AMADA®

AMADA MIYACHI AMERICA

Improving battery manufacturing through design, technology and innovation

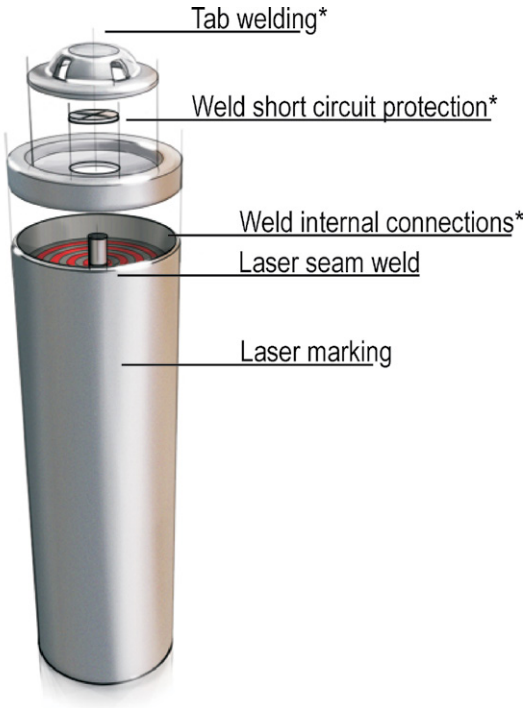
Equipment and integrated solutions for

Battery Pack Manufacturing

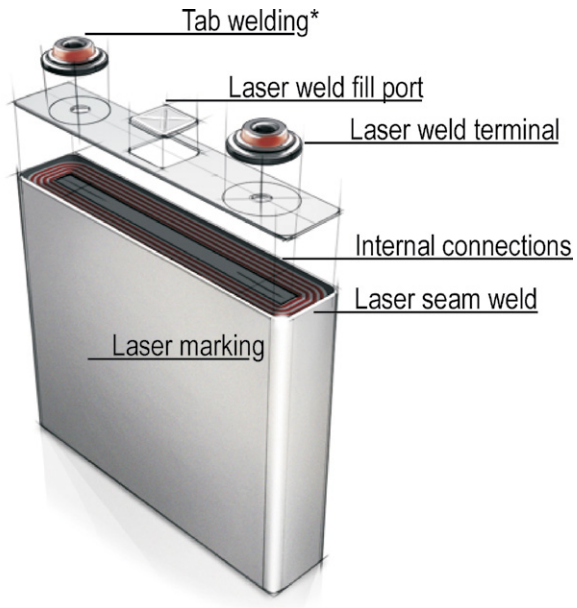
Resistance Welding | Laser Welding | Laser Marking

For each type of battery manufactured, AMADA MIYACHI offers a production solution: resistance welding, laser welding, laser marking or laser cutting. We have in-depth knowledge and experience for each category and application, for example, laser welding of dissimilar metals for battery tabs and resistance welding for tab design optimization. Our in-house application labs enable proven processes to be delivered with optimized systems.

