



PythonX[™]
A Lincoln Electric Company

STRUCTURAL FABRICATION SYSTEM

MORE THAN A MACHINE



"We've increased our overall production by 100% since we got a PythonX. Now we do double the work with the same number of employees and the same floorspace."

- Fabricator from Alberta, Canada
PythonX™ #102



In Structural Steel Fabrication, the **Lowest Cost Per Ton Producer** usually wins.

But if you pay about the same as your competitor for steel and labour, how do you get the lowest cost per ton?

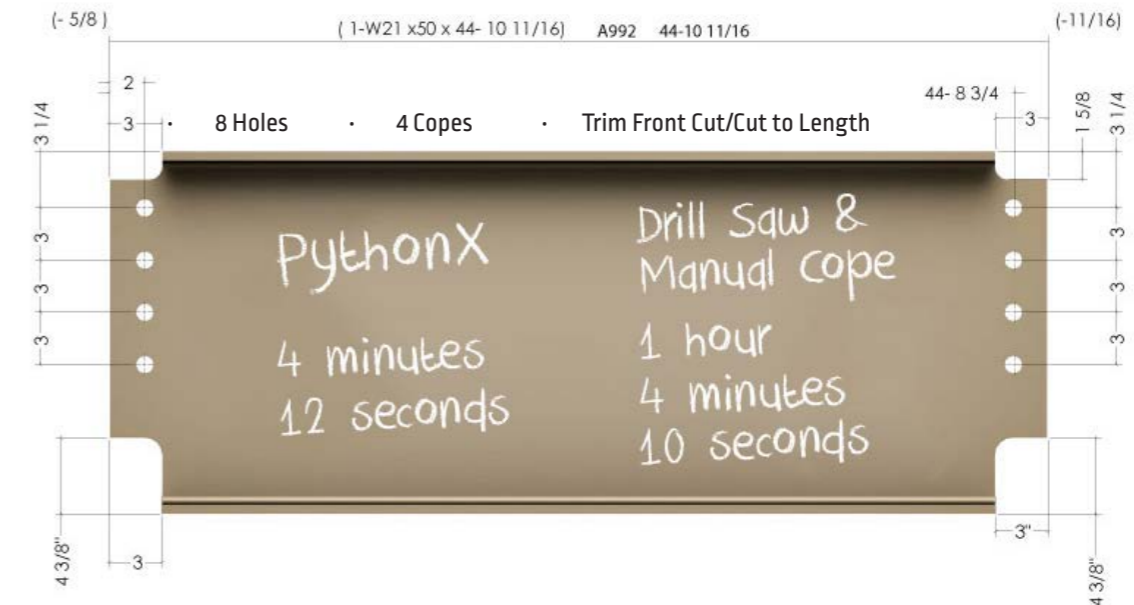
You Get Lean. PythonX™ is the lean machine that lets you do more with less:

- » Less Time Per Piece
- » Less Material Handling
- » Less Inventory
- » Less Waiting
- » Less Waste
- » Less Space
- » Less Overhead
- » Less Programming
- » Less Errors
- » Less Scrap

COMPARE BEAM MACHINES

THINK YOU ARE AUTOMATED WITH A DRILL & SAW??

Let's analyze a common beam in structural fabrication.



15 YEARS OF EXPERIENCE & OVER 250 MACHINES IN SERVICE WORLDWIDE

PythonX™ is the robotic CNC plasma cutting system that has revolutionized structural steel fabrication. More than a machine, PythonX™ has created a **NEW STANDARD** in the way you think about running a fabrication shop.

Compared to traditional machines, PythonX™:

