TELSONIC
ULTRASONICS

Revolutionizing Battery Cable Assembly for Industrial Electric Vehicles: A Case Study

PLASTIC WELDING | METAL WELDING | CUTTING | CLEANING | SIEVING

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In a significant leap for the industrial electric vehicle (EV) sector, Telsonic's innovative PowerWheel® welding technology has been successfully integrated with ProEV™ cables and Stäubli's PerforMore connectors, setting new standards for quality and efficiency in battery cable assemblies. This synergy marks a pivotal advancement in EV technology, promising enhanced performance and reliability for industrial applications.

The Challenge: Precision in Limited Space

Promark Electronics, a division of Electrical Components International, faced the complex task of welding ProEV™ 95 mm² cables to Stäubli's compact PerforMore two-pole connectors within the tight confines of an electric drivetrain. The ProEV™ cable, known for its exceptional flexibility and composed of 3,000 fine strands of 0.2 mm diameter, required a welding solution that could achieve the necessary weld compaction within an available width of just 18 mm, as opposed to the ideal 22 mm. This posed significant challenges in ensuring a high-quality weld without damaging the delicate strands in the transition area.

The Solution: Telsonic's Torsional PowerWheel® Welding System

Telsonic's Torsional PowerWheel® welding system emerged as the ideal solution to this intricate problem. The system's advanced tooling design and configuration enabled the precise application of welding energy required to achieve a robust weld within the restricted 18 mm space. Key to this success was the PowerWheel® system's ability to provide higher clamping force, crucial for welding large cables in compact areas.

Configuration Advantages

The PowerWheel® system's unique torsional welding amplitude peaks at the center of the weld nugget, allowing additional energy application necessary for thicker welds with minimal impact on the fine strands. This feature is pivotal in ensuring the integrity and quality of the weld, even within the confined space constraints. Moreover, Telsonic's system allows meticulous control and monitoring of critical quality variables such as final weld height, welding time, and power. This level of precision ensures consistent weld quality and facilitates comprehensive production data recording for traceability.

Successful Implementation: MT8000 Torsional Ultrasonic PowerWheel® System

The battery cable assembly was completed using Telsonic's MT8000 torsional ultrasonic PowerWheel® system. This state-of-the-art system has proven its capability in delivering high-quality welds under challenging conditions, underscoring its suitability for demanding industrial EV applications. The successor product, Telso®Terminal TT7, continues this legacy of excellence, further enhancing the reliability and efficiency of battery cable assemblies.

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