

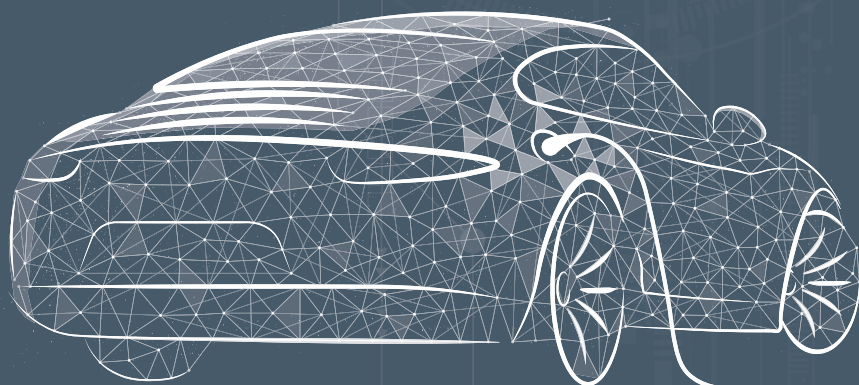


ultra fast. ultra strong. **ultrasonic.**

Sonosystems®

# SCHUNK SONOSYSTEMS

ULTRASONIC WELDING  
FOR  
POWER ELECTRONICS  
AND CELL CONTACTING SYSTEMS



# ABOUT US

ultra fast. ultra strong. **ultrasonic.**

Our 400 employees worldwide develop and produce our innovative ultrasonic welding equipment - and together with our representatives we are always close to our customers. In addition to our headquarters in Wetzlar (Germany), we have locations in Boston (USA), Toluca (Mexico), Kenitra (Morocco), Taicang (China), Ansan City (South Korea) and Yokohama (Japan). Furthermore we have a worldwide sales and service network.

## APPLICATION AREAS



### WIRE HARNESS

- Wire - Wire | Wire - Terminal
- X-/Y-Splices
- Cascade | Mixed-Connections
- Ground and high current contacts
- Busbars | Flat Flex Wires
- High Voltage Applications



### BATTERY

- Battery modules
- Li-Ion Technology
- Capacitors
- Anode/cathode connections
- Copper/Tab connections



### POWER ELECTRONICS

- IGBT Modules
- IPM Modules
- Cell contacting Systems
- Signal Terminals to substrates



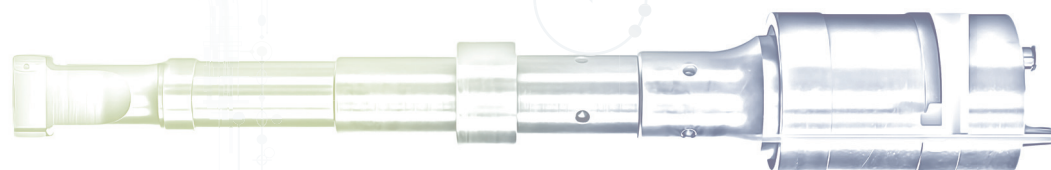
### COOLING TECHNOLOGY

- Copper tubes for refrigeration circuits
- Capillary tubes for thermostats
- EX-certified



### SERVICE

- Technical advice and support
- Process development and integration
- Software development
- Training system

