



Ultrasonics



Vibration



Thermal



Spin



Hot Plate



Laser



**DUKANE**

Intelligent Assembly Solutions

# Intelligent Assembly Solutions

**Laser Welding** has the advantage that contained weld joints produce no flash or particulate outside of the joint. The assembly is not exposed to heat or vibration and the parts do not move relative to each other during the assembly process. A beam-steering and focusing head provides the capability for fixed and dynamic beam welding. Because the process is very precise and controllable, laser welding produces cosmetically clean joints on parts with complex geometries. Laser welding is extremely versatile and costs less than you think.

## Laser



Laser welding requires the absorption of laser light. One material transmits the coherent laser light and the other material absorbs the light and converts it to heat. Parts that appear to be black to the human eye can be transparent or opaque at the wavelength of the laser light. Clear-to-clear joints and joints that are optically transparent can be readily achieved by use of special coatings.

Laser benefits include:

- Low residual stress on part
- Low heat input for welding close to sensitive components
- Bonds are dust and humidity proof
- Full-wall collapse welding in quasi-simultaneous mode
- Excellent aesthetics and invisible joints
- Ideal for quick prototyping and short production runs
- Sophisticated LaserCAD software uses standard CAD elements
- Diode pumped solid-state laser for long component life

## Ultrasonics



When it comes to **Ultrasonic Welding**, you couldn't be in better hands. We have over 30 years of experience in every facet of ultrasonic assembly. We have a long list of product innovations, a well known reputation for fast service and support, and a product line to match every need.

### DPC Generators

Our Dynamic Process Controllers™ (DPC) are designed to give you the highest level of control and capability at the greatest value. Each is available in a wide range of power levels and frequencies and can be customized to your requirements. They also meet US and International certification standards.

### Press Systems

Precise, rugged yet easy-to-use, these highly engineered systems are loaded with features that make them accurate, versatile and very reliable.

- Exclusive dual-pressure capability
- Linear ball-slides for precise movement
- High performance Titanium booster and Magnum transducer

### Automated Systems

We offer turnkey solutions or modular OEM components to meet every plastic assembly need.

- Rotary parts handling system
- Platen thrusters for multiple welds
- Narrow profile thrusters
- Hand probes
- Ultrasonic slitters
- Ultrasonic sewing machines
- Rotary drum machines for continuous fabric and film applications

**Vibration Welding** is a highly reliable process that can handle large parts in challenging materials or multiple parts per cycle with ease. Engineered to be tough, dependable and provide years of trouble-free service, Dukane's Advanced Vibration Welders are built for the long haul.

Some of the innovative features they include are:

- Industrial computer color touch screen graphical interface
- Fully compliant with standard ethernet networks for unlimited storage of setup files and part history information.
- Sophisticated security system enables process changes to be made only by authorized personnel

## Vibration



- Advanced parameter indexing mode allows dynamic changes of process variables during the weld cycle
- Programmable user inputs and outputs interface with tooling clamps, vacuum retention or sensors
- Extensive online context-sensitive help menus

Uninterrupted production, consistent quality and minimal downtime are assured by rugged construction:

- Massive one piece bridge ensures vibrations are delivered to the part, not the machine frame
- Four-rail ultra-rigid lift table guides
- FEA-optimized components permit heavier tooling loads
- Autotune feature matches drive to the resonant frequency of the tooling
- Low-noise 80dbA maximum continuous noise rating

Dukane's vibration welders are available in a range of sizes, control levels and custom configurations to meet your specific needs.

## Thermal



Our **Thermal Presses** can handle multiple stake posts or inserts on multiple planes simultaneously. These machines can be used for date coding, embossing or degating.

Our modular design allows us to quickly configure and modify a machine as your job requirements change. Our unique digital touch-screen controller automatically recognizes and activates slide kits or heat-zone controller modules as they are added. We have brought a lot of innovation to our thermal press with features like:

- Simple bolt-on master and slave modules for ease of expansion and maintenance
- Intuitive setup and operation from the main touch screen and digital heater controllers
- All controls and readouts are up front for easy access
- Setup mode simplifies job changeover
- Hydraulic speed control is standard
- Rotary tables or transfer lines can be easily incorporated
- Post cool, slide kits and quick-change tooling available

We have brought innovation to the Thermal Press with our Multi-Adjustable Thermal Probe (MATP). Its unique design permits quick adjustment of lateral or radial position.

Dukane's **Hot Plate Welders** can accommodate a wide range of part sizes and configurations. These machines offer high-reliability hermetic seals and strong mechanical bonds on complex part geometries.

The utility of these rugged machines is limited only by your imagination. We can deliver standard or custom machines in horizontal or vertical configurations. Our standard machine features:

- Two digital heat zones, and prewired for four zones
- Digital touch screen with intuitive setup and operation menus
- Pneumatic operation, hydraulic optional
- Vacuum part retention and sensing system
- Complete enclosure with exhaust fans
- Isolated pneumatic cabinet keeps valves clean and quiet
- Quick-change tooling system available
- Fail safe counter-balanced platens

## Hot Plate



Dukane **Spin Welders** can handle almost any part you can imagine that has a circular joint. Highly reliable hermetic seals and maximum flexibility in part fixturing are just two advantages that spin welding has to offer.

