STRUCTURAL STEEL FABRICATION SYSTEM

LINCOLN ELECTRIC

"We've been able to pass along to our customers the savings of reduced time in the shop, so we're getting more jobs because we've been able to reduce our operating costs."

- Bob Reiman, **Anderson Steel**
Great Falls, MT, USA

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

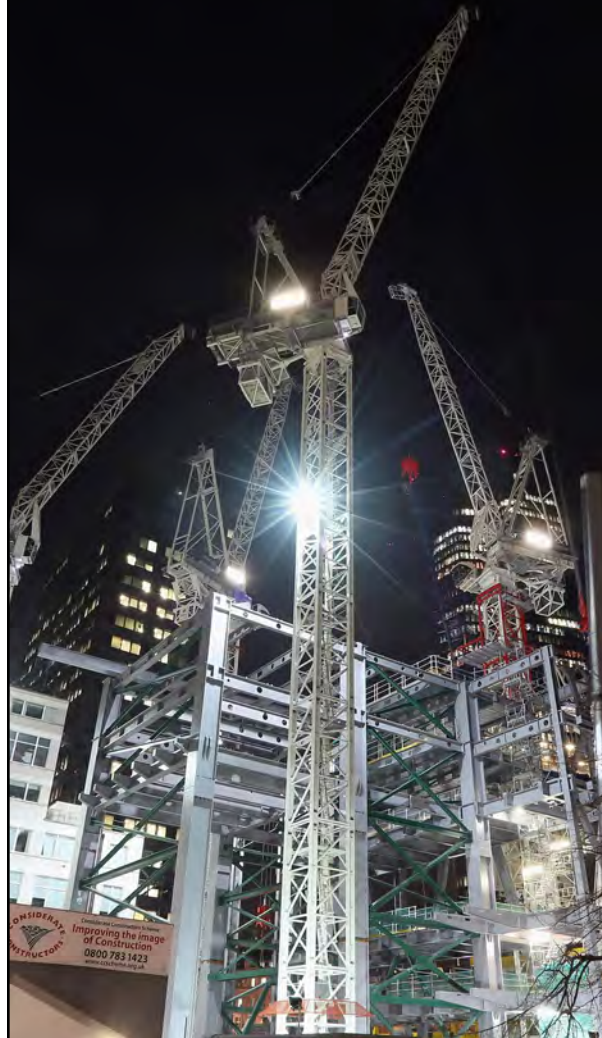But if you pay about the same as your competitor for steel and labor, how do you get the lowest cost per ton?

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**

15 YEARS OF EXPERIENCE & OVER 300 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 a fraction of the floorspace**

» **Needs only a fraction of processing time**

» **Requires only One Operator and No Programming**

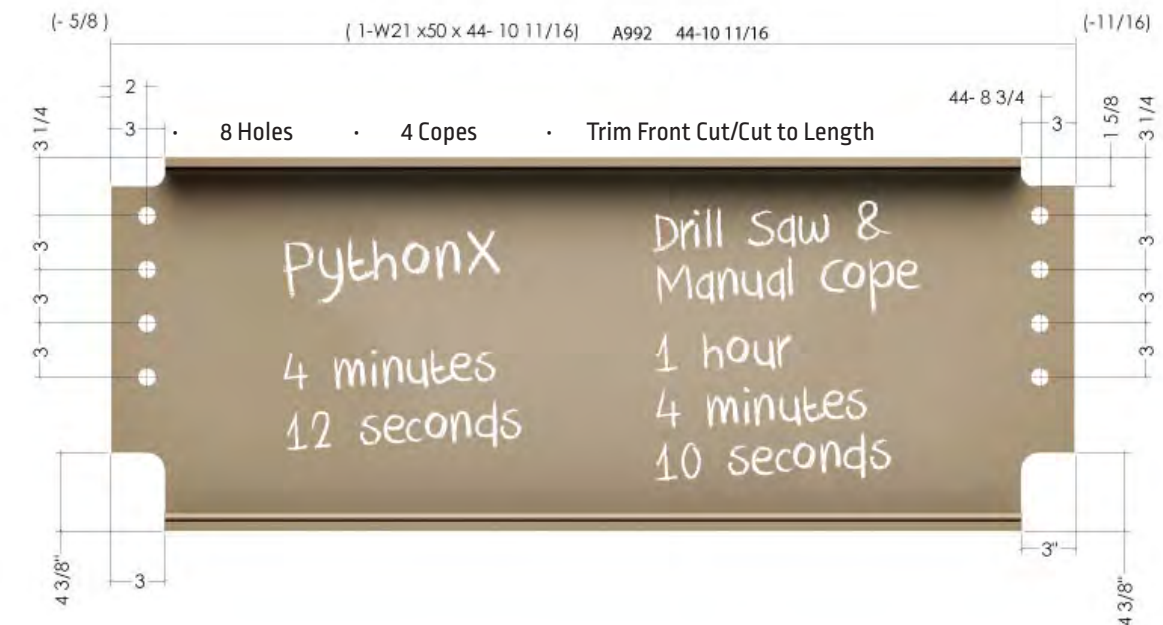» **Offers complete fabricating capability for a fraction of the price**