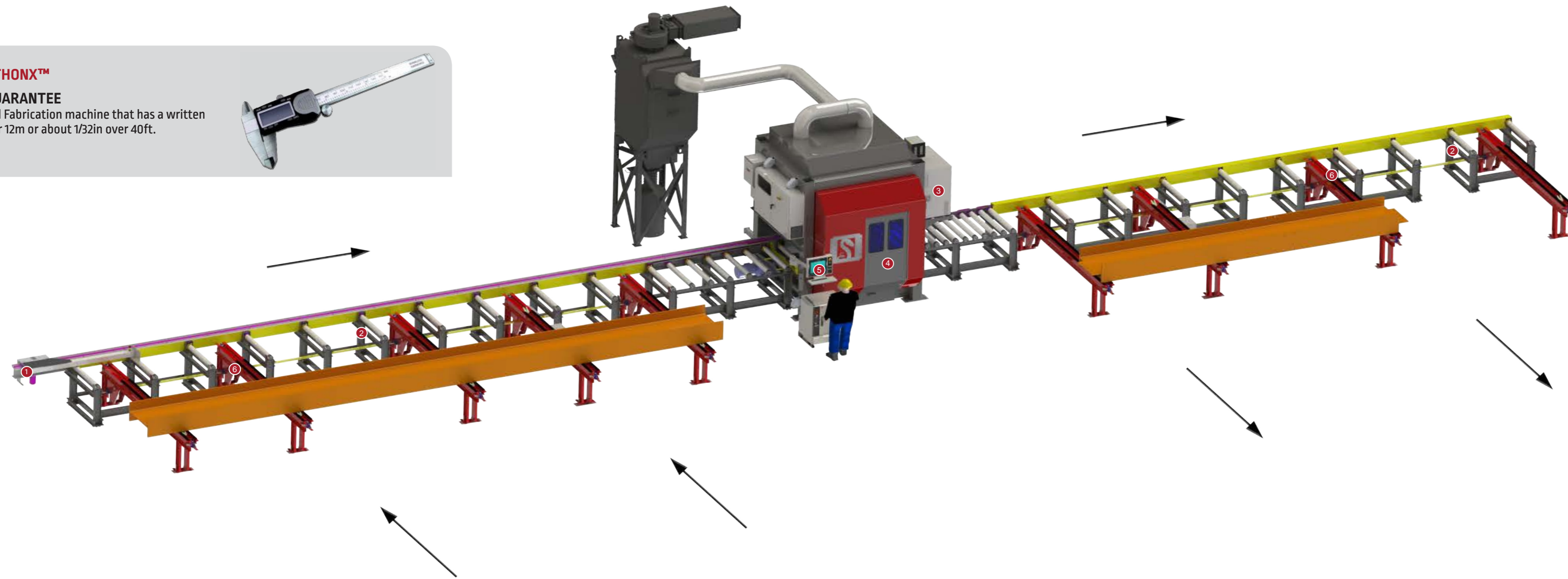
- » Uses Just 20% of the Floorspace
- » Needs Only 20% as Much Processing Time
- » Requires only One Operator and No Programming
- » Offers Complete Fabricating Capability for a fraction of the Price

PythonX™ users are processing steel at the lowest cost per ton in the following industries:

- » Buildings
- » Oil and Gas
- » Industrial
- » Mining
- » Off Shore Rigs
- » Pipe Racks
- » Transmission Towers
- » Stadiums
- » Elevators
- » Trailers
- » Shipbuilding
- » Bridges
- » Equipment Manufacturers

Machine Capability	Single Spindle Beam Drill Line	Three Spindle Beam Drill Line with Band Saw	PythonX™
Produces Quality Bolt Holes <small>(Approved for Structural Joints)</small>	YES	YES	YES
Maximum Hole Diameter	2 in (50mm)	2 in (50mm)	24 in (609mm)
Produce Layout Marks for Clips & Stiffeners	LIMITED	LIMITED	YES
Downloads from Design / Detailing Software <small>(TEKLA, SDS/2, StruCAD, ProSTEEL, AUTOCAD)</small>	YES	YES	ANY SHAPE
Time to Cut-to-Length one W24 x100	INCAPABLE	5 MINUTES	1 MIN 15 SEC
Automatic Part Handling <small>(set it and forget it)</small>	FLIP MANUALLY	YES	YES
Cut Copes with CNC Accuracy	INCAPABLE	INCAPABLE	YES
Make Cutouts for Bracing & Knife Connections	INCAPABLE	INCAPABLE	YES
Text Scribing <small>(any size)</small>	INCAPABLE	INCAPABLE	YES
Fabricate Complete Stair Stringers <small>(including Tread Layout)</small>	INCAPABLE	INCAPABLE	YES
Miter Cut	INCAPABLE	COSTLY OPTION	YES
Cut Slots & Any Other Shapes	INCAPABLE	INCAPABLE	YES
Weld Prep Bevel Cut	INCAPABLE	INCAPABLE	YES
Rip I-Beams into T-Beams	INCAPABLE	INCAPABLE	YES
Tool Change Required	YES	YES	NEVER
Overall Production Output	SLOW	AVERAGE	FASTEST
Price	LOWEST	HIGHEST	MID RANGE

