NEWS RELEASE

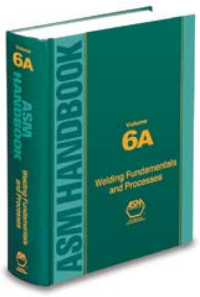
1191 McDermott Drive, West Chester, PA 19380
Phone: 610-696-4710 Fax: 610-692-0674
Internet: www.SonobondUltrasonics.com
Email: info@SonobondUltrasonics.com

Contact: Janet Devine
President
610-696-4710

SONOBOND'S PRESIDENT, JANET DEVINE, AUTHORS THE CHAPTER ON ULTRASONIC METAL WELDING FOR THE IMPORTANT, NEW ASM INTERNATIONAL HANDBOOK

Devine's contribution to *Volume 6A--Welding Fundamentals and Processes*--reflects her many years of innovative leadership and exceptional expertise in the field of ultrasonic technology.

WEST CHESTER, Pennsylvania, January 26, 2012—Sonobond Ultrasonics announced today that the company's President, Janet Devine, authored the chapter on "Ultrasonic Welding" for the ASM International Handbook, *Volume 6A-Welding Fundamentals and Processes,* printed in November 2011. This publication is a focused revision of the welding information in the 1993 *Volume 6—Welding, Brazing, and Soldering,* for which Ms. Devine also contributed the chapter on Ultrasonic Welding.



ASM International, The Materials Information Society, has 36,000 members worldwide and was formerly known as the American Society for Metals. It is a professional organization for materials scientists, engineers, metallurgists, and others working with metals. The newly released Volume 6A is the most complete and up-to-date reference source on welding processes available today. Copies of this expert-written and peer-reviewed publication can be obtained by going to the Society's website at www.asminternational.org.

An Outstanding Record of Achievement

Janet Devine was born and educated in England. A graduate of the prestigious Imperial College of the University of London, she has a B.Sc. Degree in Mathematics and Physics. Prior to coming to the United States in 1959, she worked for Bristol Aero-Engine Group (now Rolls-Royce). She joined Sonobond, then known as Aeroprojects, in 1960 when ultrasonic metal welding was in its infancy. Ms. Devine has been an active participant in the development of many of the most significant commercial and industrial uses of ultrasonic energy for metal welding and metal forming. Before being named Sonobond's President in 1990, she served as the company's Vice President and Technical Director.

Ms. Devine holds several patents. She has also authored numerous papers in the field of ultrasonic metal welding, textile bonding, and ultrasonic processing (e.g., extrusion and wire drawing). In 1991, she was a member of the committee that authored the chapter on Ultrasonic Welding for Volume 2, Eighth Edition of the American Welding Society's *Welding Handbook.* Ms. Devine serves on the Board of Directors of the Ultrasonic Industry Association (UIA) and was President of that organization from 1997-1999. In describing her reaction to being asked to contribute the chapter on Ultrasonic Welding for the new ASM handbook, she said, "I was honored to be of service in this way. I was also pleased to once again to be working with Karl Graff of the Edison Welding Institute, who authored the chapter on ultrasonic additive manufacturing that follows mine in the new handbook."

Ultrasonic Metal Welding Offers Important Advantages

Ultrasonic metal welding is a solid-state welding process that uses localized high-frequency vibratory energy in conjunction with moderate clamping force. It does *not* require consumables—such as welding rods, fluxes, fillers, or solders—or special cleaning methods. This energy-efficient, environmentally-friendly system produces no arcs or sparks. It is ideal for joining non-ferrous dissimilar metals, for welding thin sections to thicker sections, for joining multiple layers of thin materials, and for welding through most oxides and surface oils. Ultrasonic metal welding produces strong joints that have good thermal and electrical conductivity. Only a modest amount of space is needed for the equipment.

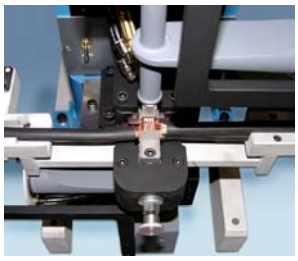
The first patent ever issued for ultrasonic metal welding was awarded to Sonobond Ultrasonics (then called Aeroprojects) in 1960. Since then, the company has continued to be a worldwide leader in the development of ultrasonic metal welding equipment. This technology offers significant energy cost-saving advantages when compared to other bonding methods. According to President Devine, "Our equipment not only produces superior metal welds, it also generates important savings in comparison to such methods as resistance welding and soldering. This makes it win-win for manufacturers because they can generate fast, reliable welds while, at the same time, reducing what they have to spend on energy and other production costs." According to Ms. Devine, energy consumption with Sonobond equipment is substantially less than with resistance welders. For example, manufacturers with multiple installations of resistance welders may require a new electrical substation to handle their requirements. On the other hand, ultrasonic welding equipment can usually be accommodated with standard power capacity.

