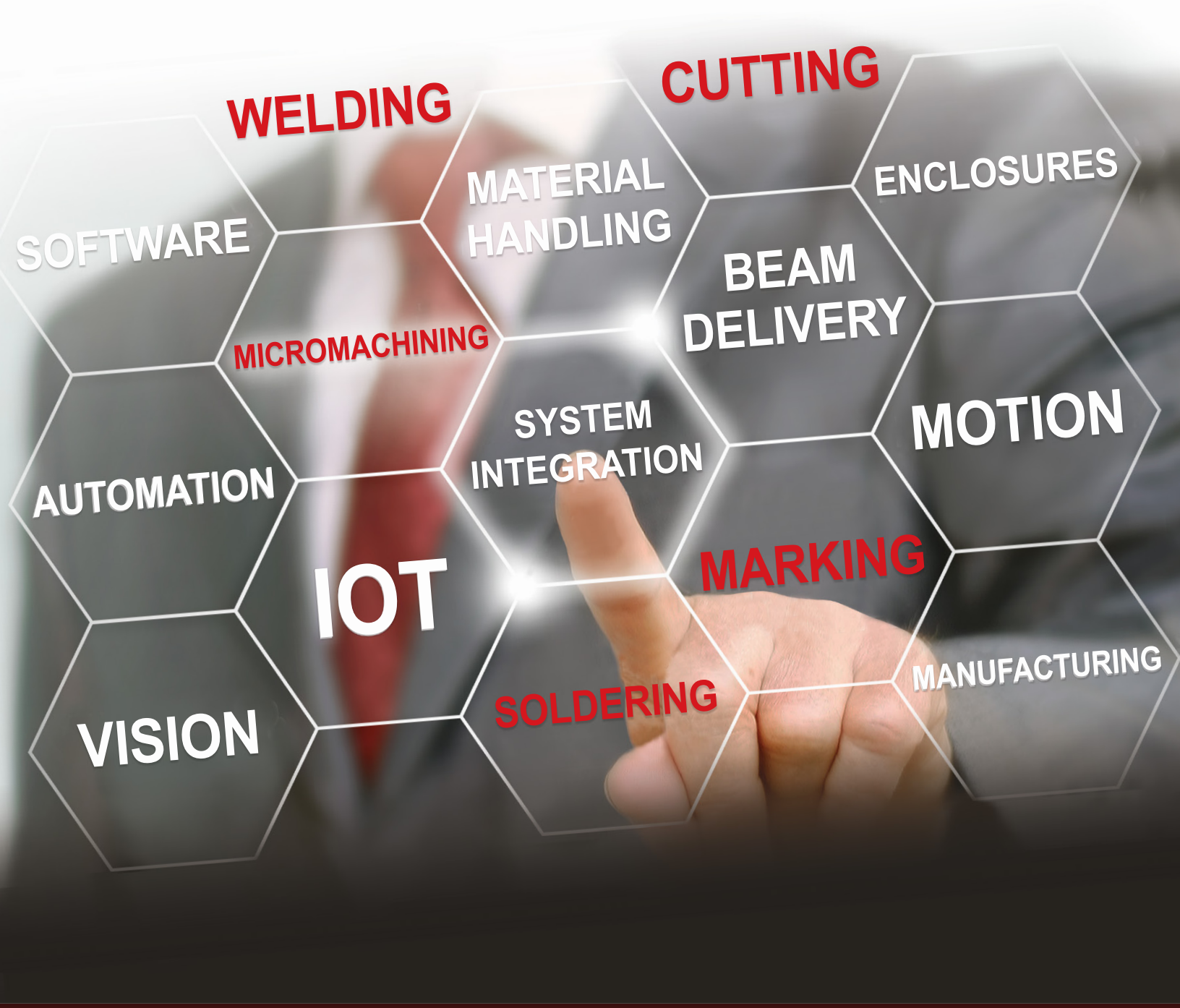
AMADA

AMADA WELD TECH

Integrated Systems

for Advanced Manufacturing



Our Philosophy: Define - Design - Deliver

Developing a unique solution geared for advanced manufacturing is complicated. Our approach? Define-Design-Deliver. This methodology helps us design the ideal system to meet your manufacturing needs and budget while maximizing your equipment ROI and meeting your production goals.

Process Assessment

- Determine part usage and success
- Optimize part designs
- Select material

Sample Qualification

- Process sample parts
- Determine optimal production settings

Equipment Specification

- Meets production, quality, and budget criteria
- Product flow
- Customer requirements

Product Assembly

- Engineer oversees project
- Work with customer & technicians

Test and Verification

- Rigorous testing
- System acceptance
- Customer directed

Installation and Support

- Install system and verify functionality
- Train engineers and operators
- Provide continual, ongoing support

Systems for Manufacturing

Cutting edge machine solutions for advanced welding, cutting, marking, soldering and bonding applications across multiple industries

Built to International Safety Requirements Where Applicable

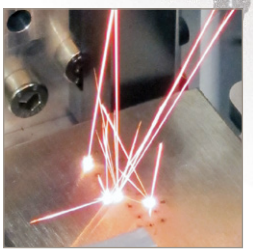
- CE
- UKCA
- CDRH/FDA
- NFPA79

Process Monitoring

- Resistance welding
- Laser welding
- Micro TIG welding
- Hot bar reflow soldering

Material Handling /Automation

- Robotic arms
- Conveyors for part delivery
- Rotary tables
- Automatic tube loaders
- Custom tools and fixtures
- Multi-axis motion stages
- Pinch rollers



Laser Beam Delivery

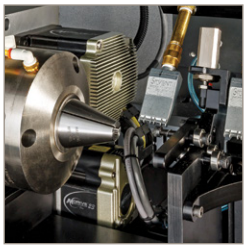
- Fixed beam
- 2D galvo scanning
- Wobble/Weave heads

Integrator Packages

- Laser micromachining
- Laser welding
- Laser marking
- Resistance welding

Standard Systems

- Laser welding
- Resistance welding
- Laser stent & tube cutting
- Gloveboxes
- Hermetic sealing
- Hot bar reflow soldering & bonding
- Laser marking



System Options

- Motion
- Viewing systems
- Vision systems
- Lighting
- Custom software
- Cover gas
- Debris management

Safety Enclosures

- Standard
- Custom
- Gloveboxes

Innovative Products for Manufacturing

Since 1948, AMADA WELD TECH has worked to achieve one goal: to solve customers' manufacturing challenges. Knowing there is no one solution that fits all, we strive to provide customers with innovative and reliable manufacturing technology solutions in an effort to be their single source provider.

At the heart of every system we build is one or more of our industry-leading products for advanced manufacturing. The technology selected will depend on your specific application and factors like materials, part accessibility and desired throughput. AMADA WELD TECH has expertise in a number of core technologies ensuring you get the right product for your application, floorspace, and budget.

Core Technologies

Resistance Welding
- High frequency DC power supplies
- Mid frequency DC power supplies
- Linear DC power supplies
- Capacitive discharge power supplies
- Alternating current power supplies
- Motorized electromagnetic weld heads
- Motorized servo weld heads
- Pneumatic weld heads
- Manual weld heads
- Resistance weld process monitors

Laser Welding
- Fiber lasers
- Nd:YAG lasers
- Blue diode lasers
- Laser weld process monitors

Laser Marking
- Fiber lasers
- UV nanosecond lasers
- Picosecond lasers

Laser Cutting
- Femtosecond lasers
- Fiber lasers

Laser Micro Machining
- Femtosecond lasers
- Picosecond lasers
- UV nanosecond lasers
- IR fiber lasers

Laser Soldering
- Direct diode lasers

Hot Bar Reflow Soldering
- Power supplies
- Hot bar reflow soldering heads
- Hot bar reflow soldering process monitors

Hermetic Sealing
- Projection welders
- Parallel seam sealers
- Gloveboxes

Micro TIG Welding
- Power supplies
- Torches
- Micro TIG weld process monitors

Systems Overview

AMADA WELD TECH provides several different system configurations tailored to meet your manufacturing and budget requirements: components and subsystems that can be integrated into a production line, standard, semi-automated workstations that are built to specifications, and custom systems that perform a defined application or range of applications.

Components, Subsystems, and Integrator Packages

Select from a range of components and subsystems to incorporate into your own workcell. Built to specification with a range of possible applications, these products are designed to ease the integration onto production lines or minimize cost in an R&D laboratory.

Laser power supplies and focus heads

Resistance welding power supplies, heads, and monitors

Sigma®LS femtosecond laser subsystem

Standard Systems

Our standard systems are built for specific technologies (laser welding, laser marking, resistance welding, etc.) and have limited flexibility to address other applications.

WL-100A Laser Processing System

WL-P300A Laser Processing Workstation

WR Resistance Welding System

Custom Systems

AMADA WELD TECH also manufactures custom systems engineered to meet your manufacturing specifications. These systems are fully tested and ready to manufacture product immediately after installation. Custom systems can be designed as standalone, single-operator workstations, or integrated into an automated production line.

Laser micromachining system with conveyorized load/unload

AX-5000 Glovebox System

Laser system with robotic handling

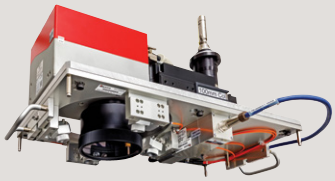
Components, Subsystems, and Integrator Packages

AMADA WELD TECH builds and designs a range of ready-to-integrate components that feature built in factory communications to simplify integration. Some of the more common configurations are packaged for drop-in to the production line, so you can focus on other automation processes.

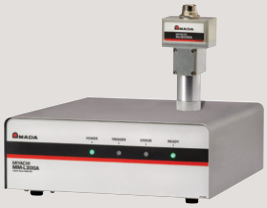
• Process Focused Product Solution • Focus on Automation
• AMADA WELD TECH Process Knowledge

Laser Welding


Laser


Galvo


Vision


Monitor

	Subsystem	Vision	Monitor	Galvo	Laser
Tier V	●	●	●	●	●
Tier IV		●	●	●	●
Tier III			●	●	●
Tier II				●	●
Tier I					●

Resistance Welding


Power Supply


Weld Head


Monitor


Vision

	Subsystem	Vision	Monitor	Weld Head	Power Supply
Tier V	●	●	●	●	●
Tier IV		●	●	●	●
Tier III			●	●	●
Tier II				●	●
Tier I					●

Example Subsystem: Laser Micromachining

The SIGMA LS Laser Micromachining Subsystem is a femtosecond laser-integrated module designed for high-precision processing versatility. The small form factor and integration-ready design make SIGMA LS ideal for machine builders and system integrators, as well as contract manufacturers, job shops, and R&D laboratories.