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

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

THINK YOU ARE AUTOMATED WITH A DRILL & SAW?
Let's analyze a common beam in structural fabrication.

- 8 Holes · 4 Copes · Trim Front Cut/Cut to Length

PythonX
4 minutes 12 seconds

Drill Saw & Manual cope
1 hour 4 minutes 10 seconds

HOW LONG TO FABRICATE THIS BEAM IN YOUR SHOP?

. 13 Bolt Holes
. 3 Slots
. 3 Copes
. Web Trim
. 9 Letter Piece Marks
. Miter Cut/Trim
. Flange Notch
. 2 Flush Flange Cuts
. 4 Layout Marks
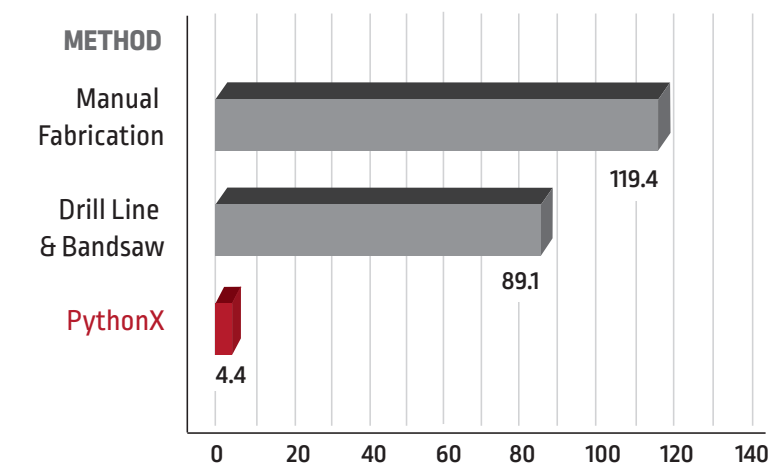
4 MINUTES 26 SECONDS

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.

