

## The Driving Power Behind Cable Assembly

Telso®Terminal TT7 – The Digital Revolution In Ultrasonic Metal Welding

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



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Following the recent launch of Telsonic's Telso®Terminal TT7 in the latter part of 2021, the system is more than living up to expectations, and already revolutionising ultrasonic metal welding applications in a number of areas. Key amongst these are applications within the fast-growing Electromobility Sector, where TT7 is addressing the increasing demand for the highest levels of quality and process control in cable assembly, terminal assembly, and battery production applications.

The height of the connector, which was approximately 17 mm, posed a particular challenge for sonotrode spacing when considering linear and conventional ultrasonic welding processes. Using these options, it is not physically possible to construct a linear sonotrode that can reach over the 17 mm height and still efficiently achieve the required frequency of 20kHz. The solution in this application came in the form of Telsonic's PowerWheel® torsional welding system. Available as an integral part of the TT7 system, PowerWheel® technology was able to achieve the termination height and produce a high-quality weld between both the 35 mm<sup>2</sup> and 50 mm<sup>2</sup> cable variants and the SQ4 terminal. The orientation of the sonotrode allows for not only sufficient clearance, but also the required weld energy to deliver a quality weld without affecting the finer strands in the transition area, or the connector itself thanks to the gentler vibrations.

PowerWheel® also offers advantages when welding a larger cable in a smaller area. This was clearly demonstrated in the application where a ProEV™ cable, manufactured by Promark Electronics, a division of ECI, was joined to a silver-plated Rosenberger connector.

In instances such as this, the height of the weld nugget is greater than in a normal scenario. Since the amplitude in torsional welding is at its highest in the middle of the weld nugget, more energy can be applied to compensate for the greater



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01 Telsonic's Telso®Terminal TT7

02 High Power Lock Box terminal – SQ4 – joined to an EV cable

height, whilst once again limiting the potential for damage to the strands within the transition area of the weld seam. Telsonic's PowerWheel® torsional welding system was the perfect solution for this application, achieving a good quality weld between the 35 mm<sup>2</sup> flexible ProEV™ cable and the 10 mm wide connector.

In a further example of welding within a smaller space, a ProEV™ cable was joined to a Stäubli PerforMore compact two-pin connector, the combination being used for electric propulsion systems. This particular cable, with 95 mm<sup>2</sup> and 3,000 flexible, fine strands of 0.2 mm diameter, is used to terminate the Stäubli connector, with limited space for the required weld width. The available weld seam width of 18 mm, as opposed to 22 mm, once again brought with it the challenge of offering a welding solution in a smaller space, where the required weld seam compression must be achieved without damaging the finer strands in the weld seam transition area.

Once again, PowerWheel® torsional welding technology, within the Telso®Terminal TT7 system, successfully achieved the high-quality weld required between the 95 mm<sup>2</sup> flexible ProEV™ cable and the 18 mm wide PerforMore connector.

In each of the application examples here, quality control variables such as the final height of the weld, the welding time, and the power were easily monitored and controlled in each cycle to ensure perfect results every time.

As can be seen in these examples, the Telso®Terminal TT7, combined with the latest version of Telsonic's proven PowerWheel® welding technology, ensures maximum reliability and optimum process control for welding metal cable cross sections up to 200 mm<sup>2</sup>. Additional benefits include the ability to change tools in under 5 minutes, thanks to the TT7's new quick-change system. The Telso®Terminal TT7 also features standardised interfaces for digital networking and ease of integration into production systems

by Dirk Schnur, CMO at Telsonic AG and Tom Pettit, Genesis Sales & Marketing Limited



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- 03 ProEV™ cable joined to a silver-plated Rosenberger connector
- 04 ProEV™ cable joined to a Stäubli PerforMore compact two-pin connector