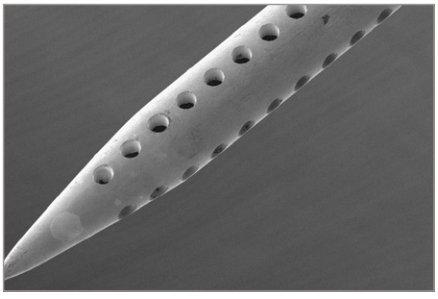
With femtosecond laser options in IR or green wavelengths, multiple optical component combinations, and laser power levels up to 80 W, SIGMA LS can be designed with the optimal configuration for applications spanning the medical device, aerospace/defense, electronics, energy/battery, and automotive industries.

All critical components are included to allow SIGMA LS to be integrated seamlessly into a production line machine or work cell, or to be used to support laser process prototyping and development.

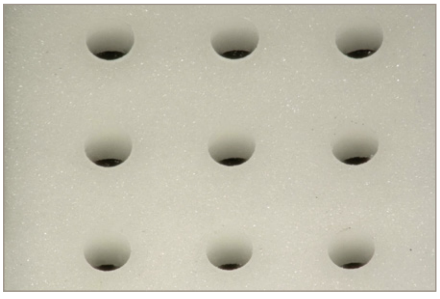
Femtosecond Laser • Beam Delivery Optics • Scan Head • Focus Lens • Camera • Controller/Software

Femtosecond laser options from 5 W to 80 W

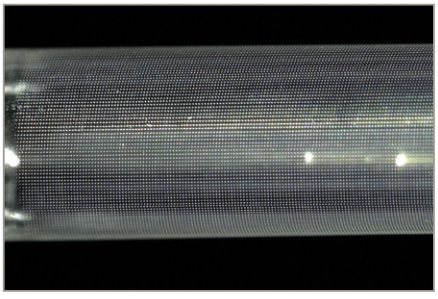
- IR or Green wavelength laser options
- Air-cooled or water-cooled laser options
- Easy-access utilities panel for communications with common industrial control systems
- Sensitive optical components contained in positive pressure environment to prevent contamination
- Galvanometer scan head with multiple lens options for accurate, high-speed beam delivery
- Scanner and laser control software with GUI tailored to the application
- Optional fixed-optic focus head
- On-axis (through-the-lens) and off-axis vision options
- Rigid aluminum structure with protective sheet metal enclosure



Hole drilling in stainless steel cannula



Hole drilling in ceramic microfluidics



Surface texturing metals, polymers, and ceramics

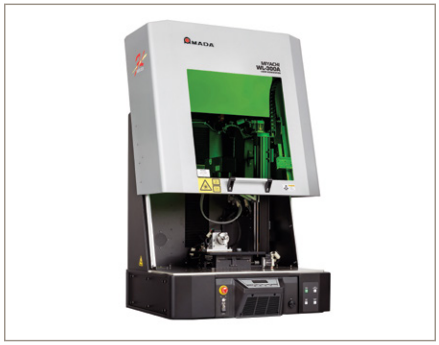
Standard Systems

AMADA WELD TECH offers a range of standard, fully integrated desktop and floor-standing systems for advanced manufacturing. These flexible systems are designed to be used as stand-alone, single operator workstations, or integrated into larger systems and automated production lines.

Laser Welding • Laser Stent & Tube Cutting • Gloveboxes • Hermetic Sealing
Hot Bar Reflow Soldering & Bonding • Laser Marking

Benchtop Systems

WL-P100A Laser Processing Systems



WL-P300A Laser Workstations

NH Series Desktop Systems for Reflow Soldering, ACF bonding, and Heatstaking

AF-8500A Hermetic Seam Sealers

HF-2500A Benchtop Resistance Welding System

Floor Standing, Standalone Systems

WL-P300A Laser Processing System

SIGMA Stent and Tube Cutting System

Resistance welding system

Laser Marking and Welding Systems

WL-100A Laser Processing System

WL-300A Laser Processing System

Delta Series Laser Welding System

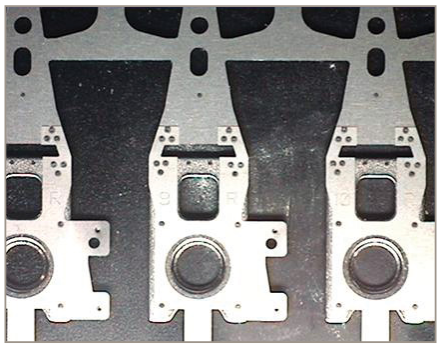
AMADA WELD TECH's line of standard laser marking and laser welding systems are highly configurable workstations designed for industrial manufacturing and offering the widest range of processing capabilities on the market. Workstations are CDRH Class 1 compliant and feature a large viewing window for easy visual observation by the operator.

The WL Series workstations are intended for low volume or R&D work. They are available in 2 sizes and can be used as either bench top or floor standing systems. They feature a motorized door, fast and precise motorized Z-axis for easy focus adjustment, and XY table (larger unit only) and fume extraction port.

The Delta Series workstations – all floor standing - come in 4 standard sizes. Designed for higher volume manufacturing or integration into a production line, they feature a pneumatic door, precision, multi-axis (XYZ) motion, control hardware, and Windows® software with industry standard G&M programming.

Options for both lines include a rotary stage, cover gas module, fume extraction, bar code reader and camera systems to tailor the machine to your specific processing needs.

Laser Marking • Laser Welding • CDRH Class 1 Compliant



Laser spot welding disk drive armatures

Welding of dissimilar materials for battery packs

Depth marks on trocar medical device

Windows® is a registered trademark of Microsoft Corporation

SIGMA Laser Stent and Tube Cutting System

The SIGMA Laser Stent and Tube Cutting System is designed for precision micro-cutting of tubes. It features high speed linear motors, top-of-the-line stages, and the latest-generation digital controllers to minimize tool path cycle time and maximize precision. Options for femtosecond or fiber lasers enable a fast, stable, and high quality cutting process, and the AMADA WELD TECH-designed operator-oriented machine interface maximizes user ease and efficiency. AMADA WELD TECH engineers provide system installation at your facility, along with a fully developed laser process and operational training as part of the system delivery.

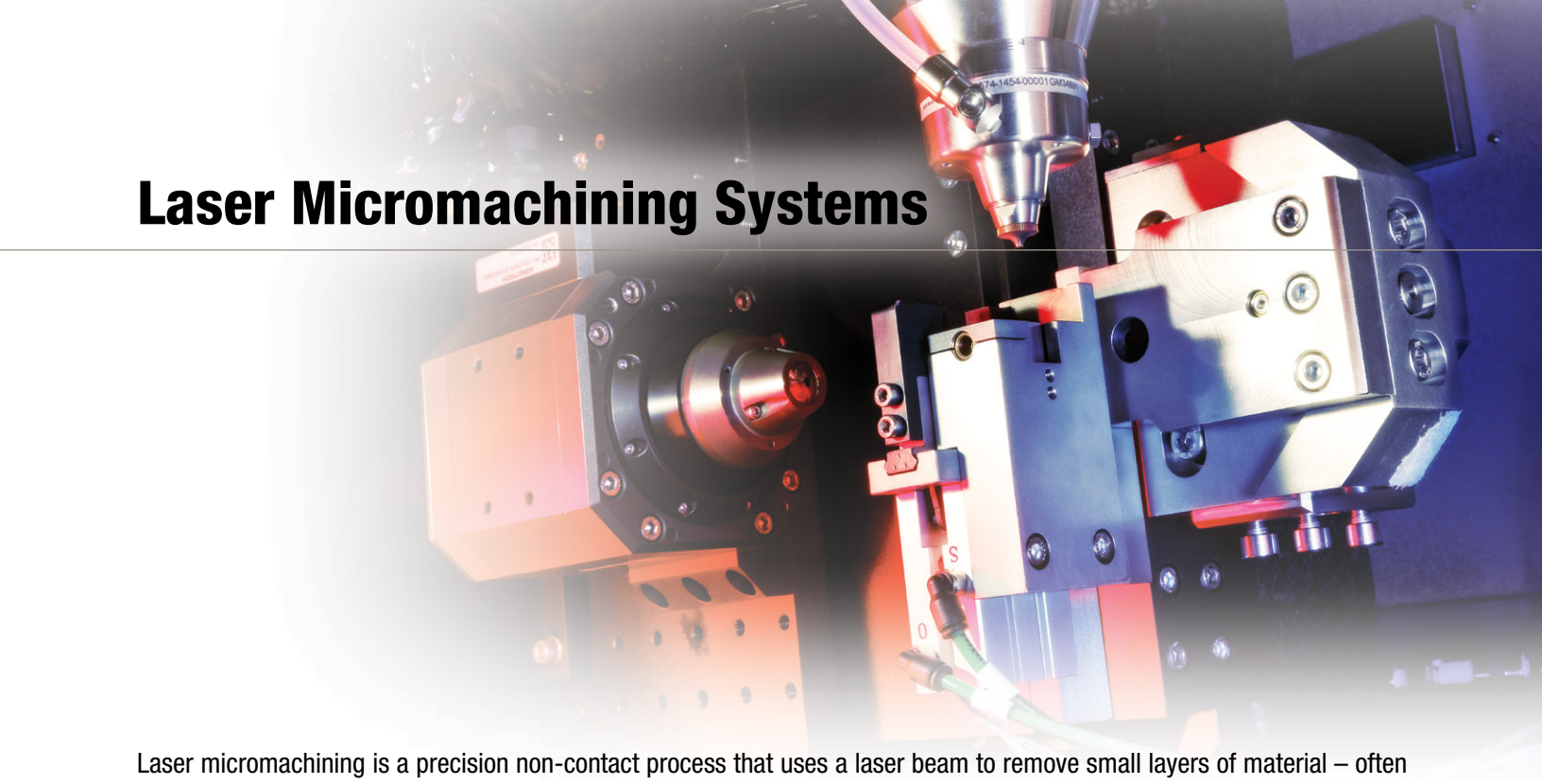
Process Tube Diameters from 0.2 mm – 30 mm (0.008 in – 1.180 in) • Compact Footprint
Femtosecond or Fiber Laser • 4-axis Coordinated Motion Options
Wet Cutting Capability • Flat Cutting Option

