacts include advancements in joining technologies for battery manufacturing, potential applications in other industries, and overall support for sustainable transportation.

# Electro-Thermo-Mechanical Behaviours of Joints Integrity for Electric Vehicle Battery Interconnects



The process of micro-TIG welding



Example of micro-TIG welding (Alexy, 2019)



Tensile testing of the specimen

This research provides valuable insights into the electro-thermo-mechanical behaviours of micro-TIG-welded joints and offers a unique perspective on optimizing this technique for electric vehicle battery interconnects.

The results contribute to the ongoing development of electric vehicles and sustainable transportation solutions, emphasizing the importance of suitable joining methods for enhancing performance, safety, and efficiency in EV battery packs.

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