

Application example

## 120 mm<sup>2</sup> aluminum cable on an aluminum conductor rail

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



### Task

Due to the pricing developments on the copper market and the desire to reduce weight, aluminum is increasingly being used as an alternative for high-current applications. In order to conduct power from the battery at the back of the vehicle into the engine compartment, an aluminum conductor rail running through the body has to be connected to a 120 mm<sup>2</sup> aluminum cable. The connection quality has to be monitored in the production process while process data needs to be stored. Low line and conduction losses play an important role, which is why the connection's electrical contact resistance must be as low as possible.

### Solution

To ensure good electrical conductivity when connecting aluminum, the oxide layer first has to be broken down – when using ultrasonics, the results of this process are outstanding thanks to the high-frequency vibrations. Welding aluminum with a larger cross section of up to 200 mm<sup>2</sup> requires a great deal of power, which is why this application is welded using a PowerWheel® system such as the Telso®Terminal TT7 with sound protection casing accessible from three sides. The welding process is controlled using the Telso®Flex control software with convenient touchscreen operation.

### Advantages of this configuration

The torsional PowerWheel® technology can output power up to 14.4 kW, meaning it is often used for large wire cross sections that require higher levels of power. Thanks to its hallmark torsional oscillation mode, the welding width can be reduced by up to 30% in contrast to conventional ultrasonic welding solutions, which can be useful when construction space is limited. The Telso®Flex process controller allows for comprehensive quality monitoring by enabling you to set parameter limits. All data is stored and can be analyzed statistically if necessary. PowerWheel® components can be integrated seamlessly into production lines.



The application was welded using torsional PowerWheel® technology. Above, the Telso®Terminal TT7 with a maximum welding power of 14.4 kW.