

# *Hypertherm*<sup>®</sup>



## SureCut<sup>™</sup>

Maximizing performance through  
embedded expertise

HyPerformance<sup>®</sup> Plasma



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For the latest product information and complete specifications visit [www.hypertherm.com](http://www.hypertherm.com)

# SureCut technology overview

## Maximizing performance through embedded expertise

SureCut technology is brought to you via various delivery mechanisms that include Hypertherm systems, CNCs, and online/offline CAM software.

- SureCut is delivered through a combination of products that include plasma power supplies and waterjet pumps as well as CNCs and CAM software
  - Automatically applies optimized cutting process parameters which simplifies cutting and reduces operator intervention
  - Easy set up improves job efficiency
  - Provides access to Remote Help™ and troubleshooting which reduces downtime
  - Works across multiple cutting technologies
  - Launched January 2016
- SureCut technology includes:**
- True Hole® technology applies process expertise to automatically deliver bolt ready holes
  - True Bevel™ technology automatically applies the correct bevel angle and reduces operator trial and error
  - Rapid Part™ technology increases the number of parts produced per hour by automatically reducing cut to cut cycle time between parts
  - Sampled arc voltage CNC setting improves consumables life by automatically maintaining torch height
  - Remote Help™ offers Hypertherm expertise and reduces downtime



### Outcomes/Techniques



- True Hole®
- True Bevel™
- Rapid Part™
- Optimized consumable life

### Setup/Diagnostics



- Easy setup
- Optimized process parameters
- Easy troubleshooting

Click to view the SureCut interactive PDF:  
<http://www.calameo.com/read/0043483922bc61bea7b30?authid=720LkE7pi6Up>



# SureCut process flow



## Step 1 = Program using the CAD/CAM nesting software

Hypertherm's off-line nesting software automatically nests parts and applies optimal cutting techniques in the NC Code (Numerical Control Programming Language).



## Step 2 = Set up on the CNC

The off-line nesting software interacts with the CNC software to make it easy for the operator to set up a job and cut like a pro.



## Step 3 = Produce results

Hypertherm's integrated nesting software, CNC, THC and HyPerformance plasma systems work together seamlessly to optimize cut quality, parts per hour and cost per part.

# Step 1: Program using the nesting software

Build Hypertherm expertise into your part programs to minimize operator variability



## Hypertherm's nesting software makes it easy to:

- Import part drawings
- Efficiently nest them on the plate
- Apply optimal cutting techniques
- Generate the NC code

The resultant NC code will be used by the CNC to complete the job. Embedding Hypertherm's cutting techniques into the part program will help you achieve more consistent results (cut quality, productivity and consumable life) from operator-to-operator, shift-to-shift, and site-to-site. In less than an hour you will be programming jobs like an industry pro.

## Easily import CAD:

- 2D and 3D CAD/CAM file import and conversion
- Industry-specific design files

## Nest parts efficiently to maximize material utilization.

Hypertherm's superior nesting optimization capabilities deliver measurable material savings by placing the parts efficiently on the plate; full sheets or remnants.

## Integrate seamlessly with business systems

For incremental productivity and efficiency:

- Connect the nesting software directly to your MRP/ERP (Manufacturing Resource Planning/Enterprise Resource Planning) system. Working directly with current ERP data, combining orders is made easy, helping to reduce delays and improve efficiency, with less time spent setting up individual jobs and longer continuous runs.
- Pass plate inventory data from your MRP/ERP system to the nesting software plate inventory. Initial setup is fast and easy. Once operational, the system will routinely synchronize your MRP/ERP plate inventory with the nesting software plate inventory; continuously adding and updating plate information.

### Automatically apply expert cutting techniques to optimize performance

The software places decades of plasma, laser, oxyfuel, and waterjet process expertise at your fingertips. It automatically applies optimal cutting techniques that are specific to the parts being cut (material type, thickness, part geometry) and the processes being used to cut them.

Operators simply select the desired job on the CNC and the part program will automatically apply the ideal cutting parameters.

