

# Ultrasonic Metal Welding

For non-ferrous metals, ceramics and metal coated materials



Ultrasonic metal welding is described as a friction welding process, where oxides and other contaminations present on the material surfaces are broken up and the parts to be welded are brought together under simultaneous pressure. Molecular bonding, similar to the conventional cold-press welding, then takes place.

ROOPTELSONIC offers high power/high precision equipment for wire splicing, linear welding and the torsional welding process. Our Rotary Ultrasonic Welding Head is available for continuous assembly operations.



Mobile wire splicing unit



Ergonomic work area for ease and non tiring loading and discharging of work pieces

ROOPTELSONIC is synonymous with decades of experience in development, design and production of highly reliable ultrasonic components and matching mechanical presses and actuators.

The powerful, patented ultrasonic torsional welding units demonstrate the innovation power of our specialists. Torsional welding is perfectly suited for highly demanding applications, such as the helium tight sealing of cans and containers.



Ultrasonic torsional welding system with 500 W output power, suitable for integration into automatic production lines

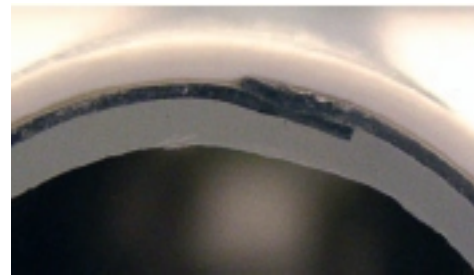


Ultrasonic Rotary Head for continuous applications

Continuous seam welding of copper and aluminum, in particular, is easily achieved with the Rotary Welding Head, combined with an external synchronized drive. The ultrasonic output power can be up to 3000 Watts.

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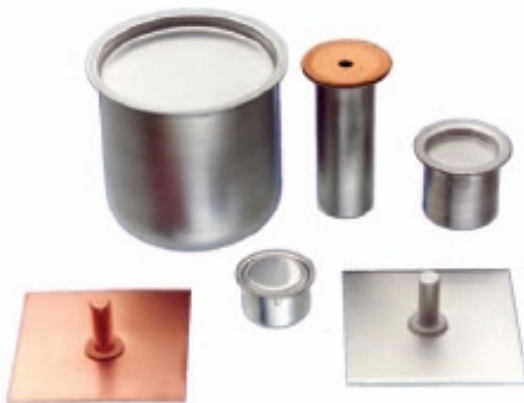
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Plastic coated aluminum tube



Solar absorber panel

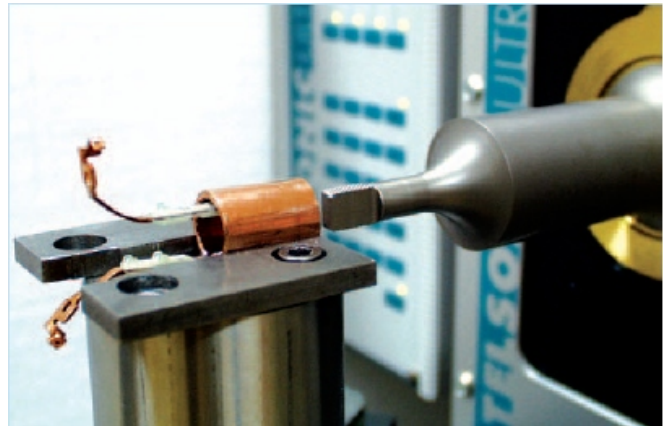


Typical torsional applications

**The greater the challenge, the stronger our commitment:**

Ease of automation, weld parameter monitoring and statistical process control are demanded by the market, as they are prerequisites for the use of ultrasonic metal welding in industrial production environments

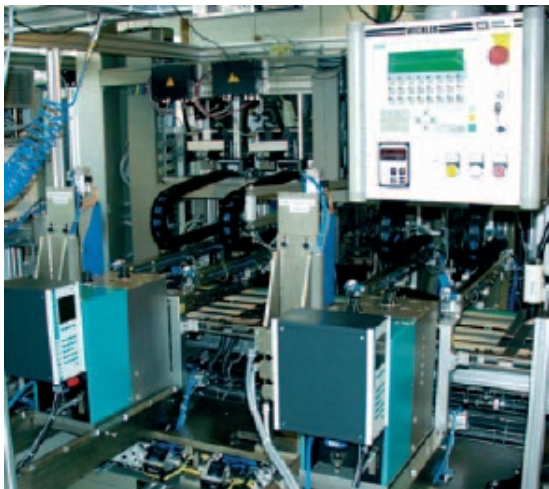
On the basis of solid engineering know-how and Swiss precision machine building, we offer application specific welding systems for semi- and fully-automated production processes.



Welding of two contacts into copper tube, with automatic parameter switching



Lithium-ion-battery



Production line for lithium-ion-batteries with two integrated linear ultrasonic metal welders



Linear ultrasonic metal welder with 4'000 N clamping force and max. 6'500 W output power

### **Technical Data of Press M-4000**

Dimensions (W X D X H)	: 240 * 585 * 445
Dimensions of Welding Plate	: 230 * 176 mm.
Throat (Depending upon sonotrode material)	: 80 to 130 mm.
Stroke Maximum	: 25 mm.
Diameter of pneumatic cylinder	: 100 mm.
Weight	: 70 Kg.
Compressed air supply	: 8 bar Max.
Closing force	: 5500 N Max.
Closing force	: 100 N Min
Force Sensor (Fully electronic)	: 100% = 4000 N.
Limit Switch for upper stroke limit	: Non Contact.
Acceptance Switch	: Non Contact.
US Stop (if provide)	: Non Contact.
Setting Up	: Key Switch

### **Specification for Generator SG-22-1000-4500 - 20-40 KHz**

Power supply 10 / + 20%	: 3 x 380 / 50Hz.
Maximum Current Input	: 8 Amp effective Max.
Working frequency	: 20/40 KHz.
Maximum Out Power	: 1000-4500 Watts.
Amplitude Constancy	: 2%.
Dimension 19 4HE BTH	: 510 * 440 * 220 mm.
Further power options	: 2000 / 3000 Watt.

### **Specification for Converter SE-50/40-6-20KHz**

Idle Amplitude	: 20 USS 5% at 25 <sup>0</sup> C.
Maximum Power	: 4500 Watt effective.
Converter Current Real Part	: 3 Amp effective.
Maximum Convert Voltage	: 1700 Volt effective.
Thread	: UNF 1/2 20.

### **Specification for Converter SE-3512/4012- 40KHz**

Idle Amplitude	: 40 USS 5% at 25 <sup>0</sup> C.
Maximum Power	: 1500 Watt effective.
Converter Current Real Part	: 3 Amp effective.
Maximum Convert Voltage	: 680 Volt effective.
Thread	: UNF 1/8 20.

**NOTE:** Technical specifications are subject to change without prior notice, due to continuous upgradation.

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