



# **BAYKAL PLASMA PRODUCT ANNOUNCEMENT**

***Hypertherm®***

# BAYKAL PLASMA TRUE HOLE CUTTING UPGRADE

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- “With existing competitors and new competition, Baykal is following its principle of offering competitive features which add value to the machine and not a cheap products”
- “Baykal have a continuous development program to achieve higher productivity from our machines”





## Hypertherm's Full Suite of Integrated Plasma Cutting Solutions

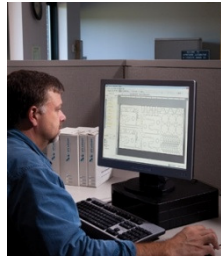
*Performance you can trust*

**Baykal**

**Hypertherm<sup>®</sup>**

# Definition of “Full Suite”

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ProNest 2010



HYPERTHERM CNC



ArcGlide THC



HPRXD systems

- A complete new line up of automated products being launched in 2009 / 2010
- Each product will have a compelling “stand alone” value proposition
- Using the products together will ensure “Performance Customers Can Trust” by creating a value proposition not previously available in the marketplace
  - We have embedded over 40 years of innovation and process expertise into them
  - Our integrated nesting and process optimization software, CNC, THC and plasma systems work together seamlessly, making it easy for customers to get the most out of their cutting operation
  - It is like having the best operator equipped with the latest technology optimizing cut quality, productivity and operating cost on every cutting table and shift

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# Full Suite Product Line

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| MTC          | CNC       | THC      | PAC   |
|--------------|-----------|----------|-------|
| ProNest 2010 | EDGE Pro  | ArcGlide | HPRXD |
| ProNest 2010 | MicroEDGE | ArcGlide | HPRXD |

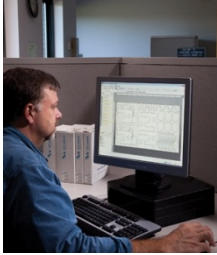
Any combination provides compelling benefits.

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# Full Suite Products in Action

## Nesting and Process Optimization Software



Programmer selects the parts:

- The software allows parts to be nested and applies the optimal cutting techniques.
- The software then sends the resultant program to the controller.

## Controller / CNC



Machine Operator:

- Uses the CNC to load the job produced by the nesting and process optimization software
- Sets up the plate and consumables

## THC / Plasma System



System and torch work in combination to execute the job specified by the nesting and process optimization software and machine operator

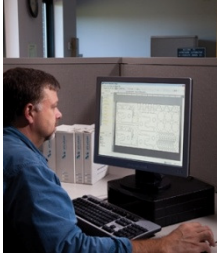
**Optimized performance requires seamless integration of all of the components**

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# Full Suite Products in Action

## Nesting and Process Optimization Software



## Controller / CNC



## THC / Plasma System



Hypertherm's full suite offering will make plasma cutting more competitive as compared to laser and oxyfuel

Laser competitors leverage their full suite offering to enhance performance:

- Specialized piercing routines for thicker plate
- Specialized cutting routines to improve holes and fine features
- Automatically applied cutting techniques make it easier to train operators

Oxyfuel customers perceive complexity in plasma, which becomes a barrier to adoption.

Hypertherm's full suite offering can be leveraged to simplify:

- Operator training requirements
- Channel partner integration, installation, training and support

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# Full Suite Value Proposition

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## Easy

Easy to order  
Easy to integrate/install  
Easy to operate  
Easy to learn/train  
Easy to troubleshoot  
Easy to service

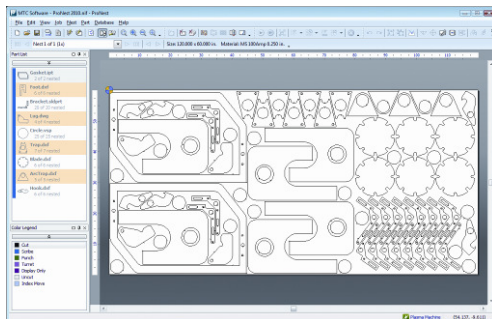
## Reliable

Robust hardware and software  
Consistent motion  
Repeatable optimized performance

## Performance

Cut quality  
Productivity  
Operating Cost  
Flexibility

Easy ----- Reliable ----- Performance



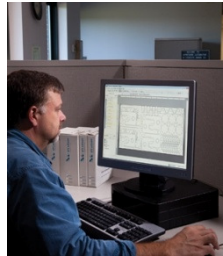
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# Full Suite Value Proposition

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MTC software



HYPERTHERM CNC



ArcGlide THC



HPRXD systems

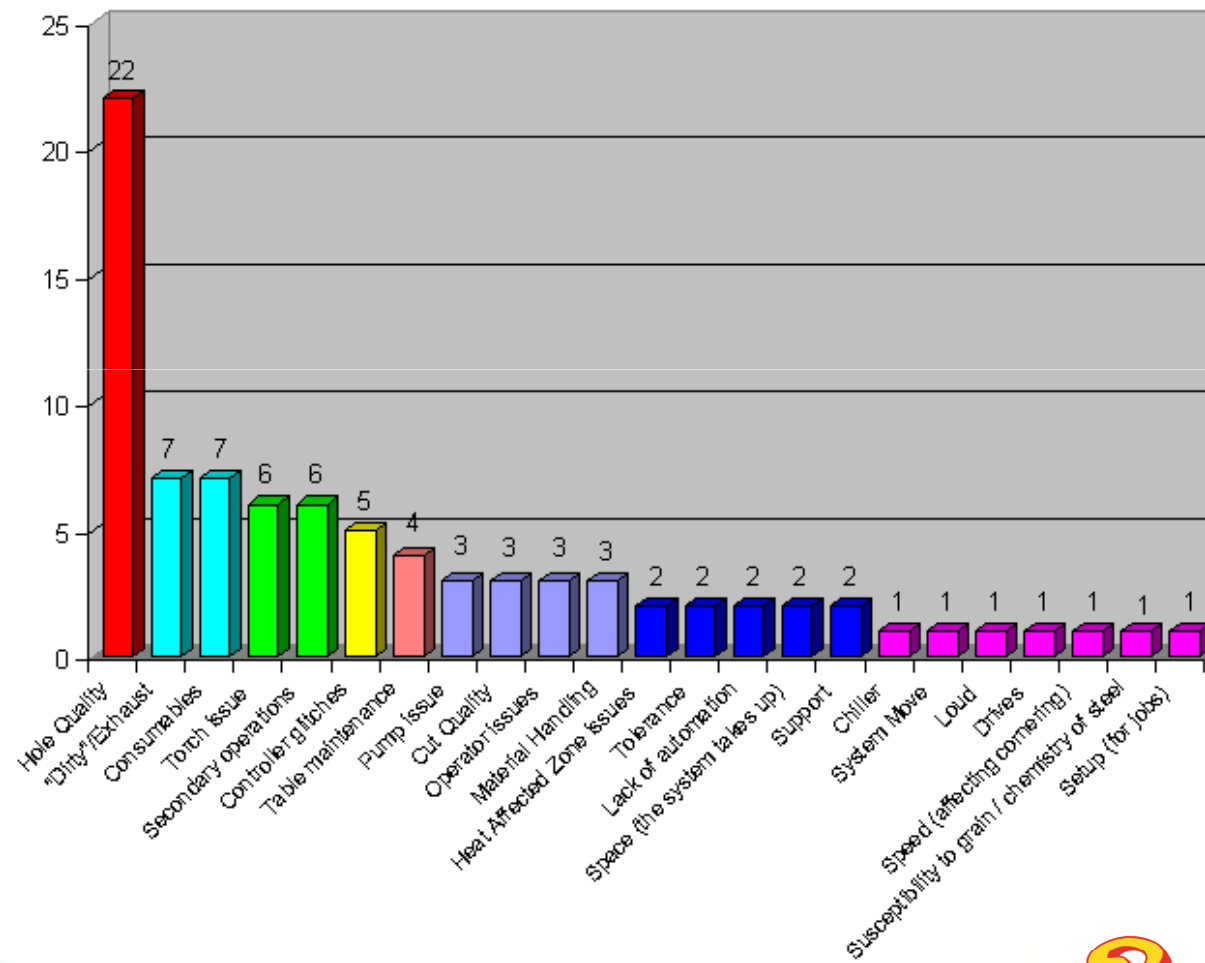
Dramatic **improvement** in hole quality

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# End User VOC: Hole Quality = Key Gap vs. Laser

End-user Thermal Survey  
Plasma Complaints Frequency Distribution



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# Hole Quality VOC Results

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**What is the most common application for a cut hole?**

- Bolt holes

**What are the most important quality improvements needed for holes?**

- Form error (ding/divot) and taper are the most important improvement areas (rationale - if present they necessitate a secondary operation)
- Dross is a distant third (rationale – it can be easily removed by the operator)

**If form error and taper are improved but dross is still present will plasma gain share vs. laser?**

- Yes = 88% of respondents
- No = 12% of respondents

**What material type and thickness is most important to focus on?**

- Mild Steel, gauge to 1”

**What diameter to thickness ratio should we target?**

- 1:1 – 2:1

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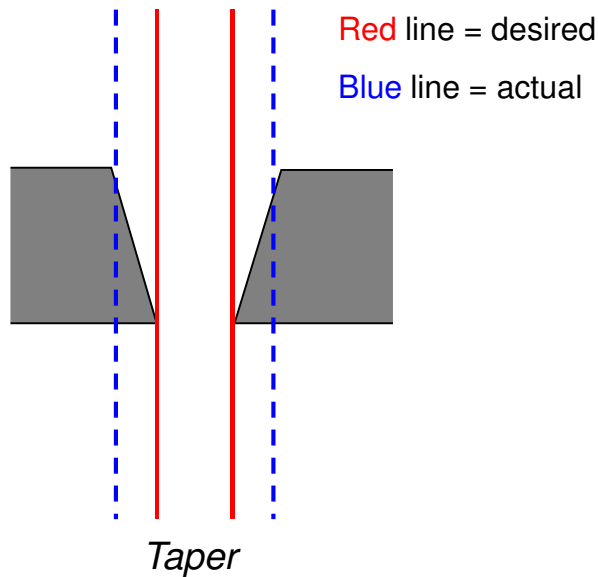
# Defining Hole Quality

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Perfect hole: equal in circular dimension throughout the entire body of the hole

Some common problems when cutting holes involve errors in form, or shape:

- Ding/divot = a dent, small cavity, or imperfection on the inside of the hole
- Taper = two ends of the hole are inconsistent in width, with a gradual degradation from one end to the other