Large diameter biopsy devices

Flexible tubing

Micro cannula

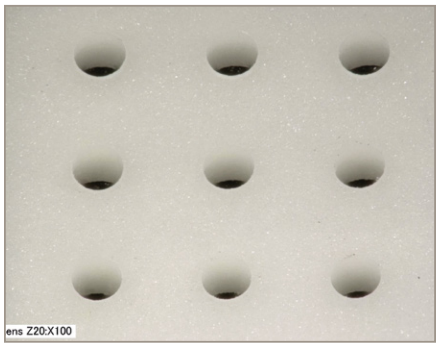
Laser Micromachining Systems



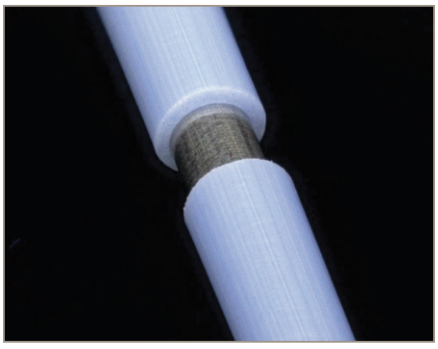
Laser micromachining is a precision non-contact process that uses a laser beam to remove small layers of material – often only microns (tenths of a thousandth of an inch) thick – from a sample surface. Laser micromachining can be applied to a broad range of applications such as precision milling and selective ablation, wire stripping, drilling, surface texturing, and marking. The integrated systems that support laser micromachining come in a range of sizes and form factors to readily accommodate a large variety of sample part sizes, motion stage travel dimensions, laser sources, optical delivery methods, and automation and accessory components. Tooling can be customized to suit almost any application.

Micromachining systems are commonly integrated with galvanometer scan heads and ultrashort pulse (USP) femtosecond lasers, which provide the best material removal quality with minimal-to-no thermal defects, and the highest degree of process stability and precision. With options in IR, green, and, in special cases, UV wavelengths, femtosecond lasers provide the optimal processing capability for nearly any material including metals and metal alloys, plastics and polymers, ceramics, and glasses. For processes that benefit from other types of laser sources, micromachining systems can also be configured with a range of fiber, DPSS nanosecond green or UV, CO_2, and picosecond lasers selected specifically for the application.

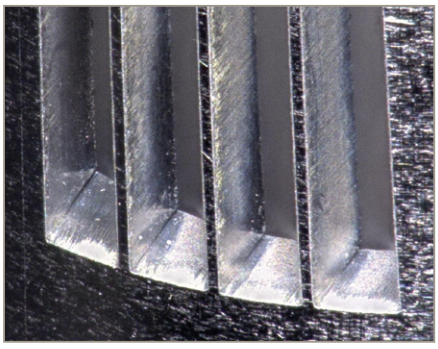
Micro Drilling • Micro Milling • Micro Patterning • Micro Scribing
Ablation • Wire Stripping



Alumina sheets



Polymer selective ablation



Titanium struts

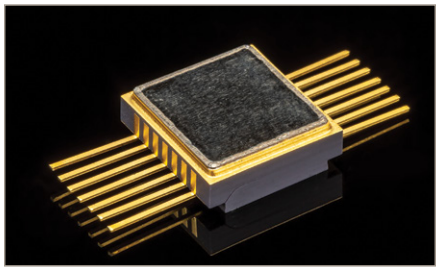
AMADA WELD TECH offers multiple ultrashort pulse femtosecond and picosecond lasers, as well as various laser beam delivery strategies, to provide successful solutionsfor a broad range of high-precision and sensitive micromachining applications. Standard and customized system designs, as well as integrator-ready subsystem packages, are available to meet the demands of both high-production and R&D-level environments.

Hermetic Sealing Systems

Seam sealing or seam welding is a resistance welding method used to join the lids to the cans of electronic packages. The process utilizes two motor driven electrode wheels, which are positioned on opposite sides of the package and rolled along the perimeter conducting current through both lid and can to create the seal.

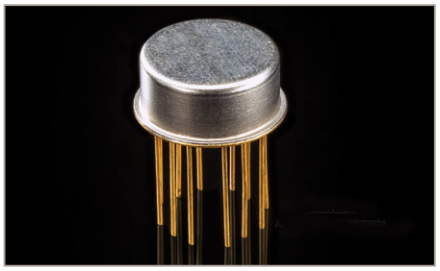
Hermetic sealing is a variation of this process which results in a package completely sealed against ambient atmosphere, preventing the entry or escape of air. Hermetic sealing processes generally take place in gloveboxes or dryboxes which enclose the seam sealers in a controlled atmospheric environment.

