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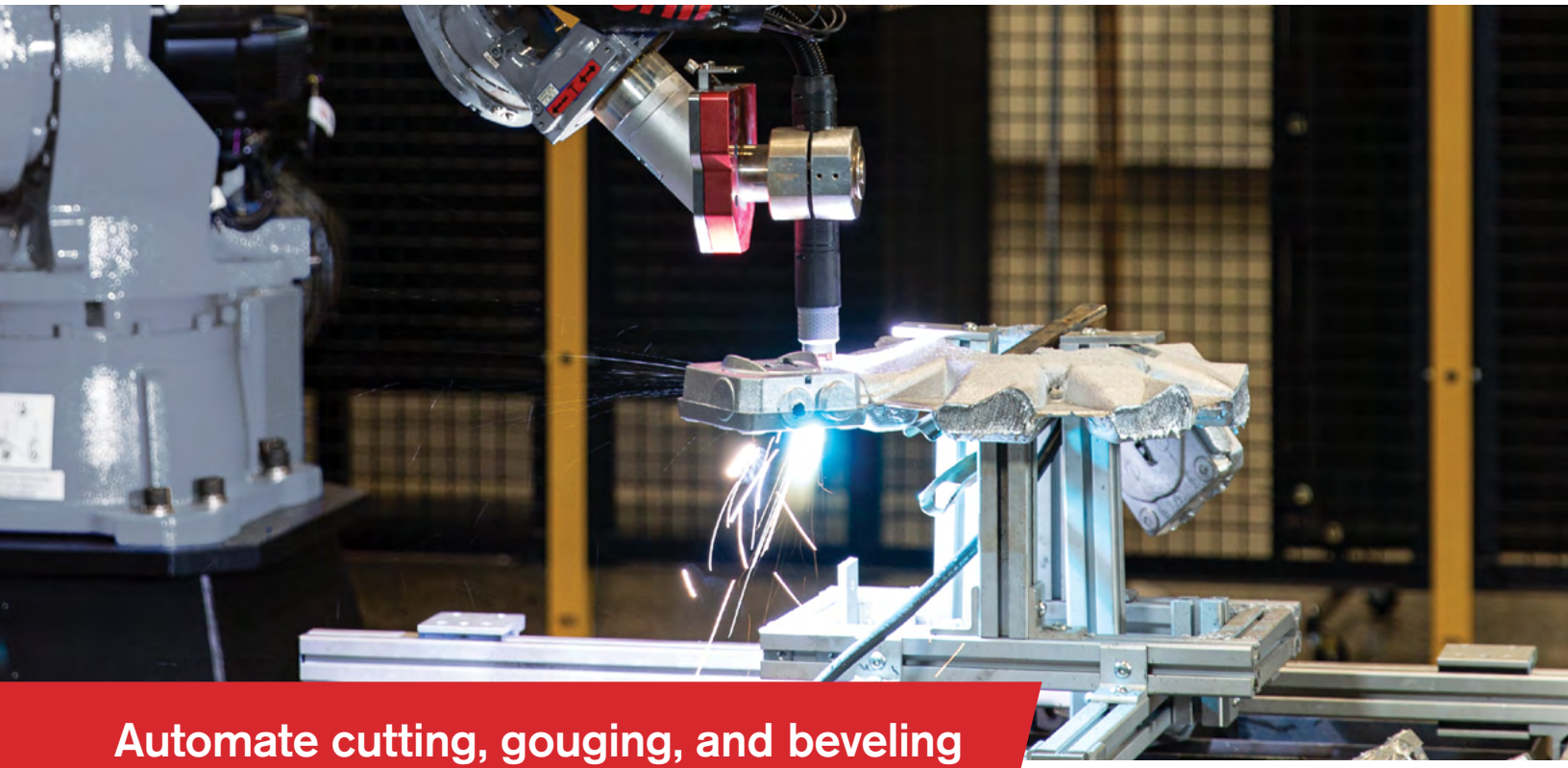
A Hypertherm Associates Brand

Robotic Plasma Cutting Is Within Reach With Trusted Hypertherm Performance



Automate cutting, gouging, and beveling with flexibility and consistency

Metal fabricators are facing rising production demands, increasing safety expectations, and an ongoing shortage of skilled labor. Customers also expect shorter lead times and consistent quality, even as work becomes more customized. These pressures are accelerating the adoption of robotic automation for plasma cutting, plasma gouging, and welding.

