

Telsonic's Telso®Terminal TT7 Leads The Digital Revolution In Ultrasonic Metal Welding

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



Bronschhofen (CH), 10/2022

Manufacturing has changed in recent years with many sectors placing a greater emphasis on flexible production, faster product changeover, and smaller batch sizes. This means that manufacturers, and the technologies they use, need to be more agile if they are to meet the changing demands of their customers. The ongoing transition from conventional internal combustion engines to that of hybrid and electric propulsion within the automotive sector has also been instrumental in influencing the way many manufacturing processes are changing.

The attributes of versatility, flexibility, and efficiency are at the heart of Telsonic's new Telso®Terminal TT7 which, since its recent launch, has been revolutionising ultrasonic metal welding in many application areas. A combination of digital process control, the introduction of a new generation of PowerWheel® technology, and a series of market specific features have all been incorporated into this new ultrasonic metal welding system.

The new Telso®Terminal TT7 is already making a positive impact on cable assembly and battery production by addressing the increasing demand for the highest levels of quality and process control. Specific applications include HV cables, battery terminals, and cell connectors which are welded in a wide variety of materials, designs, and configurations.



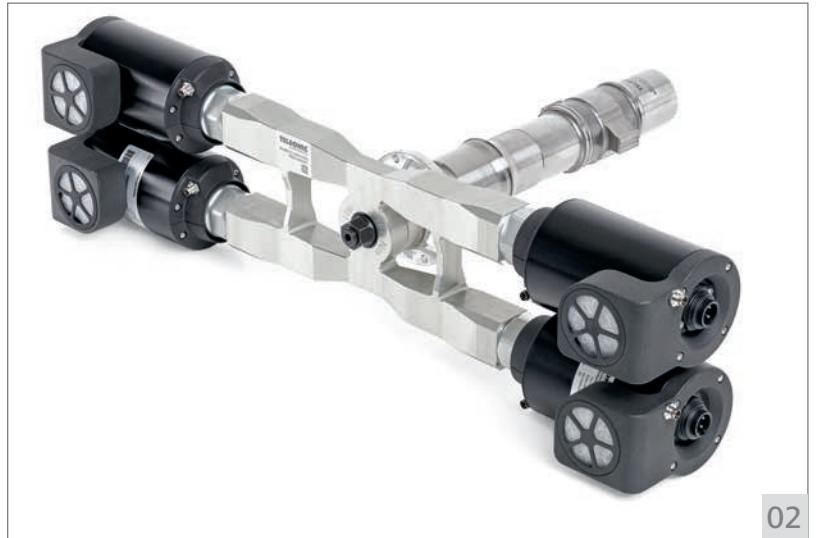
01 Telsonic's New Telso®Terminal TT7

Designed To Enhance Customer Metal Welding Production Processes

The Telso®Terminal TT7 revolutionizes ultrasonic metal welding through process control digitalization. A series of comprehensive control mechanisms ensure continuous monitoring of the welding process, ensuring a smooth welding operation with accurate results. In addition, any power supply interruptions are detected immediately preventing flawed production parts.

Telso®Terminal TT7, combined with the latest version of Telsonic's proven PowerWheel® welding technology, guarantees maximum reliability and optimum process control for welding metal cable cross sections up to 200 mm². PowerWheel® welding technology uses an innovative sonotrode oscillation behavior, excited by a torsional converter. This results in a pendulum motion directly at the weld location, which ensures that the maximum amplitude is always in the center of the weld surface area and that the energy is applied to the welding zone in a targeted and focused manner.

If required the welding amplitude can be optimized via a booster to fit the specific application. As with conventional ultrasonic welding, the PowerWheel® system can weld all non-ferrous metals and combinations of these materials. For even better efficiency, the PowerWheel® sonotrode can have up to four different welding surfaces. Additional customer benefits include a new quick-change system, which gives the ability to change tools in under 5 minutes. A self-centering Poka Yoke feature incorporated within the PowerWheel® sonotrode eliminates potential sources of error and greatly reduces the need for manual adjustment. Also, by achieving ultra-short cycle times of only 15 seconds during production, this innovative metal welding system maximizes productivity levels and output.