Seam Sealing • Hermetic Sealing • Projection Welding



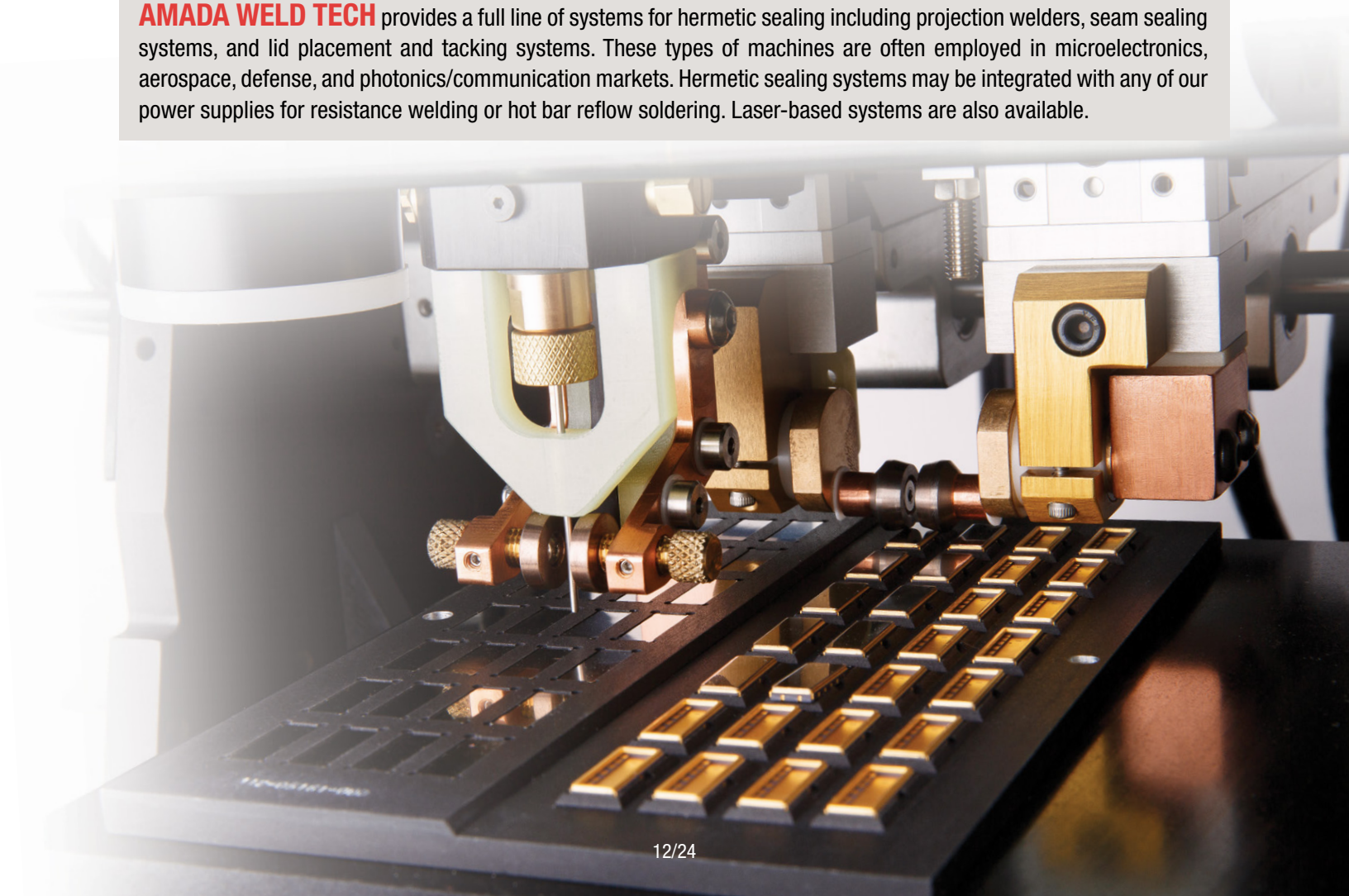
5G communication devices

TOSA/ROSA devices

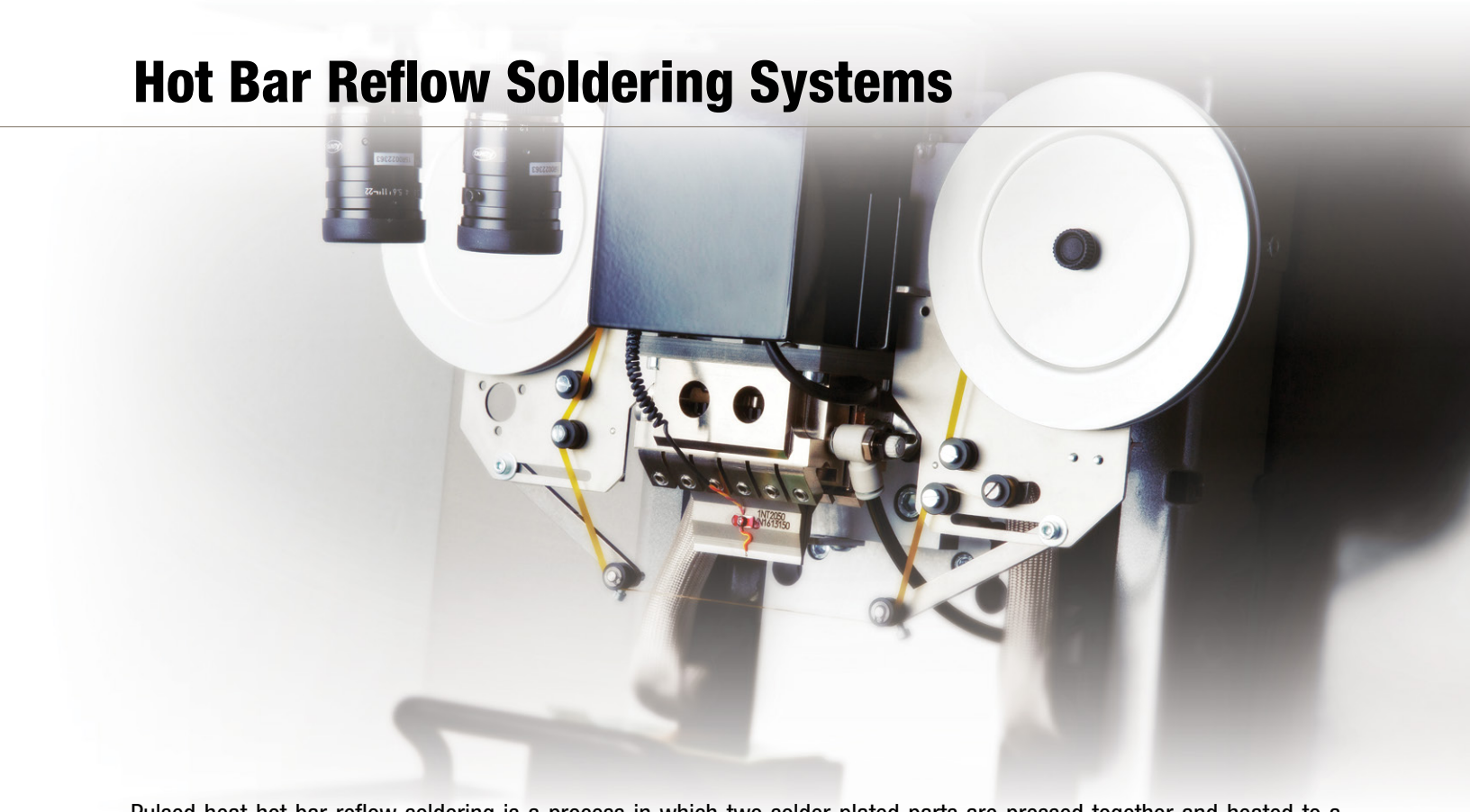


Round TO packages

AMADA WELD TECH provides a full line of systems for hermetic sealing including projection welders, seam sealing systems, and lid placement and tacking systems. These types of machines are often employed in microelectronics, aerospace, defense, and photonics/communication markets. Hermetic sealing systems may be integrated with any of our power supplies for resistance welding or hot bar reflow soldering. Laser-based systems are also available.



Hot Bar Reflow Soldering Systems

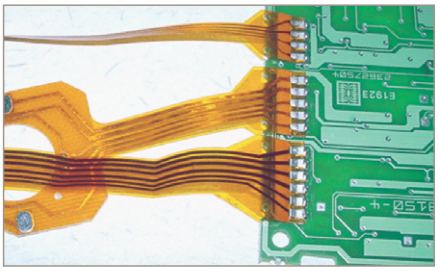


Pulsed heat hot bar reflow soldering is a process in which two solder plated parts are pressed together and heated to a controlled temperature adequate to cause the solder to melt and flow, forming a permanent, electro-mechanical bond. Hot bar reflow soldering is an excellent process for applications that require multiple connections to be made simultaneously, such as flex-to-PCB or flex-to-glass. Up to 200 leads or wires can be connected in a single process cycle. Hot bar reflow soldering processes are reproducible, quantifiable, and traceable to quality standards such as ISO / NIST.

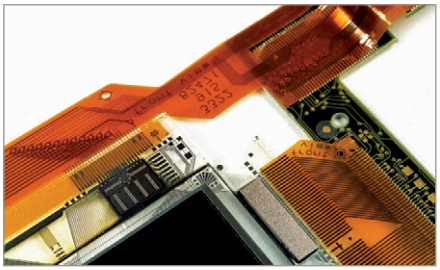
These same systems are suitable for ACF bonding and heat staking applications.

Compact, Standard Systems • Custom Systems • Tape Interposers
Linear Slide or Rotary Table Options • Optical Alignment Modules • Custom Tooling

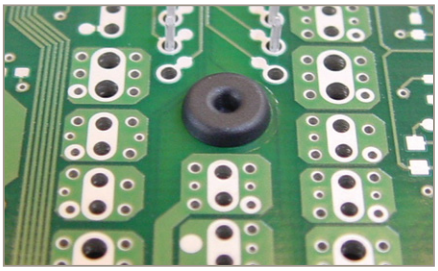
AMADA WELD TECH offers a range of standard and custom systems for reflow soldering, heat seal bonding and heat staking. All systems are integrated with an AMADA WELD TECH UF-4000A pulsed heat reflow soldering power supply and bonding head, and feature robust frame construction, active integrated cooling, and X-Y thermode co-planarity adjustment.



Hot bar reflow soldering flex circuit to PCB



ACF bonding flex circuit to glass

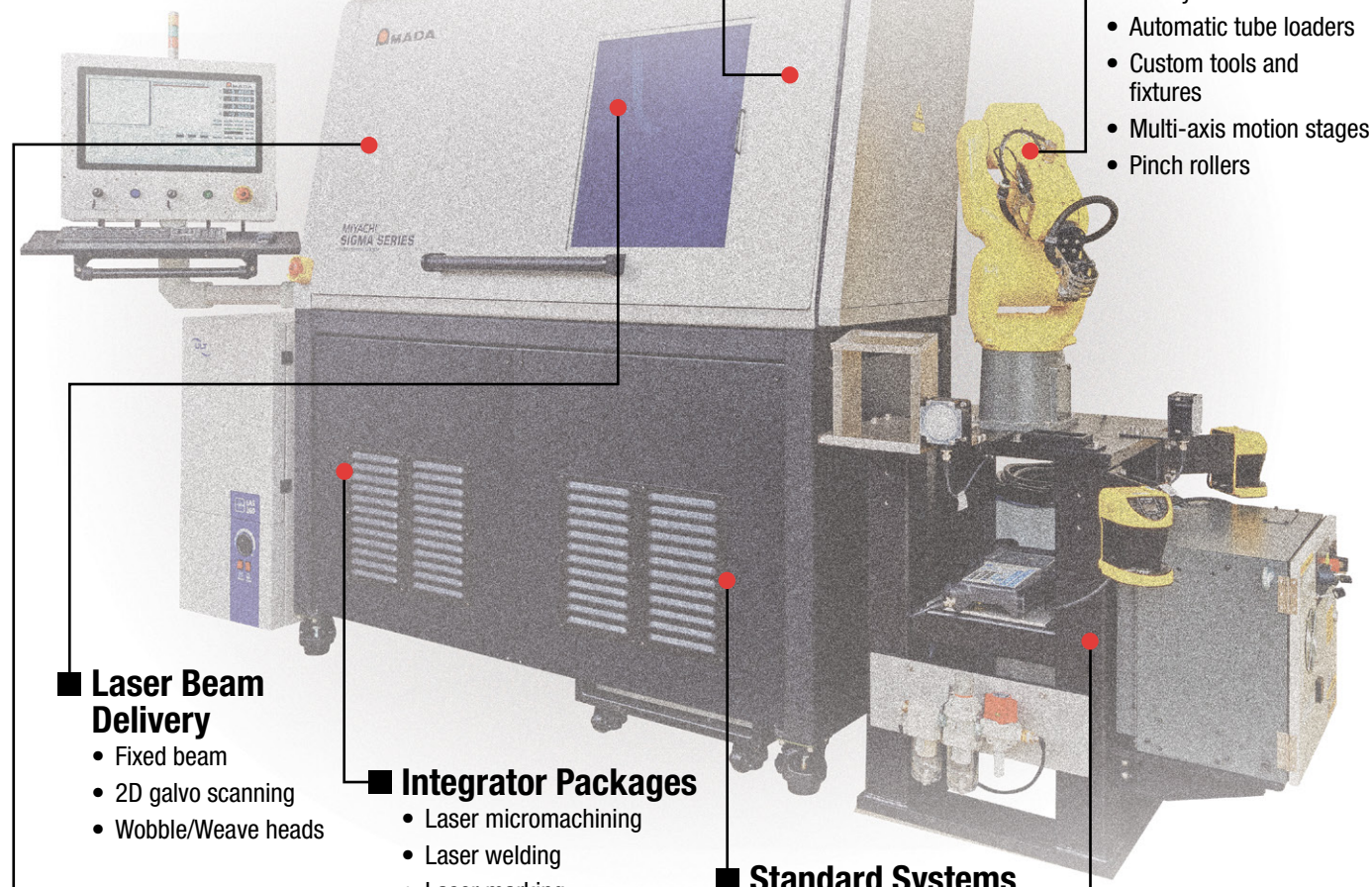


Heat staking a pin on PCB

Custom Systems

Some products and processes are so specific that a system needs be designed and customized to meet the outlined manufacturing requirements. Our engineers work with our customers to come up with the perfect system solution, taking into consideration things like materials, part accessibility, throughput, quality, operator safety and more.

Almost every integrated system is unique in one way or another, but using standard components as building blocks, and leaning on years of experience ensures that the system is built to specifications and has robust components for high up-time and the engineering teams at AMADA WELD TECH love the challenge! We've built custom systems for resistance welding, hot bar reflow soldering, laser welding, laser micromachining, and more.