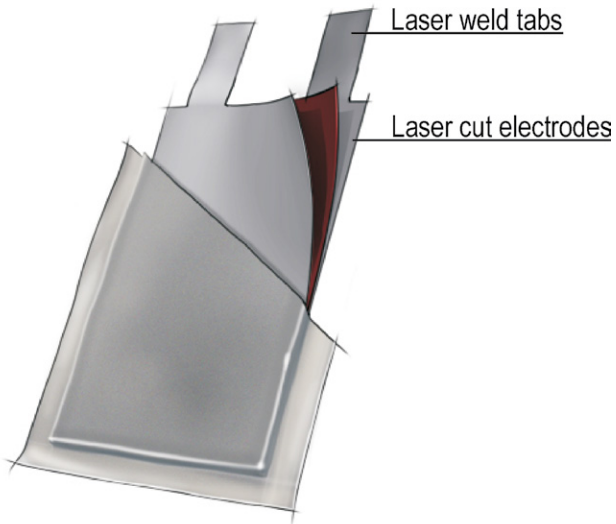
Cylinder



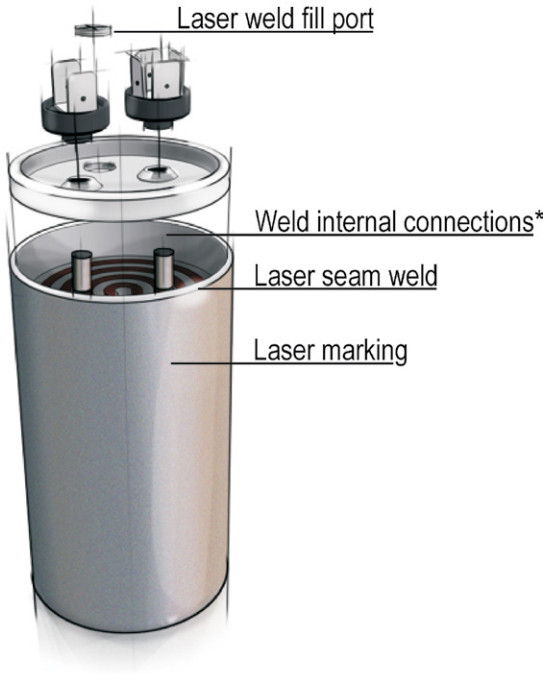
Prismatic



Pouch



Ultracapacitor

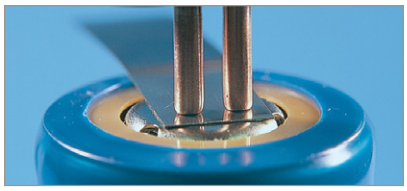


** laser or resistance welding*

AMADA MIYACHI offers a complete range of resistance welding power supplies and lasers specifically designed for both low and high volume battery manufacturing. Our experienced team selects from this range of technologies to precisely match production needs. We can supply as standalone products or fully integrated system solutions. Every product and system is delivered with a tested and guaranteed application developed and supported by our in-house application engineers.

Resistance Welding

A full range of resistance spot welders including inverter, linear DC, capacitive discharge and AC supported by our complete line of weld heads, and process monitors and checkers.



Laser Welding

A full range of power levels for fiber and Nd:YAG laser technologies provides complete application coverage for material thickness, combinations and production throughput.

Laser Engraving and Marking

These processing systems utilize nanosecond pulsed lasers for welding, cutting and marking or engraving. Offered in entry level, low production benchtop or highly automated engineered systems.

Pack Manufacturing

AMADA MIYACHI has developed laser welding and resistance welding systems for a wide variety of pack configurations.

Conveyer fed automation cell

Laser tab welding system with fire suppression top

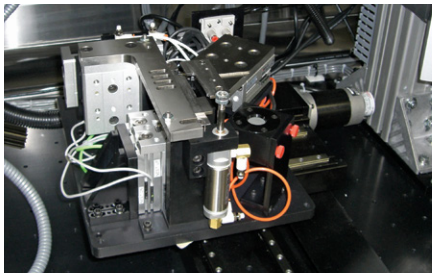
Resistance welding system

Resistance welding, laser welding and marking systems

All of AMADA MIYACHI's resistance and laser products can be integrated into standard or custom engineered systems for battery pack manufacture. Options such as process monitoring, process data management and weld quality assessment offer the necessary tools to setup and maintain a high throughput process that offers higher quality and yields. Each of our systems can be integrated for standalone or automated operation as dictated by the production requirements.

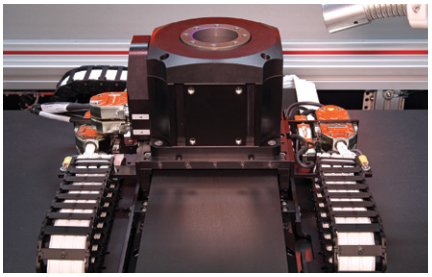
Enclosures

AMADA MIYACHI offers a range of sizes of enclosures, (Class 1 if required), according to the pack size, part load and unload method, always with consideration to minimize the footprint.



Tooling

Tooling is critical for any welding process, especially for batteries. With many years of tooling design experience we can provide tooling or consult with our customers to help them find the right tooling approach.