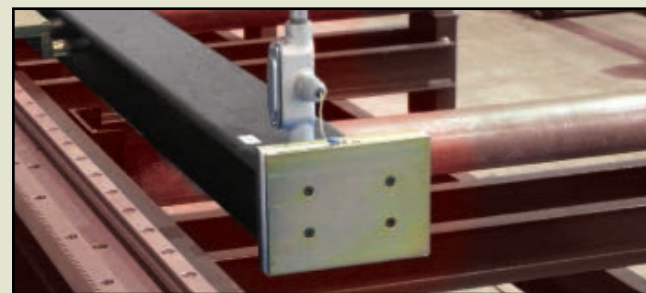
ONLY AVAILABLE WITH PYTHONX™
1mm ≈ 1/32in - ACCURACY GUARANTEE
 PythonX™ is the only Structural Fabrication machine that has a written guarantee of 1mm accuracy over 12m or about 1/32in over 40ft.



A single PythonX™ machine replaces all traditional equipment:

- » Beam Drill Line
- » Bandsaw
- » Coping Machine/Torch
- » Angle Line
- » Plate/Bar Line
- » Marking Machine

1. MEASURING CART



The measuring cart relays the exact position of the work piece to the robot.

- Superior accuracy and measurement compared to pinch roll systems, which can slip
- Initially measures and displays the full length of the beam, which is not possible on pinch roll systems

2. INFEED/OUTFEED CONVEYORS



Precision machined rollers with no flat spots for ultimate accuracy.

- 4in[101.6mm] diameter on heavy duty welded frames
- Built to last with oversized 75hp motors, compared to most others using 2.0hp

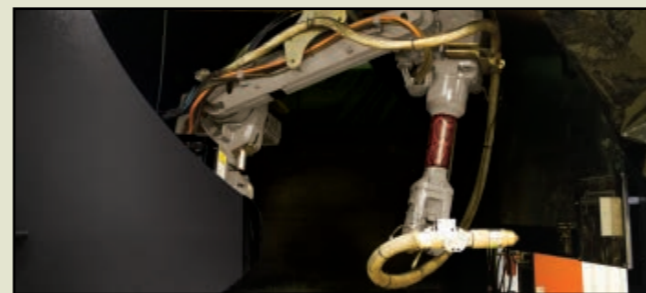
3. HIGH DEFINITION TORCH



High Definition Plasma technology aligns and focuses the plasma arc, improving arc stability and energy for more powerful precision cutting.

- Completely automatic gas and kerf control
- **PATENTED** hole taper compensation and advanced bevel tuning

4. MULTI-AXIS ROBOTIC ARM



Tuned twice for absolute best in class accuracy and least cut-path following error.

- Complete with collision detection
- Stronger with a higher payload, further reducing vibration and sway

5. OPERATOR CONTROL SYSTEM



Versafab Studio is the most advanced robotic plasma cutting software ever with over 15 years in development.

- Touchscreen industrial PC
- Networked
- Upgradeable

6. CROSS TRANSFERS



Accumulate and transfer material for Infeed and Outfeed conveyors. (Optional feature)

- Reduces material handling, increases output
- Heavy duty motor and gear reducer controlled by a variable frequency drive
- Separate Operator Station