Process Monitoring

- Resistance welding
- Laser welding
- Micro TIG welding
- Hot bar reflow soldering

Material Handling /Automation

- Robotic arms
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- Motion
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- Vision systems
- Lighting
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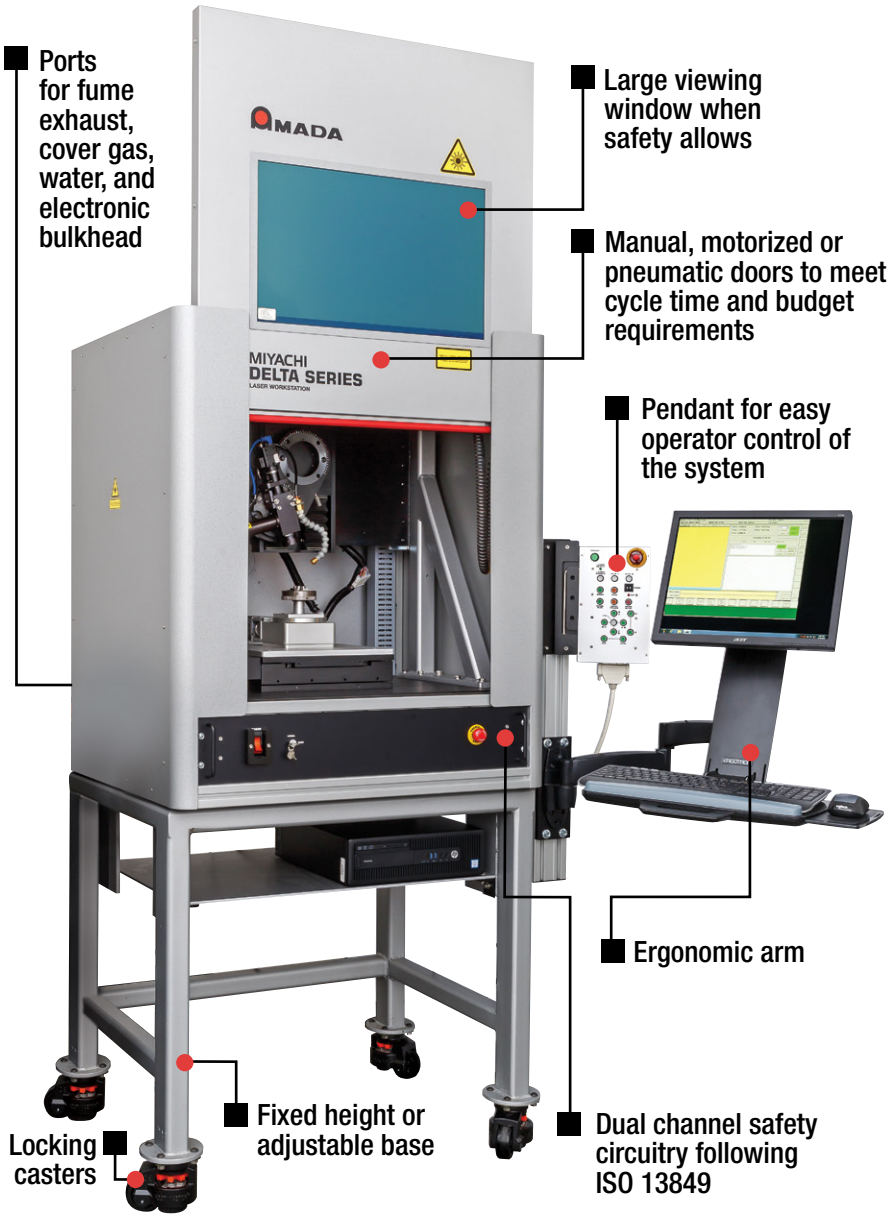
- Cover gas
- Debris management

Safety Enclosures

Once the process is defined and the technology is selected, design begins in earnest. The next steps are to assess the manufacturing space, determine the footprint of the finished system, and define any special requirements for the parts and part handling. AMADA WELD TECH's system enclosures are optimized to protect not only the machinery and parts, but also the operators from harmful environmental particulates and fast-moving motion components. The enclosure is a frame built of sturdy and durable components which functions as the framework around the process. These enclosures are built to the required safety standards for the process and location of installation (CDRH Class 1, CE, CSA, NFPA79, etc.).

Large Viewing Window • Removable Side Panels • Easy-Access Electronics Drawers Manual or Pneumatic Doors • Ergonomic Arm • 4 Standard Styles in Multiple Sizes Locking Casters • Dual Channel Safety Circuitry



WL Series enclosure

SIGMA Series enclosure

AX5000 glovebox enclosure

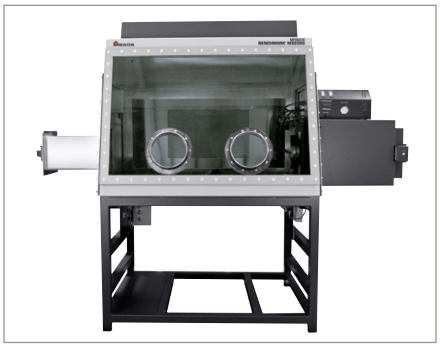
Safety Enclosures: Gloveboxes

Gloveboxes – also known as atmospheric enclosures or inert gas enclosures – are sealed work areas with built-in glove ports, pass-through chambers, and interlocking doors to allow the introduction and manipulation of objects in a controlled working environment.

Typical applications include the hermetic sealing of electronic components which require high-purity, moisture-free inert environments. Chambers are typically filled with argon, nitrogen, helium, or a combination of these gases.

2 and 4 Glove Port Standard Sizes • Aluminum or Steel Base • Antechambers
Stainless Steel Chamber Add-on • Extensions for Storage or Part Preparation
Gas and Sensors Vacuum • Ovens with Heated Walls and Shelves • Gas Purification

Alpha Series Glovebox Systems



MX2000 Glovebox Systems

AX5000 Advanced Glovebox Systems

AMADA WELD TECH glovebox systems can be equipped with AMADA WELD TECH lasers, projection welders and hermetic sealing systems and are easily integrated with robotic arms for automated loading and unloading of parts. Robots are ideal for production with large magazines of trays and can lead to periods of lightly supervised production.

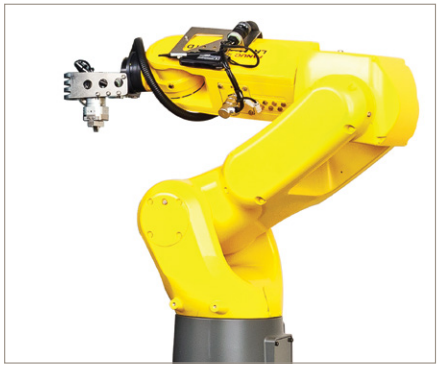
Material Handling/Automation

In today's competitive, globalized manufacturing environment, cost control is critical, and an efficient material handling process is one of the best ways to help reduce unit cost of production. Characteristics of optimized material handling include: proper facility layout, optimized machine design, and development of methods which simplify, verify, and improve the manufacturing process.

All of these things, in turn, can improve operator efficiency and reduce scrap leading to increased overall production activity.

Material handling efficiency is greatest when it approaches a steady flow of materials, with minimum downtime and scrap, and where movements approach continuous versus intermittent flow. Automation, in the form of robotic arms, conveyor systems and rotary tables are all excellent examples of the application of this idea.

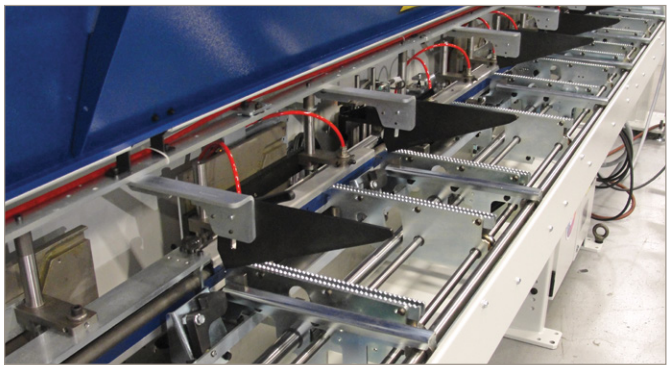
High Output and Productivity • Consistent Quality • Efficient Resource Utilization
Enhanced Safety • Effective Hedge for Skilled Workforce Shortages



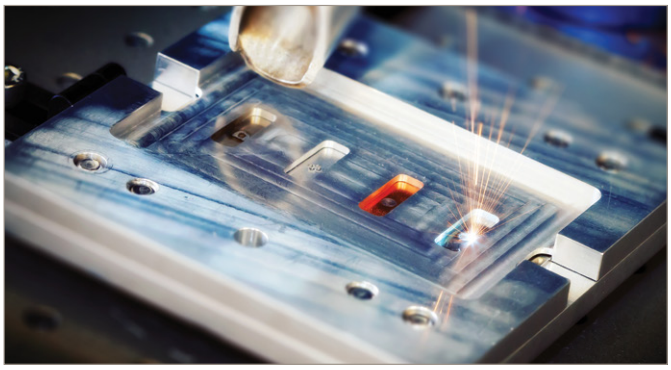
Robotic arm

Conveyor

Rotary table dial indexer



Automated tube loader



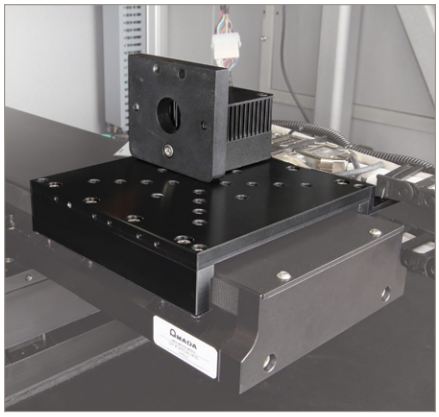
Custom tooling

More System Options

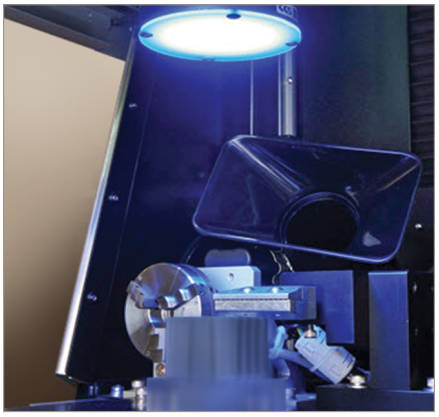
Motion, Vision, Cover Gas Delivery, Debris Management, Software and more...

Every system requires consideration of a range of options to meet both manufacturing needs and operator safety.