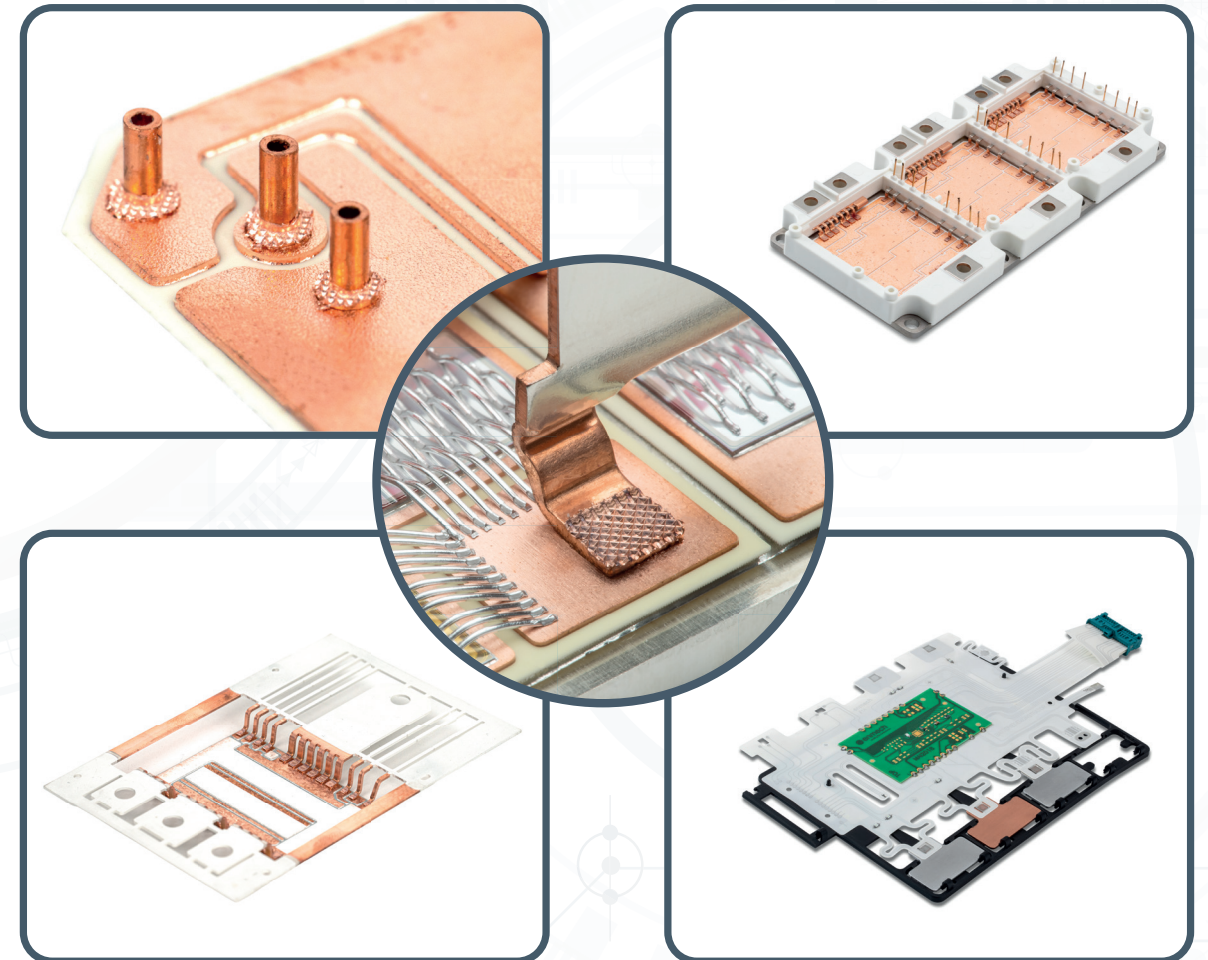


# POWER ELECTRONICS | CELL CONTACTING SYSTEMS

## ULTRASONIC WELDING IN THE FIELD OF POWER ELECTRONICS

In the field of power electronics increasingly high-performance modules such as IGBTs (Insulated-Gate Bipolar Transistors) or IPMs (Intelligent Power Modules) are produced with the help of ultrasonic welding. Ultrasonic welding of the load and control connections to substrates (e.g. DBC) offers full process and quality monitoring compared to conventional soldering.

In reliability tests, ultrasonically welded power modules last up to ten times longer. The intermetallic connection leads to a significantly reduced power dissipation at the contact points, which increases the electrical efficiency of the module and minimizes the cooling effort.





## DS20-S-PLUS



The manually operated ultrasonic welding machine DS20-S-plus is based on a flexible concept and is suitable for laboratories, prototypes, sample series production and smaller series production of e.g. power electronics, cell contacting systems or special applications.