The plasma operator at the cutting table does not need to set\*:

- Amperage
- Plasma gas type, preflow and cut flow
- Shield gas type, preflow and cut flow
- Torch pierce height, time and delay
- Torch cut height
- Arc voltage
- Interior and exterior profile feed rates/techniques
- Kerf compensation

### The software automatically programs torch motion routines to optimize cut quality, productivity and operating cost

- Lead in type, location and speeds are set to optimize quality and minimize material scrap.
- Lead-outs, part sequencing, and torch height control settings are managed to optimize quality, reduce traverse time between parts and maximize the number of parts produced per hour.
- Collision and tip up avoidance routines minimize down time.

\*Cutting table operators can easily achieve optimized system performance when the off-line nesting software is used together with Hypertherm HyPerformance® Plasma HPRXD® systems with auto gas capability and either Hypertherm CNCs and THC's or qualified CNCs and THC's from other providers. Ask your cutting machine manufacturer or Hypertherm for more details.

# Step 2: Set up on the CNC

Setting up a job and cutting like a pro is as easy as 1, 2, 3

In customer testing, new operators using Hypertherm's patented CutPro® Wizard were cutting high-quality parts in less than 5 minutes without any training. The expert cutting techniques that are built into the software will ensure consistently optimized cut quality, productivity and operating cost with minimal operator intervention.

## 1. Select the program on the CNC

- The operator selects the job created using Hypertherm's nesting software.
- The software automatically sets the optimal cutting parameters in the CNC that are specific to the parts being cut and the equipment being used to cut them.
- The operator does not need to set torch height, pierce delay, cut speeds, and kerf compensation.
- When using Hypertherm HyPerformance® plasma systems with auto gas capabilities the operator does not need to set amperage, plasma/shield gas type, and plasma/shield gas flows.



## 2. Load the plate and consumables

- The CNC software prompts the operator with the specific material type, thickness and size to be loaded onto the cutting table.
- The consumables that need to be loaded into the torch are identified with pictures and part numbers on the CNC display.



## 3. Align the plate

The CutPro Wizard guides the operator through a step-by-step process of aligning the plate.











## Step 3: Produce results

Optimized cut quality, productivity and operating cost equals greater profitability

