

Application example

## Screw-on solution for aluminum busbars

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



### Task

The objective is to fasten a busbar with a screw in a cost-efficient way while still maintaining the electrical conductivity. Directly utilizing screws is not feasible due to the specific relaxation properties of the aluminum and the insufficient pre-load created by the low height of the busbar. The proposed solution involves utilizing a silver-plated copper sleeve located within the busbar, which thereby creates a durable and conductive connection and therefore enables screw fastening.

### Solution

The silver-plated copper sleeve is inserted into a punched hole in the busbar. This sleeve is designed with an enlarged collar in order to effectively transmit torsional ultrasonic vibrations by means of a sonotrode. The sleeve is joined to the aluminum busbar by ultrasonic welding, which preserves the integrity of the silver coating.

### Advantages of this configuration

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 efficient and cost-saving. The integrated process monitoring ensures a consistently high quality of the connections.



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