## Spin



Our spin welders are value-packed with features like:

- Advanced ServoWeld™ control for precise angular part orientation
- Available in custom configurations for special requirements
- Pre-spin, part pickup, and torque-sense trigger modes
- Intuitive touch screen programming
- Multiple setup file storage
- Programmable limits for part parameters
- Hydraulic speed control standard on pneumatically activated units
- Locking control door secures mechanical settings
- Easily integrated into automation systems
- Compact benchtop machines



### Appliances

Whether it's a small circuit board or a large complex part, Dukane has the right equipment to handle all kinds of houseware and consumer applications.



### Automotive

Inside, outside and under the hood, a significant number of parts in your car require some kind of plastic assembly and we've worked on just about all of them.



### Electronics

From simple connectors to personal computers, anywhere you find electronics, you find plastic assemblies that require quality, cost-effective solutions.



### Medical

Equipment used to produce medical devices must often be calibrated and verified. If you require Statistical Process Control records for FDA approval, we have the solutions you can trust.



### Packaging

Whether it's pour spouts, tubes, pouches, handles, clamshells, corrugated containers or blister packs, we'll make sure your package is as good as the product inside.



### Textiles

Our Fabric and Film Technical Center works with every kind of woven and non-woven material in rotary, slitting, plunge and traversing applications.



### Toys

Most toys and children's products require a reliable and non-toxic assembly solution. We work with you to determine the best solution.

## Process Comparison Chart

	Ultrasonics	Vibration	Hot Plate	Laser	Thermal Press	Spin
<b>Applicable Part Sizes</b>	Sm-Med	Med-Lg	Med	Sm-Med	Med	Med
<b>Assembly Techniques</b>						
Welding	•	•	•	•	•	•
Staking	•			Some		•
Swaging	•			Some		•
Inserting	•					•
Spot Welding	•					
De-gating	•			•		•
Date Coding/Embossing				•		•
<b>Materials</b> (must be Thermoplastic)						
Amorphous	•	•	•	•	•	•
Semi-Crystalline	Small Parts	•	•	•	•	•
Flexible Materials (e.g. TPE)	Some	Some	•	•	Some	Staking
Film and Fabrics	•	Some	Some	Some		
<b>Cost</b>						
Energy	\$	\$\$	\$\$\$	\$	\$	\$\$
Labor	\$	\$\$	\$\$	\$\$	\$	\$\$
Equipment	\$	\$\$	\$\$	\$\$\$	\$	\$
Tooling	\$	\$\$\$	\$\$	\$	\$	\$
<b>Performance</b>						
Weld Strength	◻M	◻H	◻H	◻M	◻H	-
Cycle Time	◻	◻	◻	◻	◻	◻
Resultant Stress Levels	◻M	◻M	◻M	◻L	◻M	◻L
<b>Part Requirements</b>						
Structural/Hermetic Seals	•	•	•	•	•	-
Thin Walled Parts	•		PD	•		-
Multiple Parts per Cycle	PD	•	•	•		•
Uniform/Solid Flash			•			•
Multi-level or Curved Joints	PD	•	•	•		•
Welding Internal Surfaces	•	PD	•	•		-
<b>Part Size KEY:</b> Sm = Small Parts Med = Medium Size Lg = Large Parts						
<b>Cost KEY:</b> \$ = Low Cost \$\$ = Average Cost \$\$\$ = Expensive						
<b>Performance KEY:</b> L = Low M = Medium H = High						
<b>Part Requirements Key:</b> PD = Part Dependent						

## Application Labs

Our application labs are a valuable resource to save you time getting to production. Our team of assembly experts can review your application long before mold steel is cut to ensure the weld joint will produce the desired result. You get into production faster and save money on mold changes. Let us help you with:

- Design analysis for a more robust part
- Material weldability testing
- Actual tooling tests and weld analysis
- Initial settings and parameters
- Part testing and problem solving

## Custom Engineering

We are unique in that the products we offer, even those in our standard product line, can be modified to meet your needs. The modular design of our equipment permits innovative configurations and applications. Capabilities include:

- Custom software development
- Custom system design and construction
- Integration of plastic assembly equipment into new or existing machinery
- No charge application consultations
- Customer-driven design philosophy

## Training

Dukane's total commitment to your success includes our investment in the most comprehensive plastics assembly training available. In addition to the training provided by our field engineers and regional service centers, we offer practical, hands-on training courses targeted at specific needs and tailored to individual job functions.

We keep the classes small, make them interactive, and pack them with information to maximize the return on your training investment. We can customize courses to fit your needs, conduct them in your facility and even teach them in other languages.

## Service & Support

For over thirty years, Dukane has been known for our unmatched level of service and support. Here is just a sample:

- 24/7 Service hotline
- Service loaner program
- Dukane online store for parts
- Quick-ship tooling program
- Application labs across the country for engineering assistance
- Regional Service Centers
- Extensive training programs
- Resource information center available online at [www.dukcorp.com/us](http://www.dukcorp.com/us)