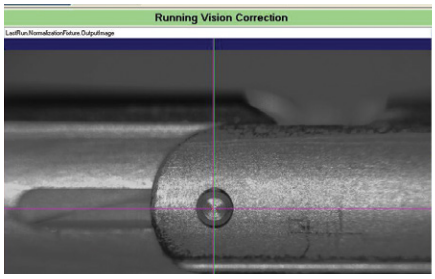


Motion

Motion solutions vary according to the application, pack size, pack weight and production throughput. Smart decision on motion optimizes cycle time and minimizes complexity.

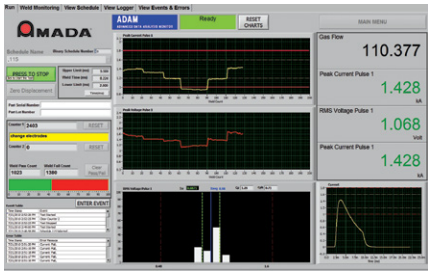
Optics

AMADA MIYACHI offers heavy duty welding heads, 2d and 3d scan heads, and trepan heads all determined by application testing and integrated seamlessly with our motion control software.



Software

With our in-house motion control software AMADA MIYACHI can provide as much control as required. Integration of vision corrected motion, customer specific control systems or data management systems are all possible.



Monitoring

Independent welding source and process monitoring options are available that offer the possibility of process drift, error detection and automated rework.

AMADA MIYACHI AMERICA's broad range of technologies, products, and systems makes it possible for us to provide complete solutions for both simple and complex manufacturing challenges. The path to solving even your most difficult materials processing needs begins with our technical sales experts. Working with our applications engineers, our broad, experienced team offers insightful feedback on process feasibility and part design to maximize production reliability. Application/sample qualification in our labs helps you determine the best choice of equipment for a robust, production-ready process. If a system is needed, our team of system engineers with expertise in motion, tooling, vision and software deliver smart and innovative solutions tailored to functional requirements and budget. Define - Design - Deliver.

AMADA MIYACHI AMERICA Company Profile

AMADA MIYACHI AMERICA is a leading manufacturer of equipment and systems for resistance welding, laser welding, laser marking, laser cutting, laser micromachining, hermetic sealing, projection welding, and hot bar soldering and bonding. The company provides products to a wide range of markets, including the medical device, battery, electric vehicle and solar industries, as well as global electronics, automotive and general industrial markets.

Since 1948, AMADA MIYACHI AMERICA has worked to achieve one goal: to solve our customer's manufacturing challenges. Knowing there is no one solution that fits all, we strive to provide our customers with innovative and reliable manufacturing technology solutions so that we may be their single source provider.

AMADA MIYACHI AMERICA sells, distributes, services and supports the sales of all AMADA MIYACHI group branded products: Miyachi Unitek, Miyachi Peco, Miyachi Eapro and Benchmark, ensuring you get the best technology solution to fit your budget and your specific application.

Our headquarters is located in Monrovia, California with state-of-the-art facilities for developing, producing and servicing the solutions offered to our worldwide customer base. A global company, AMADA MIYACHI AMERICA also has sales offices and applications laboratories located in Detroit, Michigan; El Paso, Texas; and Sao Paulo, Brazil.

Company timeline

1948 Unitek Corporation founded in Pasadena, CA to manufacture orthodontic appliances.

1950 Weldmatic Division organized; produced a complete line of electronically operated resistance welders for missile, aircraft, electronics, and metal working industries.

1965 Moved into current Headquarters location in Monrovia, CA.

1971 Unitek Equipment Division established.

1978 Unitek Corporation acquired by Bristol Myers Squibb. Development and patent of force firing systems critical to small parts welding.

