

Innovative Packaging Technologies: Sustainability Meets Process Reliability

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



01 Food packaging made from mono-materials

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The packaging industry faces a major challenge:

With the introduction of the new packaging and packaging waste regulation (PPWR) in the European Union, the focus on sustainable materials was further emphasized. Environmentally friendly materials must not only be more sustainable but also meet high requirements for product protection and process reliability. Especially in the food industry, tight, hygienic, and durable seals are essential. The Telsonic Group, a leading provider of ultrasonic technologies, is setting new standards with its particularly material-friendly combination of conventional linear ultrasonic welding and the unique torsional ultrasonic technology (SONIQTWIST®).

Sustainable Packaging: Trends and Challenges

Recyclable mono-materials, bio-based plastics, plastics with recycled content or innovative paper and film substrates are becoming increasingly important. However, these materials bring new challenges: their thermal sensitivity often makes traditional sealing processes problematic. Conventional heat-sealing methods or even standard linear ultrasonic welding reach their limits with these materials due to temperature issues and mechanical stresses.

This is where Telsonic's torsional ultrasonic welding comes into play. It was specifically developed to seal sensitive and thin materials reliably, fast, and with minimal heat impact. The gentle torsional vibration creates a seal without the usual thermal stress factors – a crucial property for modern sustainable packaging.

Torsional Ultrasonic Welding: Superior for Sustainable Materials

Telsonic's SONIQTWIST® technology stands out significantly from conventional welding processes. While linear ultrasonic welding is already a proven method for secure and tight connections in packaging applications, torsional welding goes even further:

- **Material protection:** The even distribution of energy over a larger area ensures a more gentle sealing process, which is a crucial advantage, especially for paper and film packaging.
- **Increased process speed:** SONIQTWIST® operates with minimal material heating and significantly higher cycle rates than conventional welding techniques
- **Hermetic sealing despite sensitive materials:** Even if packaging has slight contamination in the sealing zone (e.g., oil or liquid residues), a reliable and secure connection is achieved.
- **Reduced energy consumption:** Since heat is generated directly within the material rather than introduced via hot tools, energy consumption is significantly lower than in thermal processes.
- **Flexibility in material selection:** From recycled plastics to innovative paper and film composites – torsional ultrasonic welding delivers outstanding performance across a variety of substrates.

These advantages make SONIQTWIST® the superior choice for sustainable packaging solutions, combining top quality with material conservation.



02 SONIQTWIST® welding module in a packaging line



03 Telso®Assist interface with process monitoring

Digitalization in Packaging Technology: Telso®Assist as a Key Technology

Beyond material technology, digitalization plays an increasingly important role in the packaging industry. With Telso®Assist, Telsonic offers a powerful tool for integrated process control and quality assurance.

Telso®Assist enables machine manufacturers and brand owners to monitor all welding parameters in real-time and to better control the whole ultrasonic process. By integrating into existing Manufacturing Execution Systems (MES), customers gain full traceability of every single welding process, which is particularly important in the food industry.

Advantages of Telso®Assist:

- Easy integration into the packaging line
- Live data analysis for immediate process optimization
- Automatic error detection to reduce waste
- Full data exchange with existing MES or QMS systems
- Predictive maintenance to prevent downtime

With Telso®Assist, Telsonic is setting new standards in Industry 4.0-ready packaging technology, not only connecting machines but also providing real-time process and quality data.

Conclusion:

Future-Proof Packaging Technology with Telsonic

The combination of conventional linear ultrasonic welding and the innovative torsional SONIQTWIST® technology makes Telsonic the ideal partner for companies facing the challenges of sustainable packaging.

Torsional welding, in particular, proves to be a superior method for sensitive materials, enabling sustainable, efficient, and secure packaging solutions.

Together with Telso®Assist, packaging manufacturers also receive a powerful tool for digitalization and process optimization, making production not only more efficient but also more transparent.

Would you like to learn more about how Telsonic can optimize your packaging processes? Contact us today and let our experts advise you!

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