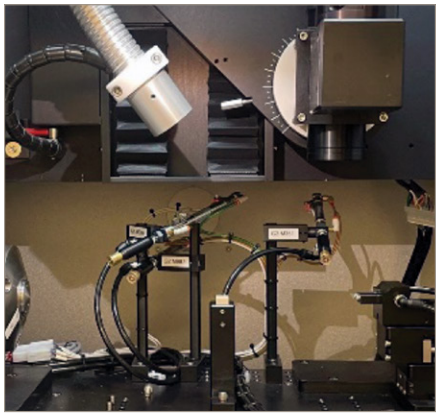
Precision Motion Stages • Camera Systems • Machine Vision • Lighting • Teach Mode
Position-Based Firing • Custom Software • Custom Tooling • Cover Gas • Debris Management



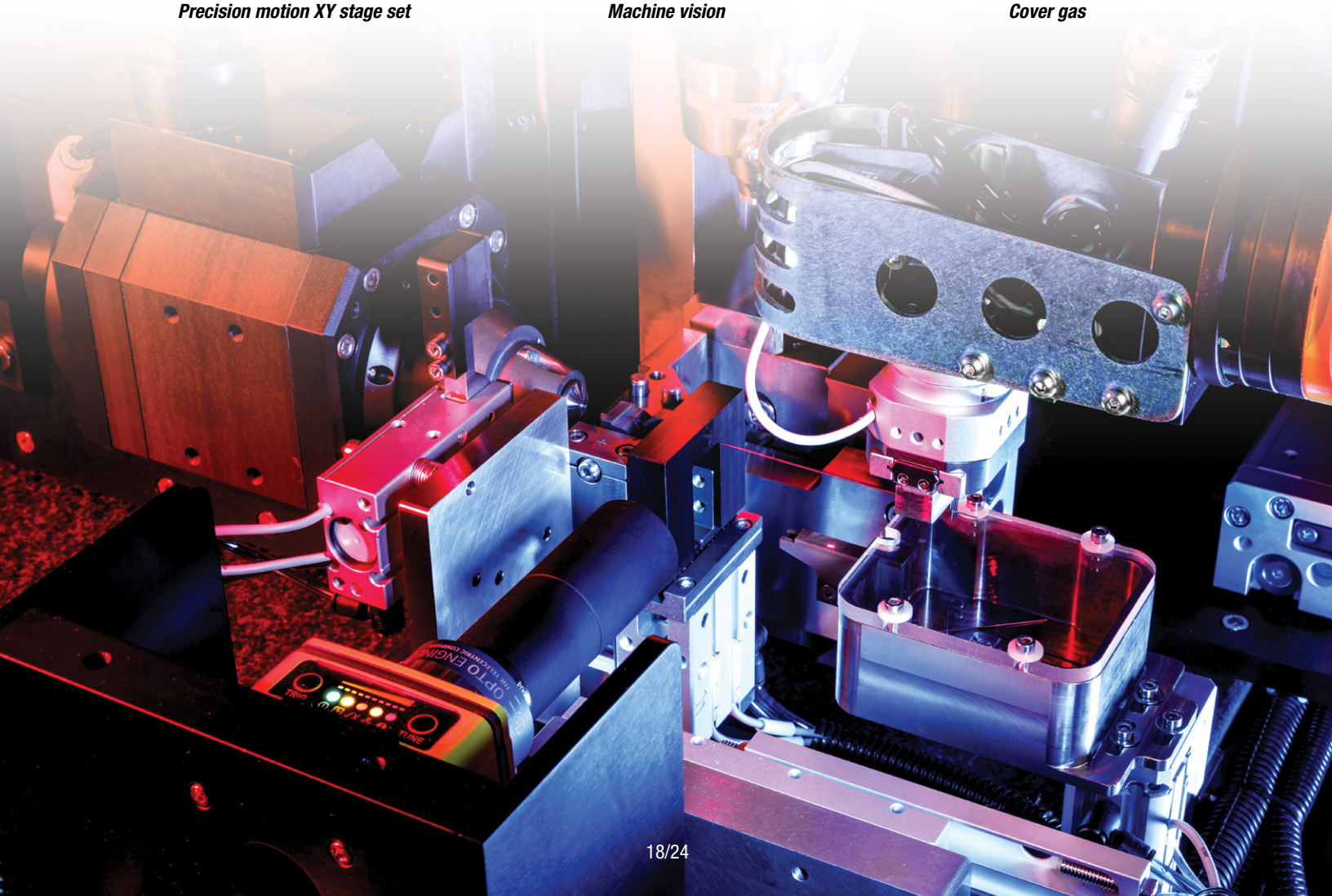
Precision motion XY stage set



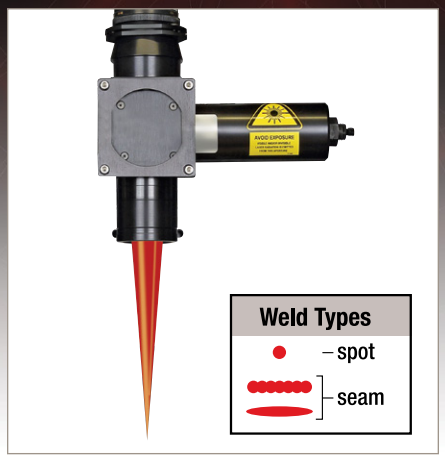
Machine vision



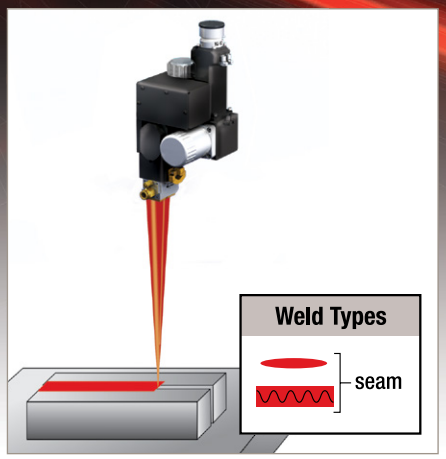
Cover gas



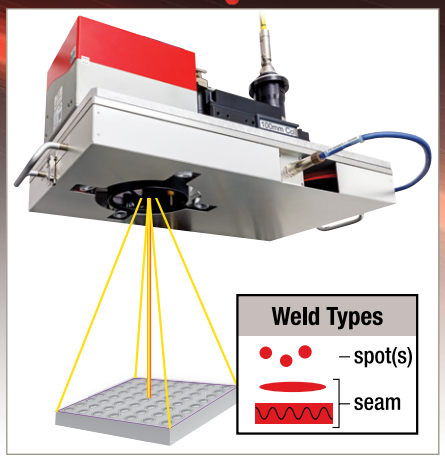
Laser Beam Delivery



Fixed head



Wobble/weave



Galvo scanning

Unique to laser systems, but critical for performance, is the consideration of laser beam delivery, which generally refers to the hardware components (mirrors, shutters, collimators, fibers, focus heads) used to deliver a laser beam from the source to the workpiece.

Industrial laser systems deliver laser beams by either reflective optics or a fiber. The selected delivery method depends on the type and power of the laser being used. CO_2, UV nanosecond, and femtosecond lasers generally require a series of reflective optics, while many solid-state lasers – including Nd:YAG and fiber – often use fiber optics to deliver the beam to the focusing head.

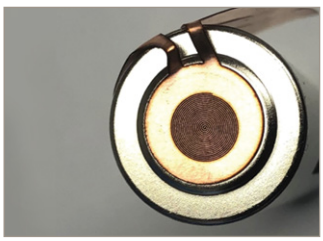
Fixed focus heads are typically mounted to a vertical Z-stage in the enclosure, and the parts are moved below (via motion system) to set points where the laser is fired.

Wobble/weave focus heads are typically mounted to a vertical Z-stage in the enclosure. However, rather than a fixed location at the output, a small oscillation can move the beam back and forth in a defined pattern. This helps increase the melt pool and join parts that have lower manufacturing tolerances. Like the fixed focus head, the parts are moved below (via motion system) where the laser is fired and a seam weld is created.

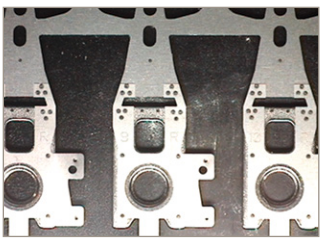
Galvo scan heads direct the laser beam through the scan head by two mirrors to a lens, which focuses the laser over an X/Y area according to where the motors have positioned the laser at the input side of the lens.

Selection of these components is most often determined by, and optimized for, the particular application (laser marking, laser welding, laser cutting, laser drilling, etc.).

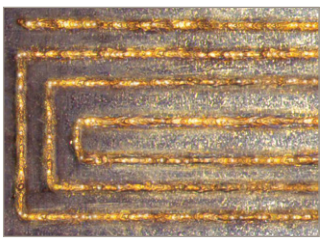
AMADA WELD TECH has many years of experience designing laser systems and determining the best beam delivery to achieve the desired spot size, minimalize power loss, and ensure ease of maintenance.



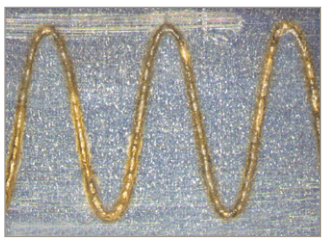
Spiral welding



Multi-point welding



Square spiral



Sinusoidal curves

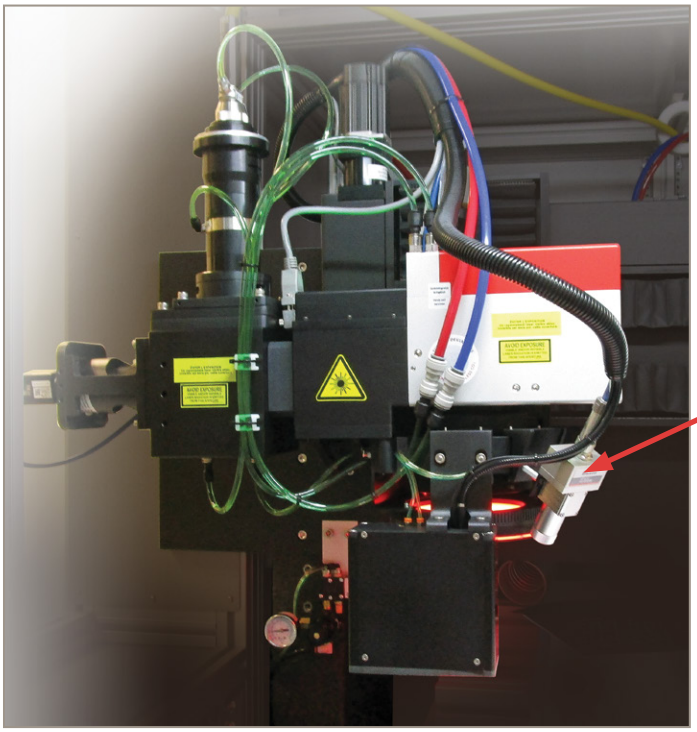
Ensuring Manufacturing Success with Process Monitoring

Product failure. Upset customers. Product on stop shipment. For the process manufacturing engineer, it's a worst-case scenario. When this situation occurs, it requires swift attention and accurate resolution: do you know the fundamental underlying issue? Can you calmly and expertly identify the source of the problem and what to do to get back on track? This is where process monitoring comes in. By observing and measuring the process, it is possible to discern good from bad product and, when bad occurs, specify defect signatures. In fact, process monitoring can help manufacturers avoid this situation altogether.