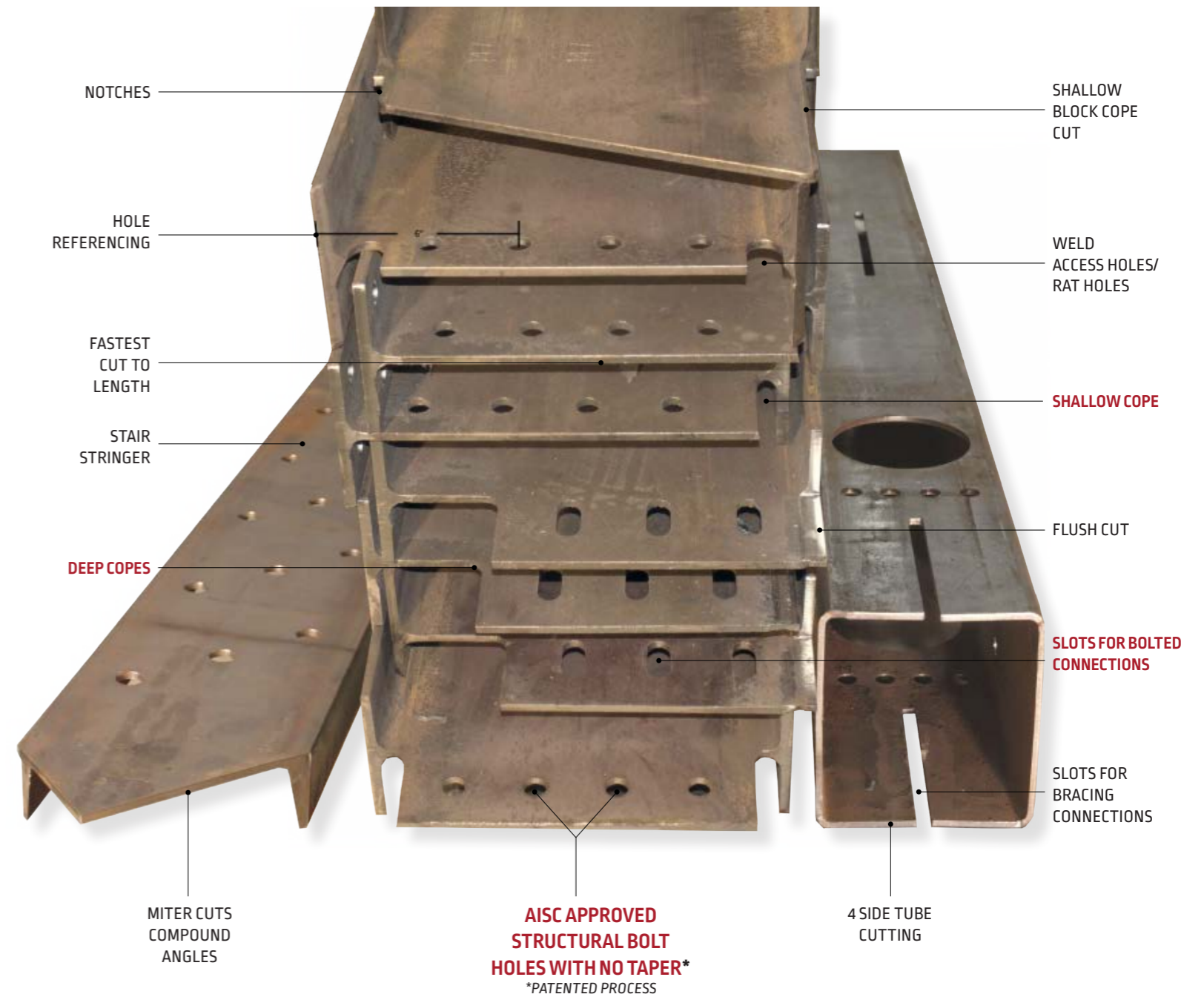


"Some of our competitors do not bid on jobs if we are on the bidder's list because they know we have a PythonX. They think bidding on the job will just be a waste of time."
 - Structural Fabricator Ontario, Canada
 PythonX™ # 23

MATERIAL CAPACITY



CUTTING CAPABILITIES



PART LENGTH:

A standard system accommodates 40ft [12m] lengths. Can increase up to 80ft [24m] by increments of 4ft [1.2m] at a time.

MATERIAL THICKNESS:

Max pierce thickness is 1.5in [38 mm];
Edge start max thickness is 2in [51mm],
Upgrade Available: 2in [51 mm] pierce, 3in [75 mm] edge

OTHER MATERIALS:

Bulb, Flatbar, Strip Plate, Aluminum, Stainless

	Minimum Capacity		Maximum Capacity	
	Width in (mm)	Height in (mm)	Width in (mm)	Height in (mm)
BEAM	4 [101]	4 [101]	48 [1219]	18 [457]
CHANNEL	3 [76]	1 [25]	36 [914]	4 [101]
HSS TUBE	2 [51]	1 [25]	12 [308]	18 [457]
ANGLE	2 [51]	2 [51]	10 [254]	10 [254]