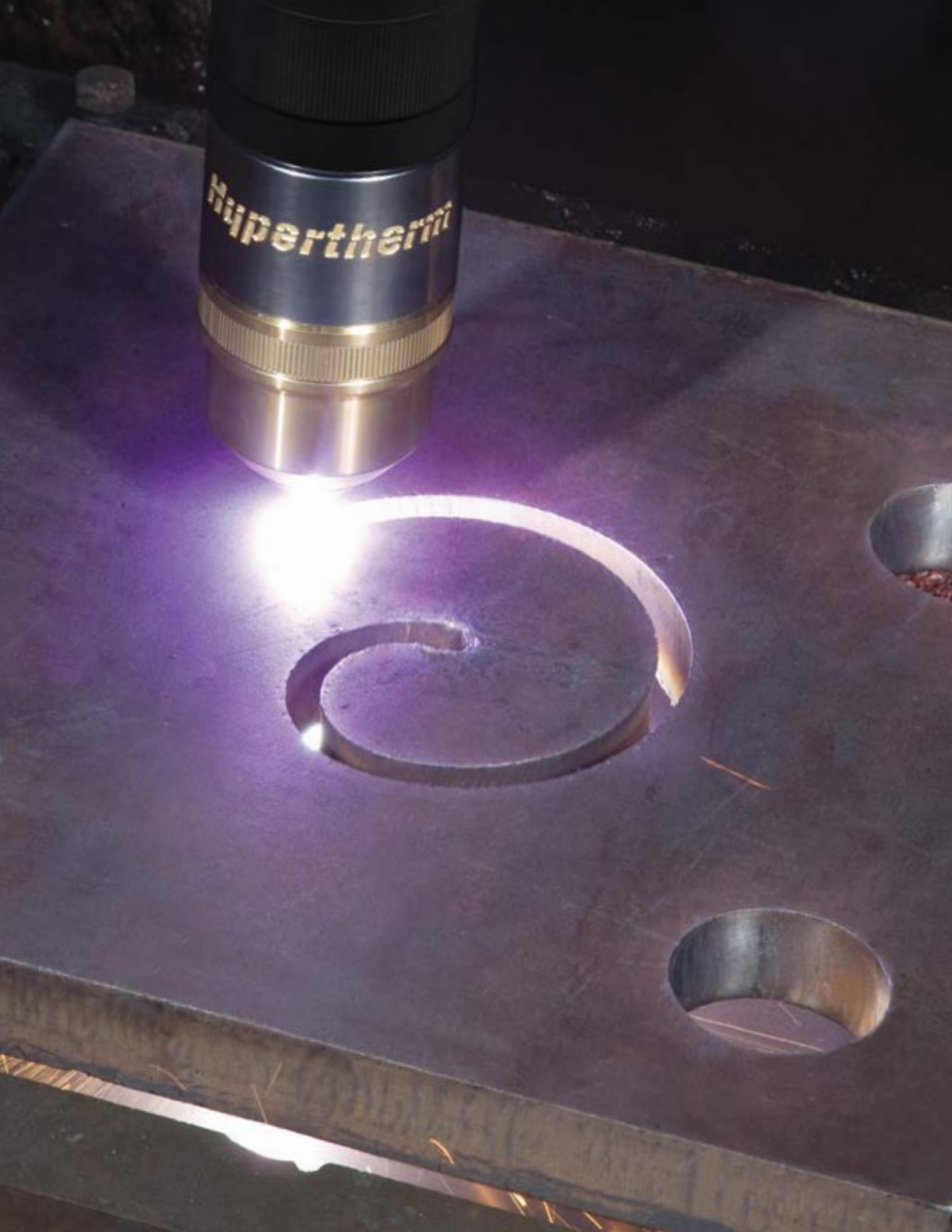
Hypertherm's integrated nesting software, CNC, THC, and HyPerformance® plasma cutting systems have more than forty five years of cutting innovation and process knowledge built into them. Our products are designed to work together seamlessly, making it easy to optimize cut quality, parts per hour and cost per part.

### Optimize cut quality

Hypertherm's integrated nesting software, CNC, THC, and HyPerformance plasma systems provide:

- Automatically applied cutting techniques to ensure consistently optimized quality
- Monitoring and automatic adjustment for:
  - Arc voltage as the consumables wear, to ensure that cut quality is maximized throughout the life of the consumables
  - Kerf compensation based on material thickness, amperage and speed to produce tighter tolerances and more consistent cut quality
- Cut quality optimization tips on the CNC that are easily accessed with the click of a button
- Hypertherm plasma cuts fine-feature parts with superior quality and consistency, reducing the cost of secondary operations





# Optimum hole quality: True Hole®

As part of Hypertherm's SureCut™ technology, our patented True Hole® cutting technology for mild steel produces significantly better hole quality than what has been previously possible using plasma. This is delivered automatically without operator intervention.

Hypertherm's patented True Hole cutting technology for mild steel is a specific combination of cutting parameters (process gas type, gas flow, amperage, piercing methodology, lead in/out technique, cut speed, and timing) that is optimized for each material thickness and hole size. This process is exclusively available for use with Hypertherm's HyPerformance® HPRXD® auto gas plasma systems and is automatically applied by our nesting software and CNC software to mild steel holes with hole diameter to thickness ratios as low as 1:1.

