



ENDEAVOUR

Automatic CNC lines for drilling, milling, marking, sawing and coping for beams, channels and flats





ENDEAVOUR BEAM PROCESSING LINES



ENDEAVOUR



The latest in beam processing

Endeavour is the newest family of three spindle drilling lines from Ficep for the processing of both large and small structural sections. The Endeavour features the latest in technological developments which adds greatly to being able to simplify the design for enhanced reliability. This amazing yet simple modular design is implemented into six different models ranging in capacity of 610mm x 305mm to 2515mm x 1015mm.

Esthetics

The new technology that is evident with the Endeavour greatly reduces the required components by employing such elements as "Direct Drive" spindle motors. The power of these spindle motors and the speed of spindle positioning that is achieved by employing rack and pinion systems represents another Ficep first. The implementation of the mechanical devices above the pass line permits the incorporation of a chip conveyor without a foundation pit. Two popular working heights are available for installation with existing material handling systems and the Endeavour can be easily coupled with saws, marking units and coping robots.





ENDEAVOUR DRILLING LINES

Safety

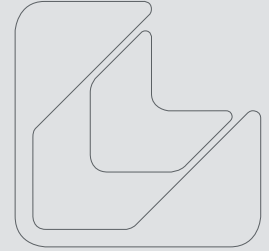
Safety is built inside! Our engineers were challenged to think about the various functionalities of the Endeavour to reduce the potential operator involvement with the different machine cycles. The result is that typical machine cycles are achieved with predictable cycle times as the operator involvement is greatly eliminated.

New auxiliary axes

The three spindles are equipped with a new additional sub axis that allows independent control of the spindle in the length or "X" axis. The independent movement of the three sub axis while the beam is stationary maximizes the utilization of each spindle within the stroke. While drilling on one flange it is possible to perform other completely independent operations such as drilling, scribing or milling on the opposing flange or web.

Fast drilling, scribing, tapping, milling for all three drills independently.





Higher productivity

New innovations have been engineered and implemented in the Endeavour design to increase the productivity.

- Faster drilling speeds at minimum cost
- New helical milling features (for the generation of larger lifting holes, for example)
- New milling applications for pocketing
- Weld preparation milling
- Higher RPM's for faster scribing speed
- New universal tool holder
- Slotting in any direction
- Automatic detection of the section size
- Processing of tapered welded beams
- Option for camber and unequal flanges

Usability:

- Easy access to the working units and tool changers
- New chip collector design
- New clamping system for increased milling performance
- Angled, uncluttered surfaces facilitate removal

Underside scribing





ENDEAVOUR COMBINED WITH A CNC SAWING UNIT

The Katana range of saw lines represents the latest technology in High Performance band saws for the structural steel industry. With the increased cutting speed, the Katana saws represent a significant step forward in beam processing. These extremely fast saws can carry out sawing operations at 90° or at miters by program command. The saws can be delivered for stand-alone installations or as combined lines with the Ficep beam drilling units.



The main advantages that the combined drill/saw configuration offers are:

- Consolidated layout minimizes the required shop space.
- Lower man hours per ton are achieved by the elimination of one operator.
- Reduction of the investment costs as the combined system requires less material handling elements.
- Reduction in material handling steps.
- Ability to drill and saw short parts and even handle trim cuts automatically without operator intervention.
- The high structural integrity of the cutting head is achieved with a welded one piece, totally enclosed bridge type structure.
- Prismatic sliding ways guide the cutting head on both sides of the two bridge structure.
- The blade guide system adjusts automatically as section sizes are changed as part of the CNC program.
- Spray mist blade lubrication and cooling system.
- Non ferrous motorized chip brush is incorporated for blade cleaning.
- Chip conveyor
- Automatic saw mitering at +60°/-60°