*36in[914mm] is standard and most popular size. 48in[1219mm] is an upgrade

WELD PREP BEVEL ANGLES

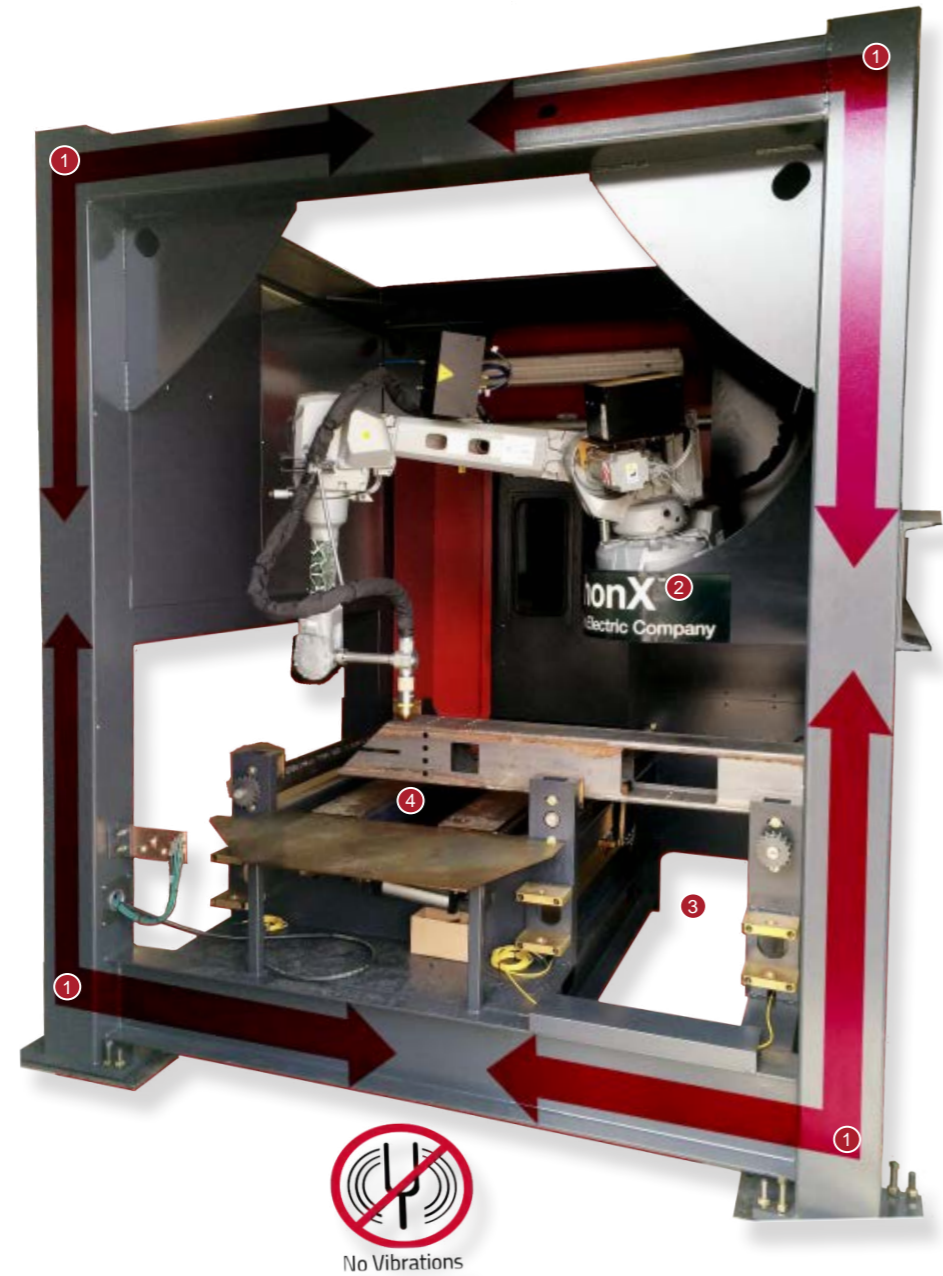


PART MARKING/SCRIBING



BEAM SPLIT





1. **ONE PIECE WELDED BOX FRAME**
Heavy, strong and designed to be extremely rigid. The uni-body welded frame provides the most stable vibration free foundation for the cutting system.
2. **FIXED STATIONARY ROBOT BASE**
A fixed non-moving base welded to the box frame lets the PythonX™ use only the robot motion to perform cutting. There are no additional axes of motion which add vibration, backlash and sway leading to poor cut quality.
3. **UNDERSIDE CUTTING**
The underside cuts are performed in a separate zone where no scrap pieces fall and no crash can occur.
4. **CUTS AND SEVER**
All sever operations occur in this zone, which allows ample room for endcuts and scrap to accumulate without having to worry about crashes since no underside cutting is performed here.

Poor hole quality and cut finish can lead to failed inspections, lost jobs and a damaged reputation. Due to its stable, stationary base the PythonX™ pioneered robotic plasma hole technology and has been producing the undisputed best bolt holes and cuts in the industry for many years. The bolt holes have been lab tested and AISC approved.