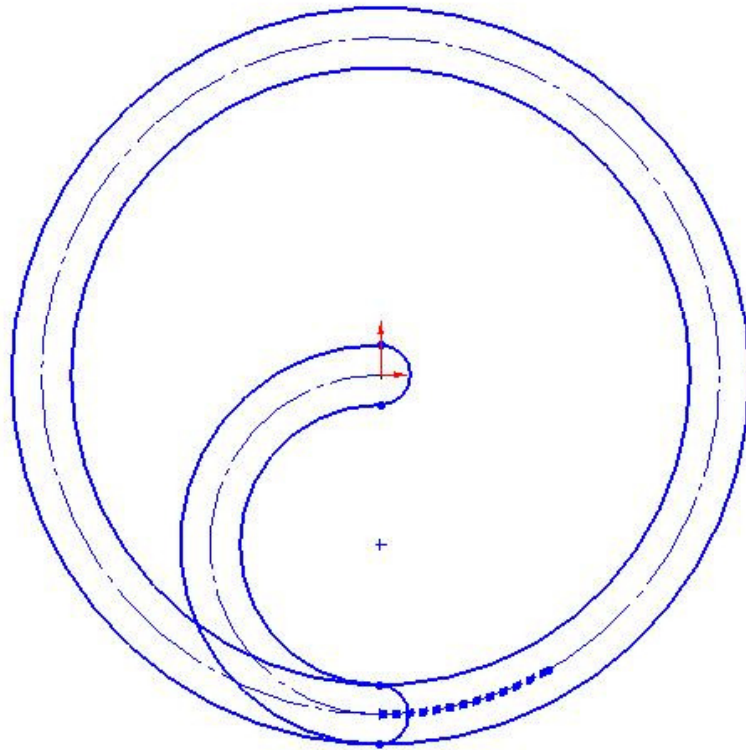
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# Patent-Pending True Hole Technology by Hypertherm

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A specific combination of the following parameters for optimizing mild steel hole quality that is linked to a given amperage, material thickness and hole size:



- Process Gas Selection
- Gas Flow Rates
- Pierce Technique
- Lead In / Out Technique
- Cut Speeds
- Timing

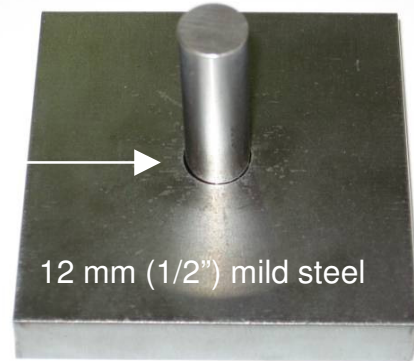
The process is automatically applied by our cutting optimization and nesting software

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# True Hole Results = Market Share Gain vs. Laser & Competitors

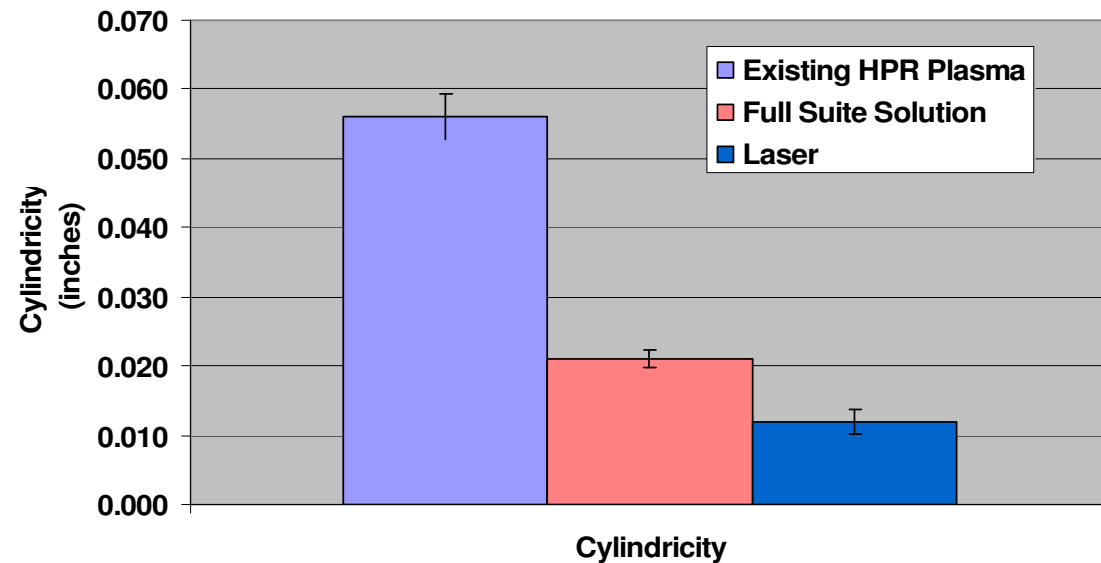
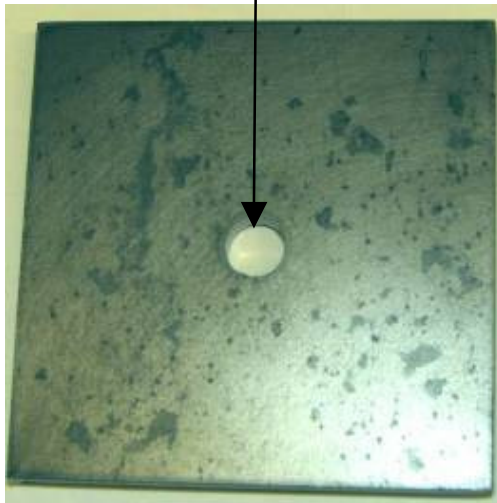
Taper is virtually eliminated and the Ding is reduced and biased to the outside of the hole. Dross is still present but can be easily removed.



12 mm (1/2") hole with  
True Hole technology



12 mm (1/2") hole without  
True Hole technology



True Hole™ technology requires an HPRXD torch with PowerPierce technology, HPRXD Auto Gas, True Hole enabled CNC, THC, and nesting software

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# True Hole Results = Market Share Gain vs. Laser & Competitors

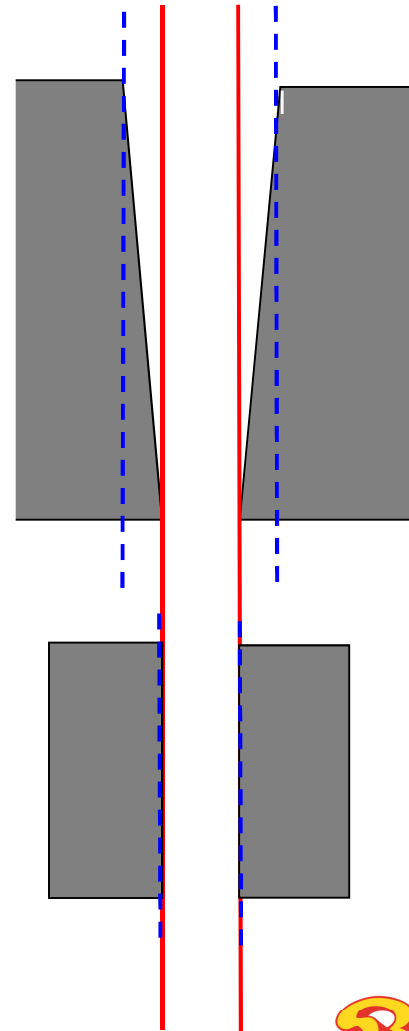


12 mm (1/2") hole **without**  
True Hole technology



12 mm (1/2") hole **with**  
True Hole technology

Cross section of a hole, with taper and without



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# Mild Steel True Hole Cut Charts (English Measurements)

## Standard consumables

|      | 10ga | 3/16" | 1/4" | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" |
|------|------|-------|------|------|------|------|------|------|----|
| 30A  | X    | X     |      |      |      |      |      |      |    |
| 50A  | X    | X     | X    |      |      |      |      |      |    |
| 80A  |      | X     | X    |      |      |      |      |      |    |
| 130A |      |       | X    | X    | X    |      |      |      |    |
| 200A |      |       |      | X    | X    | X    |      |      |    |
| 260A |      |       |      |      | X    | X    | X    |      |    |
| 400A |      |       |      |      |      |      | X    | X    | X  |

## Bevel consumables

|      | 10ga | 3/16" | 1/4" | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" |
|------|------|-------|------|------|------|------|------|------|----|
| 80A  |      | X     | X    |      |      |      |      |      |    |
| 130A |      |       |      | X    | X    |      |      |      |    |
| 260A |      |       |      |      | X    | X    | X    |      |    |
| 400A |      |       |      |      |      |      | X    | X    | X  |

Each material thickness has a range of processes available to provide a choice.

Each process has been optimized to cover a range of thicknesses.

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# Mild Steel True Hole Cut Charts (Metric Measurements)

## Standard consumables

|      | 3mm | 4mm | 5mm | 6mm | 8mm | 10mm | 12mm | 15mm | 20mm | 22mm | 25mm |
|------|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 30A  | X   | X   | X   |     |     |      |      |      |      |      |      |
| 50A  | X   | X   | X   | X   |     |      |      |      |      |      |      |
| 80A  |     |     | X   | X   |     |      |      |      |      |      |      |
| 130A |     |     |     |     | X   | X    | X    |      |      |      |      |
| 200A |     |     |     |     |     | X    | X    | X    |      |      |      |
| 260A |     |     |     |     |     |      | X    | X    | X    |      |      |
| 400A |     |     |     |     |     |      |      |      | X    | X    | X    |

## Bevel consumables

|      | 3mm | 4mm | 5mm | 6mm | 8mm | 10mm | 12mm | 15mm | 20mm | 22mm | 25mm |
|------|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 80A  |     |     | X   | X   |     |      |      |      |      |      |      |
| 130A |     |     |     |     |     | X    | X    |      |      |      |      |
| 260A |     |     |     |     |     |      | X    | X    | X    |      |      |
| 400A |     |     |     |     |     |      |      |      | X    | X    | X    |

Each material thickness has a range of processes available to provide a choice.

Each process has been optimized to cover a range of thicknesses.

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# Mild Steel True Hole Cut Charts: Hole Sizes Available

Tested on holes from 1:1 to 2:1, diameter to thickness ratio

|           | Hole size (inch) |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Thickness | 0.394            | 0.472 | 0.571 | 0.650 | 0.728 | 0.827 | 0.945 | 1.024 | 1.102 | 1.260 | 1.496 | 1.772 | 2.047 |
| 1"        |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 7/8"      |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 3/4"      |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 5/8"      |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 1/2"      |                  |       |       |       |       |       |       |       |       |       |       |       |       |
|           | Hole size (inch) |       |       |       |       |       |       |       |       |       |       |       |       |
| Thickness | 0.142            | 0.165 | 0.189 | 0.209 | 0.228 | 0.276 | 0.315 | 0.394 | 0.472 | 0.571 | 0.650 | 0.728 | 0.827 |
| 3/8"      |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 1/4"      |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 3/16"     |                  |       |       |       |       |       |       |       |       |       |       |       |       |
| 10Ga      |                  |       |       |       |       |       |       |       |       |       |       |       |       |

True Hole cut charts available for mild steel only

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# True Hole Table Acceleration Requirements

The motion capabilities of the cutting table play a very important role in the overall quality of the hole. Optimal hole quality requires a table to meet certain acceleration and deceleration capabilities as well as the ability to produce a good round hole.