METHOD

Manual Fabrication	119.4
Drill Line & Bandsaw	89.1
PythonX	4.4

0   20   40   60   80   100   120   140
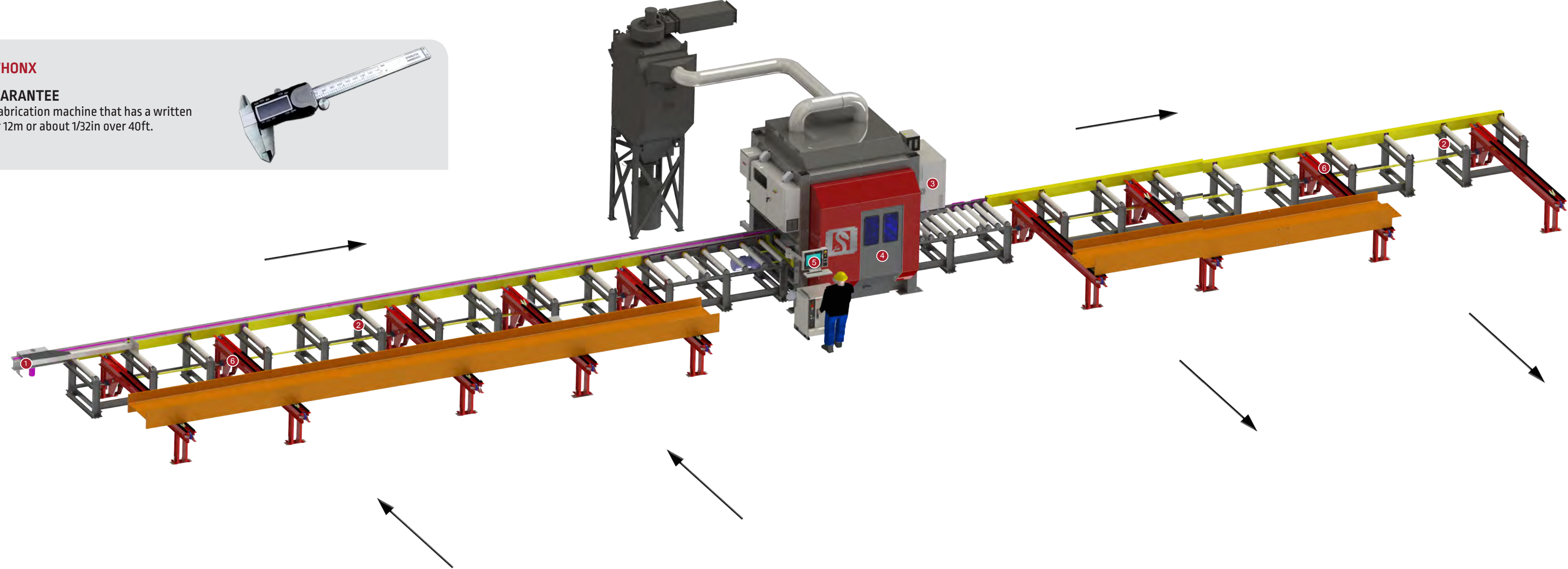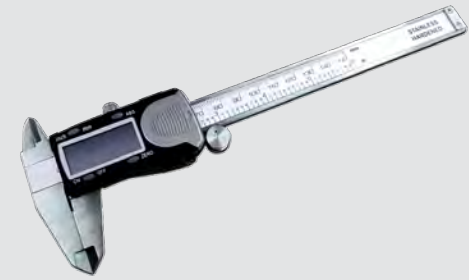
A single **PythonX** machine replaces all traditional equipment:

- » 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
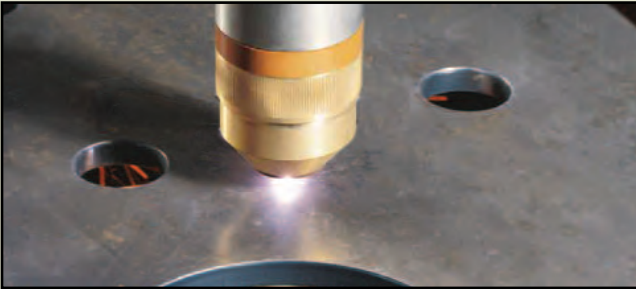
2. INFEED/OUTFEED CONVEYORS

Precision machined rollers with no flat spots for ultimate accuracy.

- · 4in (101.6mm) diameter on heavy duty welded frames
- · Built to last with oversized 7.5hp motors, compared to most others using 2.0hp
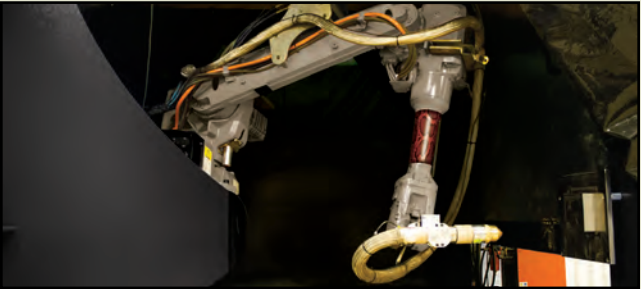
3. HIGH DEFINITION TORCH

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. NEW! OPERATOR CONTROL SYSTEM

New features and capabilities let you get more done, more quickly and easily.