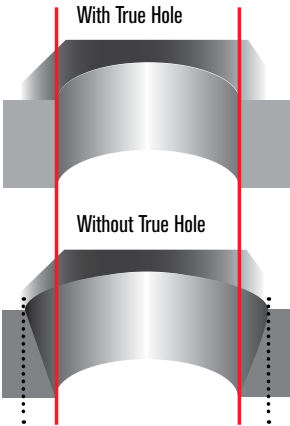
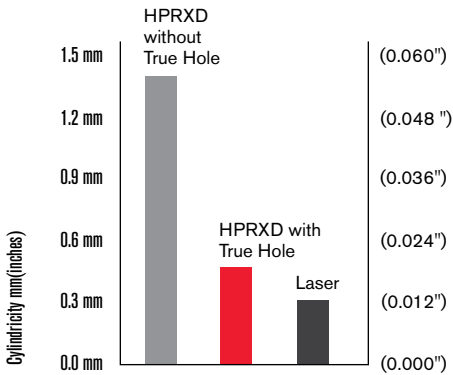
With True Hole technology



Without True Hole technology



10 mm holes, 9.5 mm mild steel plate, 130 A process  
(0.394" holes, 3/8" mild steel plate)



True Hole technology requires a HyPerformance Plasma HPRXD auto gas system along with a True Hole enabled cutting machine. Consult with your machine manufacturer for more details on specific components you may require.



Available now from Hypertherm and our partners







# Improved productivity: Rapid Part™

As part of Hypertherm's SureCut™ technology, Rapid Part technology offers up to 100% increase in productivity, automatically, without operator intervention. Rapid Part technology uses motion optimization techniques programmed into the part program and automatically executed by the Computer Numerical I Control (CNC).

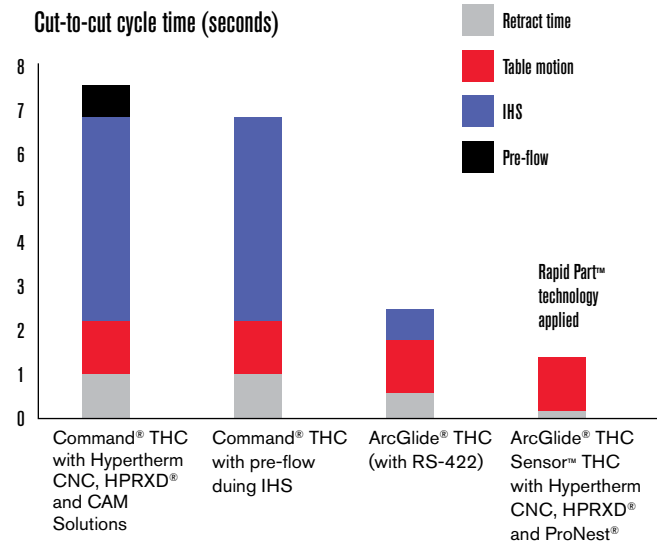
Achieve greater productivity by reducing cut-to-cut cycle time. Rapid Part controls and optimizes every step in the plasma cutting process – without operator intervention – so you can focus on your business and your customers.

- Increases the number of parts produced per hour by up to 100%.
- Delivers cut-to-cut cycle time reduction automatically without operator intervention.

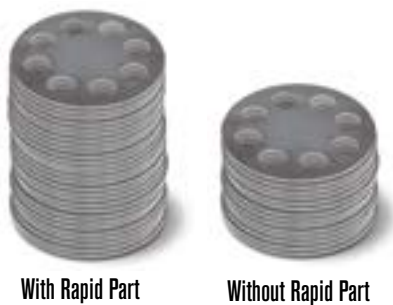
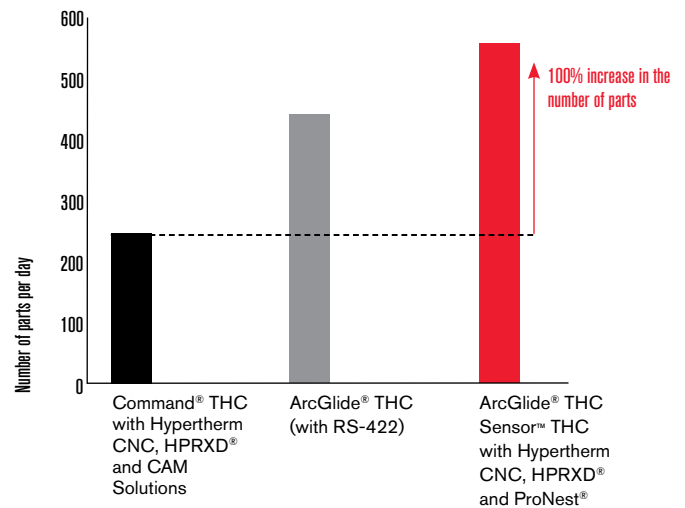
## Less cut-to-cut cycle time means increased productivity

