

Cast trimming with robotic plasma cutting technology



Significantly increase efficiency, lower costs, and deliver superior cut quality

A new era of giga castings

Auto manufacturers must excel in quality, efficiency, and cost reduction to stay competitive. Profitability hinges on identifying opportunities to improve efficiency. That's why global auto manufacturers are increasingly adopting giga casting for large-scale frames with one cast, eliminating the need to weld dozens of body parts. Fewer parts decrease vehicle weight, enhance fuel efficiency, and accommodate the growing demand for battery-electric vehicles and more efficient internal combustion vehicles.

A robotic system with two robots equipped with Hypertherm plasma decreased the cost per unit by 49% versus using a trim press

A better, more cost-effective way to trim large castings

Excess material from the mold must be removed once the cast part is extracted from the press. That's where robotic plasma-cutting technology is helping to revolutionize auto manufacturing.

Plasma cutting is revolutionizing post-casting operations in rheocasting

Unlike traditional trim presses, plasma systems can cut through thick gates—up to 30 mm—making them ideal for the robust geometries typical of rheocast parts. This improves precision trimming, reduces manual labor, and enhances safety.

Plasma's flexibility enables you to fine-tune your process to lower costs while meeting cycle-time targets. Automated and robotic plasma solutions can cut cycle times by up to 50%, deliver consistent cut quality, handle complex shapes, and streamline production.

Solve automotive cast trimming challenges with robotic plasma cutting

	Trim press	Robotic plasma cutting
Equipment and operating costs	Trim presses are expensive to purchase and maintain. They incur high capital costs and ongoing expenses for repairs, parts, oil, and replacement die blades.	Robotic plasma is generally about one-third of the cost of a trim press. It requires minimal maintenance, has a significant lifespan, and does not require expensive die tooling or fixturing.
Machine downtime	Frequent maintenance and part replacements lead to increased downtime, reducing overall productivity.	Robotic plasma drastically increases uptime, as it does not need to go down for maintenance and repairs like a trim press.
Product design changes	Trim presses limit design flexibility as new press dies are costly and time-consuming to produce.	Robotic plasma cutting can be rapidly programmed to cut new parts and shapes, offering the flexibility of mixed model production.
Scrap and secondary operations	Trim presses generate large scrap pieces that are difficult to handle and fill bins quickly. Saw blades only allow straight cuts, requiring additional secondary operations to remove excess material.	A near net cut on complex shapes can be achieved, reducing the need for secondary operations. The robot can be programmed to trim down the scrap size for better scrap bin usability.
Saw blades only allow straight cuts, requiring additional secondary operations to remove excess material.	A near net cut on complex shapes can be achieved, reducing the need for secondary operations. The robot can be programmed to trim down the scrap size for better scrap bin usability.	A single robotic plasma can cut with 6° of freedom, reducing the complexity of saw cutting operations.
Part variation	Trim presses can create quality issues or additional secondary processes when part variability exists.	Plasma cutting has a greater tool-to-part distance (stand-off) that makes it an ideal choice for parts with some variability from the mold.
Floor space	Trim presses occupy a large footprint on the production floor, limiting space for other operations or equipment.	A robotic plasma solution occupies minimal factory footprint.
Part cooling before trimming	Parts must cool before trimming to prevent fractures and deformations, increasing cycle time and scrap rates.	With plasma, castings can be trimmed and cut while hot, reducing production time, avoiding part distortion, and saving energy costs by remelting the scrap quickly while hot.

Hypertherm plasma is the trusted choice for auto manufacturers

Hypertherm® plasma systems are designed to easily integrate into robotic cells for cutting cast metal parts, significantly reducing time, labor, and operating costs compared with alternative technologies. Hypertherm systems have key differentiators from competitive systems and other technologies that make it the choice for leading auto manufacturers.



Learn more about cast trimming with plasma:



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