

Innovative technology for industrial ultrasonic applications

Offering solutions to users

PLASTIC WELDING METAL WELDING CUTTING CLEANING SCREENING

Interview between Ellen-Christine Reiff, Redaktionsbüro Stutensee, and Dr. Axel Vietze, CEO of the Telsonic Group.

The Swiss Telsonic Group has been offering its technological solutions through representation in Europe, America and Asia since 1966. Constant innovations help ensure that, in many applications, the company has achieved an advance that offers added value to users. With its more than 250 highly-qualified staff, the owner-managed family firm has specialised in plastic and metal welding as well as ultrasonic cleaning and screening. Current trends mean that these competencies are strongly in demand, e.g. for lightweight construction.

The main sectors of activity for the Swiss ultrasonic specialists are the automotive, packaging and medical industries. «As a pioneer in ultrasonic technology, we develop and sell production-ready ultrasonic solutions worldwide. Our in-depth development and production capabilities allow us to react rapidly to customer requests. Our focus here is on cooperation with users and system-builders,» sums up CEO & Chairman Dr. Axel Vietze. Competitiveness is assured by production sites in Switzerland and Serbia, which have been optimised according to LEAN principles. Thanks to its strong customer orientation, the company has grown constantly in recent years. Its product range includes ultrasonic generators, converters, actuators, mechanical assemblies, controllers, semi-automatic



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01 Electromobility – a topical subject, supported by industrial ultrasonic applications

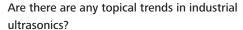
Dr. Axel Vietze, CEO & Chairman of the Telsonic Gruppe

machines and a full range of acoustic tools. Even at the prototype stage, the FEM-supported development of ultrasonic welding sonotrodes accompanies the development of applications, leading to innovative tool designs. The effort put into mass production pays off in tools that have a homogeneous amplitude distribution with low power loss in the protection class required.



How is the technology developed at Telsonic different to that of its competitors?

The SONIQTWIST® and PowerWheel® torsional welding technologies, offered as a complement to longitudinal welding, are unique throughout the world. Particularly gentle and powerful, they solve complex application problems for all industries. Among other things, this patented process permits better access to the application areas that cannot be reached with the longitudinal process. Telsonic also asserts its market leadership in high-output generators (5 kW and up), whose uses include metal welding and cut-n-seal of textiles.



Lightweight construction is an important trend in the automotive industry. Telsonic's SONIQTWIST® technology supports thin-wall technology, which is







used, for example, in vehicle bumpers made from polypropylene (PP). This patented and extremely gentle welding process enables wall strength to be significantly reduced without visible marks on Class A surfaces of already lacquered vehicle parts. As well as cutting down on weight, it enables significant cost savings.

In the composites application field, pressure-free and cold cutting is much in demand. Telsonic ultrasonic cutting systems achieve outstanding results with a clean cut, giving them an advantage over water jet and laser cutting. In these applications, the water penetration or burn traces they leave behind are often unwanted. In addition, ultrasonic welding systems need no additional resources and require little energy. Ultrasonic-optimised hard metal blades increase material throughput thanks to high cutting speed. Tools are also subject to less stress and have a longer service life.

At Telsonic, electromobility is divided into the application areas of batteries, IGBT (power electronics), battery and high voltage cables. In battery manufacture, ultrasonic screening systems from the SONOSCREEN® plus range ensure homogeneous powder consistency for the manufacture of electrodes. During cell assembly, the conductor foils are bonded with the cell conductors (pouch cell) or with the contact terminals (e.g. round cell) using the longitudinal or the torsional high-power welding process, depending on the application. In ultrasonic welding on metal-coated ceramic substrates, as used in power electronics (IGBT modules), the gentle torsional welding process has an advantage over traditional longitudinal welding, because it subjects the material to less stress. Telsonic ultrasonic systems have been welding battery cables for many years now and are in series production worldwide with well-known manufacturers of

electrical systems. One of Telsonic's success fields is PowerWheel® torsional high-powered welding for bonding battery and high-voltage cables made from copper or aluminium, particularly with large cable cross-sections. The reliable process of welding cable strands in the prefabrication of vehicle cable harnesses is characterised by growing quality requirements in autonomous driving – a current topic in quality monitoring. To this end, the Telsonic Quality Control Center (TQCC) provides a solution that can be integrated into the production process and networked with MES systems, thereby meeting the requirements of Industry 4.0. The general quality characteristics of the ultrasonic welding process are low contact resistance and low mechanical and thermal stress during the welding process.



- 03 Vehicle bumpers with ultrasonically welded sensor brackets
- 04 Sensor brackets for parking distance sensors, torsionally welded with SONIQTWIST®
- 05 Ultrasonic sonotrode welds sensor bracket to bumper
- 06 Ultrasonic cutting of a carbon-fibre mat



3D printers for industrial use are already an established trend. To this end, Telsonic has specifically developed resonance systems that support powder recovery through ultrasonic screening, which reduces costs and protects the environment.

In the packaging industry, key requirements include high speed, as well as safe and tight welding. To make this possible, Telsonic offers system builders digital multi-function generators (MAG) with various bus modules for data communication with higher-level controllers. MAG offers the highest cycle rates and the lowest energy consumption. New closing mechanisms on drinks packaging, coffee capsules, tea bags and thin materials can be securely welded with ultrasonics. The ultrasonic joining technology, which has absolutely no adverse health effects and works without adhesives or chemicals, is especially suitable for the food and pharmaceutical industries.

In the medical industry, the uses of torsional welding technology include welding ultra-thin membranes securely and reliably, without causing any damage. In principle, thanks to the patented technology known as the so-called membrane effect, which involves the membrane oscillating until it is destroyed, this destruction will no longer be an issue.

What does the future hold for ultrasonics, in your opinion?

Ultrasonic technology is safe and sustainable. The spectrum of applications for ultrasonics is huge, particularly in terms of important industrial trends. The Telsonic Group is well-positioned for this and is investing in innovation and customer support in order to give the best possible support to all relevant industries.



A very wide range of industrial ultrasonic applications