TELSONIC ULTRASONICS

Application example

Screw solution for silver-plated aluminum busbar

PLASTIC WELDING | METAL WELDING | CUTTING | CLEANING | SIEVING

The application was welded using torsional SONIQTWIST® technology. Above, the TSP3000 torsional welding system.

Task

The KERN-LIEBERS Group, a producer of precision stamped parts, has developed a technique for coating aluminum busbars inline with silver. The challenge is to fix these coated busbars in place using screws. Direct screwing is not possible due to the relaxation properties of the aluminum. The solution is to integrate a copper sleeve into the busbar, which enables a permanent and electrically conductive connection, which is then used for screw fastening.

Solution

The copper sleeve is placed in a pre-punched hole in the busbar to enable implementation. This sleeve is designed with an oversized collar which enables the transmission of torsional ultrasonic vibrations through a sonotrode. The copper sleeve is joined to the silver layer by ultrasonic welding, whereby the integrity of the silver layer is maintained.

Advantages of this configuration

The silver coating extends the compatibility of ultrasonic welding to new aluminum alloys.
Ultrasonic welding enables the reliable and long-term stable joining of non-ferrous metals with minimal electrical contact resistance.
Producing busbars with punched holes is cost-efficient. Additional transportation costs for external coating are therefore prevented by integrating the silver coating into the production process for the busbars.