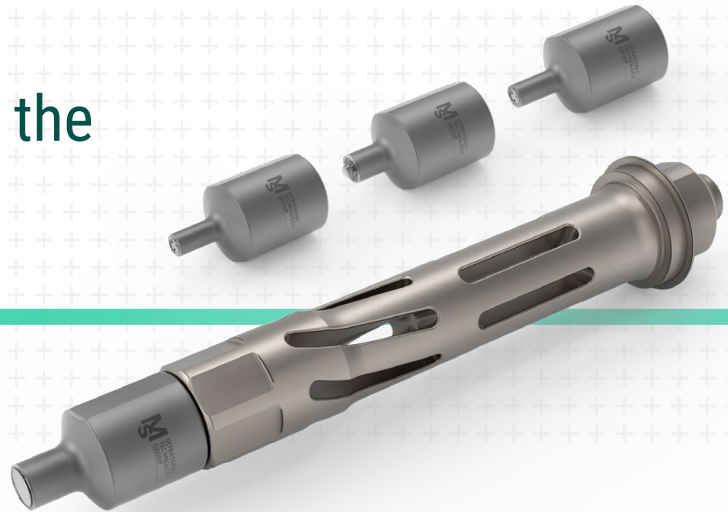


FLAWLESS APPEARANCE AND SOLID WELDS

Gentle and efficient processing thanks to the torsional sonotrode



The patented torsional sonotrode from the MS Ultrasonic Technology Group gently and precisely processes membranes, films and injection molded parts. These sonotrodes are used in the MS sonxTOP series machines as well as in the MS sonxMAC custom machines.

Torsional ultrasonic welding is a high-frequency friction welding process. Vibrations are introduced tangentially, the sonotrode always takes the upper join partner with it and moves it horizontally to the lower component. Due to the high frequency of 20–35 kHz, the amplitude and the pressure, a melting occurs between the two join partners as a result of gentle friction. In comparison with longitudinal vibrations, weak points such as electronics, bridges and ribs within the component are subjected to even less stress.

BENEFITS

- + The torsional sonotrode can always be used in combination with the interchangeable contour screw-in elements (contour tips) and is thus quite variable
- + Due to the rotational vibration, there is almost no stress in the join components (about one tenth less, in comparison with longitudinal ultrasonic welding)
- + "Torsioning" allows very large forces and power to be introduced into the welding surface – as a result, thicker workpieces can also be joined with great stability
- + Higher compaction of the weld point and thus an even more stable connection than with classic longitudinal ultrasonic welding
- + Especially suitable for applications in the medical or automotive industry
- + Process which is gentle on parts (functional safety remains intact)
- + Notch effect and material thinning in film applications is considerably reduced
- + Switch between longitudinally and torsionally vibrating sonotrodes is possible at any time through the use of standard components
- + Cost-efficient solution for torsional ultrasonic welding through the use of standard components (converter, generator)
- + Contour tips available in steel, thus more durable



APPLICATION EXAMPLES

- + DAE (pressure equalization element) membranes
- + Membrane applications (e.g. degassing valves)
- + Medical droplet chambers (e.g. infusion filters)
- + Filters
- + Thin injection molded parts (nozzles, valves, connecting pieces)
- + Difficult injection molding structures (e.g. loud speaker grilles in door side trim panels)
- + Sensitive films (for coffee capsules)
- + Painted plastic parts
- + Oil dampers (in the furniture industry)



Feed unit from MS sonxMAC custom machine with torsional sonotrode



MS sonxTOP series machine with torsional sonotrode

TECHNICAL DATA

Sonotrode material	Titanium
Contour tip material	Titanium, steel (hardened)
Operating frequencies	20 kHz, 35 kHz