| Mild Steel Process |                | Hole Centripetal Acceleration (as a function of hole diameter) |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|--------------------|----------------|----------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Current (A)        | Thickness (in) | 0.276 (mG)                                                     | 0.315 (mG) | 0.394 (mG) | 0.472 (mG) | 0.571 (mG) | 0.650 (mG) | 0.728 (mG) | 0.827 (mG) | 0.945 (mG) | 1.024 (mG) | 1.102 (mG) | 1.260 (mG) | 1.496 (mG) | 1.772 (mG) | 2.047 (mG) |
| 400                | 1.000          |                                                                |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
| 400                | 0.875          |                                                                |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
| 260                | 0.750          |                                                                |            |            |            |            | 3.9        | 3.4        | 2.8        | 2.4        | 2.1        | 2.0        | 1.7        | 1.4        |            |            |
| 260                | 0.625          |                                                                |            |            | 6.8        | 4.9        | 4.0        | 3.4        | 2.9        | 2.4        | 2.2        | 2.0        | 1.7        |            |            |            |
| 200                | 0.500          |                                                                |            | 10.7       | 7.9        | 5.9        | 4.9        | 4.2        | 3.6        | 3.0        | 2.7        |            |            |            |            |            |
| Mild Steel Process |                | Lead-in Speed (as a function of hole diameter)                 |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Current (A)        | Thickness (in) | 0.102 (mG)                                                     | 0.122 (mG) | 0.142 (mG) | 0.165 (mG) | 0.189 (mG) | 0.209 (mG) | 0.228 (mG) | 0.276 (mG) | 0.315 (mG) | 0.394 (mG) | 0.472 (mG) | 0.571 (mG) | 0.650 (mG) | 0.728 (mG) | 0.827 (mG) |
| 130                | 0.375          |                                                                |            |            |            |            |            |            | 21.6       | 16.7       | 11.5       | 8.8        | 6.8        | 5.7        | 5.0        | 4.2        |
| 80                 | 0.250          |                                                                |            |            |            |            |            | 39.9       | 27.7       | 22.2       | 15.8       | 12.3       | 9.6        |            |            |            |
| 50                 | 0.188          |                                                                |            | 29.5       | 22.8       | 18.4       | 15.9       | 14.0       | 10.9       | 9.2        | 7.0        |            |            |            |            |            |
| 50                 | 0.135          |                                                                | 39.7       | 29.5       | 22.8       | 18.4       | 15.9       | 14.0       | 10.9       |            |            |            |            |            |            |            |

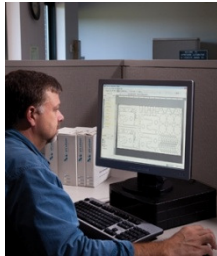
Notice a table capable of 40mG can execute all current HPRXD hole cutting processes. A table capable of 30mG can execute all but two hole cutting processes as indicated in red.

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A discussion with the manufacturer of the table would be wise to ensure the table has the capability to produce good holes.

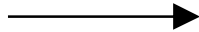
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# True Hole Technology Requires Full Suite



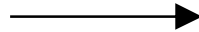
**ProNest 2010**

- Imports parts with holes
- Automatically applies the True Hole process that will optimize each hole in the nest of parts
- Sends the programmed job to the CNC



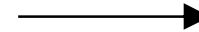
**HYPERTHERM CNC**

- Operator loads the job
- CNC prompts the operator to load the proper consumables and plate
- True Hole process settings automatically sent to the plasma system



**Hypertherm THC**

- Uses True Hole process settings for proper torch height control



**HPRXD Auto Gas Plasma System**

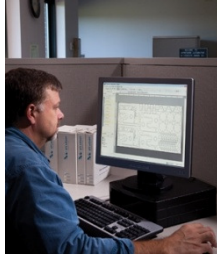
- Uses True Hole process settings to produce optimal hole quality

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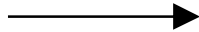
# True Hole Technology Enabled Products

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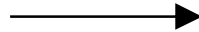
## MTC Nesting and Process Optimization Software

- ProNest 2010, build 9.0.4 or later with Advanced Plasma Post Processor machine setup



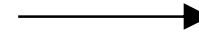
## HYPERTHERM CNC

- EDGE Pro v. 9.00.1
- Micro EDGE Pro v.9.00.1



## Hypertherm THC

- ArcGlide THC



## HPRXD Auto Gas Plasma System

- HPR130XD Auto Gas
- HPR260XD Auto Gas
- HPR400XD Auto Gas

True Hole Technology for mild steel requires the use of True Hole enabled nesting and process optimization software, CNC, and THC with HPRXD Auto Gas plasma systems.

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# True Hole Technology Requires HPRXD

## HPR130XD

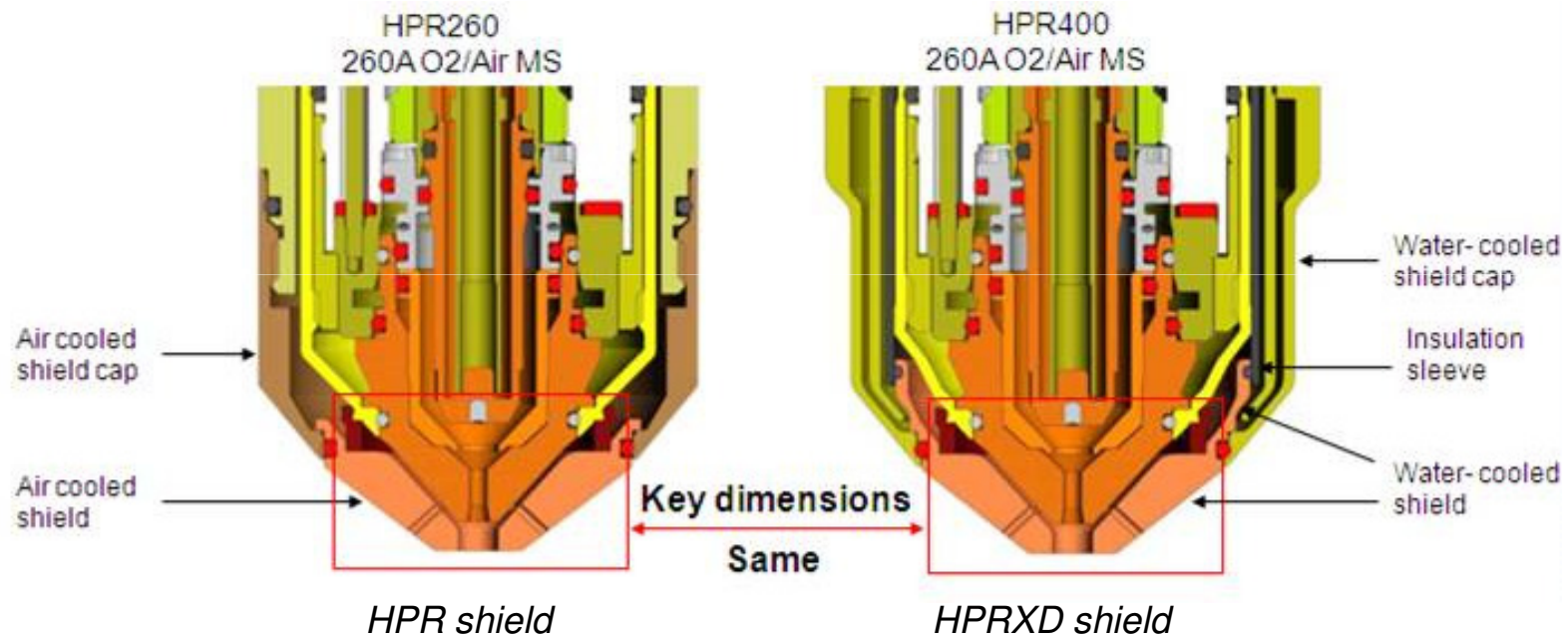
w/PowerPierce Technology

## HPR260XD

w/PowerPierce Technology

## HPR400XD

w/PowerPierce Technology



The True Hole cutting processes will be launched exclusively on the HPRXD torch for use with auto gas consoles. The hole cutting technology uses an O<sub>2</sub>/O<sub>2</sub> process and low shield flow, which requires improved water cooling enabled by the HPRXD torch design.

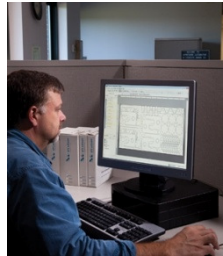
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# Full Suite Value Proposition

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ProNest 2010



HYPERTHERM CNC



ArcGlide THC



HPRXD systems

Dramatic improvement in hole quality

Up to a **100% increase in productivity** through cut-to-cut cycle time reductions

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**Baykal**

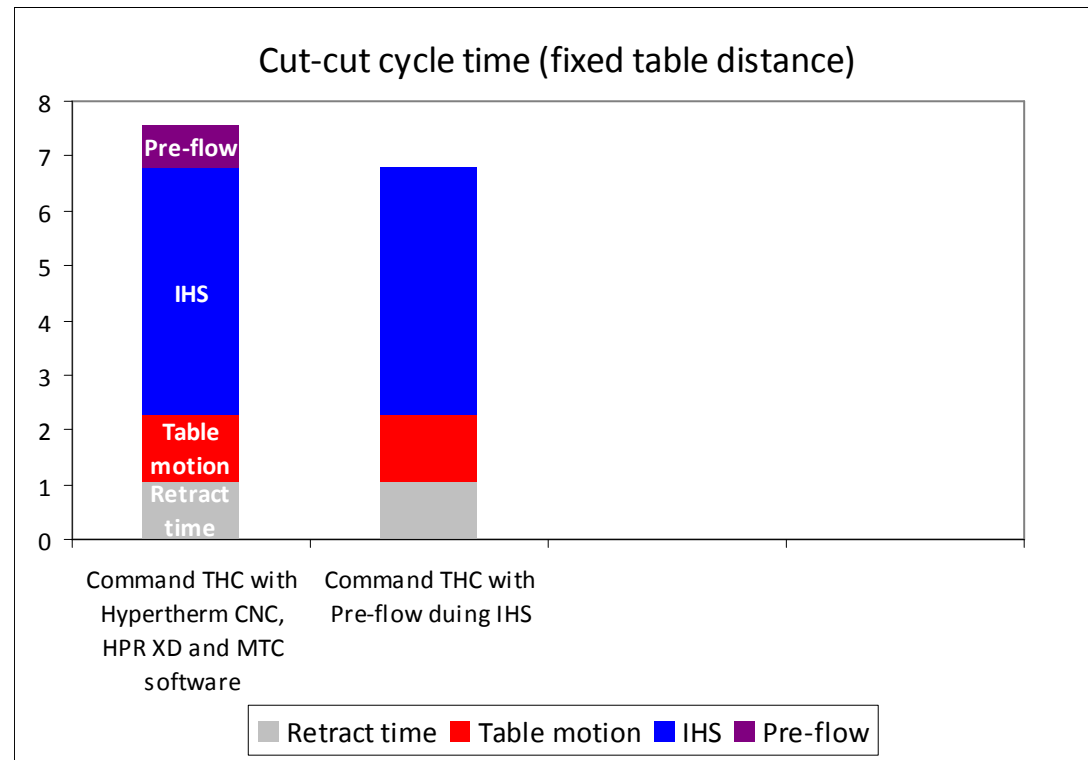
# Cut-to-Cut Cycle Time is Non Cutting Time

- Cut-to-cut cycle time is the sum of all necessary movements between cuts:

- Retracting the torch
- Table motion
- Initial height sense\*
- Pre-flow\*

(\*some THC's combine these two steps)

- This entire process takes between 6 and 7 seconds, depending on the THC settings selected by the operator.



# Hypertherm Full Suite Delivers Less Cut-to-Cut Cycle Time

Hypertherm's ArcGlide THC maximizes productivity by minimizing cut-to-cut cycle time using Rapid Ignition™ technology.

| Cut-cut action | ArcGlide technology                                                       | Results                               |
|----------------|---------------------------------------------------------------------------|---------------------------------------|
| Torch retract  | Rapid z-axis motion                                                       | Retract time reduced to ~0.54 seconds |
| IHS            | Rapid z-axis motion<br>Automatic fast-to-slow speed crossover calibration | IHS time reduced to ~1 second         |
| Pre-flow       | Pre-flow completed during initial height sense                            | Pre-flow time is eliminated           |

Further reductions are also possible when using a Hypertherm CNC & MTC's ProNest 2010 software with the optional Collision Avoidance module.