- Cutting a 20.3 cm (8") flange, more than half the time after the operator presses "go" is spent moving between cuts when using prior THC technologies.
- Rapid Part technology, part of Hypertherm's SureCut technology, reduces the cut-to-cut cycle time up to 80% and the time it takes to cut each part by about 50%.

Cut-to-cut cycle time (seconds)



Number of parts - 203 mm (8") flange



Parts produced using the same cutting machine, the same cut speed and the same cutting time duration.

Note: Cut-to-cut cycle time improvement will be apparent on all jobs, with the most significant productivity improvements achieved on nests using thin plate with a high part/pierce count.



# Optimal bevel: True Bevel™

As part of Hypertherm's SureCut™ technology, True Bevel technology for HPRXD® plasma systems is a performance application for mild steel. Factory tested and easily implemented, it takes the guesswork out of the plasma bevel-cutting process. With True Bevel, setups for new jobs are quick and results are accurate and consistent.

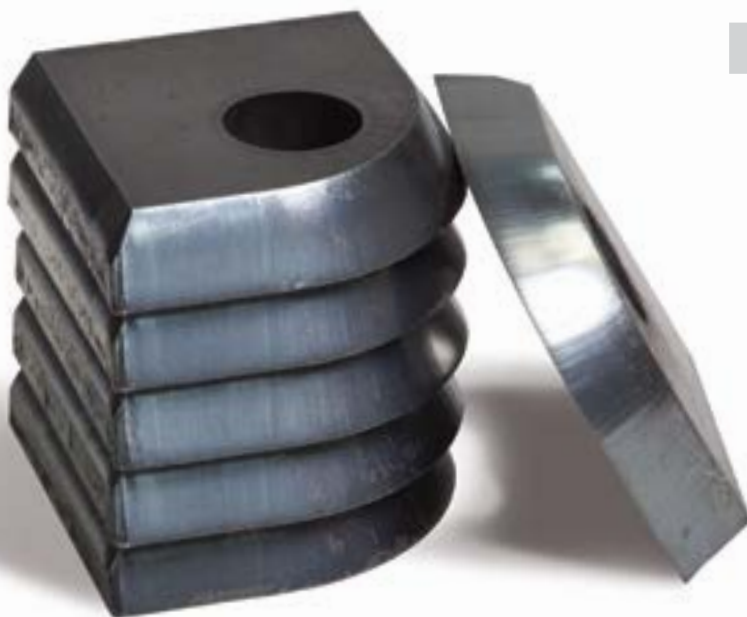
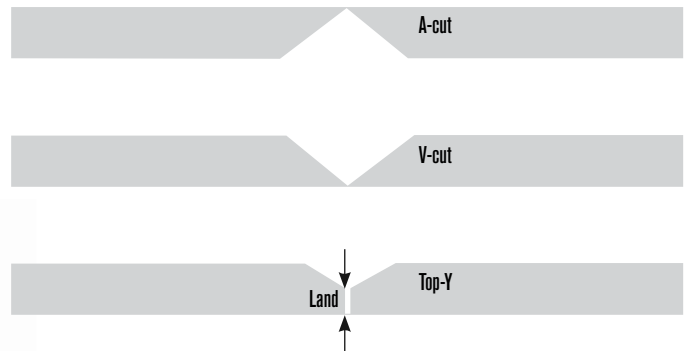
## Benefits

- Setup time and scrap material are greatly reduced for new job setup due to reduced trial and error.
- Bevel cut sequence recommendation is provided for improved accuracy and consistent quality.
- Scalable parameter tables with embedded equations allow users to add new angles with ease.