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Boosting Productivity & Quality Through Innovative Control Technology

Productivity is influenced by various factors, and Telsonic's proven Telso®Flex operating software, which has been enhanced for TT7, offers a range of functions that improve quality while reducing process times.

During production, Telso®Flex enables continuous quality monitoring. The system detects trends that can be used to quickly identify and prevent possible production errors. A series of sensors are used to detect components that have been inserted at an angle or incorrectly and which deviate greatly in height or diameter. The parts to be joined are recorded in detail together with images in the material database, this means that material changes are documented and traceable. An automatic self-test of the system ensures stable production conditions and timely fault detection.

New operators become efficient sooner due to the step-by-step operator guides which contain text and images of the parts to be joined. Operators also have the option of adjusting the batch size of the production run when manufacturing large quantities. In addition, the software offers them valuable information and topic-related assistance, which reduces down-time during maintenance and service procedures. An intuitive 21.5" user interface displays only the information which is relevant to the operator. Production data and values from various monitored sensors are available for subsequent storage and analysis via standardized interfaces for digital networking and ease of integration into production systems.



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- 02 The Telso®Terminal TT7 works with the latest version of the proven PowerWheel® welding technology
- 03 Multiple quick-change systems reduce application and tool changeovers to just a few minutes
- 04 Innovative control technology with a user-friendly interface

The Telso®Terminal TT7 can be connected directly to the customers' MES (Manufacturing Execution System), which increases process reliability and facilitates quality assurance. The Telso®CON interface provides a flexible solution for the integration of the Telso®Terminal TT7 via OPC-UA. Production data always remains transparent allowing production orders, together with all technical

parameters, to be transferred automatically. All parameters and results can be shared via the network and used to optimize production control. Users can access real-time production data and welding results and save data to network drives or other storage media. This ensures traceability once data has been processed for its specific purpose.

Temperature Controlled Tools

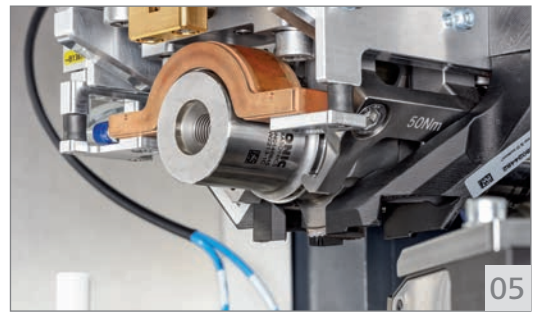
The Telso®Terminal TT7 uses a liquid temperature control system, eliminating the need for expensive compressed air cooling. The liquid temperature control system ensures a constant temperature for the tools before and during welding. The temperature setpoint is conveniently specified in the Telso®Flex software. If the tool temperature is seen to be outside the pre-set limits, production is prevented, and the operator is informed. The cooling process protects the tools and ensures a stable welding process with consistent product quality.

A Comprehensive Standard Solution with Customizable Options

As standard the Telso®Terminal TT7 system incorporates several modules including the controller, ultrasonic generator, and the new PowerWheel® vibration system with the quick-change feature. Also included is terminal clamping, with horizontal and vertical adjustment, the anvil with its quick-change system and indexing, fan-cooled converters, and a QR and barcode reader.

A comprehensive range of additional items are also available such as: part positioning nests, cable positioning with insertion detection, cable clamping for single and multiple lines, and a wire cutter to destroy incorrectly welded parts, together with segregation of rejects to an external bad parts container.

There are also options for a damping system for vibration-sensitive terminals, an integrated debris extraction system with sonotrode cooling, the liquid temperature control system for the sonotrode and clamping jaws, and temperature monitoring of the converters. These are further supported by a quality monitoring software package for step-by-step guided application changeover and interfaces via OPC-UA and for peripheral devices. The flexibility and capability inherent within this latest generation system is clearly demonstrated through the diversity of the applications where the system has been adopted to date.



05 The sonotrode and the gathers are kept within the required temperature range using the liquid cooling circuit



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