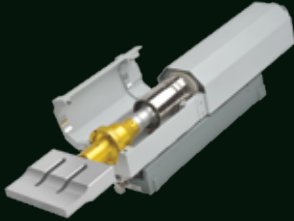




**SONICS**<sup>®</sup>  
SONICS & MATERIALS, INC.

THE  
STRONGEST  
BOND IN  
PLASTICS  
ASSEMBLY



Created with  
Innovative Equipment,  
Product Reliability,  
and Responsive Service



# building relationships that last

Leading the world in plastics welding technology since 1969, Sonics manufactures a complete product line of powerful systems and components for ultrasonic welding, staking and inserting, vibration welding and spin welding.

**F**ounded on inspired science and applied technology, Sonics delivers cutting-edge control and process consistency across a broad range of assembly applications.

As a business partner, Sonics has the equipment and expertise to provide real-world solutions and to match your application demands to products that will get the results you need on the plant floor. Working closely with you on application feasibility, customized design, tooling and implementation, our objective is to build long-term customer relationships that continue beyond the sale.

We understand that continually streamlining and maximizing your production is critical to success. Your goals are our goals: to boost productivity, realize cost savings, prevent defects and eliminate inefficiencies. Complementing our standard product line, Sonics' OEM division provides even more flexibility to achieve the goals of systems integrators and machine builders.



*Robert Soloff with an original Sonics' ultrasonic welding press.*

## founded on innovation

The beginning of ultrasonic plastic welding as we know it today started in 1963, when Sonics' founder, Robert Soloff, was experimenting with an ultrasonic probe. He brought the probe into contact with a plastic tape dispenser and welded the two halves of the dispenser together.

Realizing that sound waves could travel around corners and down the sides of rigid plastics to reach the joint area to be welded, Mr. Soloff recognized the many potential uses for this process and built the world's first ultrasonic press. He was awarded the patent for the ultrasonic method for welding rigid thermoplastic parts in 1965.

Mr. Soloff founded Sonics in 1969, and continues to foster a spirit of innovation at the company. He has been awarded 11 more patents in the field of ultrasonics, and to this day, his philosophy of "experiment for improvement" permeates the company and inspires our engineers to push the boundaries of the industry.

## SERVICE AND SUPPORT:

# always connected

Working with Sonics gives you access to an experienced, dedicated team of plastics assembly specialists with unparalleled experience across a broad spectrum of equipment and applications.

**E**xperience first-hand the many benefits of working with a company that has specialized in plastics assembly and consistently delivered outstanding customer service for over 4 decades.

Consult directly with Sonics' expert engineers to select the best processes, equipment and techniques for your application or parts production demands and enhance the success you achieve on the assembly line. Our recommendations to steer and improve your project, along with after-sales training and technical support are all part of Sonics' standard service.

Sonics continually makes real-world advancements in plastics welding. The latest technology and new mechanical developments can dramatically impact your project. Contact us to discuss design specs, equipment troubleshooting, application analysis, or to request a second opinion.

