



JOINING
TECHNOLOGIES

WHAT IS LASER WELDING?



ADVANTAGES OF LASER WELDING

✓ Speed

Hundreds (sometimes thousands) of inches per minute can be welded with precision by laser.

✓ Precision

A shallow heat-affected zone is created during a laser weld, precisely where you and our team determine it should go, with less stress on the welded component.

✓ Highly repeatable

Laser systems allow us to deliver quality results every time, regardless of your project volume.

✓ Few size constraints

When it comes to size, with laser welding you are only limited by the capability of the laser beam itself. Laser welding can be used for small devices and can also produce deeper welds – sometimes up to $\frac{1}{2}$ ".

✓ Cost-effective

In addition to the previous points, laser welding is a fast, precise process that delivers reliable, high-quality results, which can save you money in the long run compared to other systems.

When you work with Joining Technologies, you'll save on the up-front costs associated with acquiring, maintaining, and operating your own equipment.

HOW DOES LASER WELDING WORK?

Laser welding uses either a continuous wave (CW) or a pulsed beam of photons.

Continuous wave:

Power output is operated continuously over time.

Pulsed system:

Modulated to output a series of pulses at customized intervals.

With pulsed systems, weld seams are produced by overlapping individual pulses, which tends to reduce heat input by the brief cooling cycle between pulses. Use of a pulsed system is advantageous for producing welds in heat sensitive materials, or in projects with complex geometry.

A continuous wave system is ideal for performing seam welds quickly. As the name suggests, continuous wave uses a constant stream of power versus the short, powerful bursts created by a pulsed system.

In both cases, the high energy density of the laser allows the surface of the material to be brought to its liquidus temperature very quickly in only a short beam interaction. The energy, thus, has less time to dissipate into the interior of the substrate. This results in a shallow heat-affected zone and less fatigue debit to the component.

Laser welding is a practical solution in the production of surgical instruments, electronic components, sensor assemblies, and other precision devices that need to be handled with care.

Laser welding works on a variety of metals including Stainless steel, Aluminum, Inconel, Titanium, Steel, Stellite, Waspalloy. Joining Technologies uses lamp pumped YAG and Disk lasers, ranging from 30 watts to 4Kw, are capable of both pulsed and continuous welding modes.

AT JOINING TECHNOLOGIES, QUALITY CONTROL IS A TOP PRIORITY.

Our laser welding systems program meets stringent standards for quality. The program is accredited by Nadcap (the National Aerospace and Defense Contractors Association). It holds the AS9100 certification for aerospace quality system requirements. Our highly skilled laser technicians are qualified to AWS D17.1 and other standards and specifications where necessary.

WANT TO LEARN MORE?

Our experts would love to explore how laser welding can help complete your next project. Give us a call at **860-653-0111** or visit joiningtech.com/contact to get in touch with an expert!