

Application Example

High Power Lock Box Terminals-SQ4

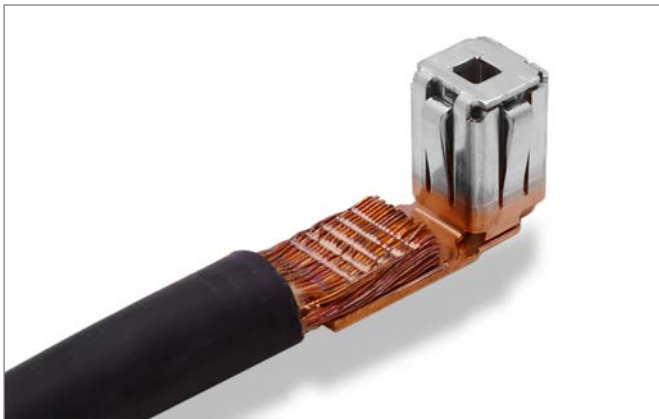
PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



Task

This 90° SQ4 terminal is made of C15100 copper alloy without plating in the weld area. The application required welding both 35 mm² and 50 mm² cables. The terminal blade width for 50 mm² was increased to 18 mm from 13 mm to accommodate a weld width of 15 mm. This also allows for 1.5 mm of clamping width on each side of the terminal when using a 15 mm sonotrode. However, the connector height of about 17 mm presented challenges for the sonotrode's clearance when considering linear and conventional ultrasonic welding processes. It is not physically possible to design a linear horn that can clear the 17 mm height and efficiently deliver the 20 kHz frequency required.

Solution

Telsonic's Torsional PowerWheel® system was utilized to clear the connector height and achieve a superior quality weld for both the 35 mm² and 50 mm² cables with the SQ4 terminal. The sonotrode's orientation allows for clearance of the 90° terminal and delivers sufficient welding energy to achieve a quality weld without affecting the finer strands in the transitional area, or the connector itself due to the gentler application of the vibrations.

Configuration Advantages

The PowerWheel® technology approach allows the sonotrode to clear the connector and reach the cable for welding the 90° SQ4 Royal Power Solutions terminal. Since the torsional welding amplitude is at its peak in the center of the weld nugget, one can apply the additional energy required for welding larger cables in a smaller weld area. This is done with minimal chance of stressing the strands within the weld transition area.

Torsional welding allows for an acceptable weld quality with minimal effort. Quality control variables such as final weld height, welding time, and power are easily monitored and controlled during every cycle whilst the production data is recorded for traceability.



The application was completed using a MT800 torsional ultrasonic PowerWheel® system. The picture above shows the successor product Telso®Terminal TT7.