True Bevel technology works with all common bevel head designs and covers V, A, and Top-Y style cuts for mild steel:

## Bevel angle and land density coverage

True Bevel technology process parameter tables contain values for V-cuts and A-cut angles ranging from 15° to 45° and Y-Top cuts from 22,5° to 45°. The tables contain values for lands ranging from 20% to 50% of the material thickness for Y-Top cuts. You can add other angles and land dimensions within the specified ranges into the bevel process parameter tables for more flexibility. The tables automatically provide newly calculated output values for angle compensation, kerf, cut height, cut speed, and arc voltage.



Available now from Hypertherm and our partners

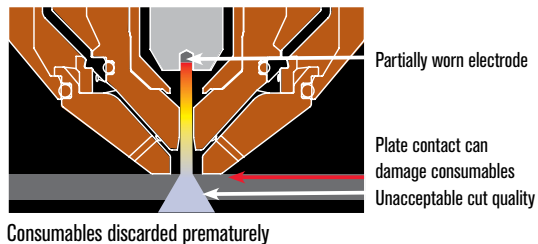
# Reduce operating cost: Optimized consumable life

Both Hypertherm's ArcGlide® THC and Sensor™ THC torch height controls automatically and continuously sample and adjust arc voltage to correct for consumable wear. This results in proper torch height for optimal cut quality over the life of the consumables without requiring operator adjustment.

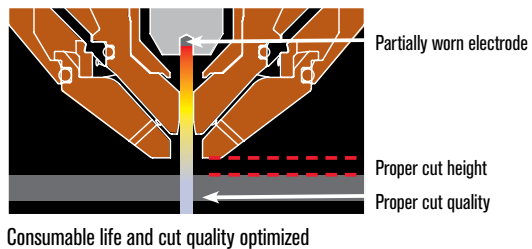


- Optimized process and torch height settings are automatically applied by Hypertherm's software. This reduces the chance of operator error and helps ensure optimal consumable life.
- Hypertherm's nesting and process optimization software maximizes consumable life by automatically managing cut lead-outs and arc shut-off timing to avoid extinguishing the arc prematurely by using a controlled ramp down.

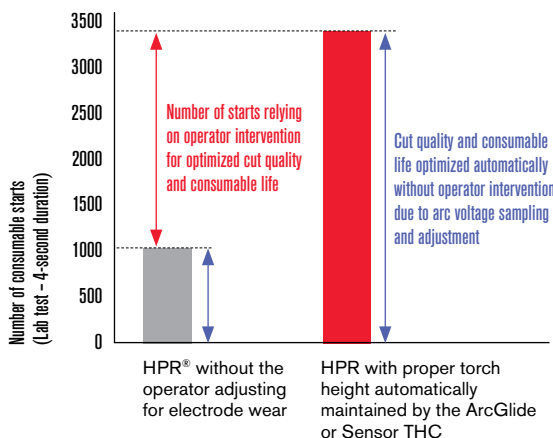
Improper cut height due to not adjusting arc voltage for electrode wear



Proper cut height automatically maintained by the THC



Number of consumable starts with < 0.25 mm (0.010") deviation from proper cut height without operator intervention (130 A) 12 mm (1/2") mild steel





# Reduce downtime: Remote Help™

During development, Hypertherm systems endure rigorous reliability testing procedures that are equivalent to years of use in extreme operating environments. The equipment is subjected to a wide range of temperatures, humidity levels, vibration, electrical noise, dust and incoming voltage to ensure that the products are extremely robust.

Hypertherm's preventive maintenance and troubleshooting tips are available on the CNC for all of our equipment (CNC, THC, and cutting systems). This makes vital system information easily accessible when you need it. Hypertherm CNCs can also perform CNC, THC, cutting system and other machine component diagnostics.