	PythonX™	Competitors
<p>BEST BOLT HOLES</p> <p>PythonX™ automatically tilts the cutting torch using a patented process resulting in a perfectly straight through hole with NO TAPER.</p>		
<p>SLOTS</p> <p>PythonX™ cuts slots and other shapes to the exact specified dimensions allowing for perfect fitup.</p>		
<p>COPEES</p> <p>Copes are produced with a mirror like finish and a smooth corner radius on the PythonX™. No touch-up is required.</p>		
<p>NOTCHES</p> <p>Notches, cutouts and flush cuts are smooth and do not require additional grinding or shaping. A perfect fitup also results in less welding.</p>		



"We paid off the machine on one large job."

- Fabricator in Texas, USA
PythonX™ #176

REFINED FEATURES ON PYTHONX™ II

After years of field testing, the new PythonX™ II machine is faster, more accurate and more reliable, further strengthening it as the #1 choice with structural steel fabricators.

1. 4-SIDE TUBE CUTTING WITH BEVEL/MITER

With one stationary robotic arm the machine cuts the underside of square or rectangular tubes and processes all 4 sides in 1 error free pass. The first and only robotic plasma to achieve 4 side cutting without mounting the robot on a moving or rotational base, which greatly sacrifices cut quality.

2. PART TABBING

Part tabbing allows for shorter structural steel parts to remain attached to the main beam for easier handling and storage. The type of tab and tab length is programmable by the operator.



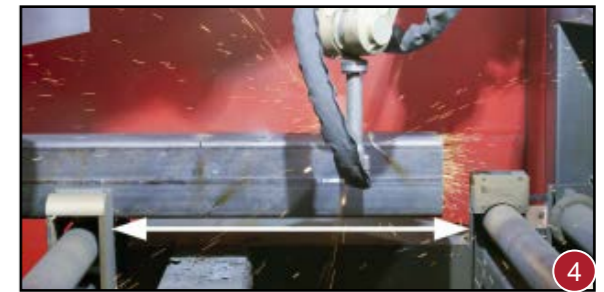
3. SHORTER PIECE TRANSFER

Advanced software combined with closer roller spacing allows for short parts to be transferred from the cutting area after a cut to length operation.

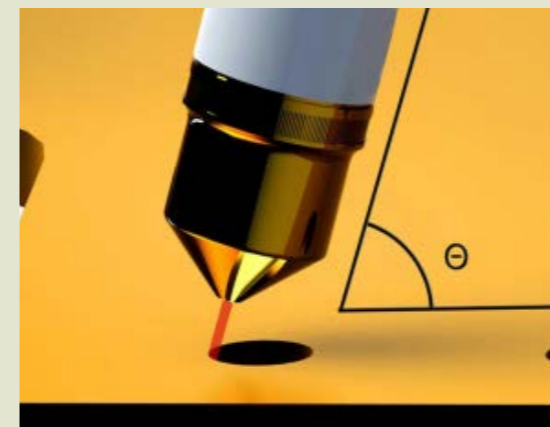


4. LARGER WORK ENVELOPE

Expanded robot cutting area allows for more features to be cut at once, reducing material indexing, leading to even lower total time per piece.