- · 24in (60.96 cm) HMI with ergonomic/industrial designed handles that allow ease of movement into optimum positions for any Operator.
- · Intuitive touch screen

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

> "PythonX has made us more competitive. We are able to take on larger projects with a decreased margin of error. And because errors are costly, that has also increased our margins on structural projects."
>
> - Paul David Stehl, **Stehl Corporation**
> Phoenix, AZ, USA

NOTCHES

HOLE REFERENCING

FASTEST CUT TO LENGTH

STAIR STRINGER

DEEP COPES

MITER CUTS COMPOUND ANGLES

AISC COMPLIANT NEARLY TAPERLESS* STRUCTURAL BOLT HOLES
*PATENTED PROCESS

SHALLOW BLOCK COPE CUT

WELD ACCESS HOLES/ RAT HOLES

SHALLOW COPE

FLUSH CUT

SLOTS FOR BOLTED CONNECTIONS

SLOTS FOR BRACING CONNECTIONS

4 SIDE TUBE CUTTING

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 (50 mm) pierce, 3in (75 mm) edge

OTHER MATERIALS:
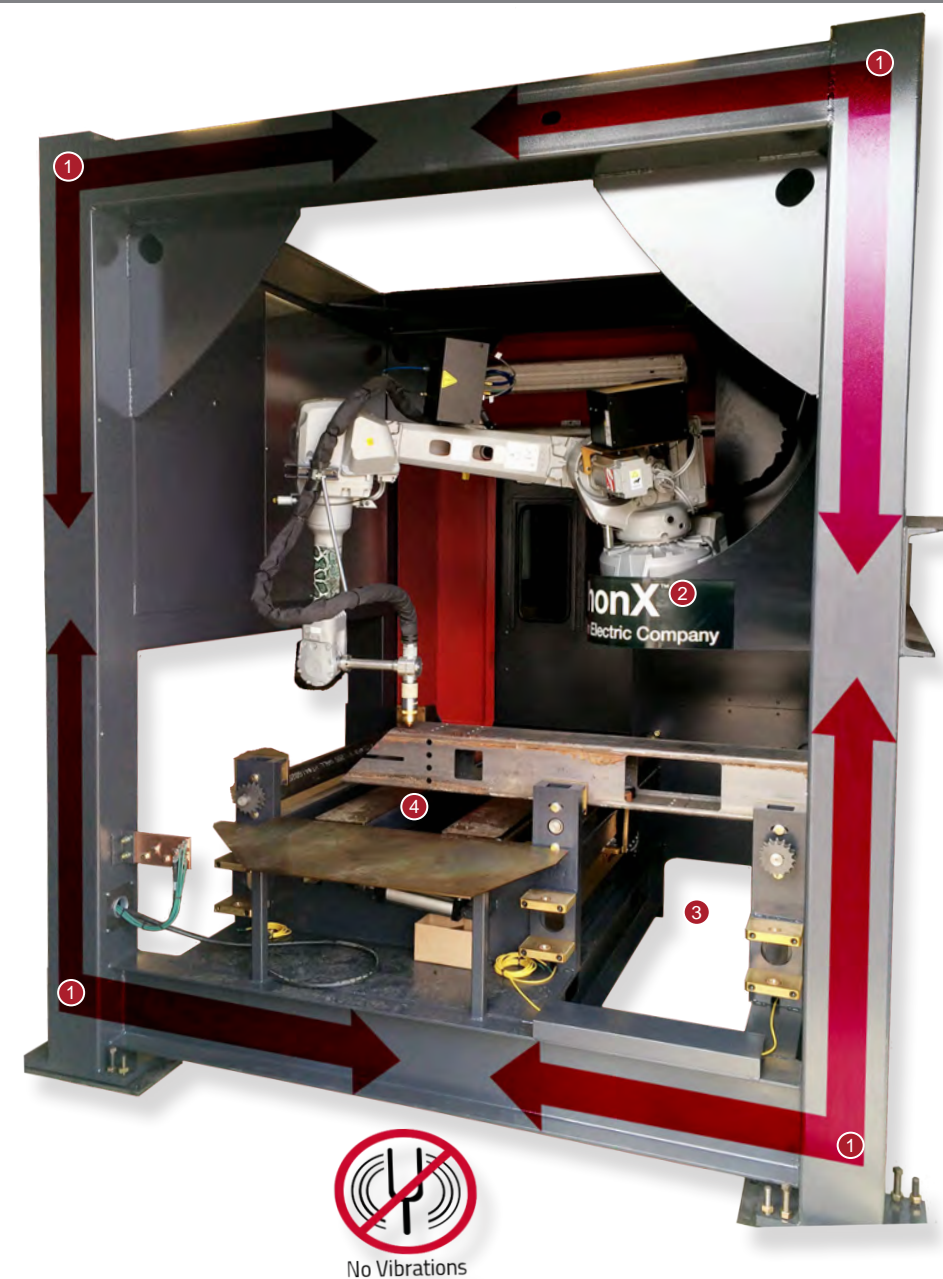Bulb, Flatbar, Strip Plate, Aluminum, Stainless
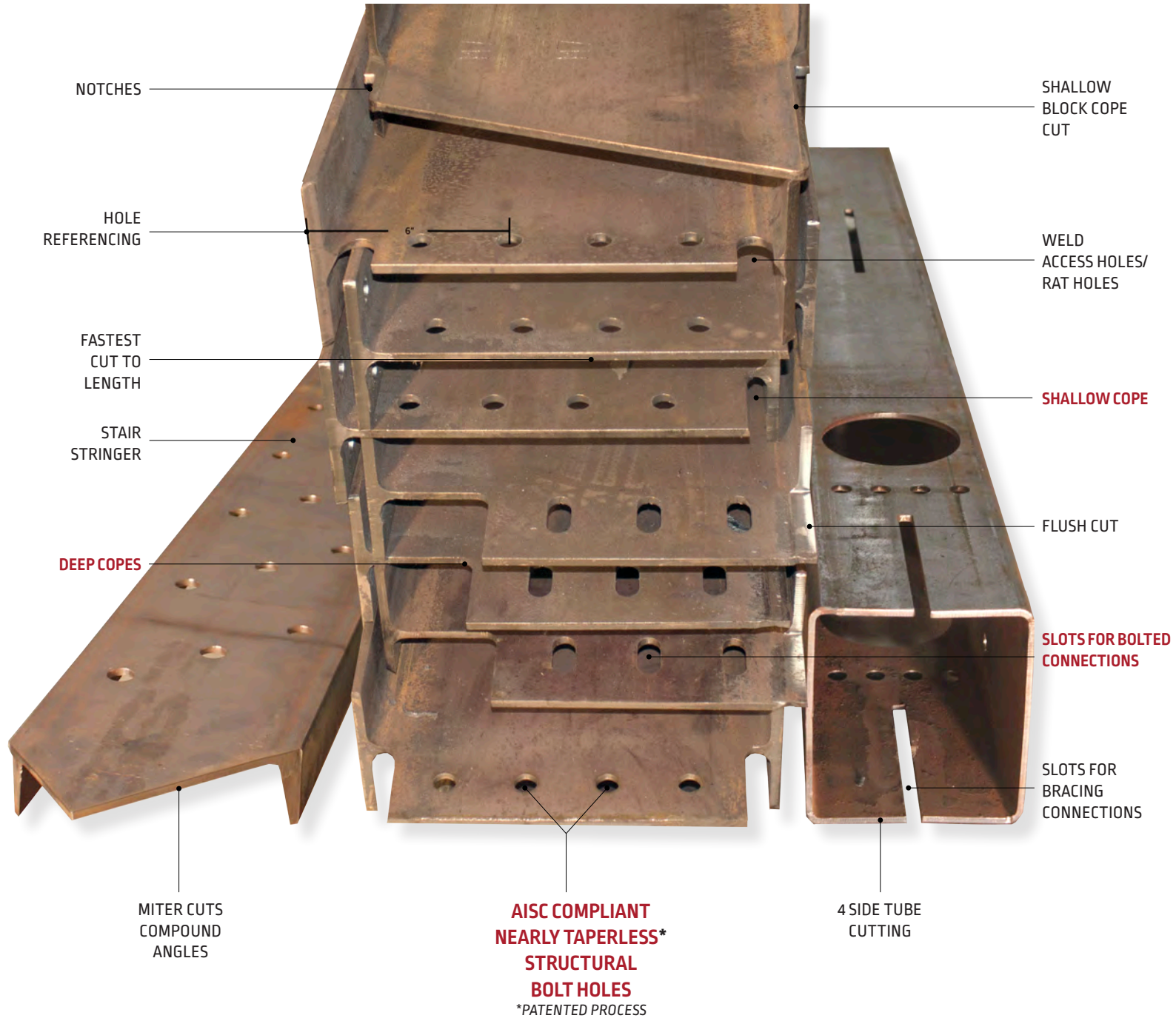
	Minimum Capacity		Maximum Capacity	
	Width in (mm)	Height in (mm)	Width in (mm)	Height in (mm)
BEAM	4 (101)	4 (101)	48 (1219)	18 (457)
CHANNEL	3 (76)	1 (25)	36 (914)	4 (101)
HSS TUBE	2 (51)	1 (25)	12 (308)	18 (457)
ANGLE	2 (51)	2 (51)	10 (254)	10 (254)
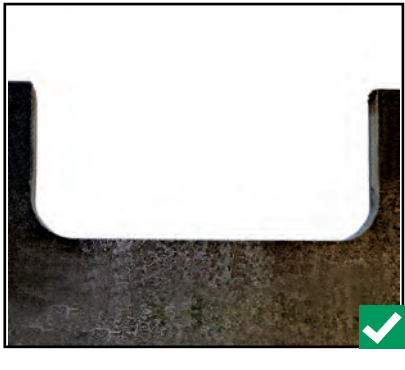
*36in (914mm) is standard and most popular size. 48in (1219mm) is an upgrade