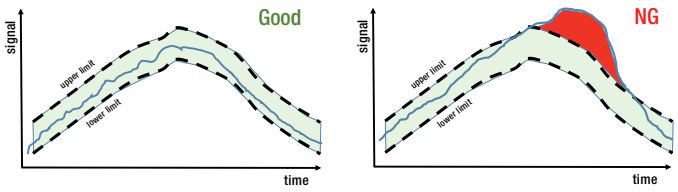
For laser welding, detect and record thermal signals and set an envelope (min/max) to determine good and bad welds by identifying errors such as gaps between parts, missing parts, over-penetration, incorrect focus, and cover gas absence. For resistance welding, monitor parameters like weld current, voltage drop across the electrodes, workpiece expansion and deformation, electrode force, electrode movement (displacement) and more.

The monitor data can also be used to develop better manual or automated workstations that can avoid weld inconsistencies. Plus, data collected with monitors can provide value *after* a product is sold in case of a recall or similar situation, as weld data can be correlated with serial numbers.

Improve Quality • Reduce Downtime • Reduce Scrap



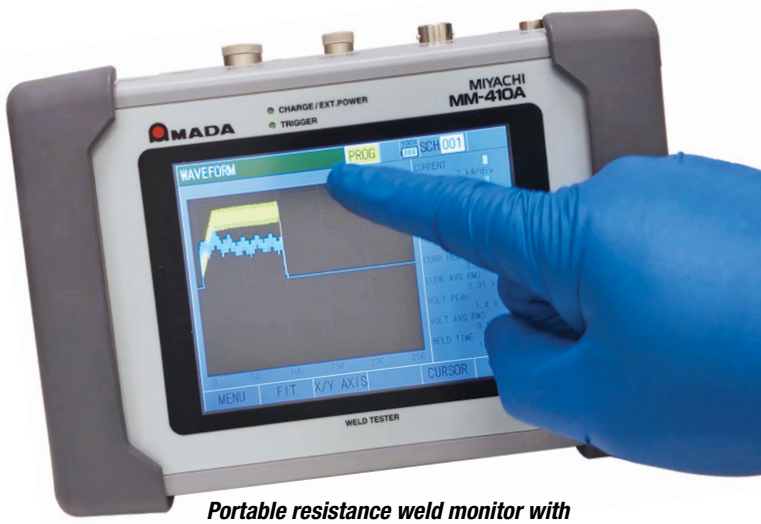
Laser weld monitoring



Graphical representation of an instantaneous judgement of measured waveform versus limits that were determined during a DOE. The Good signal results when the newly measured waveform falls within acceptable values. The NG occurs when the waveform falls outside those limits.

AMADA WELD TECH offers real-time process monitors for **laser welding, resistance welding, micro TIG welding and hot bar reflow soldering.** These stand-alone monitors are invaluable tools for product development, improving quality and throughput in production, and storing data for traceability.

Off-axis laser weld monitor



Portable resistance weld monitor with a touchscreen interface

Value Added Services

Training

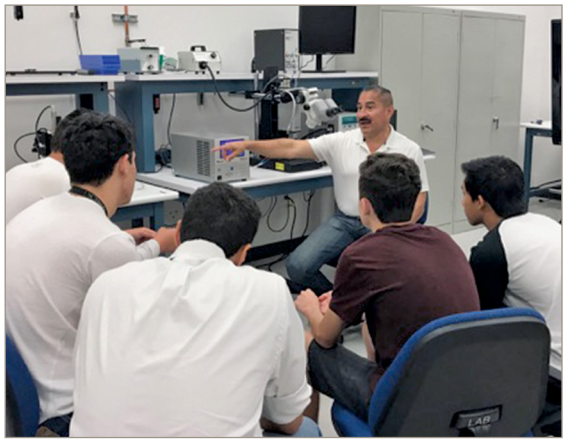
We offer application support and process development services at our Technical Centers in Monrovia, California; Wixom, Michigan; High Point, North Carolina, or on-site at your facility. These services can be tailored to meet your specific needs and may include hands-on equipment training.

Topics

- Technology fundamentals
- Developing process success
- Equipment troubleshooting

Location Options

- On-demand webinars
- Live webinars with Q&A
- Factory hands-on
- On-site training (specific to your equipment)



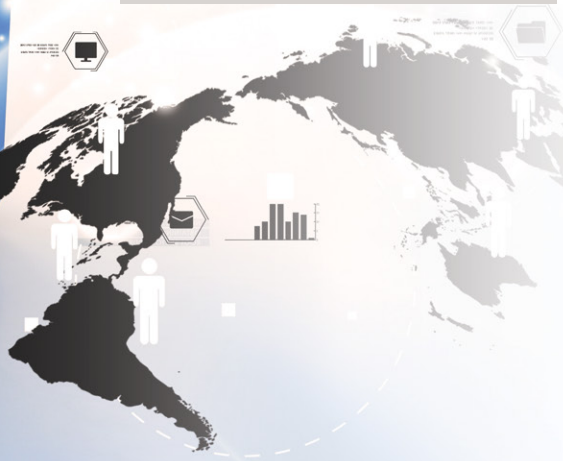
Around the Clock Service Support to Minimize Downtime

Inevitably something may go wrong. This can be caused by a multitude of reasons, but ultimately the longer that the product is out of order, the larger the impact to your business.

We are there when you need us.

24/7 Field Service

- **+1-866-751-7378**
- **service@amadaweldtech.com**

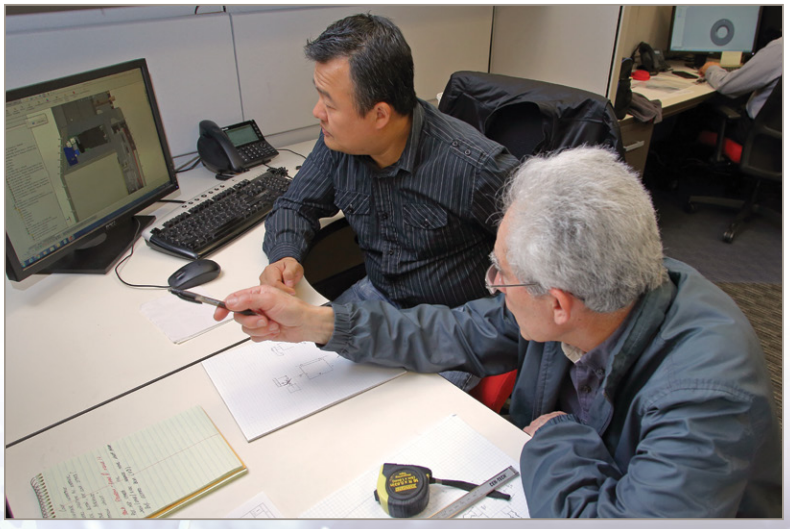


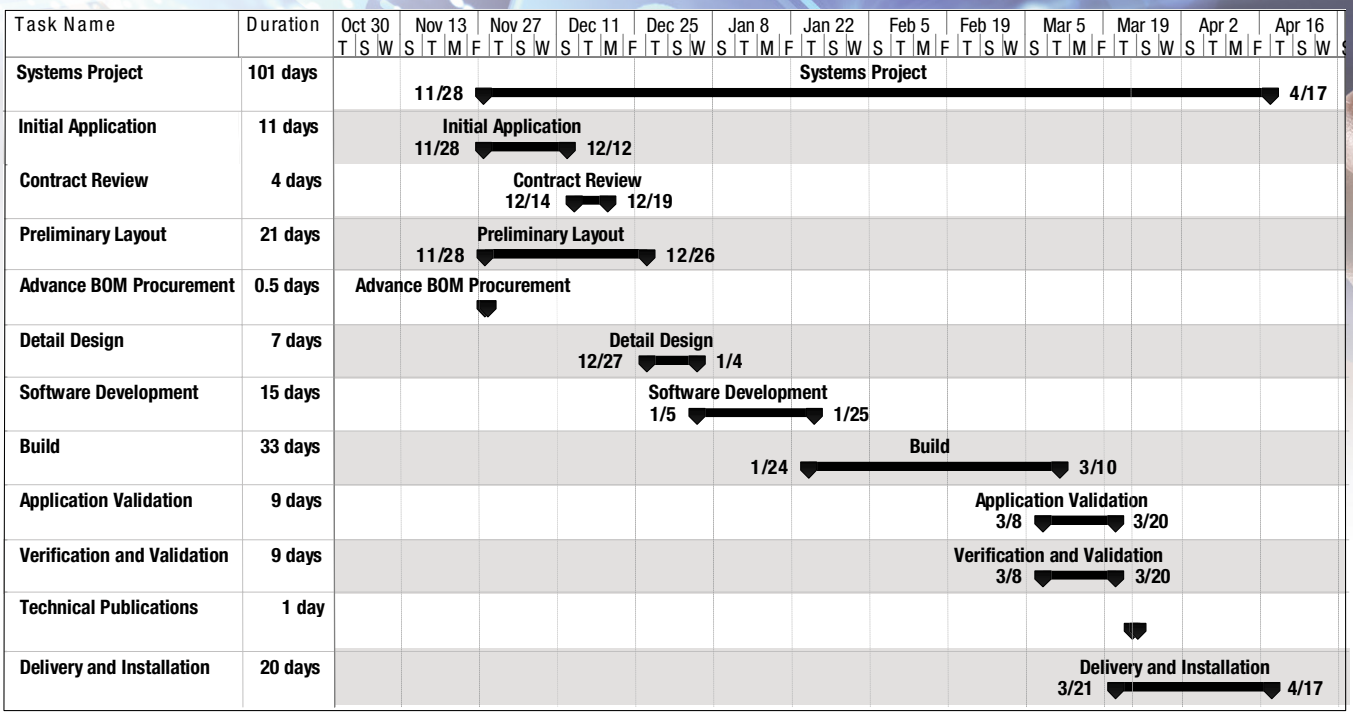
Project Management for Custom Systems

At AMADA WELD TECH, we work on the principle of define-design-deliver for our custom built systems. Every machine is assigned to a dedicated project engineer who manages the build of the system starting with a kick-off meeting providing regular updates, and FAT scheduling. This person is the primary contact during the entire building cycle.