MODEL		ENDEAVOUR COMBINED WITH A CNC SAWING UNIT						
		603 DDB	1003 DDB	1103 DDB	1203 DDB	2003/6 DDB	2003/8 DDB	2503/8 DDB
Drill heads	No.	3	3	3	3	3	3	3
Spindle power	kW	27	27	27	27	27	27	27
Sawing capacity at 90°	min.mm	60 x 10	80 x 10	80 x 10	80 x 10	200 x 10	200	200
	max.mm	610 x 310	1015 x 450	1100 x 510	1250 x 610	2000 x 600	2000	2500
Blade size	mm	34 x 1.1	41 x 1.3	54 x 1.6	67 x 1.6	67 x 1.6	67 x 1.6	67 x 1.6
Blade speed	mt/min	150	170	170	170	170	170	170
Band saw motor	kW	7	9	15	15	18	19	19
CNC axes	No.	7+2	7+2	7+2	7+2	7+2	7+2	7+2

ENDEAVOUR + KATANA
SAWING UNIT

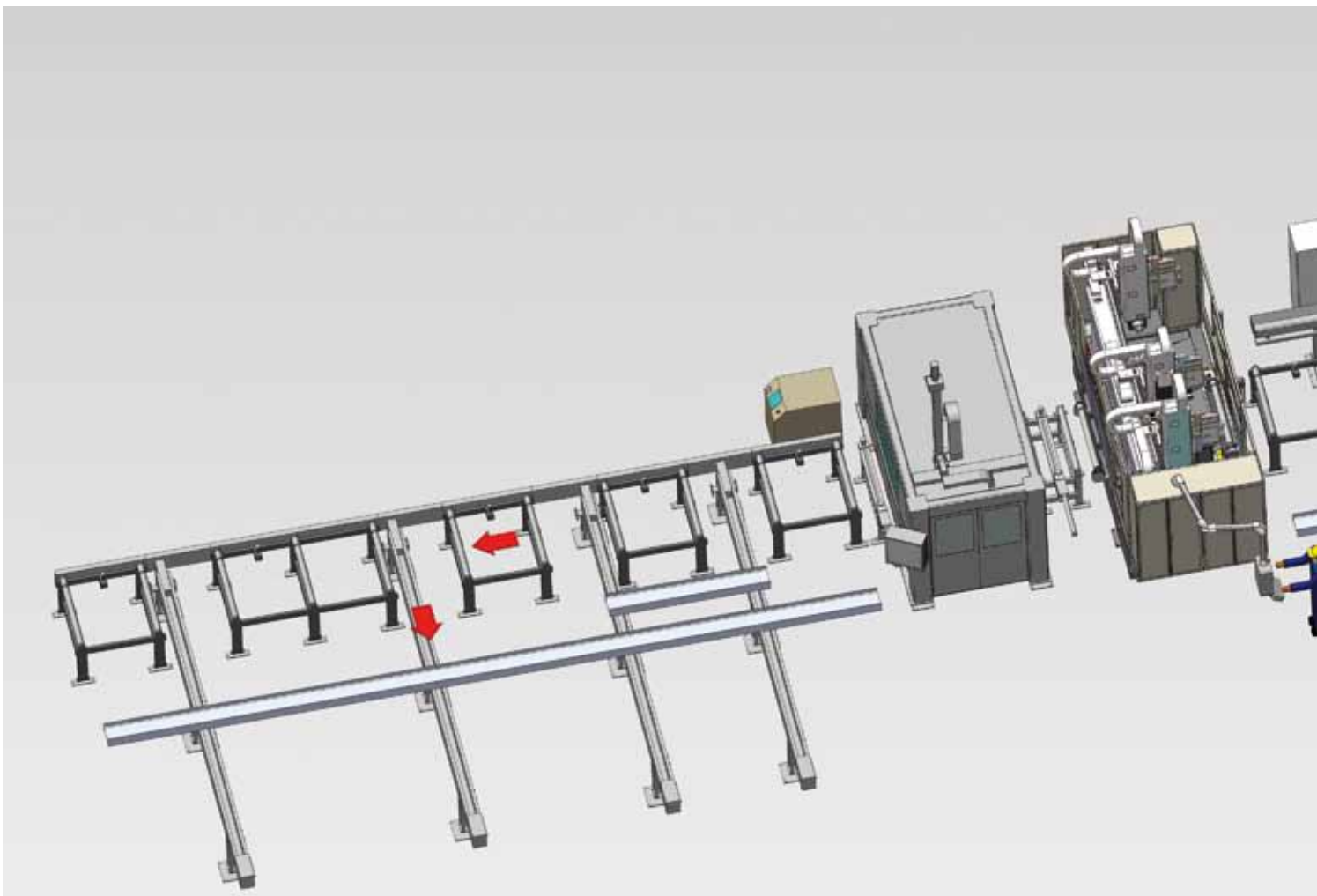




ENDEAVOUR COMBINED WITH A COPING ROBOT

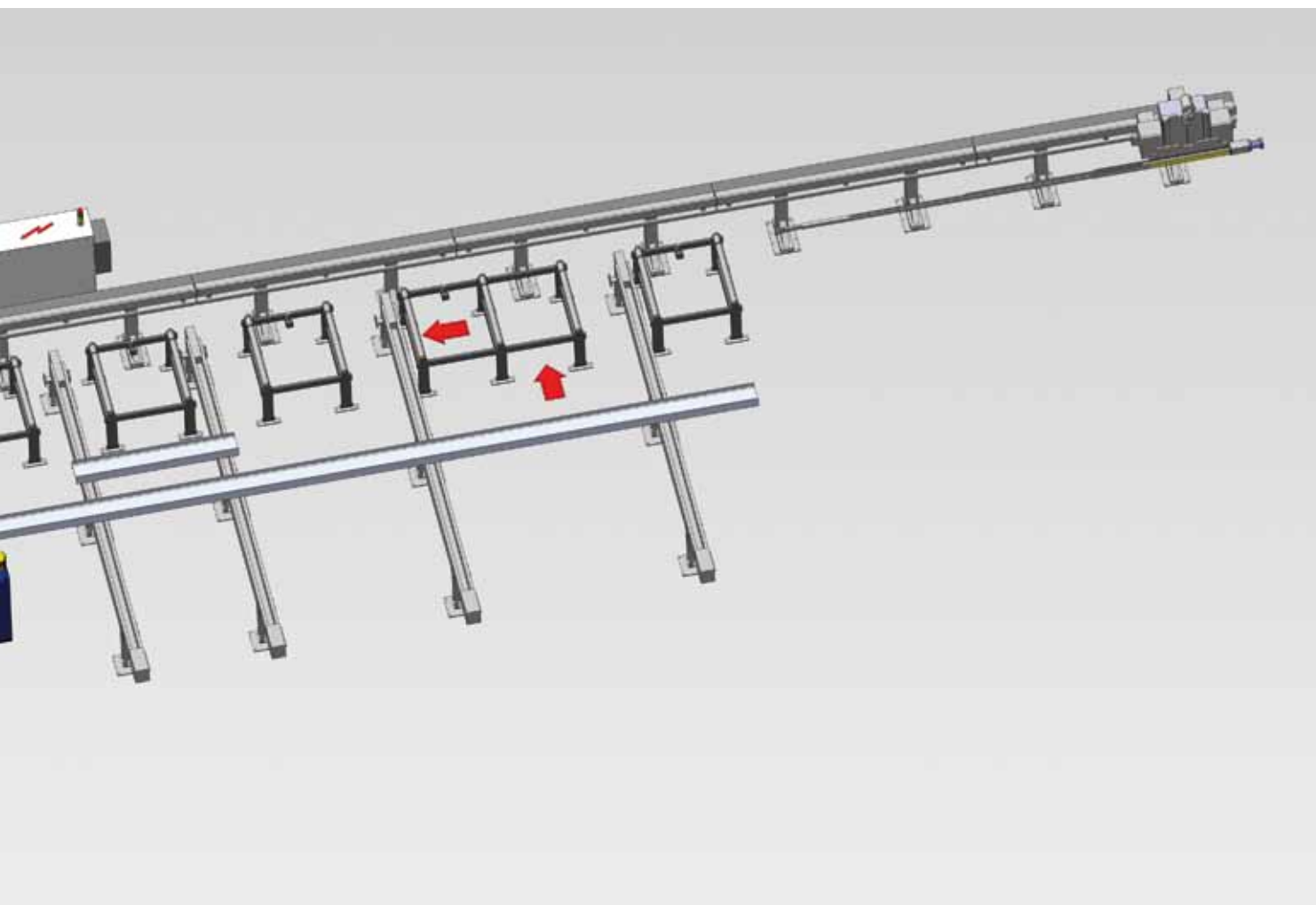
The Endeavour beam drill machines can be combined with plasma or oxy robotic thermal cutting units (FRC) to automatically generate such typical task as coping, flange thinning, rat holes, weld preps, and splitting of beam into tees.