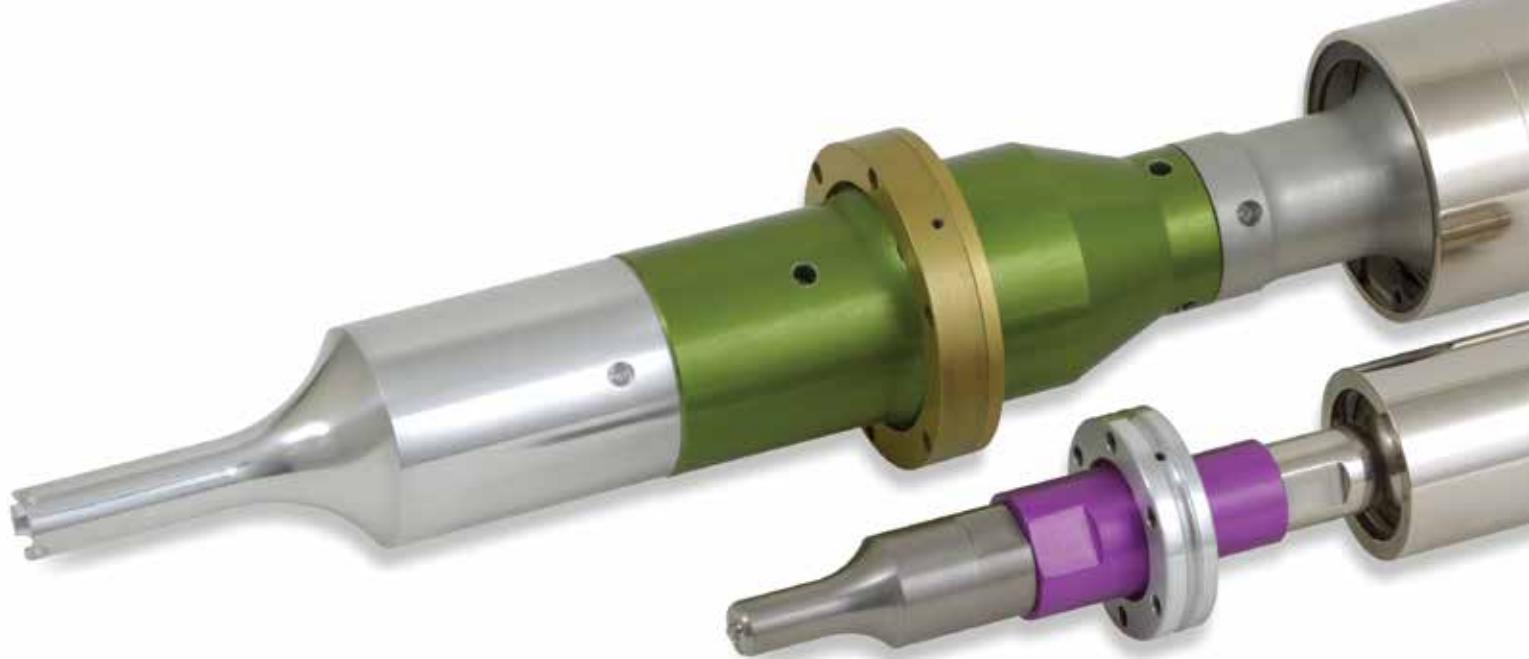


## APPLICATIONS LAB:

# testing for savings and service

In our custom-built, fully equipped applications laboratory, sample parts are tested for weldability and performance along with the best procedures for assembly. Employing techniques like continuous cycle tests, Finite Element Analysis (FEA) and stringent real-world simulations, Sonics applications engineers can identify the optimal equipment and processes for your application. Testing can yield additional benefits, such as the development of more effective individual stations or joint designs, for example.





**ADHERING TO OUR CORE STRENGTH:**

## ultrasonics

As a world-class innovator in plastics welding, Sonics has remained focused on setting the standard for ultrasonic assembly. We continue to strive for discoveries that yield greater efficiencies and cost-effectiveness for our customers. Our latest advancements continue to move ultrasonic technology forward with equipment that provides more power, more features and more flexibility across the full range of assembly frequencies.

### ultrasonic equipment

**S**onics manufactures a complete line of ultrasonic plastics assembly equipment, tooling and systems, including microprocessor-controlled bench-top presses; remote actuators and kits for automation; power supplies; and hand-held units. Accessories such as linear encoders and optional sound enclosures are also available, along with a line of ultrasonic tube sealing systems, food cutting components and metal welding equipment.

Maximum versatility is provided through ultrasonic components and slimline actuators that can be used for mounting into a machine structure at virtually any angle. Sonics' technical experts will help you determine the best system, frequency and power configuration for your application.

#### available frequencies:

**40 kHz** **35 kHz** **30 kHz** **20 kHz** **15 kHz**

In general, higher frequencies are better suited for welding smaller, close-tolerance assemblies. For instance, Sonics' 40 kHz ultrasonic welding presses are fast, precise and virtually inaudible models ideally suited for plastics products such as printed circuit boards, microelectronic components and medical devices.

The 30 kHz frequency, as well as the very commonly used 20 kHz frequency, is suitable for a wide range of applications and varied types of thermoplastic components. Sonics' 20 kHz ultrasonic welding equipment line offers several multi-featured models suitable for many plastics assembly applications.