1987 Unitek Corporation acquired by 3M.

1988 Divested from 3M as Unitek Equipment Division of KVA Holdings Corp.

1991 Name changed to Unitek Equipment Inc.

1994 Acquired by Miyachi Technos and reorganized as Unitek Miyachi Corporation with merger of Miyachi America Company.

1994 Established Integrated Systems division

1995 Acquired Weld-Equip companies in Holland, Germany and France, and Miyachi Technos Europe in Germany.

1995 Received ISO 9001 Certification.

2000 Acquired Peco Welding Systems, GmbH.

2001 Acquired Benchmark International, Inc.

2005 Renamed Miyachi Unitek Corporation, consolidated Benchmark International to California.

2008 Reorganized European companies into single entity: Miyachi Europe Corporation.

2010 Opened applications lab in Wixom, MI.

2011 Opened sales office and applications lab in Brazil.

2013 Miyachi Corporation acquired by AMADA CO., LTD.

2014 Renamed Miyachi America Corporation.

2015 Reorganized as AMADA MIYACHI AMERICA, INC.

Our brands

AMADA MIYACHI AMERICA has proudly designed and manufactured its Miyachi Unitek products for the global market since 1948 and also sells, distributes, services and supports the sales of the other, AMADA MIYACHI Group branded products: Miyachi, Miyachi Eapro, Benchmark and Miyachi Peco ensuring you get the best technology solution to fit your budget and your specific application.

MIYACHI UNITEK

MIYACHI PECO

MIYACHI EAPRO

MIYACHI BENCHMARK

Technologies at a glance

Resistance Welding

Resistance welding is a thermo-electric process in which heat is generated at the interface of the parts to be joined by passing an electrical current through electrodes and to the parts for a precisely controlled time and under a controlled pressure (force). Very small heat affected zones and very light forces are possible. This process is suitable for metal joining applications from fine wires to sheet metal.

Micro TIG Welding

Micro TIG (tungsten inert gas) welding, also known as gas tungsten arc welding (GTAW), is an arc welding process that utilizes a constant current welding power supply to generate an electric arc between the tungsten electrode and the workpiece, using the resultant heat to create the weld. Micro TIG welding is a non-contact process and produces high quality welds with minimal heat affected zone. Micro TIG welding is suitable for welding both conductive and dissimilar metals and is perfect for welding small components.

Laser Welding

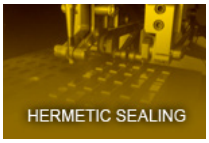
Laser welding is a non contact, single sided process suitable for welding a wide range of joint geometries and materials. Advantages include being low heat input, tailored weld dimensions, and high speeds. AMADA MIYACHI AMERICA offers laser welding system solutions capable of welding 10 micron thick foils to 0.25" thick metal automotive drive train parts, as well as plastic joining. The laser offers a highly flexible heating source that can be precisely controlled, and easily adapted to many different system integration motion platforms and manufacturing environments.

Laser Marking

Laser Marking is achieved when focused light from a laser interacts with a material to produce a high quality permanent mark. AMADA MIYACHI AMERICA's laser markers are capable of marking alphanumeric characters, bar-codes, 2D matrix codes, serial numbers, logos and graphics on a variety of materials including metals, semiconductors, plastics, ceramics and other materials.

Laser Cutting

Lasers are well suited to cutting as they offer high cut quality and high dimensional accuracy. Because lasers are a non-contact manufacturing solution, they are able to process mechanically delicate parts such as medical stents. A variety of laser sources including Yb: fiber and ultra fast technology, can be used according to the application. Each offers a unique processing capability. For example, femtosecond ultra fast lasers are able to cut both metals and plastics with no heat input into the part and provide burr free cuts even in materials such as nitinol. With focused spot sizes down to 10 microns and integration into micron accuracy motion platform laser cutting provides the ultimate precision cutting technology.



Hermetic Sealing

Synonymous to microelectronic packaging, hermetic sealing is a welding process performed in a controlled dry environment intended to encapsulate and protect moisture sensitive devices into a leak tight package preventing dry process gas in the package from escaping or harsh ambient atmosphere from entering and contaminating the device inside the package.

A microelectronic package typically has a base where the electronic device is nested and is covered by a welded lid or cap. The cover is attached to the base creating a hermetic seal using a resistance or laser welder fully integrated into a glovebox.

Hot Bar Reflow Soldering & Bonding

Hot bar reflow soldering and bonding is a process which uses a thermode (or "hot bar") which, through a closed-loop controlled process is very quickly heated and cooled creating an electrical interconnection between the parts being joined. This technology can be applied to making several different types of bonds including ACF bonding and heat staking.