The advantages of ultrasonic metal welding are particularly noteworthy in the assembly of wire harnesses for automotive and similar applications. Resistance welders need *20 times more energy than ultrasonic welders.* They may also require water cooling, which can be both costly and necessitate treatment of the water before it can be returned to the water supply. Yet it only takes about the same amount of time to make an ultrasonic weld as it does to produce a resistance weld. Wire harness manufacturers also report that ultrasonic welding *reduces the expense of attaching copper wires by 50% over old crimp and solder methods.* In addition, ultrasonically welded joints are stronger, have better electrical conductivity, and weigh less without the mechanical crimp.

Wedge-Reed Design and Other Sonobond Advantages

After proudly pointing out that Sonobond's ultrasonic metal welders are all manufactured in the U.S.A., President Devine went on to cite several other factors that help make this technology such an excellent choice. She said, "We design our equipment in ways that help manufacturers reduce costs. For instance, Sonobond machines are easy to operate and require only minimal training. Our microprocessor-controlled ultrasonic welders can set and recall up to 250 weld protocols from memory. Welding can be controlled by height, energy or time. All this substantially reduces the possibility of costly mistakes on the part of machine operators.

"There are also built-in features that provide meaningful savings to our customers. For example, *all Sonobond metal spot welders use the patented Wedge-Reed System* that combines high vibratory force with low amplitude coupling for maximum metal welding effectiveness. This system uses



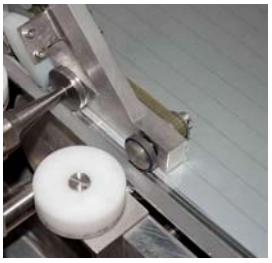
heat-treated, tool steel Taper Lock Tips that are manufactured to last for up to 100,000 welds. When the tips finally do need to be replaced, this can be done quickly and easily on our machines. However, ultrasonic metal welders manufactured by some other companies may require replacement of the *entire horn*, not just the tip. This can be much more expensive in terms of downtime and labor costs. But that's not all. *Only the Sonobond ultrasonic system is capable of welding most oxidized and tinned metals.* This is another important reason so many companies specify Sonobond equipment."

Sonobond Has an Ultrasonic Metal Welder for Practically Every Application

During her long career at Sonobond, Janet Devine has played a critical role in overseeing the development of ultrasonic metal welders for a wide variety of uses. These applications include:

Assembly of wire harnesses and heavy-duty cables for cars, trucks, and industrial machinery. Sonobond equipment can weld wire bundles with cross-sectional areas of up to 100 square millimeters, even with lightly tinned or oxidized wires. It is unique in its ability to accomplish this *with a single pulse.*

Advanced battery and super capacitor applications involving up to 80 layers of foils even if lightly tinned. The dual-head system can also weld 3 millimeter-thick, non-ferrous sheet metal when equipped with appropriate tooling.



Assembly of the solar cells that constitute solar panels. Sonobond equipment is perfect for welding aluminum strips to the metalized glass on PV modules. The resulting interconnects between the PV cells create an array with excellent conductivity.

Welding of larger metal parts, such as those used in the automotive industry. The "C-frame" units virtually eliminate the problem of tips sticking to aluminum parts and can be equipped for use on large industrial robots.

Spot welding—including wire-to-terminal welding—in a single pulse. Sonobond ultrasonic metal welders are ideal for bus bar fabrication, as well as for welding stranded wire to brass or copper terminals and producing single point ground terminals.

Fast, clean splicing of thin aluminum and copper foils up to 0.004" (0.1 mm) thick and up to 48" wide. Our system consists of a power unit with a solid-state converter, a welding head, and a rotating disk tip which transverses the width of the foil at speeds up to 15 feet per minute. This technology is found in practically all U.S. foil mills.

The industry's most powerful spot welder with a full 4,500 watts of output for welding heavy gage wire to terminals, ignition module plates, and other electronic/electrical assemblies. The welded joints are often stronger than the parent metals, and the process usually takes less than 1.5 seconds.

Portable, hand-guided tube closure for precisely crimping and sealing copper and aluminum tubing. This one-step process creates quick, airtight seals *without brazing* and can accommodate tubes already charged with coolant, fluids, and gasses.

Free Ultrasonic Welding Viability Test

Sonobond is committed to determining the right ultrasonic welding machine for each application. With that in mind, it offers a no-cost, no-obligation Ultrasonic Welding Viability Test. Manufacturers are invited to submit materials so that sample welds can be made. Once a company decides to incorporate a Sonobond unit into its production process, every effort is made to ensure the installation is completed as seamlessly as possible. "We understand that every situation is unique," says Ms. Devine. "So we work closely with our customers to make sure that everything goes smoothly. You can count on us for the very best in customer service and technical support before, during, and after installation."