Plastics assembly at the 15 kHz frequency permits the welding of many softer plastics with greater far field distances than is possible with conventional 20 kHz systems. Sonics' 15 kHz ultrasonic welding equipment is designed for welding medium to large-size parts at higher amplitudes.

## INDUSTRIES SERVED

Automotive

Medical

Computer, Electronics/Electrical

Housewares/Appliances

Packaging

Home Entertainment

Textile & Apparel

Novelties

## APPLICATIONS

### Housewares/ Appliances

- Coffee Makers
- Hair Dryers
- Washing Machines
- Dishwashers
- Clothes Dryers
- Vacuum Cleaners
- Insulated Cups, Mugs & Bowls
- Cup Handles
- Tools
- Hot Plates
- Mops
- Brooms
- Electric Toothbrushes
- Refrigerators
- Floats

### Novelties

- Toys
- Ballpoint Pens
- Photo Albums
- Whistles
- Sporting Goods

### Medical

- Catheters
- IV Components
- Valves
- Tubing
- Disposables
- Syringes
- Containers
- Instruments
- Cartridges

### Computer/ Electronics/ Electrical

- Housings
- Connectors
- Sockets
- Switches
- Inserts
- Calculators
- Flash Lights
- Telephones
- Batteries
- Toner Cartridges
- PCMCIA Cards
- Circuit Boards
- SD Memory Card Adapters

### Textile & Apparel

- Blankets
- Carpets
- Drapes
- Garments
- Pads
- Lingerie
- Roping
- Nets
- Belts
- Sheets

### Automotive

- Instrument Clusters
- Tail Lights
- Back Up Lights
- Side Markers
- Inner Door Panels
- Floor & Door Carpeting
- Filters
- Sensors
- Tanks
- Battery Parts
- Hub Caps
- Cup Holders
- Shoddy Pads
- Speaker Grilles
- HVAC Staking
- Glove Boxes
- Spoilers
- Door Pillars

### Home Entertainment

- TV
- Audio / Video Components
- Radios
- CD / DVD Players
- Converter Boxes

### Packaging

- Squeeze Tubes
- Zipper Bags
- Grocery Bags
- Plastic "Clamshells"
- Containers
- Pour Spouts



## power & control

Sonics builds

intelligence into state-of-the-art power supplies and user-friendly controllers.

Program, monitor, and display various critical welding parameters as you achieve consistent, repeatable welding results.

Select from a variety of power supply models depending upon your specific requirements for welding in energy, time, and/or distance, or even continuous duty applications.

### Standard Features include:

- Digital amplitude control
- Ultrasonic horn/stack frequency display
- Good part/bad part output signal
- Automatic frequency tuning
- Multiple job storage
- Digital force triggering
- Optional PLC I/O (Input/Output) ports

## hand held ultrasonic welding systems



Lightweight, compact and portable hand held welders for 20 kHz and 40 kHz frequencies are designed specifically for welding, staking, inserting and spot welding applications.

These rugged and reliable units consist of an ultrasonic power supply and hand held converter. Features include auto tuning, microprocessor-controlled time and energy welding modes, digital amplitude control, and overload protection circuits. A variety of optional accessories, such as a Manual Press, Stapler, Pistol Grip and Foot Pedal are available, along with a full range of standard threaded tips.

## tooling

Sonics provides

design, fabrication and custom machining of tooling and fixtures

for ultrasonic plastics welding, vibration

welding, and spin welding, as well as multi-element configurations for spot welding, staking and inserting. Tool fabrication materials include aluminum, titanium, hardened steel, stainless steel and cast polyurethanes. FEA (Finite Element Analysis) technology is used to test and troubleshoot potential areas of stress.

- Contoured and adjustable segmented tooling for ultrasonic, vibration and spin welding applications
- Multi-element horn configurations designed for spot welding, staking and insertion
- Peripheral devices for properly clamping, holding and aligning parts
- Carbide facing or chrome plating for added strength and durability



## ultrasonic electropress™

Sonics' trademarked 20 and 40 kHz ElectroPress™ yields repeatable welds to precise final dimensions and is particularly well-suited for the fine and delicate assemblies found in electronic and medical devices. The E-Press has a stepper motor drive with optical linear encoder and ball screw actuator that provides superior precision control with a weld depth tolerance of +/- 0.0003 inches (0.008 millimeters).