- Ultrasonic welding head: 20 kHz (35 kHz available on demand)
- Working area (x-y-table): x-axis: 100 mm, y-axis: 250 mm (manually with crank handles)
- Special stiff axis systems resistant to ultrasonic vibrations
- Accessibility in z-direction (sonotrode): max. 62 mm



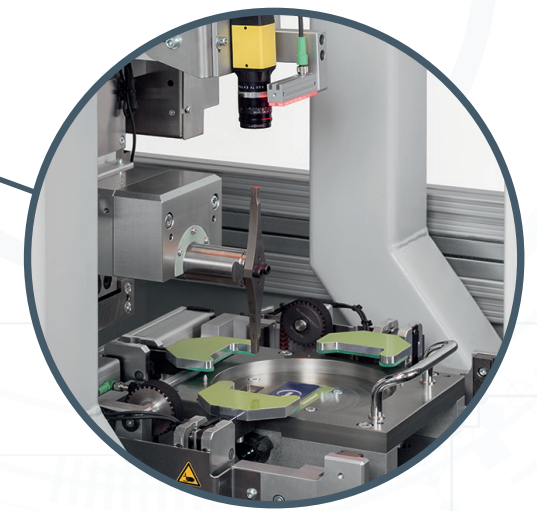
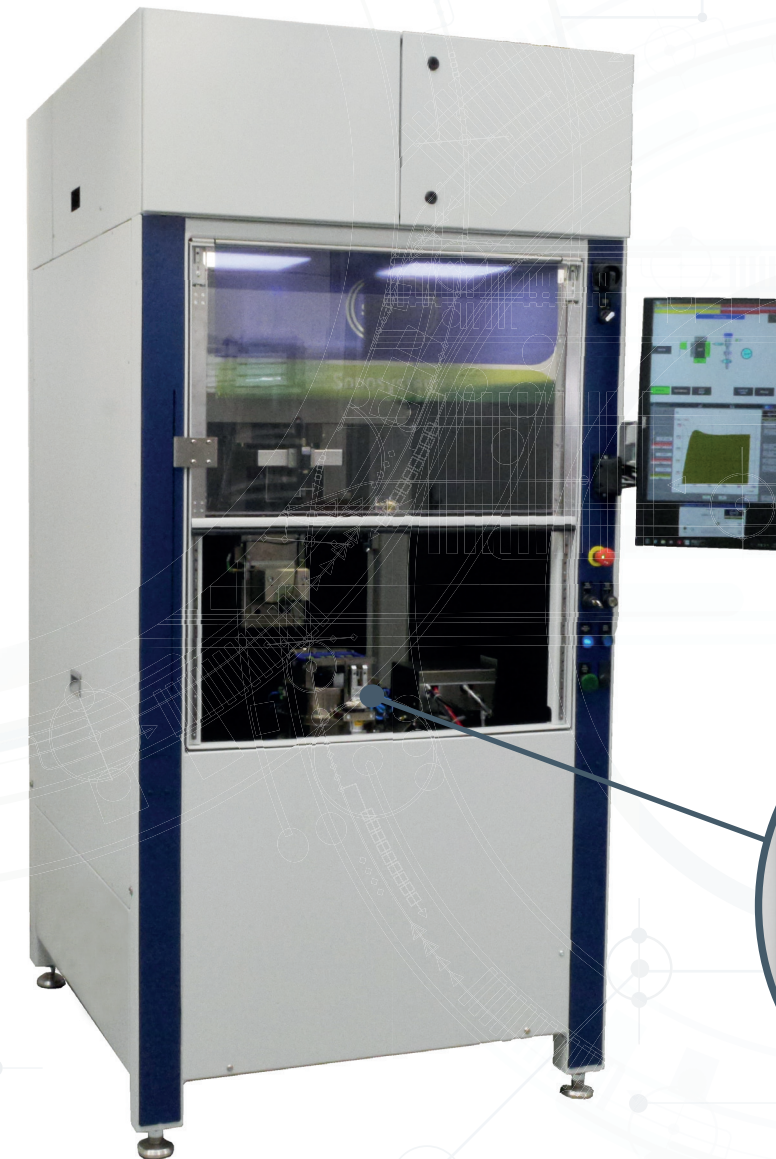
All machines are equipped with a quick-change system for welding tools and a patented dynamic process monitoring system. The latter monitors the power and height curves and provides adjustable tolerances for welding time, height, energy and deformation for each welding spot.