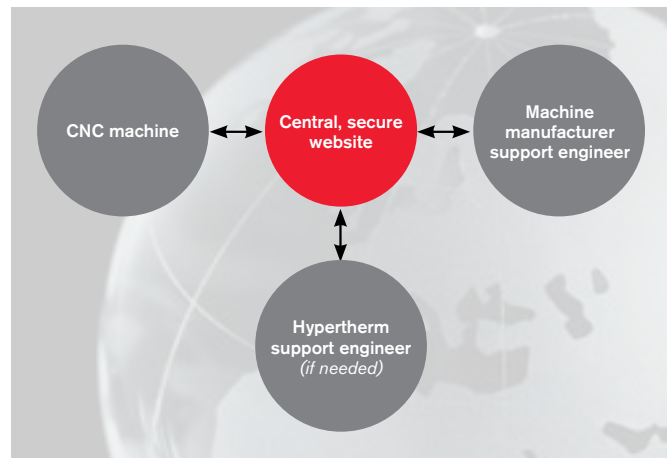
## System diagnostics over the Internet: Remote Help

Remote Help is an Internet based tool that allows your table manufacturer and Hypertherm to be virtually in your factory within minutes. Part program, CNC, THC, plasma system, and cutting table motion diagnosis and repair can often be accomplished without an on-site visit. Hypertherm's Remote Help utility allows cutting system diagnostics over the Internet to help avoid costly downtime.

Cutting machines can be up and running quickly without costly travel and wait time.

Remote Help features include:

- Fast and secure connectivity
- Safe remote access to the CNC to view and modify setups
- Secure and rapid transfer of files
- Ability to support multiple remote attendees in the session
- Ability to conduct HyPerformance® Plasma, Powermax® plasma and HyIntensity™ Fiber Laser and HyPrecision™ waterjet diagnostics at the CNC
- Useful for technical training



Remote Help communication structure

# System components

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## Nesting software



ProNest®

## Computer numerical controllers (CNCs)



EDGE® Pro Ti



MicroEDGE® Pro



EDGE® Pro

## Torch height controls (THCs)



Sensor™ Ti THC



Sensor™ THC



ArcGlide® THC

## Mechanized plasma systems



HyPerformance® Plasma HPRXD®

To learn more about these products  
go to [www.hypertherm.com](http://www.hypertherm.com)







# 50 years of Shaping Possibility

With the right tools and a relentless focus on innovation, partnership and community, we believe anything is possible.

At Hypertherm®, we give shape to our customers' vision with the world's leading industrial cutting solutions. Every day we help individuals and companies around the world envision better, smarter and more efficient ways to produce the products that shape our world. So whether you're cutting precision parts in North America, constructing a pipeline in Norway, fabricating agricultural machinery in Brazil, gouging out welds in the mines of South Africa, or building a skyscraper in China, you can count on Hypertherm to help you not just cut parts but achieve your vision.

## 100% employee ownership matters

At Hypertherm, we aren't just employees: we're all owners. Ownership is a powerful motivator that ensures our customers are our top priority. As owners, we make sure every product is built to the highest quality and that our service is second to none. And we build long-term relationships that deliver value for us, our partners and our customers.

## Shaping what's possible the world over

Hypertherm is a key partner for your fabrication needs and has built a global organization focused on providing high-performance cutting solutions.

## Key elements of the Hypertherm formula include:

- Dedicated Associates focused on customer-centered product design and support
- Local sales and service
- Broad application experience and proven results
- Sustainable and ethical business practices benefit our customers and communities



**HELPING YOU  
SHAPE THE WORLD.**



PLASMA | LASER | WATERJET | AUTOMATION | SOFTWARE | CONSUMABLES

For location nearest you, visit:  
[www.hypertherm.com](http://www.hypertherm.com)

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One of Hypertherm's long-standing core values is a focus on minimizing our impact on the environment. Doing so is critical to our, and our customers' success. We are always striving to become better environmental stewards; it is a process we care deeply about.

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