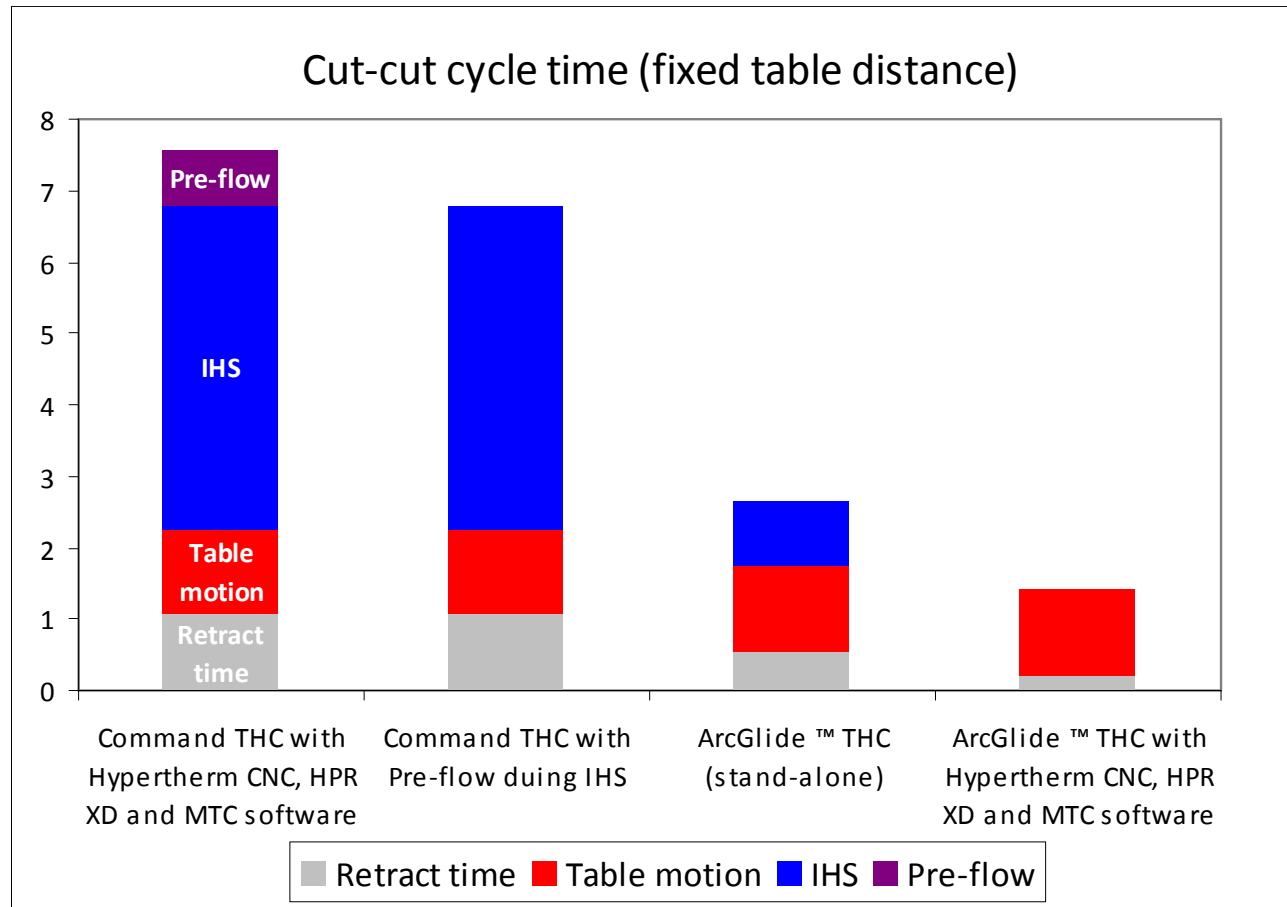
| Cut-cut action | ArcGlide technology                                                                           | Results                                                       |
|----------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Torch retract  | Torch intelligently retracts to the next pierce height, based on material and part properties | Retract time reduced to 0.2 seconds when appropriate to do so |
| IHS            | IHS is skipped intelligently, based on material properties                                    | IHS time eliminated when appropriate to do so                 |
| Pre-flow       | Pre-flow completed during motion                                                              | Pre-flow time is eliminated                                   |

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# Hypertherm Full Suite Equals Less Cut-to-Cut Cycle Time

Cut-to-cut cycle time is reduced by up to 80%, resulting in increased productivity, without operator input.



**Hypertherm®**

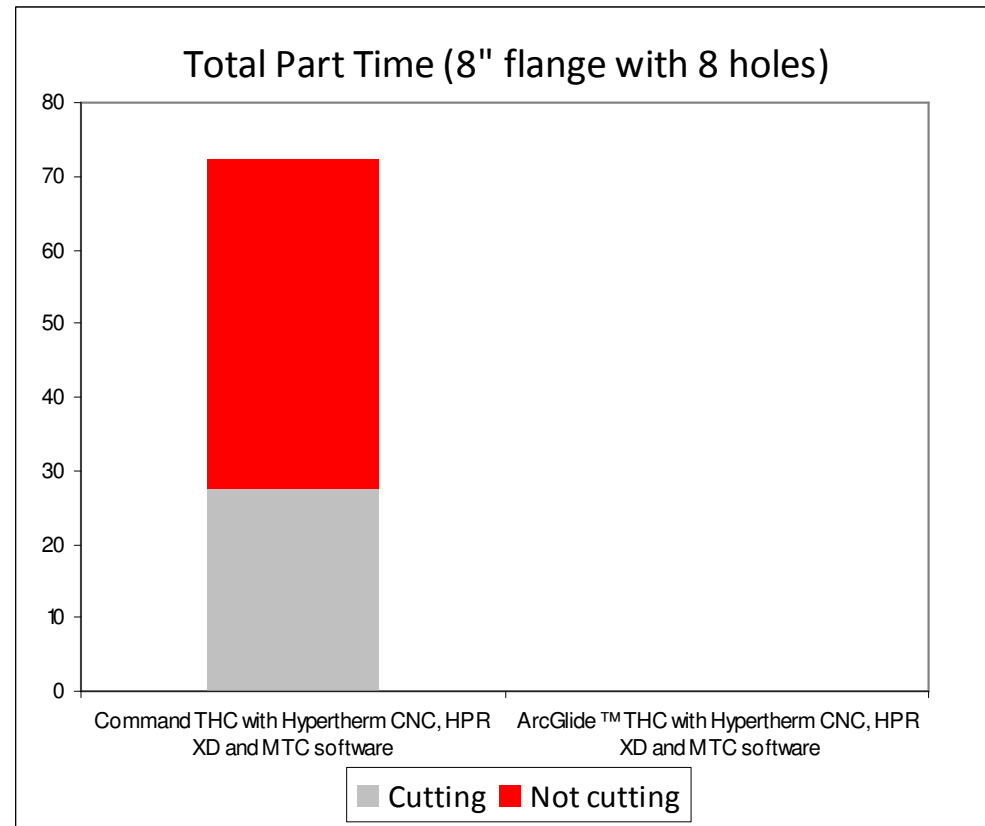
**Baykal**

# Less Cut-to-Cut Cycle Time = Increased Productivity

Using an 8" (20.3cm) flange as an example, over half the time after the operator presses "go" is spent not cutting with the Command THC.



8" (20.3cm) flange



**Hypertherm®**

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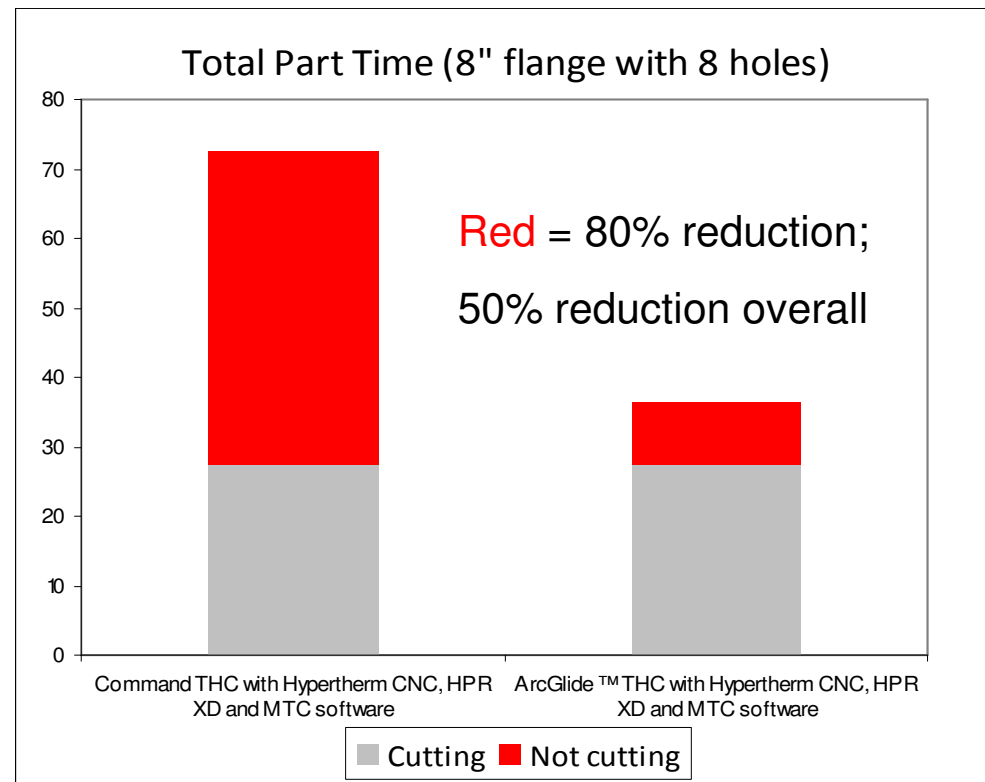
# Less Cut-to-Cut Cycle Time = Increased Productivity

- Using an 8" (20.3cm) flange, over half the time after the operator presses "go" is spent moving between cuts when using competitive torch height controls.
- The Hypertherm full suite reduces the cut-to-cut cycle time by 80% and the time it takes to cut each part by about 50%.