WELD PREP BEVEL ANGLES

PART MARKING/SCRIBNG

BEAM SPLIT
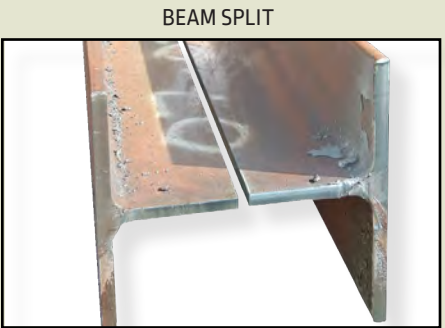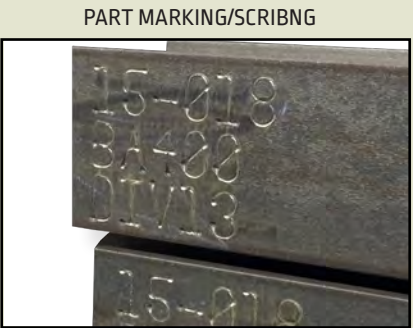
No Vibrations

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 compliant.

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

After years of field testing, the **PythonX** Structural Steel Fabrication System 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.
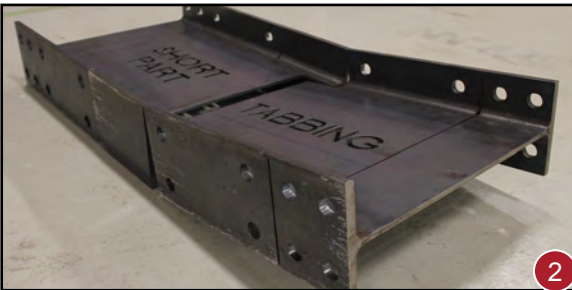
3. SHORTER PIECE TRANSFER
Advanced software combined with closer roller spacing allows for short parts to be transferred from the cutting area after a cut to length operation.