A Proud Past and a Promising Future

In looking back on Sonobond's record of leadership, President Devine says, "It has been very gratifying to see how ultrasonic metal welding has gained acceptance—and even a certain amount of prestige—over the decades. Time and time again, manufacturers across a wide variety of fields have found this process to be an extremely cost-effective and reliable solution to their needs. I'm also proud of Sonobond's part in finding new applications in evolving industries. These include significant innovations in the EV vehicle, solar, battery, electrical, and cable industries. At the same time, our equipment continues to improve in terms of power capacity, reliability, and better control functions."

Although recent economic conditions have kept some companies from investing in new equipment, Ms. Devine believes there will be pent-up demand as things improve. She says, "We see more applications for ultrasonic welding and a greater acceptance of its use in a range of niche industries. We also anticipate that robotics will mean increased utilization of ultrasonics for welding aluminum and other lightweight sheet metals. This is especially true among automotive and battery manufacturers. Sonobond is very optimistic about the future of ultrasonic metal welding and firmly committed to maintaining its leadership role in this growing field."

In addition to its complete line of ultrasonic metal welders, Sonobond offers ultrasonic equipment for nonwovens/textile and plastic applications. Among the company's many customers are leading firms in the electrical, automotive, appliance, solar, aerospace, filtration, and apparel industries.

Additional Information

Additional information about Sonobond's ultrasonic metal welding equipment can be obtained by visiting www.SonobondUltrasonics.com. For questions or immediate service, please email Vice President Melissa Alleman at MAlleman@SonobondUltrasonics.com or call 1-800-323-1269.

END

SUGGESED PHOTOS WITH CAPTIONS:

[Photo of Volume 6A] ASM International, The Materials Information Society, recently published this focused revision of their previous handbook on welding, brazing, and soldering. *Volume 6A-Welding Fundamentals and Processes* includes a chapter titled "Ultrasonic Welding" by Sonobond President Janet Devine. Copies of this expert-written, peer-reviewed publication can be purchased at the Society's website at www.asminternational.org .

[Photo of Janet Devine] Janet Devine, President of Sonobond Ultrasonics, is a graduate of the Imperial College of the University of London. She joined the company in 1960, the year the first patent for ultrasonic metal welding was issued, and has been an active participant in the development of many of the most significant commercial and industrial uses of ultrasonic energy. Ms. Devine is currently on the Board of Directors of the Ultrasonic Industry Association (UIA) and served as President of that organization from 1997-1999. She was chosen to author the chapter on Ultrasonic Welding for the recently-published ASM International Handbook, *Volume 6A—Welding Fundamentals and Processes*.

[Photo of Dual Head SpliceRite™] The Dual Head SpliceRite™, like all other Sonobond ultrasonic metal spot welders, uses the patented "Wedge-Reed" bonding system to produce reliable, solid-state metallurgical bonds. This particular ultrasonic wire splicer has two welding heads, one on each side of the weld area. As a result, it can confidently accommodate wire bundles with cross-sectional areas of up to 100 square millimeters. Even lightly tinned or oxidized wires can be spot welded. No other ultrasonic welder equals this capacity in a *single pulse,* making it especially suitable for use in assembling heavy-duty cables for cars, trucks, and industrial machinery.

[Photo of Foil Weld] Sonobond's Dual Head Spot Welder welds multiple layers and/or delicate foils to tabs or terminals for lithium-ion or NiMH batteries. Up to eighty layers of foil can be welded with repeatable accuracy and with just a single pulse, as well as aluminum sheets up to 3 mm. thick.

[Photo of solar cell assembly—PV tip over panel] Sonobond technology has been at the forefront of new ultrasonic metal welding applications. One example is the Sonobond Photovoltaic (PV) Modular System that is ideal for use in assembling the solar cells that constitute solar panels. The machine

quickly and dependably welds aluminum strips to metallized glass on PV modules. The resulting interconnects between the PV cells create an array with excellent conductivity.

[Photo of C-Frame pictured in Volume 6A] The automotive industry has a growing need for ultrasonic metal welding equipment. For example, Sonobond developed its WeldMaster™ C-Frame I and C-Frame II Spot Welders to help accommodate large metal parts. Here a C-Frame is shown on a robot arm.

[Photo showing fan of wires to terminal] Ultrasonic metal welding is a solid-state welding process that uses high-frequency vibratory energy together with moderate clamping force. It is fast, cost-effective, and environmentally-friendly. No fluxes, fillers, solders, or other consumables are required. These wire-to-terminal welds were made using Sonobond's SonoWeld® 1600 Digital Metal Spot Welder.