



Higher Normal School TALEB Abderrahmane

Laghouat (ENSL)



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**Mekahal Abdelhamid**

for participation in the 4<sup>th</sup> National Conference on Applied Physics and Chemistry

Held on February 17 and 18, 2025, Higher Normal School TALEB Abderrahmane of  
Laghouat (ENSL), Algeria.

**Title: Effect of Rotational Speed on Rotary Friction Welding**

**Co-Authors: Raouache elhadj, Fares Khalfallah**



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# Proceeding

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## **Effect of Rotational Speed on Rotary Friction Stir Welding**

Mekahal Abdelhamid, Raouache Elhadj, Fares Khalfallah

ID 176

**Abstract:** Rotary Friction Welding (RFW) is a solid-state welding technique that joins metallic parts without melting them, by utilizing heat generated through friction. This study focuses on analyzing the effect of rotational speed on the quality of welded joints between two types of stainless steel: 304 and 316L. Experiments were conducted with rotational speeds varying from 1000 to 2000 rpm to assess their influence on the mechanical properties and microstructure of the welds. The results reveal that an increase in rotational speed enhances the formation of a homogeneous joint, characterized by a refined microstructure and improved tensile strength. However, when the rotational speed exceeds a critical threshold, overheating can occur, resulting in degradation of the welded joint. The findings underscore the importance of precise control over rotational speed to achieve optimal performance in rotary friction welds, especially in demanding industrial applications such as aerospace and automotive sectors, where high reliability is essential.