This combination of drilling and cartesian robotic coping represents a unique solution. If there is a unique or difficult torch path requirement, even on a long profile, the Ficep Robot is up to the challenge.





MODEL		ENDEAVOUR COMBINED WITH A COPING ROBOT					
		604 DDRC	1204 DDRC	2004/6 DDRC	2004/8 DDRC	2504/8 DDRC	2504/10 DDRC
Web height min/max	mm	80/610	80/1220	80/2030	200/2030	200/2515	200/2515
Flange width min/max	mm	10/305	10/610	10/610	75/810	75/810	100/1015
Drill heads	No.	3	3	3	3	3	3
Oxy-fuel torch	No.	1	1	1	1	1	1
Plasma torch (option)	No.	1	1	1	1	1	1
CNC axes	No.	7+6	7+6	7+6	7+6	7+6	7+6





The latest in beam girder processing

FICEP ENDEAVOUR GANTRY drill is the ultimate technology designed by FICEP for the processing of welded girder beams and welded structures of large dimensions. Typically in the fabrication of steel bridges or big trusses the finished part reaches dimensions that could be covering volumes of 4000 mm x 2000 mm with lengths that could reach 35.000 mm.

Bridge girders could be cambered and curved along the length, box girders might require patterns of holes or also face milling, tub girders require to be positioned and handled with care to drill patterns for splice plates on the flanges and on the web, trusses might need to be faced mill and drilled on the connection points.

All the above mentioned parts have something in common apart from the machining operations that is the weight, the volume occupied and the difficulty to handle shape and geometry.

The Endeavour gantry girder drill over pass this issue by avoiding the material movement through the machine like in the traditional beam lines. The Gantry structure simply moves around the piece itself. The modular, beam frame accommodates up to three very high tech Direct Drive spindles. The power of the motor and the speed of positioning together with the new rack and pinion driving cinematics give a feeling of silence and speed under control never felt before.





ENDEAVOUR GANTRY DRILLS

MODEL		ENDEAVOUR GANTRY				
		2503/10 GDD	3003/12 GDD	3003/20 GDD	4003/12 GDD	4003/20 GDD
Web height min/max	mm	200/2500	200/3000	200/3000	200/4000	200/4000
Flange width min/max	mm	100/1000	100/1200	100/2000	100/1200	100/2000
Drill heads	No.	3	3	3	3	3
Tools per spindle	No.	6 - 3 - 6	6 - 3 - 6	6	6 - 3 - 6	6
Max hole diameter	mm	40	40	40	40	40
Spindle power	kW	27	27	27	27	27
Spindle speed	rpm	5000	5000	5000	5000	5000
Aux. axes stroke (option)	No.	200	200	200	200	200
CNC axes	mm	7	7	7	7	7