8" (20.3cm) flange

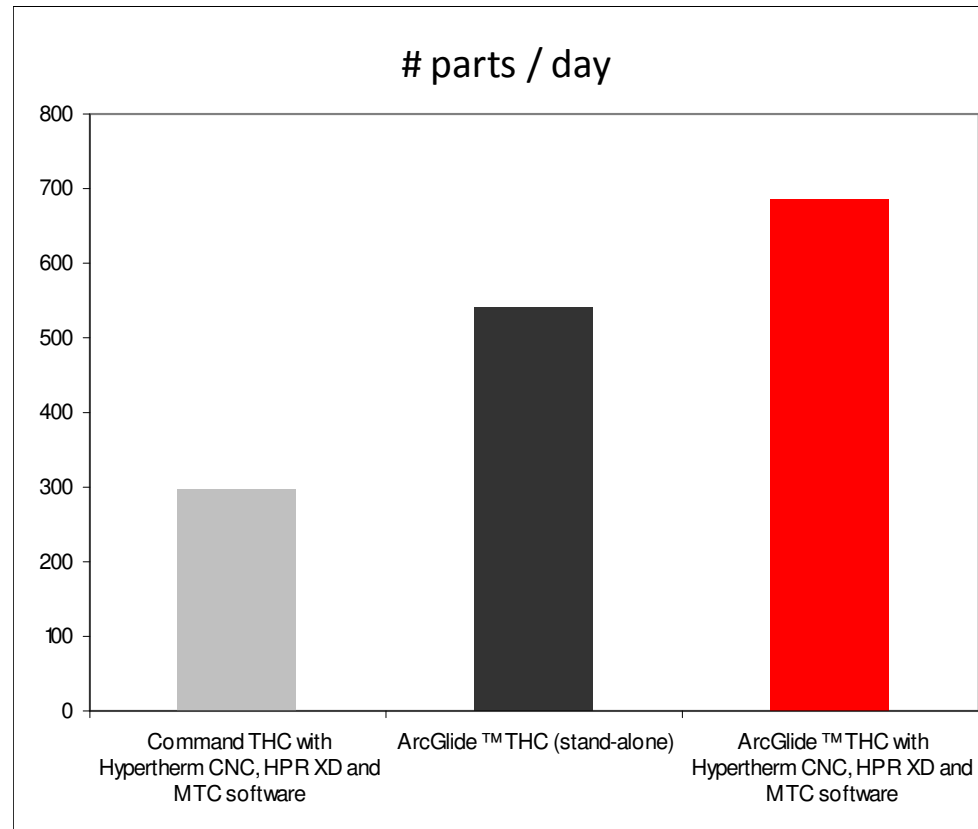
**Hypertherm**



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# Less Cut-to-Cut Cycle Time = Increased Productivity

By reducing cut-to-cut cycle, Hypertherm's full suite can improve the number of parts cut per day by up to 100%.



Note: while cut-to-cut cycle time improvement will be seen on any application, productivity improvement is dependent on plate thickness and part geometry

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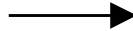
# Less Cut-to-Cut Cycle Time with Advanced Full Suite



**ProNest 2010**

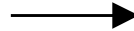
With the optional Collision Avoidance module, the software automatically applies optimized motion routines to minimize movement and downtime between cuts:

- Part sequencing
- Lead out and lead in placements
- Collision and tip up avoidance routines



**hypertherm  
CNC**

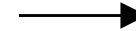
- Executes the optimized motion routines defined by the nesting and process optimization software
- Uses our Rapid Ignition technology to ensure that the plasma system is ready to fire immediately after moving into position. Initial height sensing and pre-flow delays are significantly reduced or eliminated.



**Arc Glide  
THC**

Works seamlessly with the CNC and plasma system to execute:

- Optimized motion routines
- Hypertherm's Rapid Ignition technology



**HPRXD Auto Gas  
Plasma System**

Rapid pre-flow cycle capabilities enable reduced cut-to-cut cycle time

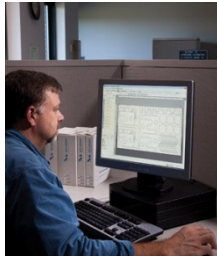
**Hypertherm®**

**Baykal**



# Cut-to-Cut Cycle Time Enabled Products

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## MTC Nesting and Process Optimization Software

- ProNest 2010, build 9.0.4 or later with Advanced Plasma Post Processor



## CNC

- EDGE Pro
- Micro Edge Pro



## THC

- ArcGlide THC



## HPRXD Auto Gas Plasma Systems

- HPR130XD Auto Gas
- HPR260XD Auto Gas
- HPR400XD Auto Gas

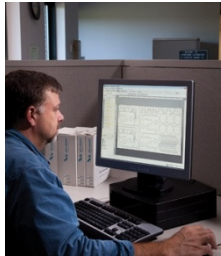
Hypertherm's advanced full suite of integrated cutting products minimizes cut-to-cut cycle time

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**Baykal**

# Full Suite Value Proposition

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ProNest 2010



hypertherm CNC



ArcGlide THC



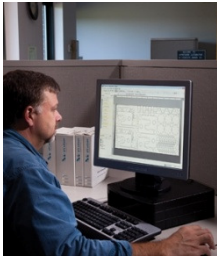
HPRXD systems

- Dramatic **improvement in hole quality**
- **Up to a 100% increase in productivity** through cut-to-cut cycle time reductions
- **Achieve optimal consumable life** without operator adjustment

**Hypertherm®**

**Baykal**

# Consumable Life and the Full Suite



**ProNest 2010**



**HYPERTHERM  
CNC**



**ArcGlide  
THC**



**LongLife  
Plasma Systems**

The software automatically applies:

- proper torch height settings for piercing and cutting
- optimized lead out placements and methods to ensure the LongLife ramping process works properly

Minimizes the likelihood of ramp down errors caused by:

- cutting off the edge of the plate
- scrap dropping out from the interior of a cut hole

**Hypertherm®**

The CNC and the ArcGlide THC work together to automatically set torch height and adjust arc voltage as the consumables wear, without the need for operator input. This maintains proper torch height and maximizes consumable life.

Patented LongLife technology ramps current and gas flow up and down in a tightly controlled manner to reduce electrode and nozzle erosion.

Reducing electrode and nozzle erosion enables more consistent cut quality over a longer period of time, while providing a significant reduction in operating cost.

**Baykal**

# Full Suite Solution Impacts Consumable Life

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## Common issues:

- Spatter during piercing presents a threat to the shield and nozzle.

## Full Suite solutions:

- Different pierce and cut height settings reduce this concern.
- The Full Suite solution automatically applies optimal torch height settings for piercing and cutting.

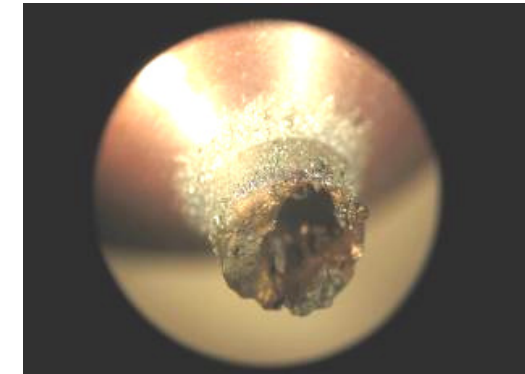
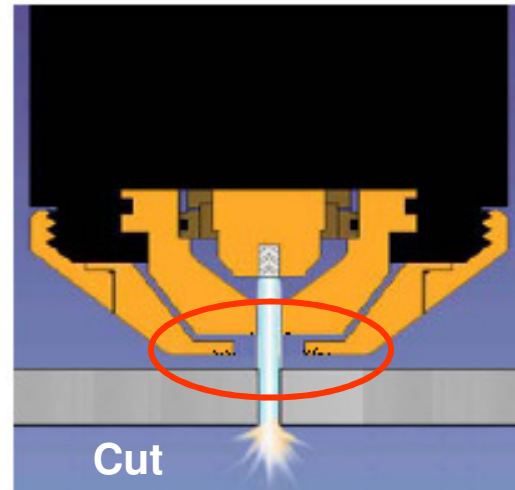
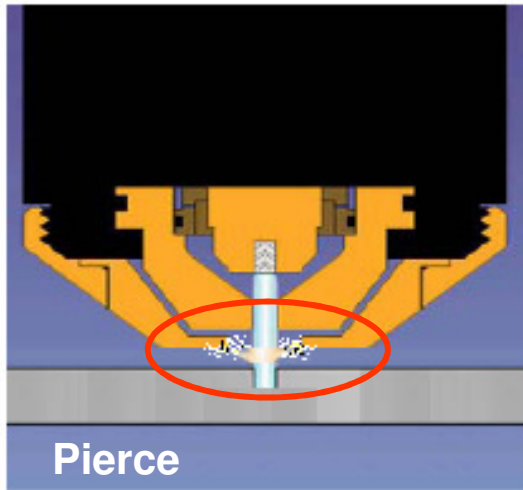


**Hypertherm®**

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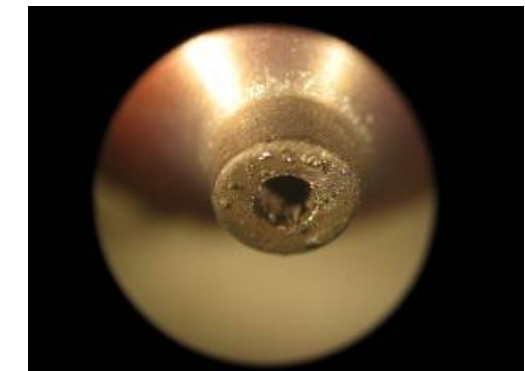
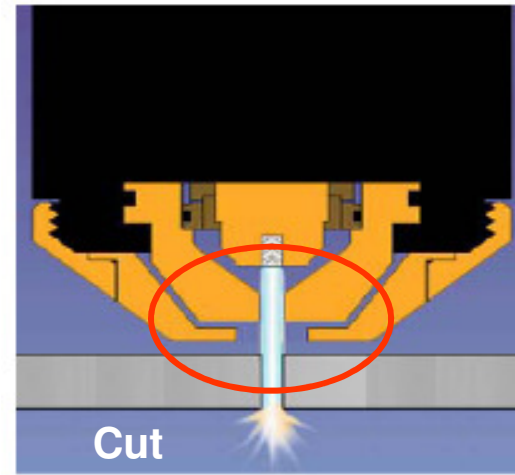
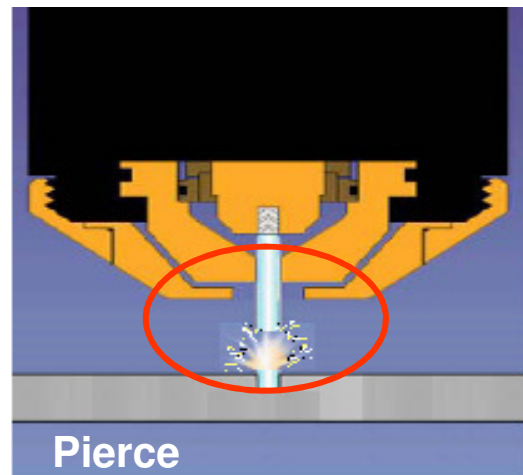
# Accurate Pierce and Cut Heights Extend Consumable Life

*Height controls with constant torch height*



*Torch stays at constant height, damaging the nozzle and shield*

*Full Suite accurately sets  
independent  
pierce height and cut height*



*Accurate pierce height protects the nozzle and shield*

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# Automatic Arc Voltage Adjustment

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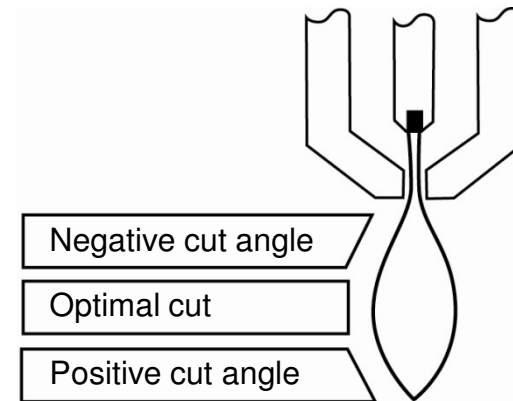
Contributes to better consumable life and better cut quality



*Negative cut angle*



*Positive cut angle*



- In order to maintain proper torch height, arc voltage must be adjusted as the consumables wear.
- If arc voltage is not adjusted as the consumables wear the torch will not be at the proper cutting height and cut quality will degrade. As a result, operators often replace consumables prematurely.
- Hypertherm's ArcGlide THC automatically adjusts arc voltage as consumables wear to ensure optimal cut quality and maximum consumable life.