## FX20-L-T



The FX20-L-T is a semi-automated ultrasonic welding machine for production. It is suitable for welding power electronic modules (e.g. IGBT modules) or cell contacting systems (battery applications). The machine is available with a pattern recognition system for checking and correcting the welding position and an external particle cleaning system.

- Ultrasonic welding head: 20 kHz (35 kHz available on demand)
- Working area: x-axis: 250 mm, y-axis: 400 mm - turntable: 360°
- Special stiff axis systems resistant to ultrasonic vibrations
- Accessibility z-direction: max. 62 mm - special long welding tool available



further information



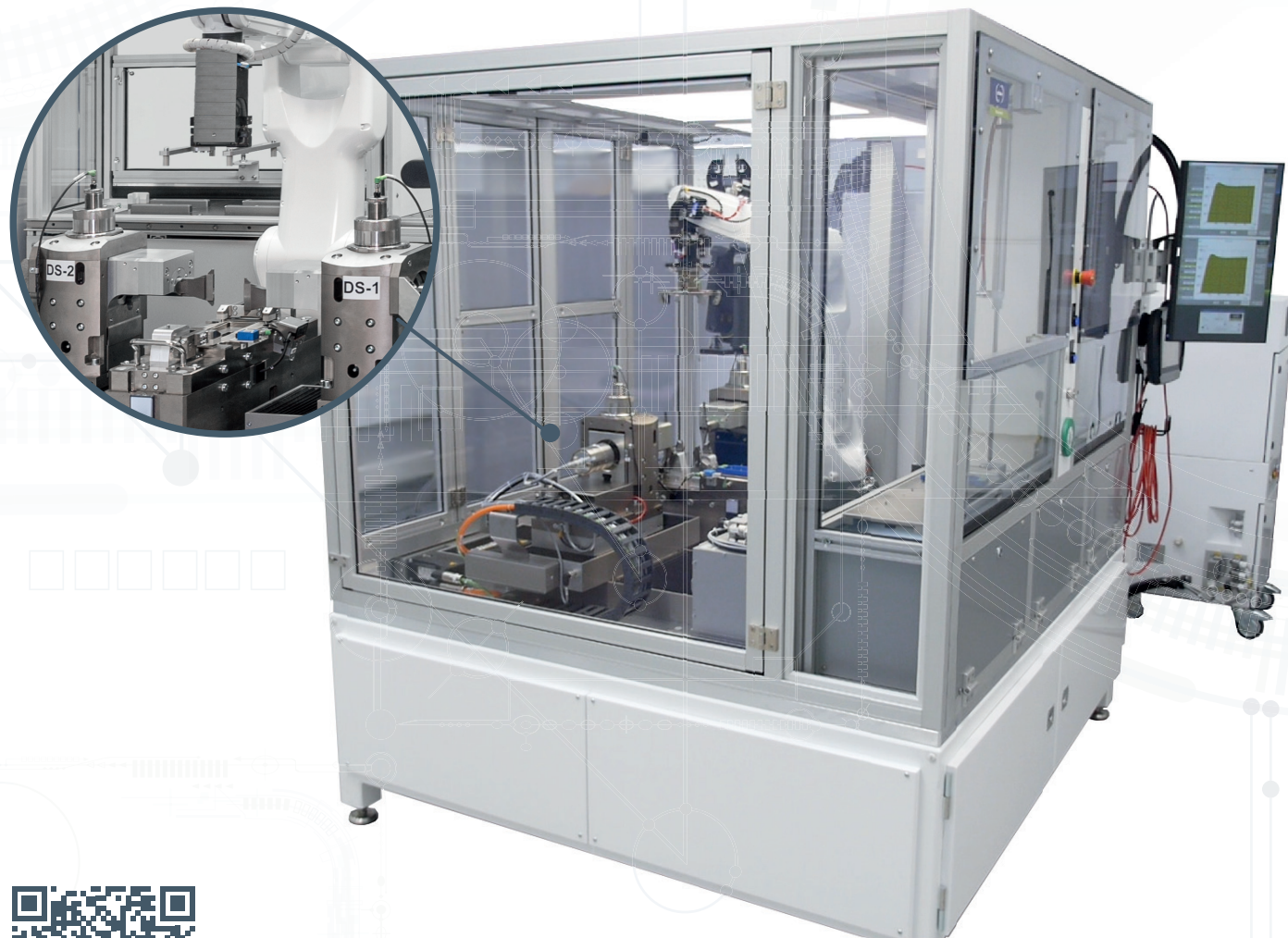


## FX20-2L-R



The FX20-2L-R is a flexible and fully automated ultrasonic welding machine for welding power electronic modules and cell contacting systems. Numerous options are available for the machine, such as an internal particle cleaning system, robot loading and component feeding via conveyor system.

- Two ultrasonic welding heads: 20 kHz (35 kHz available on demand)
- Working area (two x-y-tables): x-axis: 250 mm, y-axis: 600 mm. The highly reliable and precise axles are equipped with a brake system that ensures maximum stability during the welding process. The axle system is also designed to withstand ultrasonic vibrations.
- Special stiff axis systems resistant to ultrasonic vibrations
- Accessibility in z-direction: max. 62 mm - special long welding tools available



further information



# SPECIFICATIONS

	DS20-S-PLUS	FX20-L-T	FX20-2L-R