* Max. tools number for vertical head: 3



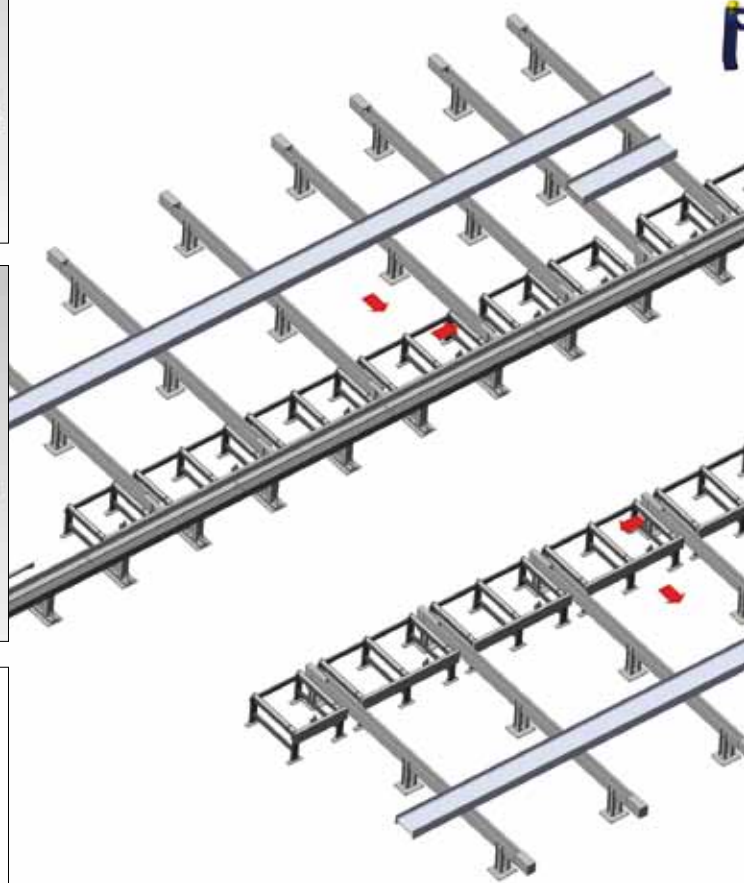
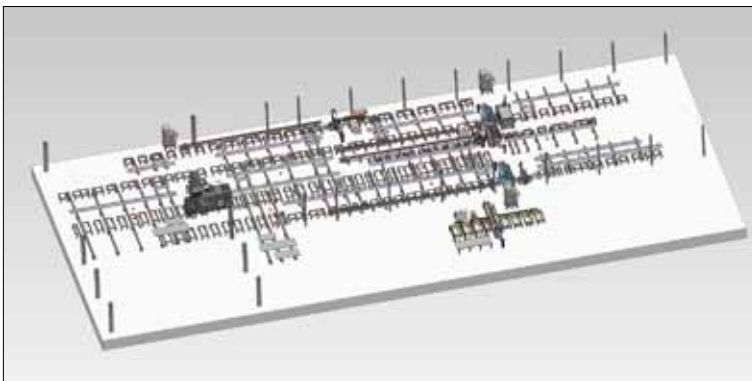
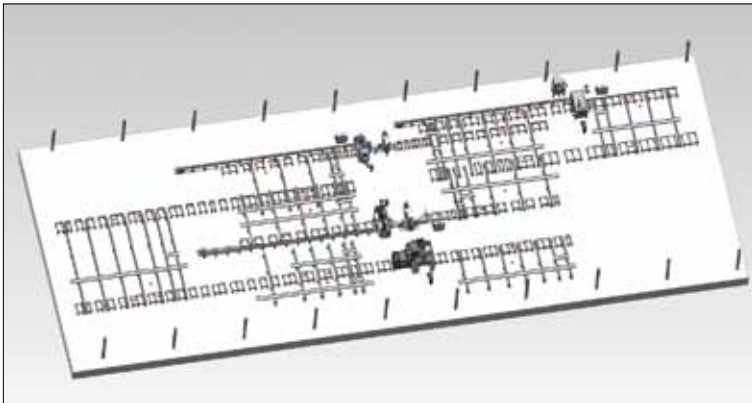