Hot bar bonding techniques are reproducible, quantifiable, and traceable to quality standards such as ISO / NIST. Typical applications include connecting flex-foils to printed circuit boards (PCB) or LCD glass-panels, wires, coax cables and many other materials such a very light or small components.

Systems

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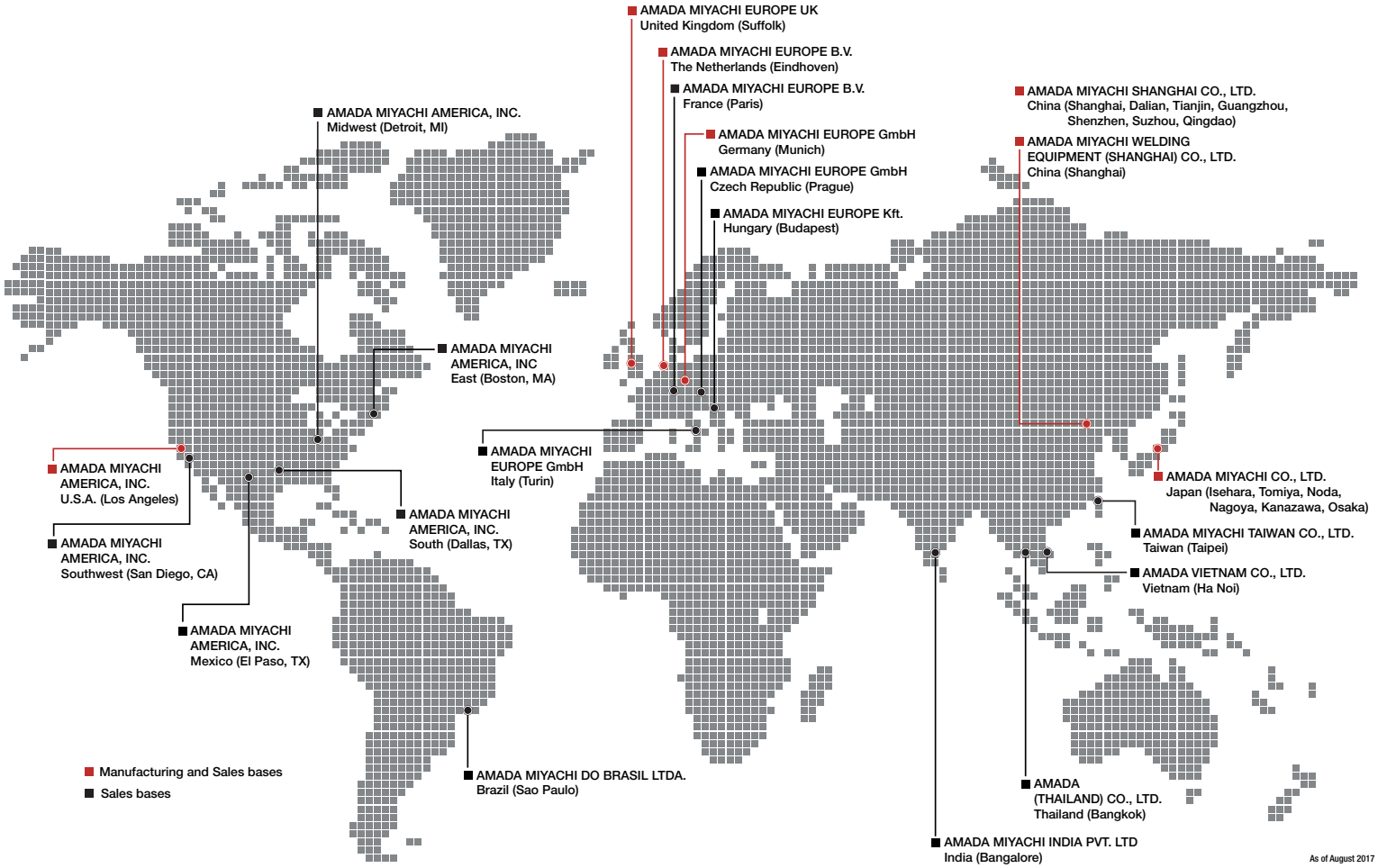

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