## POWERFUL PAIRINGS:

# working together

As plastics assembly specialists, Sonics offers a range of additional equipment and technologies for joining parts that are not necessarily suited to ultrasonic welding. Sonics' initial evaluation and analysis of your requirements and parameters will ensure that you get the assembly method best suited to your application.



### Applications:

- Glove boxes
- Auto door panels/pillars
- Medical devices
- Filters
- Air ducts
- Head lamps / tail lamps
- Carpet & trim to interior automotive panels
- Fuel tanks
- Instrument panels
- Automotive bumpers
- Intake manifolds

When bonding larger plastic components together, such as auto door panels, the vibration welder can weld a wider variety of plastics, affording maximum flexibility to accommodate unusual shapes and sizes. Process data collection capabilities and on-demand PLC controlled in-line job-switching/sequencing capabilities are also available.

## vibration welder

**S**onics' MX Series Linear Vibration Welding Systems are designed for assembling large and/or complex-shaped thermoplastic parts, and can also be tooled to assemble multiple smaller parts simultaneously. The MX Series can be used for vibration welding of virtually all thermoplastic materials, whether injection molded, extruded, formed or thermoformed.

Sonics' vibration welders feature a digitally controlled electromagnetic drive system; Windows™ based software; PC/PLC system with color touch-panel operator interface; 3 welding modes (time, distance or energy); and patented autotuning. The MX-Series has the most powerful drive mechanism in its class, with the smallest footprint and largest lift table in the industry.

## spin welder

**S**onics' high torque spin welding machines are designed to accommodate a wide range of spherical or cylindrically-shaped thermoplastic parts. Standard PLC-controlled spin welder models are available, as well as custom units built to meet the demands of automated in-line assembly systems and/or long extrusions that call for horizontally oriented machines. Spin welders provide a strong and impervious seal (hermetic seals are attainable) and can accommodate virtually any diameter part. Features include ½" steel welded framing; direct drive electric motor system with varied torque range; dynamic braking; and PLC-type power supply

with touch panel operator interface.



### Applications:

- Filters
- Pumps
- Tanks
- Insulated cups, mugs and bowls
- Fittings
- Extrusions

## additional solutions

### Hot Plate Welders

- Allow flexibility to weld semi-crystalline and amorphous thermoplastic materials by either radiant or direct heat content.
- Suited for welding complex shapes because there is no relative motion between the joints.
- Available with pneumatic, hydraulic, or servo-controlled actuation.
- Feature programmable temperature and cycle controls.

### Heat Staking & Inserting Machines

- Manual and pneumatic presses for single point, multi-point or multi-plane thermal staking and inserting applications.
- Cost-effective process because of ability to stake or insert multiple points on multiple planes simultaneously.
- Typical inserting applications include driving metal parts into a hollow boss opening.
- Typical staking includes forming a solid boss into a rivet-type head to capture or retain a secondary part.

### Hot Air/Cold Staking Systems

- Recommended for applications similar to those of heat staking equipment.
- Hot air/cold staking process makes it possible to achieve repeatable and tighter staking results.
- Systems custom built to application requirements.

### SEAMLESS FUSION:

## Sonics and OEM



Seamlessly integrate ultrasonic technology into your new or existing equipment line with Sonics' state-of-the-art components. Sonics leads the industry in successful OEM partnerships and offers a full line of ultrasonic kits and stack components designed for installation into special assembly systems.



### Available components include:

- Converter, booster and horn stack
- Ultrasonic kit for NEMA enclosure and PLC external control and sequencing
- Self-contained pneumatic slimline actuator

**U**ltrasonic kits have consistently proven to be an economical, space-saving option for manufacturers, offering maximum flexibility and the ability to sequentially switch the RF signal from one kit to several weld locations.

Additionally, kits and stacks operating at higher frequencies result in lower amplitudes which in turn can yield a strong weld without marking the Class "A" surface or part side that is visible to the customer.

Consulting directly with manufacturers allows us to analyze application feasibility, add process efficiencies, and deliver customized design with innovative implementation. From initial concepts and configuration parameters through production line assembly, Sonics' experienced engineers work with systems' integrators and special machinery builders to simplify integration and maximize throughput.

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