

Revolutionary Screw Solution for Silver-Plated Aluminum Busbars: A Case Study

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING

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Telsonic's advanced torsional SONIQTWIST® welding technology has been successfully applied in a groundbreaking solution for fixing silver-plated aluminum busbars using screws. This innovation, developed in collaboration with the KERN-LIEBERS Group, a producer of precision stamped parts, promises to set new standards for reliability and conductivity in electrical connections for industrial applications.

The Challenge: Securing Silver-Plated Aluminum Busbars

The KERN-LIEBERS Group has pioneered a technique to coat aluminum busbars inline with silver. This silver coating enhances the busbars' conductivity but poses a challenge for secure attachment using screws, due to the relaxation properties of aluminum. The solution requires the integration of a copper sleeve into the busbar, providing a durable and electrically conductive connection that allows for screw fixation.

The Solution: Integrating Copper Sleeves with Ultrasonic Welding

To implement this solution, a copper sleeve is placed into a pre-punched hole in the busbar. The sleeve is designed with an oversized collar to facilitate the transmission of torsional ultrasonic vibrations through a sonotrode. This process welds the copper sleeve to the silver layer, ensuring the integrity of the silver coating is maintained.

Configuration Advantages

The integration of silver coating expands the compatibility of ultrasonic welding to new aluminum alloys. Ultrasonic welding offers a process-secure and long-term stable connection between dissimilar metals with minimal electrical resistance. The production of busbars with punched holes is cost-efficient, and integrating the silver coating into the production process eliminates additional transport costs for external coating.

Successful Implementation: Torsional SONIQTWIST® Technology

This application was successfully executed using Telsonic's torsional SONIQTWIST® technology. The torsional welding system TSP3000, depicted above, demonstrates Telsonic's capability to meet the demanding requirements of industrial applications, ensuring reliable and conductive connections.



Contact: Telsonic AG, Dirk Schnur, Chief Marketing Officer

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