Robotic plasma cutting brings repeatability to one of the most variable steps in fabrication. By consistently controlling torch motion, speed, and cut parameters, robots deliver uniform results, eliminate manual layout procedures, and reduce pre- and post-cut operations. Shops benefit from more consistent cut quality, improved productivity, and a cleaner handoff to downstream processes, including faster fit-up and more reliable welding. With more cutting and preparation handled by automation, experienced operators can focus their expertise on higher-value work.

Many fabricators are moving to high-mix manufacturing to support just-in-time strategies. Robotics with offline programming reduces programming time and changeovers. In many applications, jig-less or reduced-fixture approaches can reduce dedicated tooling when the workpiece can be reliably located. When parts share a common locating strategy, switching models can be as simple as loading a new program.

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Common robotic plasma applications

Robotic plasma cutting and gouging solve persistent pain points across industries, especially where repeatability, safety, and throughput matter:

- **Dome processing:** cutting access holes in pressure vessel walls
- **Cast trimming:** trimming sprue, flashing, and gates from castings
- **Beam processing:** coping, cutting access holes for welding, and fastener hole cutting
- **Coupon cutting:** removing sections from structural components for metallurgical testing
- **Gouging:** removal of unwanted weld, hardface, or backgouging for weld preparation
- **Hollow beams:** cutting beams for connection assemblies, access holes, and other holes and slots
- **Pipe and tube:** cutting access holes and slots, cutting to length, and beveling
- **Robotic beveling:** flat plate bevel cutting to prepare parts for manual and/or automated welding

Industrial and collaborative robots

Robotic technology enables the integration of multiple operations within a single cell. In advanced configurations, tasks such as handling, cutting, gouging, descaling, and welding can be combined to produce near-finished, semi-fabricated parts. By eliminating multiple manual operations, significant capacity is freed, allowing skilled labor to focus on work that cannot be automated while improving overall return on investment.

Industrial robots

Industrial robots are designed for demanding production environments where reach, speed, payload, and duty cycle are critical. They are typically large, with long arm reach and powerful motors, and are installed in isolated cells for operator safety. They operate at high speeds, handle heavy payloads, and deliver high precision for cutting and gouging. Industrial robots can also be integrated with other tooling to support multi-process automation.

Industrial robot systems often require more comprehensive integration than collaborative systems, but they can be a practical, scalable investment. When paired with offline programming and simulation, industrial robots can be highly effective for both high-mix and high-volume work by shortening changeovers and reducing the time required to program new part models.

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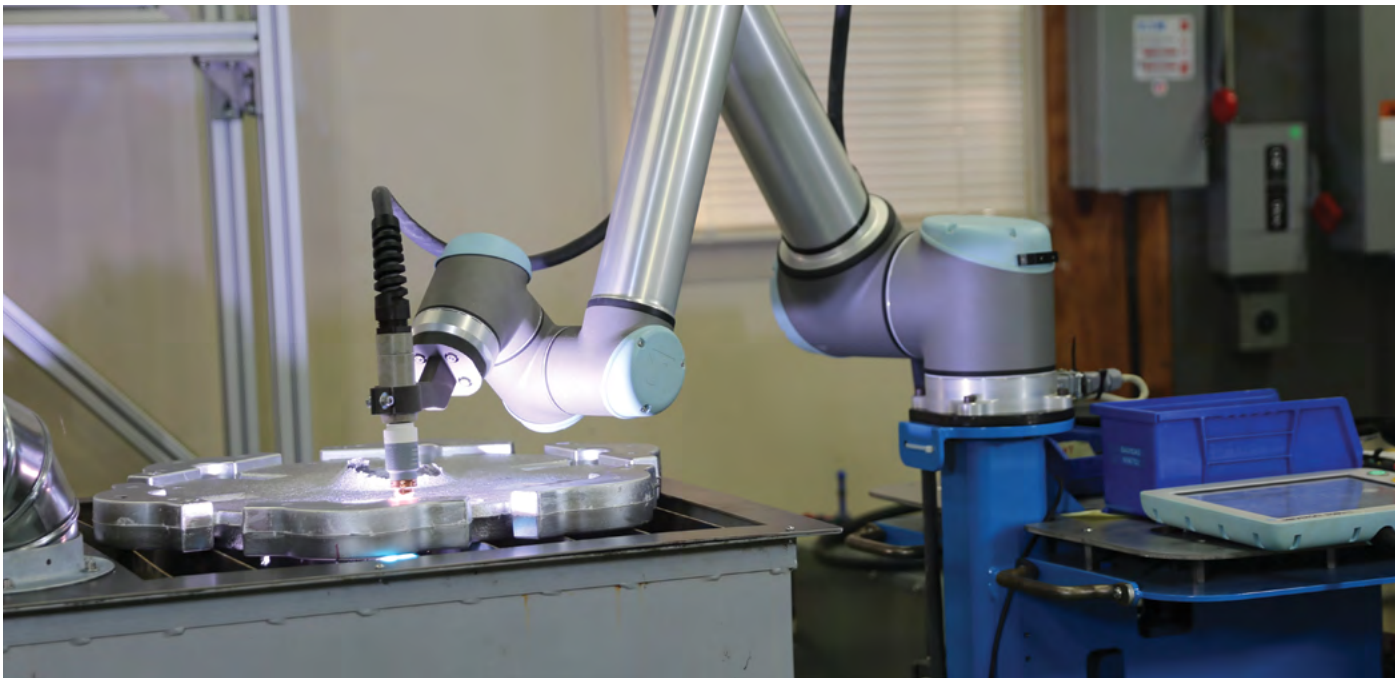