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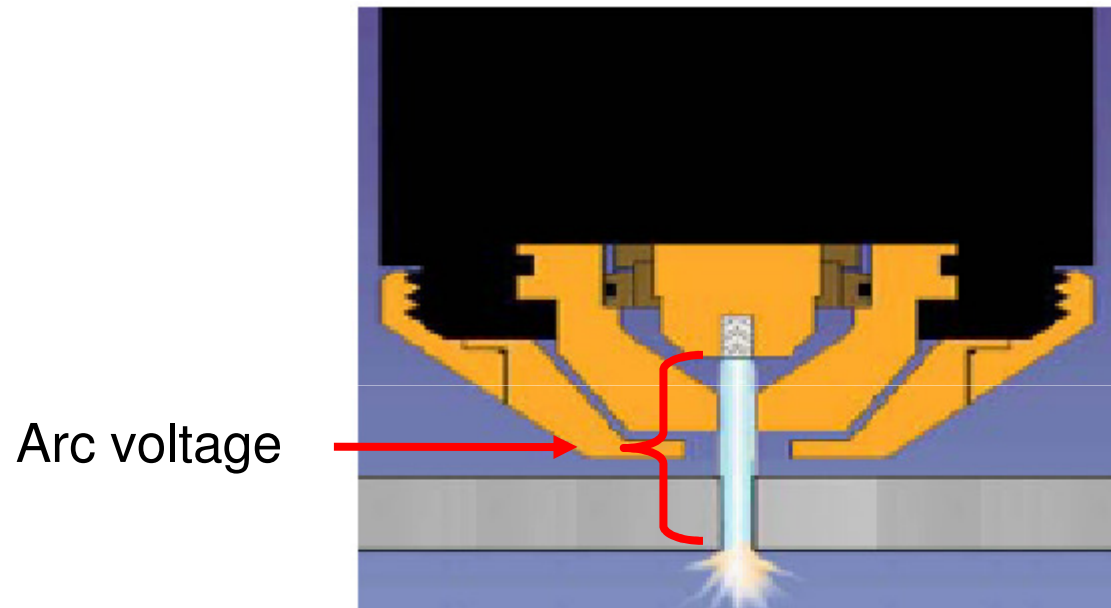
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# Arc Voltage Defined

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- When cutting with plasma, a voltage potential is created between the tip of the arc at the electrode and the bottom of the plate being cut.



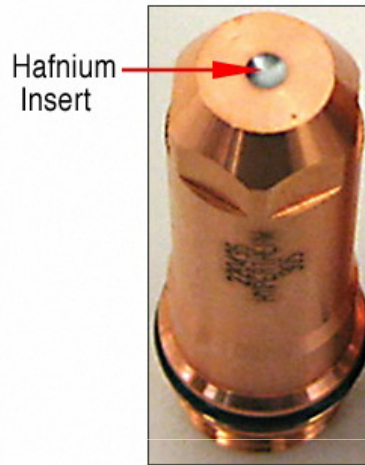
- This voltage is proportional to the distance between the tip of the hafnium and the bottom of the plate (the longer the distance, the higher the arc voltage).
- This voltage is fed back to the torch height control, and the THC moves up or down as needed to maintain the set arc voltage for that given process.

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# Arc Voltage as it Relates to Consumable Life

As consumables are used, the location of the tip of the hafnium changes



Hafnium  
Insert

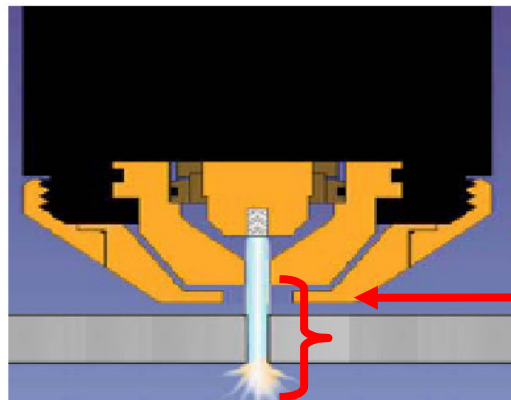
New

Since arc voltage is proportional to the distance between the tip of the hafnium and the bottom of the plate, as the consumables wear, the torch needs to be closer to the plate to maintain a constant arc voltage



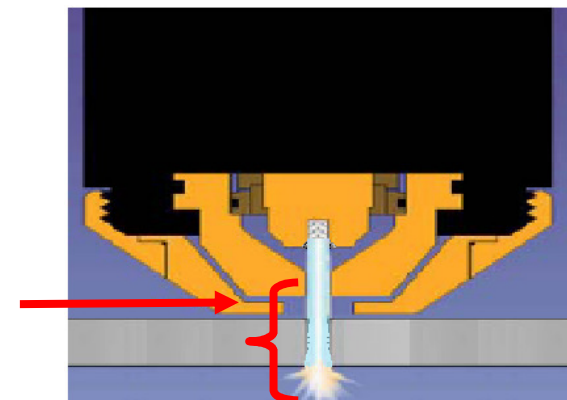
Eroded  
Hafnium  
Insert

Used



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Constant arc voltage

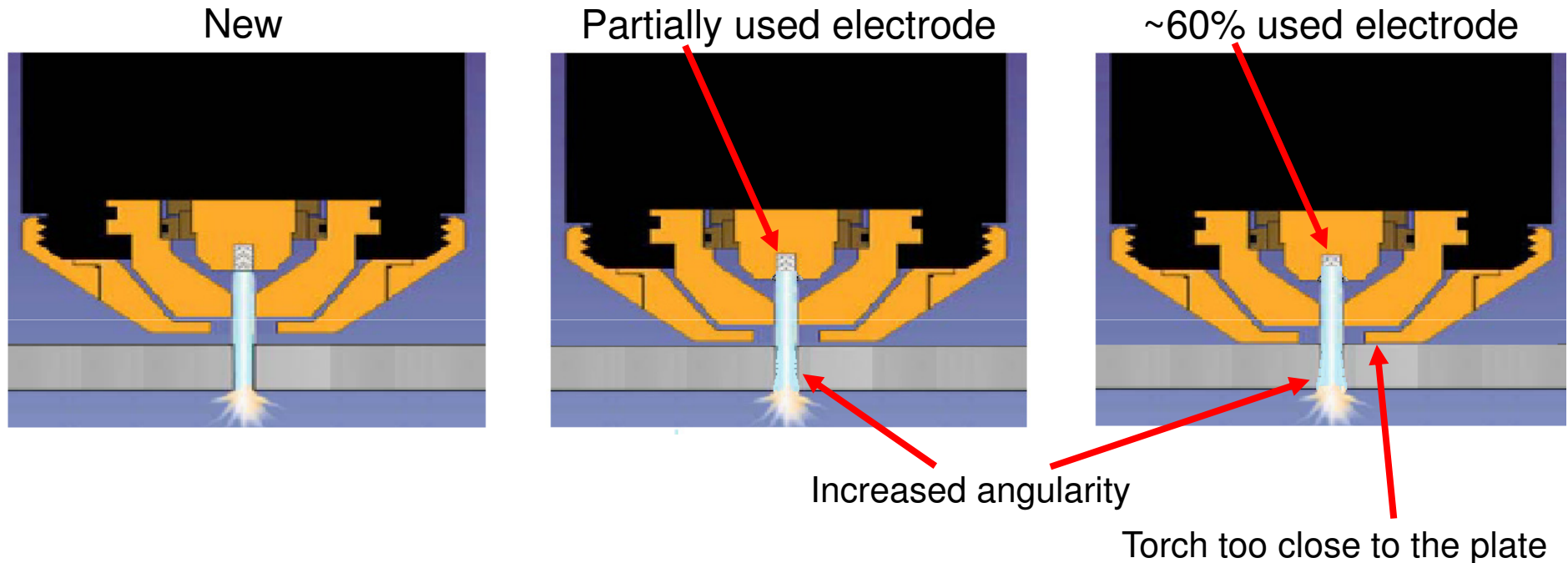


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# Arc Voltage as it Relates to Consumable Life

- If a torch height control cuts with a constant arc voltage, cut quality will degrade prematurely as the consumables wear.



- Few operators know that they should adjust arc voltage to compensate for this consumable wear, and even fewer know how much / when to adjust.
- This results in operators throwing out consumables early, either due to poor cut quality or the torch touching the plate repeatedly.

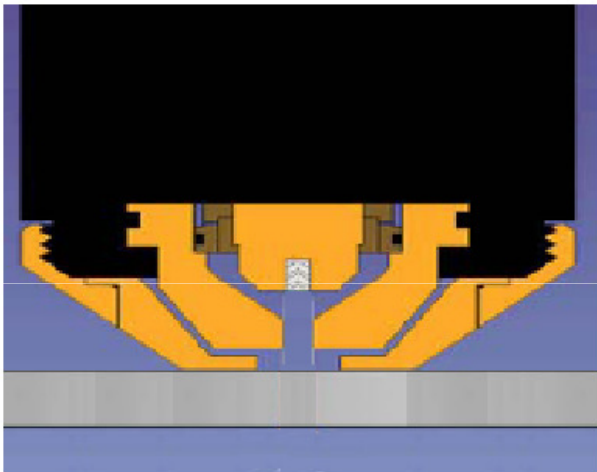
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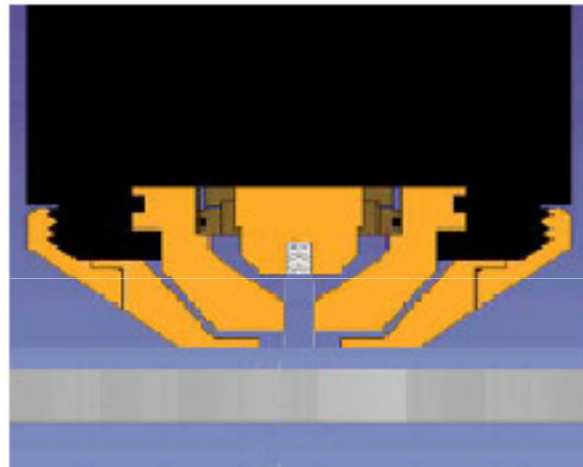
# ArcGlide THC Automatically Adjusts Arc Voltage

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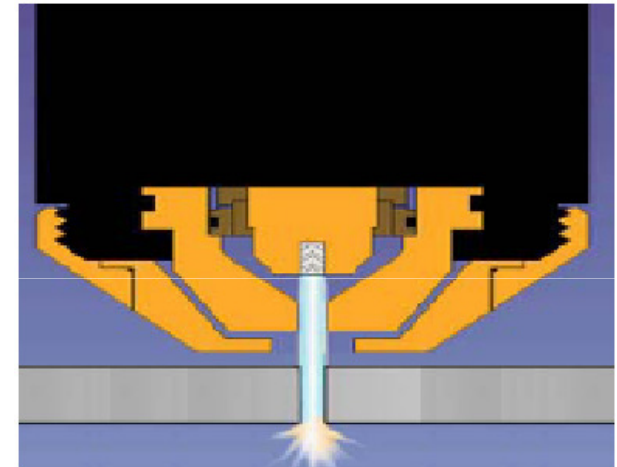
- The ArcGlide THC solves this problem by automatically adjusting arc voltage over the life of the consumables.
- How it works:



IHS: Torch finds the plate



Torch positions to a known height



After cutting is initiated, THC samples arc voltage at that known height

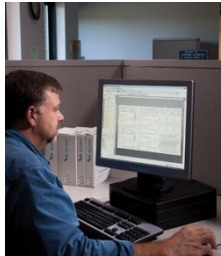
- This sampled voltage is intelligently averaged over time. As the average increases, so is the arc voltage that the THC maintains. Therefore, cut height is maintained constant over the life of the consumables.

