Laser Welding
Benefits of Laser Welding

Higher processing speeds
Up to 10 times faster than conventional welding processes

Lower distortion
The high energy density of the laser heats only the area to be welded

Reduced consumables use
Less filler metal is required — and in some cases, no shielding gas is needed

Expanded possibilities
Enables welding of new materials and access to joints unweldable with traditional processes.

Robotic laser cells
Miller® PerformArc™ pre-engineered robotic welding systems are now available as laser welding systems to help speed processing, reduce distortion and lower costs.

These laser welding systems combine the robot, laser, optics and all accessories into one fully integrated unit — with all pieces working together as a whole and sharing a single disconnect.

Your complete, ready-to-run system includes:
• Class 1 laser enclosure
• Choice of laser and process head
• Robot teach pendant
• FILTAIR® fume hood

The system’s patent-pending shielding system utilizes “active” door shutters to completely block laser light. Simultaneous welding and part load/unload is possible with the operator safely outside the welding area.

Shield operation sequence
1. Shields release
2. Table indexes to move load station into welding work zone
3. Shields close
4. Operator removes finished part
5. Reload
Customizable Solutions to Serve Unique Applications

Laser sources
The Miller welding automation team can help you choose from multiple laser source technologies to help ensure your welding application benefits from a solution that’s the best fit.

Fiber-delivered diode
Excellent fit for most welding applications. Simple, flexible, efficient and cost effective.

Direct diode
Perfect choice for large area cladding with wide variety of spot sizes and shapes.

Fiber laser
For cutting and remote welding applications.

Hotwire cladding systems
Leveraging our world-class capability in wire-feed arc welding processes, we are able to bring unparalleled performance to the laser-hotwire cladding process.

Advanced hotwire process control, based on the proven Axcess® welder platform, achieves high deposition rates and low dilution.

Benefits
No wasted material or mess as with powder cladding processes
Higher deposition than powder or cold wire
Very low dilution compared with arc processes

Optics and accessories
Laser optics and accessories are chosen based on your current and future needs.

ProHeat™ induction precision pre-heating systems ensure consistent cladding
Hotwire cladding with nickel alloy at 25 lb./hr., <2% dilution of the clad material
A beam power monitor verifies the process for quality control
The Miller Laser Team

Our highly specialized team focuses on the continuous development of industry-leading robotic welding solutions that help you enjoy increased productivity, lower costs and higher weld quality.

Laser R&D and application lab

With multiple high-power laser sources, full laser process capabilities, and resources dedicated to independently supporting both laser cladding and laser welding, our laser R&D and application labs are ready to address virtually any customer need.

High-speed imaging capabilities

By recording real-time welds using high frame-rate photography, previously undetectable events can be revealed to help optimize welding processes and solve unique challenges.

This image shows a rectangular spot forming for laser cladding.

Miller Welding Automation
281 East Lies Road
Carol Stream, IL 60188
630-258-3386

MillerWelds.com/automation

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