Collaborative robots

Collaborative robots, or cobots, are designed to work alongside humans in a shared workspace. They are equipped with sensors to detect and respond to human presence, prioritizing safety and enabling side-by-side collaboration in a station or workbench environment. These easy-to-use platforms are intuitive to program, offer a low barrier to entry, and enable high-mix production.

Cobots are also flexible in their deployment. Depending on the job, shops can bring parts to the cobot or move the cobot to the part. Cobots can be mounted on portable cells with rollers, attached to metal structures using magnets, or mounted on tracks for extended reach. This flexibility helps automate work where it happens, supports fast redeployment, and improves consistency without forcing a single fixed workflow.

Hypertherm solutions for robotic cutting, gouging, and programming

Hypertherm plasma cutting systems are trusted more than any other brand for robotic and X Y table cutting, thanks to their long proven durability, reliability, and performance in the harshest industrial environments. Designed, tested, and manufactured to the highest standards, Hypertherm plasma cutters and genuine consumables deliver consistent results for years, often decades, making them one of the smartest equipment investments available.

For robotic cutting and gouging, Hypertherm offers purpose-built lead sets and torches for XPR®, HyPerformance®, and Powermax® systems, ensuring flexibility, protection against extreme heat and molten splash, as well as smooth integration into robotic cells. Hypertherm is also the only provider of single-piece plasma cartridge consumables for Powermax SYNC® models, featuring patented RFID intelligence that communicates with the power source to set parameters, track performance, and reduce downtime. To streamline programming, Hypertherm Associates® also offers Robotmaster® software, which applies embedded Hypertherm cutting expertise to simplify and accelerate complex robotic cutting workflows.

Hypertherm automation you can trust

Today's fabricators need solutions that deliver consistent quality, shorter lead times, and safer working conditions. Hypertherm robotic ready plasma systems and programming tools help shops meet these expectations with confidence. Whether cutting, gouging, or beveling, Hypertherm technology brings repeatability to complex processes and frees skilled operators to focus on higher value work. It's a smarter, more dependable way to keep production moving.

Robotic use case: 91% faster beam coping

A metal fabrication job shop needed to cope-cut thousands of steel beams. The manual process, using a handheld plasma cutter, cut-off wheel, and grinder, took up to 15 minutes per beam and was hazardous for operators.

After attending a robotic plasma-cutting demonstration, they automated the process using a cobot paired with a Powermax125® plasma system. The coping process time dropped to 1 minute and 20 seconds per beam, a 91% reduction. They enclosed the cobot to contain fumes and then extract them, improving workplace safety. Operator training was straightforward, taking only 15 minutes, and the shop now produces repeatable, high-quality cuts that exceed their needs.

Beyond cycle-time improvements, the automated process delivered consistent cut quality and reduced variability across operators. It also reduced secondary operations, including grinding, touch-up time, and rework, helping improve throughput and predictability.

Learn more about the benefits of robotic plasma cutting

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100% Associate-owned Greener Cuts

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