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.
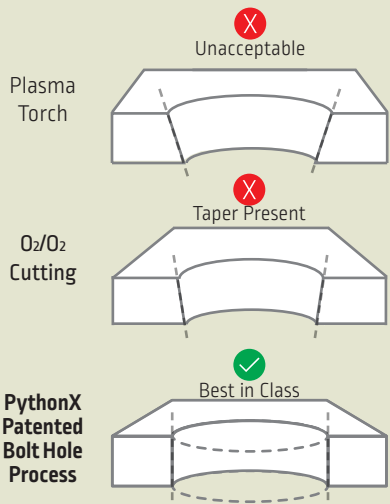
ONLY AVAILABLE WITH PYTHONX

PATENTED BOLT HOLE PROCESS

PythonX tilts the torch, instantaneously changes speeds and uses sophisticated software to produce straight through holes that are **NEARLY TAPERLESS.**

Plasma Torch — Unacceptable

O_2/O_2 Cutting — Taper Present

PythonX Patented Bolt Hole Process — Best in Class

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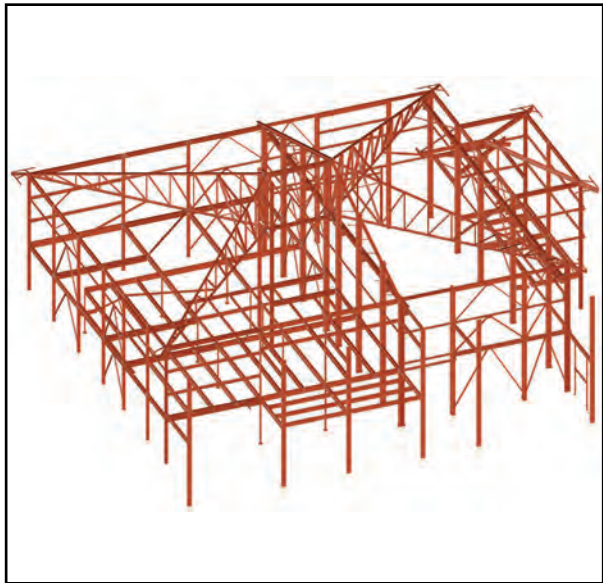
2 OPEN A PART FILE
The **PythonX** is capable of reading DSTV files from 3D detailing software such as TEKLA, SDS/2, AceCAD, ProSTEEL and others. 2D DXF AutoCAD files can also be read by the **PythonX.**

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.

A new standard for what is already the world's most advanced structural steel fabrication system. It makes PythonX better than before. It makes PythonX more capable than ever. And now it opens up amazing possibilities for your structural steel fabrication business. PythonX is the most PROFITABLE, powerful, productive and time saving equipment that you will ever own.

FEATURES

- 24in (60.96 cm) Operator Control System with ergonomic/industrial designed handles that allow ease of movement into optimum positions for any Operator
- 3D Part visualization with our NEW intuitive touch screen
- Rotate, zoom in and out of cut features with the touch of your fingers
- Tool Path Simulations further enhancing our collision avoidance portfolio
- Consumable Arc and Start Display and Monitoring that helps to ensure optimum cut quality
- Production Queue display that shows a Production Run in sequence
- Production Reporting
- Laser Measuring
- Regularly scheduled release of software enhancements and NEW innovations

New features and capabilites let you get more done, more quickly and easily, making the PythonX phenomenally powerful. Now more than ever, PythonX is the single most important **PROFIT CENTER** for any Fabricator.

Machine Capability	Single Spindle Beam Drill Line	Three Spindle Beam Drill Line with Band Saw	PythonX
Produces Quality Bolt Holes (Approved for Structural Joints)	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 (TEKLA, SDS/2, StruCAD, ProSTEEL, AUTOCAD)	YES	YES	ANY SHAPE
Time to Cut-to-Length one W24 x100	INCAPABLE	5 MINUTES	1 MIN 15 SEC
Automatic Part Handling (set it and forget it)	FLIP MANUALLY	YES	YES
Cut Copes with CNC Accuracy	INCAPABLE	INCAPABLE	YES
Make Cutouts for Bracing & Knife Connections	INCAPABLE	INCAPABLE	YES
Text Scribing (any size)	INCAPABLE	INCAPABLE	YES
Fabricate Complete Stair Stringers (including Tread Layout)	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

PythonX
A Lincoln Electric Company

4 WEEKS DELIVERY

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

		Machine Build
PythonX	4 WEEKS	Installation
		Training
Other #1	16 WEEKS	4 WEEKS
Other #2	25 WEEKS	
Start of Your ROI (MONTHS)	1 2 3 4 5 6 7 8	

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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