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# Maximizing Consumable Life with Full Suite

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**MTC Nesting and  
Process Optimization  
Software**

- ProNest 2010



**CNC**

- EDGE Pro,  
v. 9.00.1
- Micro Edge  
Pro v.9.00.1



**THC**

- ArcGlide THC



**LongLife  
Plasma Systems**

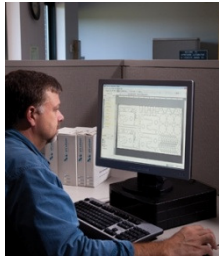
- HPR130XD Auto/Manual
- HPR260XD Auto/Manual
- HPR400XD Auto/Manual

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# Full Suite Value Proposition

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ProNest 2010



HYPERTHERM CNC



ArcGlide THC



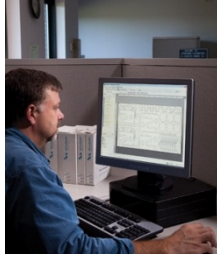
HPRXD systems

- Dramatic improvement in hole quality
- Up to a 100% increase in productivity through cut-to-cut cycle time reductions
- Achieve optimal consumable life without operator adjustment
- **Built in Hypertherm process expertise** makes it easy to:
  - Train new operators to cut like a pro within minutes
  - Maintain more consistent performance from operator-to-operator, shift-to-shift, and site-to-site

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## Ease of Use with Advanced Full Suite Solution



# MTC Nesting and Process Optimization Software

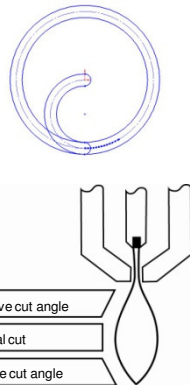
- Imports parts to be cut
- Automatically applies optimal cutting and nesting techniques
- Generates NC code

# OPTIONAL

| <div> <div>    </div> <div> <b>MSD stand</b><br/> <b>C<sub>1</sub> Phase 1-A: Stand</b><br/> <b>MSD-A</b> </div> <div>  </div> </div> |       |                                  |       |                                  |       |                                  |       |                                  |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------|-------|----------------------------------|-------|----------------------------------|-------|----------------------------------|-------|
| 00000                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 00006 | 00008                            | 00010 | 00012                            | 00014 | 00016                            | 00018 | 00020                            | 00021 |
| <b>Measuring</b><br><b>range</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       | <b>Measuring</b><br><b>range</b> |       | <b>Measuring</b><br><b>range</b> |       | <b>Measuring</b><br><b>range</b> |       | <b>Measuring</b><br><b>range</b> |       |
| mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in    | mm                               | in    | mm                               | in    | mm                               | in    | mm                               | in    |
| 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3     | 25                               | 1     | 50                               | 2     | 75                               | 3     | 100                              | 4     |
| <b>English</b><br><b>range</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |                                  |       |                                  |       |                                  |       |                                  |       |
| mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in    | mm                               | in    | mm                               | in    | mm                               | in    | mm                               | in    |
| 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3     | 25                               | 1     | 50                               | 2     | 75                               | 3     | 100                              | 4     |
| <b>Measuring</b><br><b>range</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |                                  |       |                                  |       |                                  |       |                                  |       |
| mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in    | mm                               | in    | mm                               | in    | mm                               | in    | mm                               | in    |
| 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3     | 25                               | 1     | 50                               | 2     | 75                               | 3     | 100                              | 4     |

40-25

OPTIONAL MSB-A for the induction heater



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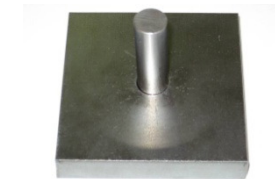
## EDGE Pro, MicroEDGE Pro

- Operator loads the job
- CNC prompts the operator to load the proper plate and consumables
- Optimal cutting techniques automatically applied
- Operator does not need to set
  - Amperage
  - Gas type, pre flow and cut flow
  - Torch pierce height and delay
  - Torch cut height
  - Arc voltage
  - Part specific feed rates & techniques
  - Kerf compensation



## HPRXD Auto Gas and ArcGlide

- Uses Hypertherm process settings to produce optimal cut quality, productivity, and operating cost

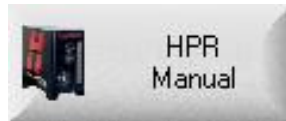


# Baykal

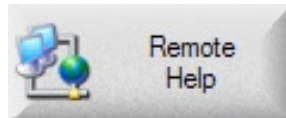
# Hypertherm Process Expertise on the CNC



## Instruction manuals



## Access to factory support via the Internet



OPERATION

Mild steel  
O<sub>2</sub> Plasma / Air Shield  
400 A

Electric - Airshield

| Material | Thickness | Amperage | Speed | Height | Time |
|----------|-----------|----------|-------|--------|------|
| 12       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 14       | 125       | 400      | 1.5   | 1.5    | 1.5  |
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| 40       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 42       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 44       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 46       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 48       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 50       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 52       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 54       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 56       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 58       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 60       | 125       | 400      | 1.5   | 1.5    | 1.5  |
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English

| Material | Thickness | Amperage | Speed | Height | Time |
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Marking

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| 40       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 42       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 44       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 46       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 48       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 50       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 52       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 54       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 56       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 58       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 60       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 62       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 64       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 66       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 68       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 70       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 72       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 74       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 76       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 78       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 80       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 82       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 84       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 86       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 88       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 90       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 92       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 94       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 96       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 98       | 125       | 400      | 1.5   | 1.5    | 1.5  |
| 100      | 125       | 400      | 1.5   | 1.5    | 1.5  |

4-16 HPR 200A Pro User Instruction Manual

## System cut charts

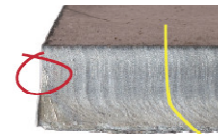


## Cut optimization tips

### Potential issues

#### Issue(s)

#### Excess bevel angle



Result of high speed

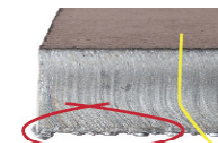
#### Possible cause(s)

1. Torch not square
2. Standoff too high
3. Amperage too low
4. Speed too fast
5. Incorrect torch travel direction
6. Worn nozzle

#### Solution(s)

1. Square torch to workpiece
2. Lower standoff
3. Increase amperage
4. Decrease speed
5. Change direction
6. Replace nozzle

#### Hardened dross



Result of standoff too high

1. Speed too fast
2. Amperage too low
3. Standoff too high

1. Decrease speed
2. Increase amperage
3. Lower standoff

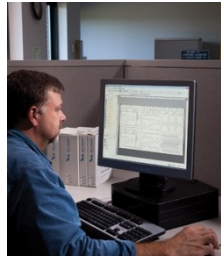
**Hypertherm** Job specific consumable prompts for operators

**Baykal**

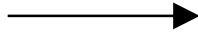


# Full Suite Value Proposition

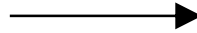
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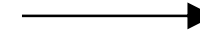
ProNest 2010



HYPERTHERM CNC



ArcGlide THC



HPRXD systems

- Dramatic **improvement in hole quality**
- **Up to a 100% increase in productivity** through cut-to-cut cycle time reductions
- **Achieve optimal consumable life** without operator adjustment
- **Built in Hypertherm process expertise** makes it easy to:
  - Train new operators to cut like a pro within minutes
  - Maintain more consistent performance from operator-to-operator, shift-to-shift, and site-to-site
- **Remote help** makes it easy for BAYKAL to access the system within seconds via the internet to provide process support and/or troubleshoot the systems

**Hypertherm®**

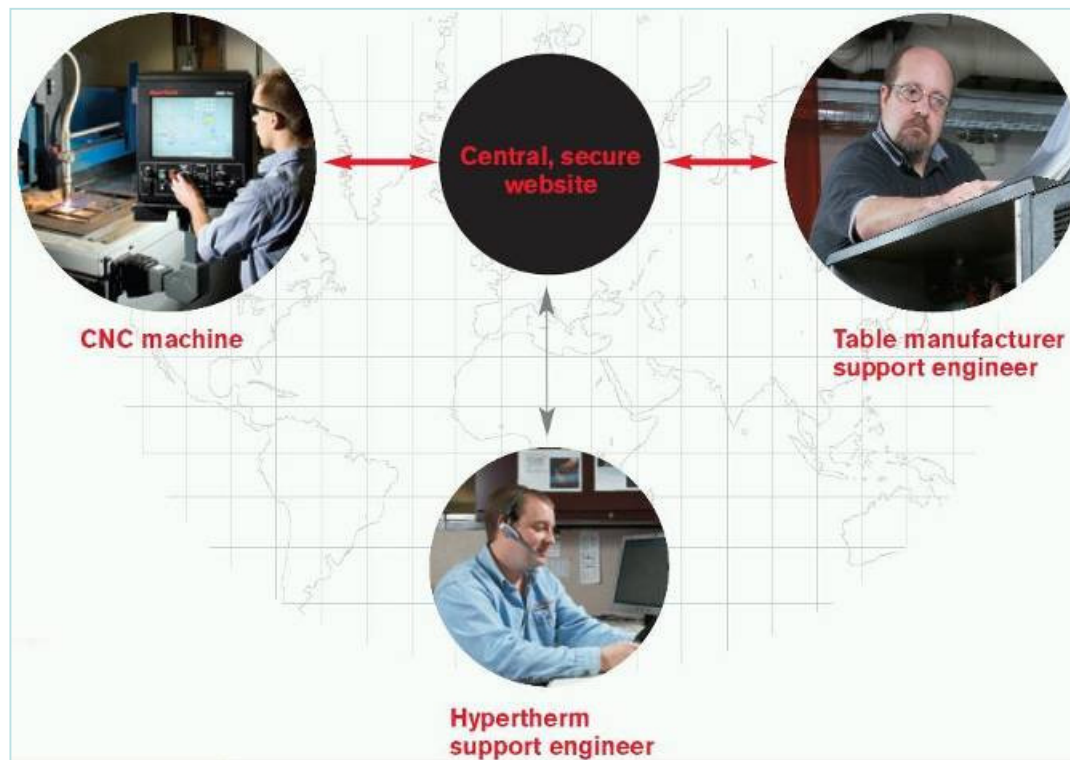
**Baykal**



# Remote Help Through the CNC

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- Remote help allows the BAYKAL and Hypertherm to be virtually in the end user's factory within minutes via the Internet
- Remote help can be leveraged for training and diagnostic support for part programs and all of the Hypertherm equipment on the cutting table

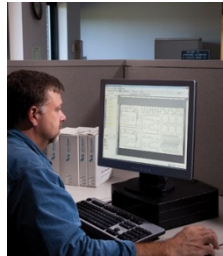


**Hypertherm®**

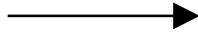
**Baykal**

# Full Suite Value Proposition

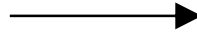
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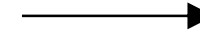
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HYPERTHERM CNC



ArcGlide THC



HPRXD systems

Hypertherm provides a **full suite of turn-key products** that make it easier to produce industry leading cutting solutions, win sales and satisfy BAYKAL customers.