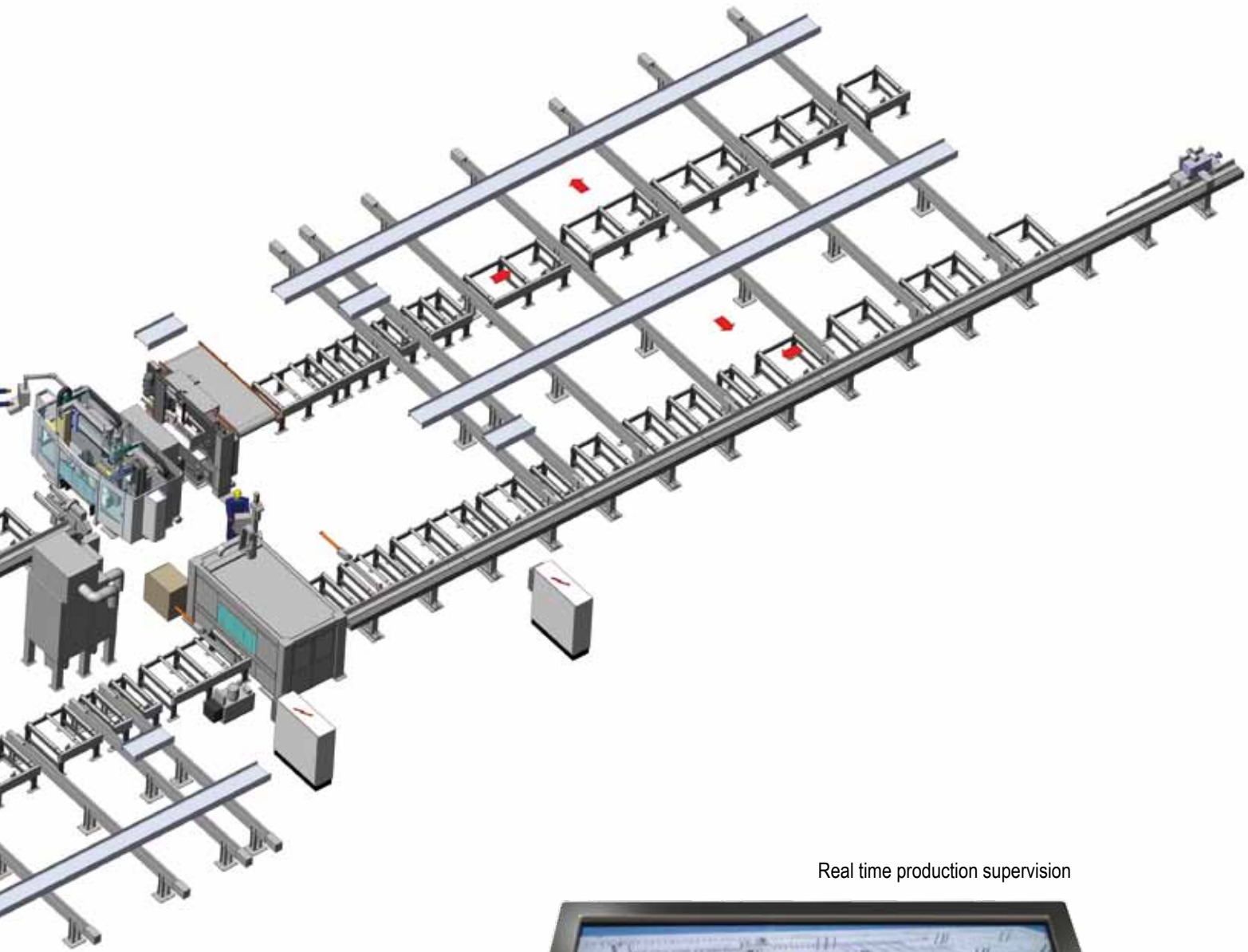
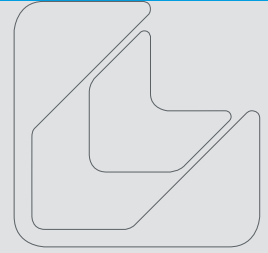
AUTOMATIC SYSTEMS

Ficep is the world leading supplier of fully automatic systems for structural steel industry. We have sophisticated software in use to carry out challenging production capacity calculations based on each project's requirements and layout proposals. This way we can study the optimal solution for each type of customer.