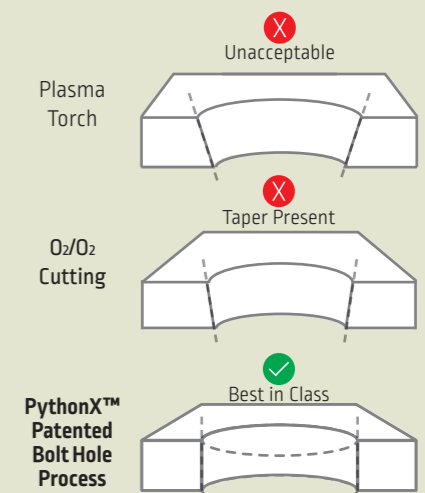


ONLY AVAILABLE WITH PYTHONX™



PATENTED BOLT HOLE PROCESS

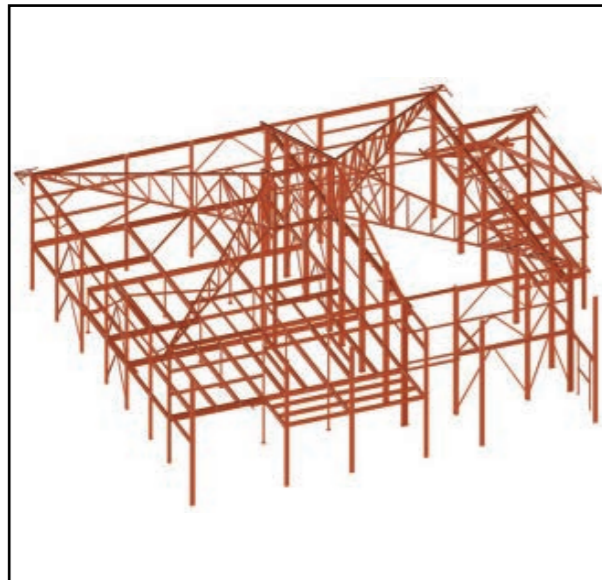
PythonX™ tilts the torch, instantaneously changes speeds and uses sophisticated software to produce straight through holes with **NO TAPER**





EASY AS 1, 2, 3 WITH PYTHONX™
Advanced CNC robotics and high-definition plasma cutting, equipped with software so sophisticated it programs all the cuts by itself.

1 LOAD THE WORKPIECE
Load piece on the infeed conveyor. The measuring cart shuttles the work piece into the work envelope, measures and displays the length of the piece on the operator screen.



2 OPEN A PART FILE
The PythonX™ is capable of reading DSTV files from 3D detailing software such as TEKLA, SDS/2, AceCAD, ProSTEEL and others. 2D DXF AutoCAD files can also be read by the PythonX™.



3 PRESS START
The PythonX™ takes it from here by identifying all the features and dimensions required and generates the cut sequence. The pieces are probed to determine exact position and the robot automatically adjusts to the exact dimensions. After completion, the part is shuttled out on the outfeed conveyor for transfer to fitup, welding and painting.

W16x31 Structural Building - VersaFAB Studio (Off Line Version) - [Run]

File View Plasma Unit Tools Help

Run Part View Plasma Unit Manual Settings

	Status	Size	Probe	Stop	Position	Face	Category
1	Pending	Face	First		3 3/16"	Top	Hole (1")
2	Pending		First		4 3/4"	Top	Hole (1")
3	Pending		First		6 1/16"	Top	Hole (1")
4	Pending		F/L		2 1/8"	Top	Front Multi Point Cut Off
5	Pending	Both	F/L		10 1/8"	Left	Front Cut Off
6	Pending	Both	First		3 3/8"	Right	Hole (1")
7	Pending		First		3 3/8"	Right	Hole (1")
8	Pending		F/L		1 1/2"	Right	Front Cut Off
9	Pending	Face	F/L		41'-9 9/16"	Top	Rear Cut Off
10	Pending	Face	F/L		41'-9 9/16"	Left	Rear Cut Off
11	Pending	Face	F/L		41'-9 9/16"	Right	Rear Cut Off

Job Information

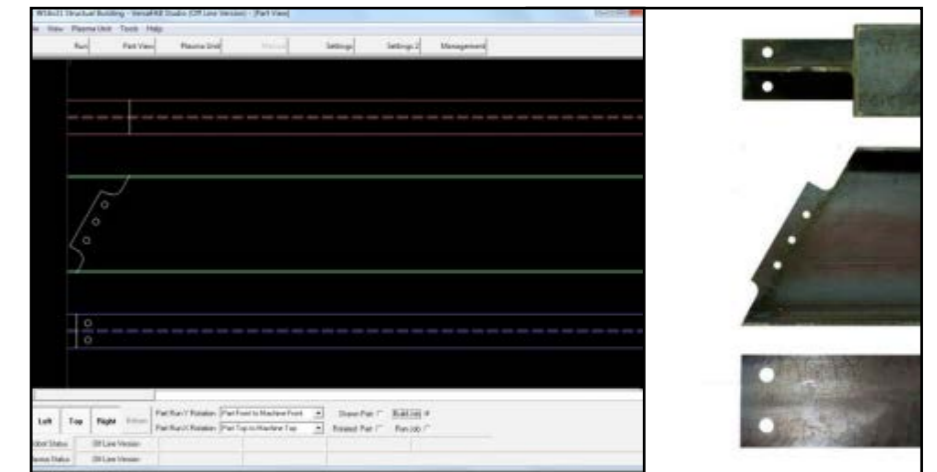
Name: W16x31
Material:
Profile: Wide Flange
Orientation:
Top: 1'-3 7/8"
Left-Right: 5 1/2"
Length: 41'-9 9/16"

VERSAFAB SOFTWARE

The PythonX™ is managed and controlled by the state of the art VersaFAB Studio operating system. All machine functions, part programming/loading, and alarms are controlled by the software. VersaFAB Studio interprets part data from design detailing packages and instantly creates the sequence of cutting operations which are sent to the machine.

