

Quality Partner for the Medical Industry

Validating your process. Qualifying every part.

Obtaining FDA approval. They all boil down
to quality—an objective Dukane Ultrasonics
can help you achieve.

That's because we've been working with the
medical industry for decades. By offering
technology and equipment that's reliable
and controllable—and backing it up with
unparalleled service and support—we've
helped thousands of companies bring their
medical products to market.



DUKANE

Intelligent Assembly Solutions



Ultrasonics can be used to slit, seal, and assemble synthetic fabrics and thin films. We've helped customers implement this clean, economical technology in the production of medical face masks and IV sets.

Our application experience includes surgical devices and a variety of critical devices.



Controllable, Repeatable, Reliable Performance

From software to hardware, the operation of your ultrasonic system is critical in achieving a quality assembly. Dukane offers the most advanced, most flexible equipment to keep your process in control—part after part.

Microprocessor Control

Our 32-bit RISC microprocessor simultaneously controls and monitors your application—based on the parameters you set. Information can be generated for every part or setup to ensure quality, repeatability, and **part/process validation**.

Statistical Process Control

Unlike competitors' ultrasonic equipment, our microprocessor supports a variety of SPC packages. This gives you the freedom to select the SPC program of your choice—or to integrate our ultrasonics with your current program.

Automation

The input/output communication ports on our systems are uniquely designed to facilitate electrical interface with automated machinery. This is useful for manufacturing high volume applications, such as reservoirs and filters.

Easy to Use

Our hardware and software are user-friendly. Press systems are simple to

operate, minimizing human error.

Programming process parameters is easy with the intuitive menus of our exclusive touch screen display.

Rugged Equipment Design

Built with heavy-duty cast aluminum frames and linear ball bearing slides, our systems reduce deflection and assure mechanical repeatability and accuracy.

Consistent Service & Support

Unparalleled service and support further separates Dukane from the competition. To make your application a success, we'll work with you from application concept to finished part. And we'll always be there after you're in full production.

Design Consultation

Our knowledgeable sales engineers can assist you with part and joint design at the beginning of your application.

Customization Capabilities

Every application is different. If yours has special needs that can't be met with our standard product line, we'll create a customized system.

Quick Turnaround

Regional Technical Centers throughout the world provide quick delivery on your order—so you can get your product to market fast.

Setup Assistance

Your sales engineer will set up your application, so you can immediately start production.

Local Support

Regional Technical Centers are staffed with full-time service engineers that are on call 24 hours. The centers are equipped to evaluate applications and tooling, perform feasibility testing, run sample parts, and service equipment.

Training

Training workshops are continuously hosted at our St. Charles, IL facility. Eight different programs cover a variety of topics, including data acquisition and SPC, computerized process control, and part design. Regional training programs and in-plant workshops are also available.

Warranty/Loaner Program

All of our ultrasonic equipment comes with a 3-year warranty. And if a problem occurs with your equipment, don't worry about downtime—we provide free loaner equipment.

Our microprocessor controls make *part/process validation* possible; they also enable our customers to meet tough application requirements, such as the hermetic seal on this blood filter.



ce in the medical industry like this stapler, as well as are products, implantable and diagnostic equipment.



The Ultrasonic Advantage

You have a lot of choices when it comes to plastics assembly. But can you say all of these things about the other processes?

Certifiable, Qualifiable

Ultrasonic assembly is a certifiable process, and SPC data can be generated for qualification of each part. And because no foreign substances (such as adhesives or fasteners) are used, an ultrasonically processed part is easier to pass FDA approval.

Clean, Safe

Ultrasonics doesn't emit fumes or exhaust, so it creates a safe working environment for employees. And it's a viable process for clean room applications. Finished parts are also very clean.

Calibration

No other assembly method allows as much process control as ultrasonics; calibration of all key welding parameters, including time, distance, absolute distance, energy, peak power, amplitude, force, and velocity, is possible.

Because joint design is critical in ultrasonic assembly, especially for detailed parts with multiple weld points, our sales engineers get involved at the beginning of an application to assist with part and joint design.

Consistent, Accurate

Because ultrasonics can be controlled by a microprocessor, you'll avoid human error associated with other assembly methods and have a more consistent process.

Fast

Ultrasonic systems don't require warm-up periods, so you can jump right into production. Cycle times are very low, and systems can be easily automated.

Low Maintenance

Once your system is up and running, maintenance and calibration requirements are minimal.

Cost Effective

On a cost-per-part basis, ultrasonics is generally less expensive than competitive assembly methods.

Medical Case Studies

Corson Needle

Surgin, Inc.

Surgin worked with Dukane to design the joint of the two ABS halves of this needle. Using energy directors around the cannula hub permitted a 360° weld at this challenging area; energy directors were also placed around the rest of the joint. This design enabled Surgin to achieve a hermetic seal around the entire part. When the application went into full production, it initially experienced problems with flash and weld inconsistency. Dukane's microprocessor controller overcame these problems by allowing Surgin to control the weld by absolute distance.