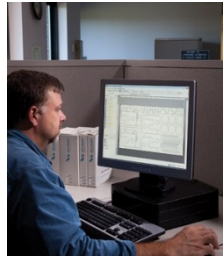
- Dramatic **improvement in hole quality**
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**Hypertherm®**

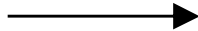
**Baykal**

# Full Suite Product Offering: BAYKAL Benefits

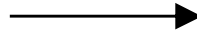
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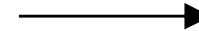
ProNest 2010



HYPERTHERM CNC



ArcGlide THC



HPRXD systems

**One-stop shopping** enables BAYKAL to consolidate suppliers and benefit from a strong partnership

- The software, CNC, THC, and plasma systems have been designed by one company to work together seamlessly; therefore, they are easy to integrate, sell, install, run, and support.
- Sales, service and training support provided by one supplier versus a multitude of different suppliers. This global support will be integrated across the entire product line and aligned with your overall strategy, eliminating finger pointing and bouncing back and forth between multiple suppliers.
- Hypertherm has industry leading market share and brand recognition.
- Hypertherm holds over 75 patents in plasma cutting and has a history of leading edge innovation. The full suite of products from Hypertherm ensures that you will have the highest performing technology available on the market.
- Maximize loyalty discounts by consolidating purchases with Hypertherm versus spreading them across multiple suppliers.

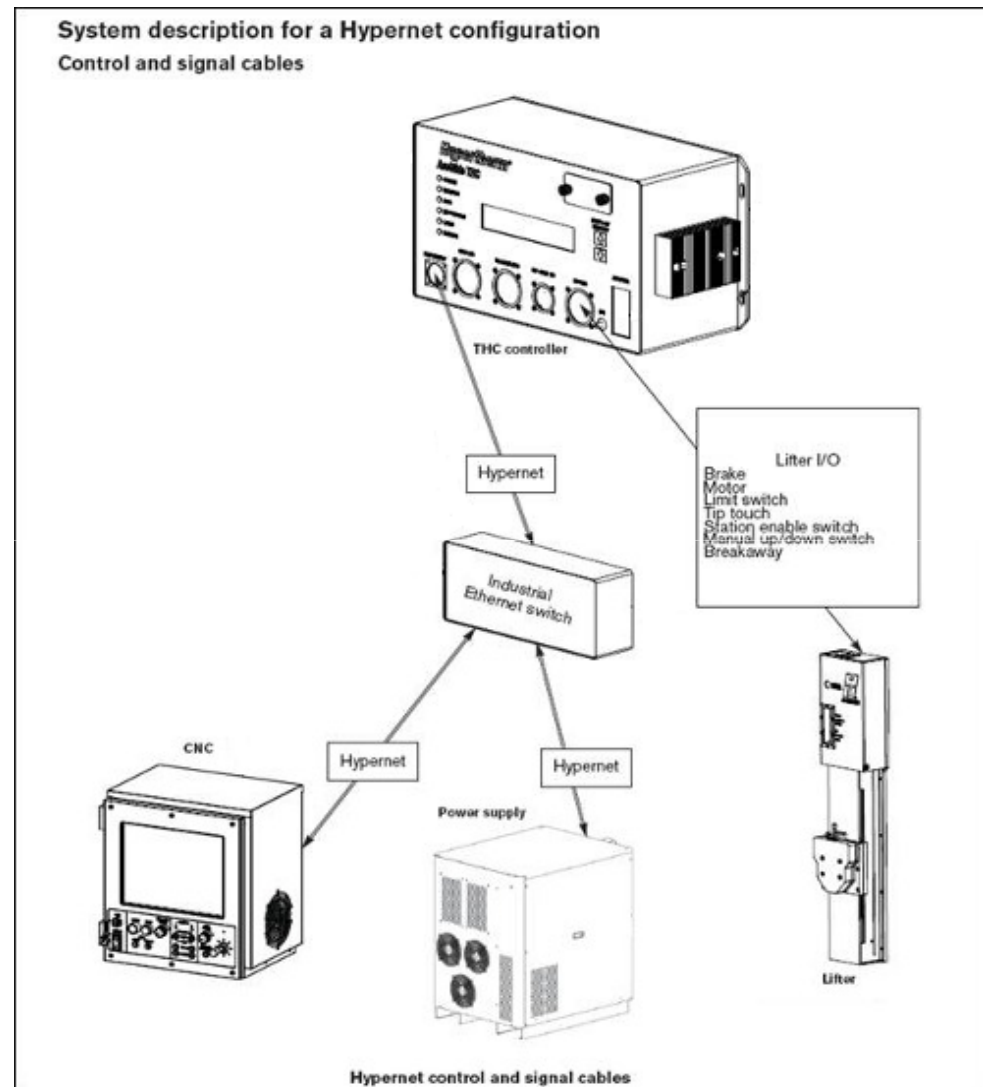
**Hypertherm®**

**Baykal**

# Full Suite Ease of Installation

Components of the Full Suite were designed for easy connection through the use of Hypernet<sup>®</sup>, a new interface that uses standard Ethernet cables

Hypernet also provides fast and easy connection for multiple torch applications



**Hypertherm<sup>®</sup>**

**Baykal**

# Full Suite Ease of Installation

For ArcGlide, the typical 4 cable connections have been consolidated into just 1 cable, using a color-coded system for easy identification

One end of the cable connects to the front of the ArcGlide; the other end connects to the top of the lifter



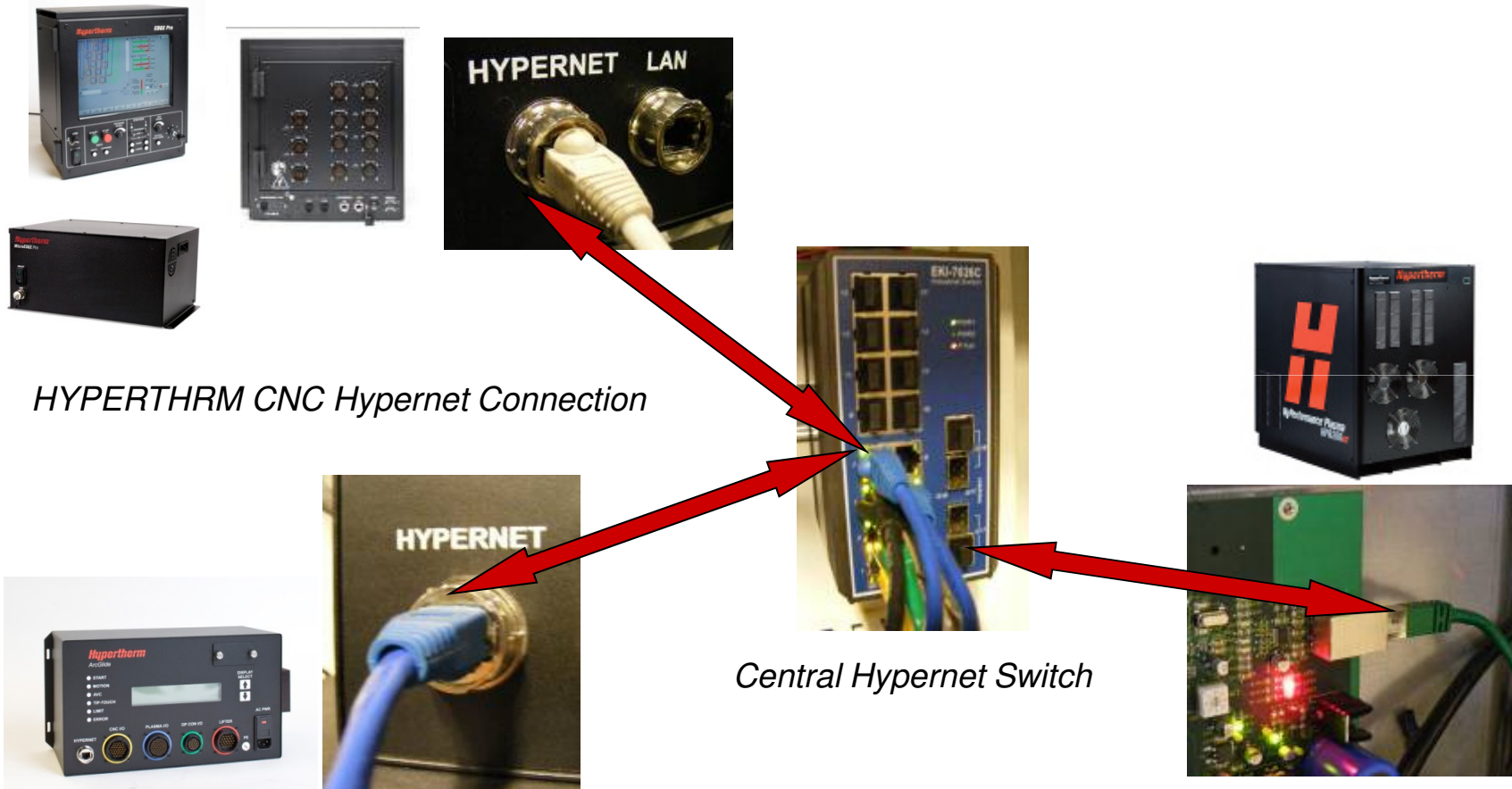
**Hypertherm®**

**Baykal**



# Full Suite Ease of Installation

Communication cables are easy to connect all components of Full Suite



*ArcGlide Hypernet Connection*

**Hypertherm**

*HPRXD Hypernet Communication  
(replaces serial connection)*

**Baykal**

# Full Suite Ease of Installation

---

HYPERTHERM CNC combined with ArcGlide drastically simplifies table setup:

- Takes minutes to connect
- Parameters are set automatically once an ArcGlide is assigned in the CNC, including:
  - Slide tuning for settings such as speed
  - Default parameters for optimal consumable life and cut-to-cut cycle time
  - Offsets for laser pointer
  - Diagnostic screens
- Simplified connection to multiple torches
  - Using a cleaner wiring system, two HPR systems talk directly to the torch, as opposed to previous serial communication from one power supply to another power supply
  - Table setup and troubleshooting much more robust and easier



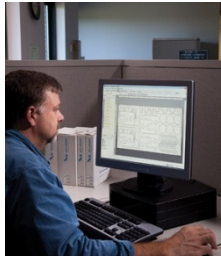
**Hypertherm®**

**Baykal**

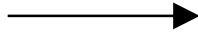


# Full Suite Value Proposition

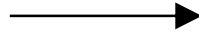
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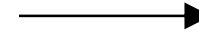
ProNest 2010



HYPERTHERM CNC



ArcGlide THC



HPRXD systems

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**Hypertherm®**

**Baykal**