There is no programming required.

There are many options for downloading machine code directly from design drawing packages such as TEKLA XSTEEL, SDS/2, PROSTEEL, STRUCAD, ADVANCE STEEL and others through DSTV files. The machine can even take in AUTOCAD drawings through DXF files. Versafab studio comes with **reporting** software, **nesting** software and options for offline viewing of parts and files.



The only capital equipment that gets better the longer you own it. Software and functionality upgrades keep your PythonX™ current and on the leading edge with new features and functions so you don't have to buy a new machine every few years.

"I can't believe we've seen a substantial increase in profit even in this market."

- Fabricator in California, USA
PythonX™ #156

RETURN ON INVESTMENT

HOW LONG TO FABRICATE THIS BEAM IN YOUR SHOP?

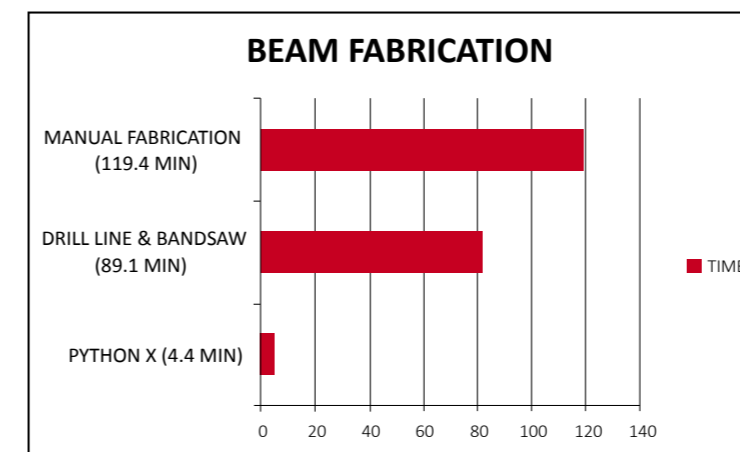
4 MINUTES 26 SECONDS

Total time it took PythonX™ to make all these features, start to finish, with unmatched location accuracy.

How does traditional fabrication compare?

Not too well. Considering time needed for reading the drawing, measuring/marking the piece, and actually making the cuts, this same beam took 89 minutes in a shop using a combination CNC drill line/bandsaw unit and manual coping/torching. It took two hours in an all-manual shop. And in those cases, time to move the beam between operations wasn't counted in the total.

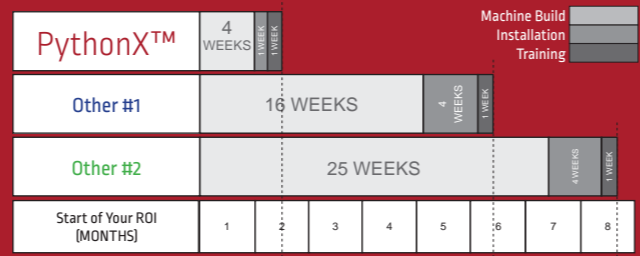
The chart on the left shows where time was consumed. Or, with PythonX™, where it was saved.





4 WEEKS DELIVERY

Machine starts paying for itself 4 to 6 months sooner than others; Results in the fastest return on investment (ROI).



SERVICE COMMITMENT

Our expert trained technicians are committed to helping you by providing:

- A single focus and dedication to the only system that we build, the PythonX™
- 24/7 access to support specialists
- Remote access control with online diagnostics
- Advanced troubleshooting techniques and procedures
- Sophisticated Service tracking system and logging

BECOME THE LOWEST COST STRUCTURAL FABRICATOR



ONLY AVAILABLE WITH PYTHONX™

LONGEST WARRANTY

Have peace of mind with the industry leading and most comprehensive warranty; PythonX™ offers 3 years.



BURLINGTON AUTOMATION

Burlington Automation, a Lincoln Electric Company, is focused on applying LEAN Manufacturing and Automation Principles to structural steel industries through the implementation of the PythonX™ Structural Fabrication System. The drive to improve the capabilities of our clients, to ensure they are better than their competitors, is a Passion our employees embrace every day. We are dedicated to making our clients as good as they can be, better tomorrow than today, by committing to continued Research and Development, providing value added industry leading Upgrades as well as Real-Time & Interactive Remote Support on the PythonX™ system.



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CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

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