Cover Slide

Hycor Biomedical

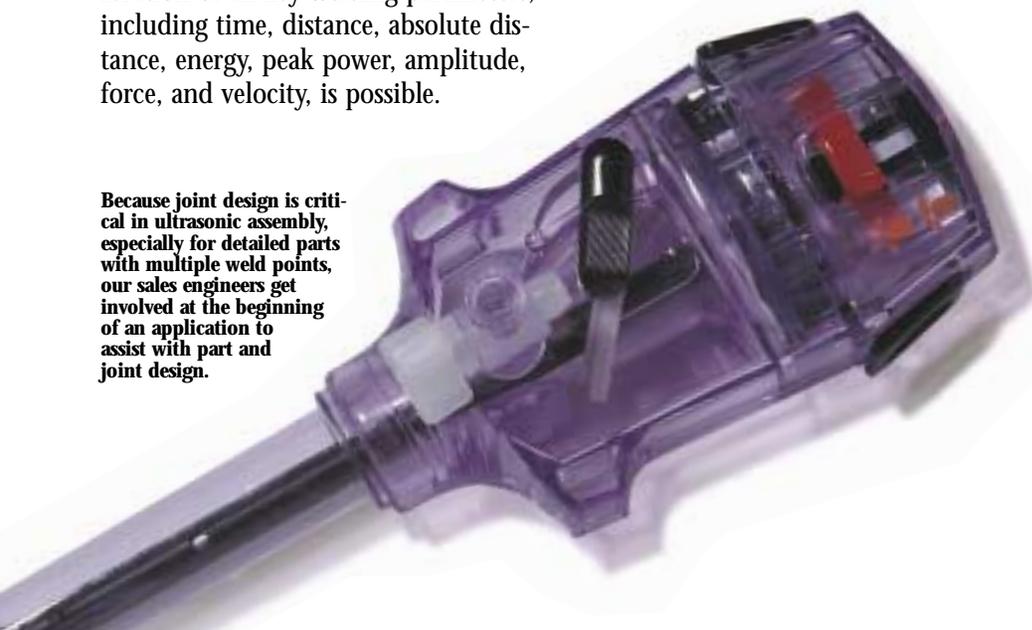
Hycor ultrasonically welds a polycarbonate cover to a polycarbonate slide, creating 10 pockets for lab specimens. Because the pocket volume is so critical (checked hourly in production), Hycor uses Dukane's microprocessor—with a linear encoder—to weld by distance. This controls melt/cooling collapse and holds the assembly to tight tolerances.



Trumpet Valve

Surgin, Inc.

Surgin had been using adhesives to attach the ABS valve housings, but the bonds were inconsistent, and extraneous adhesive flow around the joint was causing an unsatisfactory number of rejects. Dukane converted the assembly to ultrasonics and designed a shear joint to ensure a hermetic seal. Both housings needed to be attached simultaneously, so a special split fixture was developed which supported and clamped the bottom part of the valve.



Sophisticated Ultrasonic Capabilities

Dukane's innovations in ultrasonics have been instrumental in achieving quality assemblies for the medical product manufacturing industry. The following are a few products and features which have helped our customers bring their medical products to market:

Dynamic Process Controller™*

Combining the functions of a generator, process controller, and multiplexer into one unit, the Dynamic Process Controller (DPC) is the most advanced microprocessor available in the ultrasonics industry. The DPC can be programmed to control the assembly process by force, velocity, distance (melt collapse), absolute distance, amplitude, energy, peak power, or time... or a combination of those. Other capabilities include:

- Generate data for part/process validation
- User-defined upper/lower process limits allow good, bad, and suspect parts to be defined for 27 different process characteristics
- Store up to 25 application setups and minimize the need for repetitive setups or process re-certification
- Print graphs during production to depict process characteristics
- Bi-directional communication capabilities connect to multiple output devices, including monitors, printers, computers, and data collectors
- Profile pressure during the weld cycle

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Hydraulic Speed Control

Horn's stroke speed is critical and consistency can only be achieved with exact control of the horn's downspeed. By allowing you to precisely set this parameter, hydraulic speed control regulates the amount of material flow into the joint and improves the finished appearance of staking and swaging operations.

Dual Pressure*

Dual pressure is exclusive to Dukane equipment, and it allows you to apply the ultrasonics at one pressure and hold the assembly at a second, higher pressure. This feature can also be used to begin the weld at one pressure and finish it at a second pressure. Dual pressure is often used to weld hermetic seals or optically clear joints.

Hold By Distance

By holding ultrasonic welds and stakes at tolerances of up to $\pm .0001$ ", hold by distance offers superior control of melt

and flash. This feature is often used on reservoirs and stapling devices.

Weld By Distance*

By logging precise distance measurements, the weld by distance feature joins components by a specific weld depth. This assures the same amount of joint material melts for every part.

iPC™*

iPC stands for Intelligent Process Control and it provides a graphical user interface that lets you operate Dukane's Level 4 Dynamic Process Controller at its maximum capability with the greatest of ease. The iPC runs on a typical PC so there is no dedicated or proprietary hardware to buy. Once in the software, the drop-down menu makes it easy to move between control pages. There, you'll use slider controls that click and drag to adjust parameters.

Electronic Pressure Regulator

This feature electronically sets, controls, and monitors air pressure to the press. The electro-pneumatic equivalent of the manually adjustable air regulator on the press head, the electronic pressure regulator permits **equipment calibration and process validation.**

Load Cell (Force Transducer)

By measuring force during the weld cycle, and then converting mechanical force into an electronic signal, the load cell initiates ultrasonic energy at precise user-defined force levels. This allows **equipment calibration and process validation.**



*Indicates industry innovations pioneered by Dukane Ultrasonics