Dedicated Project Management Ensures:

- Single point of contact for the entire project from purchase to delivery
- Detailed project schedule with critical milestones and task assignments
- Weekly or bi-monthly status update meetings
- Ensures all customer specifications and order requirements are met
- Handles change orders that may be requested during the project cycle
- Scheduling of factory acceptance test





Our Resources, Your Success

Understanding the product and the process - ensuring success! Not sure your application is feasible? Want to know which technology is best suited to your process? Does your existing process require some modification or re-optimization? Our experienced team of Application Engineers are ready to provide assistance!

Technical Centers

- Western Technical Center - Monrovia,CA
- Midwest Technical Center - Wixom, MI
- Eastern Technical Center - High Point, NC

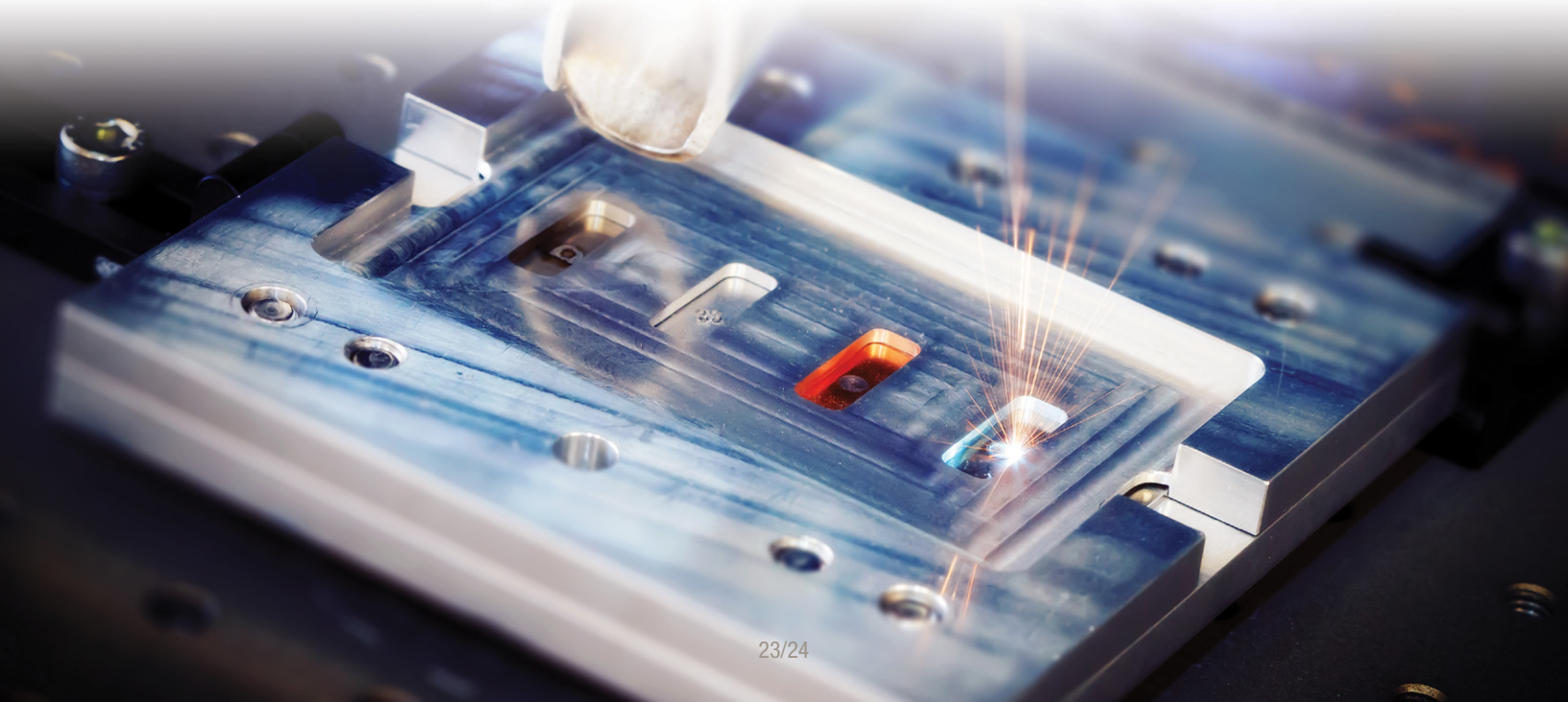
Experienced Application and Process Engineers

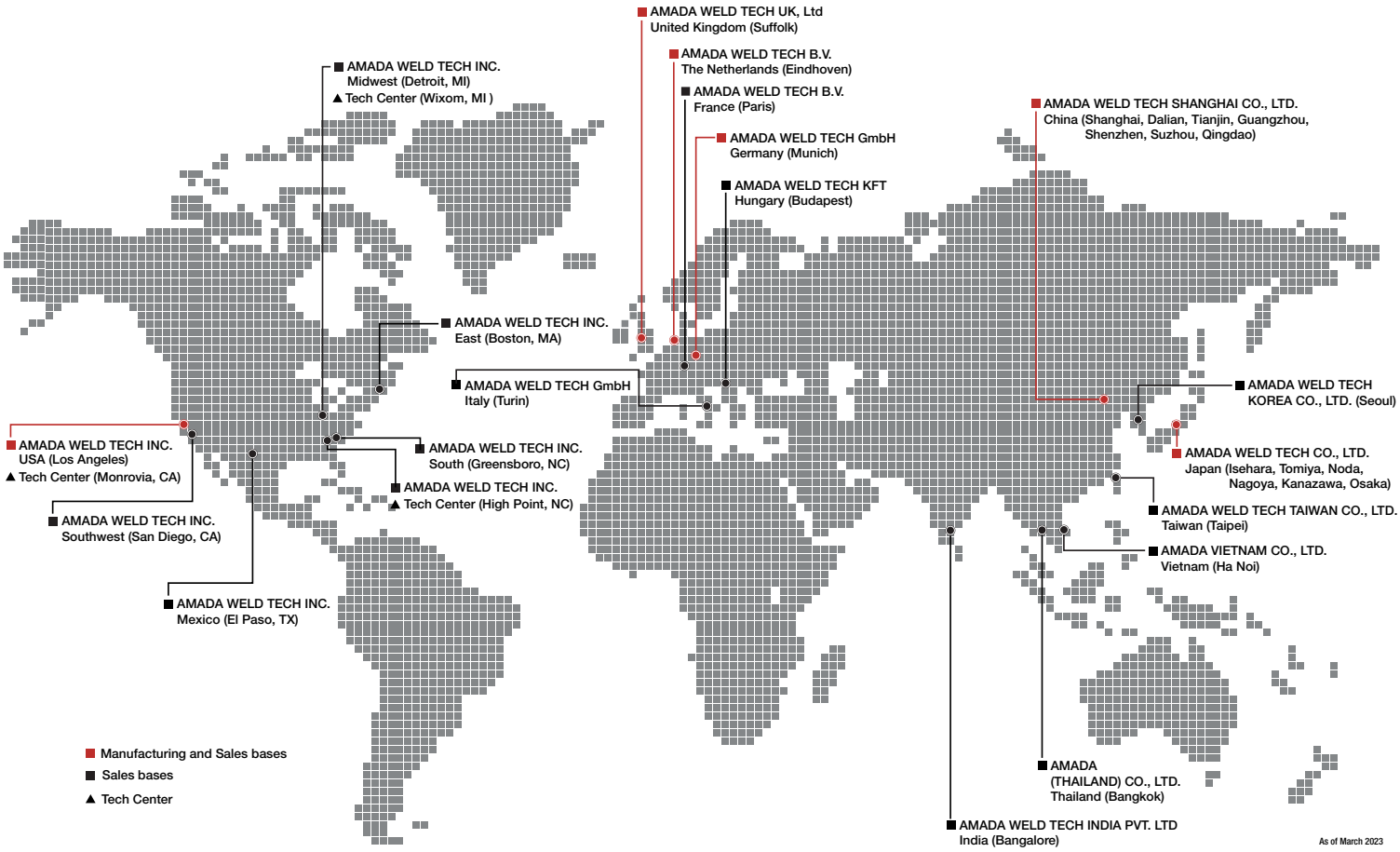
- 12 full-time application engineers and technicians

Dedicated Development Resources

- **Core Technologies -** Laser welding, resistance welding, laser marking, laser micro machining, laser tube cutting, micro TIG welding, reflow aoldering, hermetic seam sealing
- **Facilities -** 10 state-of-the-art application labs for all core technologies
- **Range of Lasers -** CW, QCW and dual beam fiber lasers, diode-pumped solid-state (DPSS) lasers, Nd:YAG lasers, picosecond lasers and femtosecond lasers
- **Range of Beam Delivery Options -** Fixed, 2D and 3D galvo-scanning, wobble head, trepanning head, multi-axis taper-free cutting head
- **Range of Resistance Welding Power Supplies -** Linear DC, High Frequency, Cap Discharge, and AC Resistance Spot Welding Controls (5 A – 100,000 A)
- **4 and 5 Axis Laser Welding and Laser Micromachining Workstations**
- **Gloveboxes for Processing in an Inert Atmosphere**

Western Technical Center





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