For operating sophisticated automatic systems FICEP Group has a software division, Steel Projects. The PLM software is an integrated solution is to Manage, Automate and Optimize the steel fabrication workflow from the BIM (Building Information Model) through Production planning and Management of logistics to the erection site.

The real-time information feedback from the workshop can be used to create reports of individual machines or the overall workshop. This data is invaluable for managing revisions, time scheduling, stock control, purchasing, nesting, cost analysis and to be able to get most out of the CNC machinery.





Real time production supervision



HARDWARE & SOFTWARE

PEGASO SYSTEM

Pegaso is the new generation CNC for Ficep machines. PC, CNC and PLC are all integrated on a single board, to have the maximum reliability. Pegaso is based on field bus technology: CanBus and EtherCAT, with up to 32 axes controlled.

The CNC is positioned on a mobile control panel, so the operator can have a complete view of the machine. The most of the input / output interface devices and brushless motors drives are located on the machine.

Programming

- Simplified data input with graphical direct preview
- 3D piece view
- Diameter programming with automatic tool assignment
- Linear, matrix and flange patterns
- Programming in feet, inches and fractions, millimeters or inch decimal
- Linear nesting

Processing

- Automatic tool assignment
- Unit offset automatic summing
- Automatic grouping and ordering of operations
- Setup modification lines generation
- Rototraslation of executing program to follow sheet orientation

Execution

- Automatic cycle stop for tool setup modification
- Probing capability to adjust program quotes to actual material position
- Automatic software to prevent machine unit collisions
- Automatic software to prevent tool collisions against material
- Tool management with operating parameters and tool life management
- Messages and alarm notifications to the operator using customer language with history log
- Graphic screens to display machine pieces handling tables
- Production times recording



PC characteristics

- CPU AMD Ontario 1.6 GHz Dual Core
- Ram 2 Gb
- Disk Compact Flash 8 Gb
- USB 6 High Speed 2.0 (one on the front)
- LAN Ethernet 10/100/100 Mbit
- Keyboard Industrial PS2
- Display LCD Led technology 15 " with touch screen
- Industrial panel with 42 push buttons
- Op. Sys. Windows 7 Embedded with EWF filter
- Teleservice software for remote diagnostics

MAIN TECHNICAL SPECIFICATION

MODEL	ENDEAVOUR								
		603 DD 603 DD LASER	1003 DD 1003DD LASER	1203 DD 1203DD LASER	2003/6 DD	2003/8 DD	2503/8 DD	2503/10 DD	3003/12 DD
Web height min/max	mm	80/610	80/1015	80/1220	80/2030	200/2030	200/2515	200/2515	200/3000
Flange width min/max	mm	10/305	10/450	10/610	10/610	75/810	75/810	100/1015	100/1200
Drill heads	No.	3	3	3	3	3	3	3	3
Tools per spindle	No.	6	6	6	6	6	6	6	6
Max hole diameter	mm	40	40	40	40	40	40	40	40
Spindle power	kW	27	27	27	27	27	27	27	27
Spindle speed	rpm	5000	5000	5000	5000	5000	5000	5000	5000
Spindle fast approach/ return speed	mt/ min	30	30	30	30	30	20	20	20
Aux. axes stroke	mm	250	250	250	250	250	200 (opt)	200 (opt)	200 (opt)
CNC axes	No.	7	7	7	7	7	7	7	7

The manufacturer reserves the right to make changes to the indicated specifications without notice. All the specifications in this catalog are not binding on the manufacturer.



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