WELDING HEAD	1 welding head: 20 kHz (35 kHz available on demand)	1 welding head: 20 kHz (35 kHz available on demand)	2 welding heads: 20 kHz (35 kHz available on demand)
WORKING AREA	x-axis: 100 mm, y-axis: 250 mm  (manually with crank handles)	x-axis: 250 mm, y-axis: 400 mm (automatic)  turntable: 360°	2 x-y-tables: x-axis: 200 mm, y-axis: 600 mm (automatic)
ACCESSIBILITY IN Z-DIRECTION	max. 62 mm	max. 62 mm	max. 62 mm
WELDING STROKE	up to 100 mm	up to 100 mm	up to 100 mm
ULTRASONIC GENERATOR	3 kW	3 kW	3 kW
PRESSING FORCE	50-900 N (1400 N on demand) soft touch down available	50-900 N (1400 N on demand) soft touch down available	50-900 N (1400 N on demand) soft touch down available
DIMENSIONS (MM) L X W X H	950 x 1000 x 1850	1200 x 980 x 2600	1800 x 2300 x 2300
WEIGHT (KG)	ca. 420	1200 - 1600	ca. 2000
OPTIONS	<ul style="list-style-type: none"> <li>▸ Data Matrix Code (DMC) Reader</li> <li>▸ Measurement and calibration station</li> </ul>	<ul style="list-style-type: none"> <li>▸ Pattern Recognition System</li> <li>▸ Data Matrix Code (DMC) Reader</li> <li>▸ Measurement and calibration station</li> <li>▸ Particle cleaning (external system)</li> <li>▸ Integration in automated production lines incl. data interface</li> </ul>	<ul style="list-style-type: none"> <li>▸ Pattern Recognition System</li> <li>▸ Data Matrix Code (DMC) Reader</li> <li>▸ Measurement and calibration station</li> <li>▸ Particle cleaning (integrated system)</li> <li>▸ Loading system (e.g. robot, conveyor belt)</li> <li>▸ Integration in automated production lines incl. data interface</li> <li>▸ Full traceability for production and maintenance</li> </ul>





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