

## RC - TT

Automatic CNC thermal coping lines for profiles notching



**FICEP**

Sp.A.



The modern structural steel buildings are made with profiles (beams, U-channels, angles, tubes) that are joined and bolted one to the other.

Straight and mitred cuts are carried out with modern sawing systems, shaped cuts on profile edges or on web and flanges, instead have always been a problem that is today brilliantly solved thanks to the Ficep thermal coping robots.

The Ficep robot allows the torch to move and orientate (using plasma or oxyfuel cutting). It is also possible to carry out coping of programmed shapes previously stored in the CNC library.

The robot is controlled by dedicated software which gives simple and essential sequences:

1. The torch carries out the probing cycle to survey the real values of the piece to be processed;
2. These real values are compared with the theoretical ones registered in the CNC library; any discrepancies are automatically corrected and the torch will move to the exact position to start the cycle, once the cut is finished, the piece always detaches itself without problem!
3. The required shape is chosen from the relevant library and only its real dimensional values must be loaded into the program; no time is lost to reprogramme the shape; the shapes in the library which are normally required in steel construction are all already programmed;
4. The torch automatically starts and carries out the cutting of the shapes and can be repeated continually without mistakes.



The advantages of these systems are straight forward and obvious:

- All the manual operations to measure, mark out and cut disappear;
- Values are respected with no mistakes;
- Cutting operations can be done in line with drilling units in order to save time;
- The processing cycle is optimized;
- The manufacturing times are drastically reduced;
- Processing is done in a complete automatic and tidy way;
- The spaces dedicated to this kind of processing are reduced;
- Production costs are lowered;
- The labour required for complicated operations is reduced to the minimum.





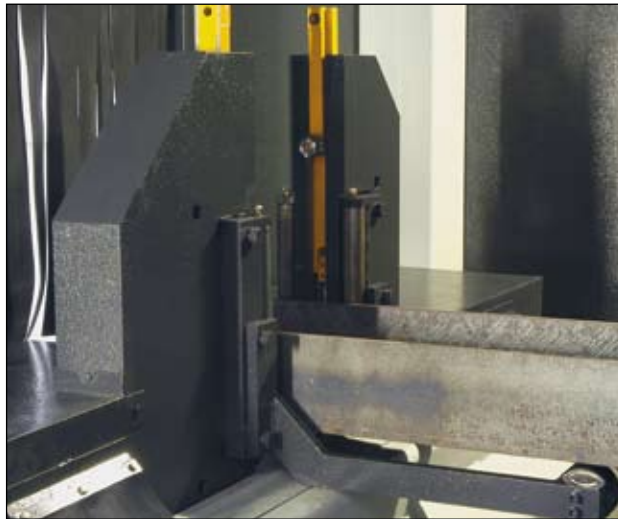
Thermal coping system mod. TT  
complete with rollerways and transfer  
tables with carts.

RC - TT





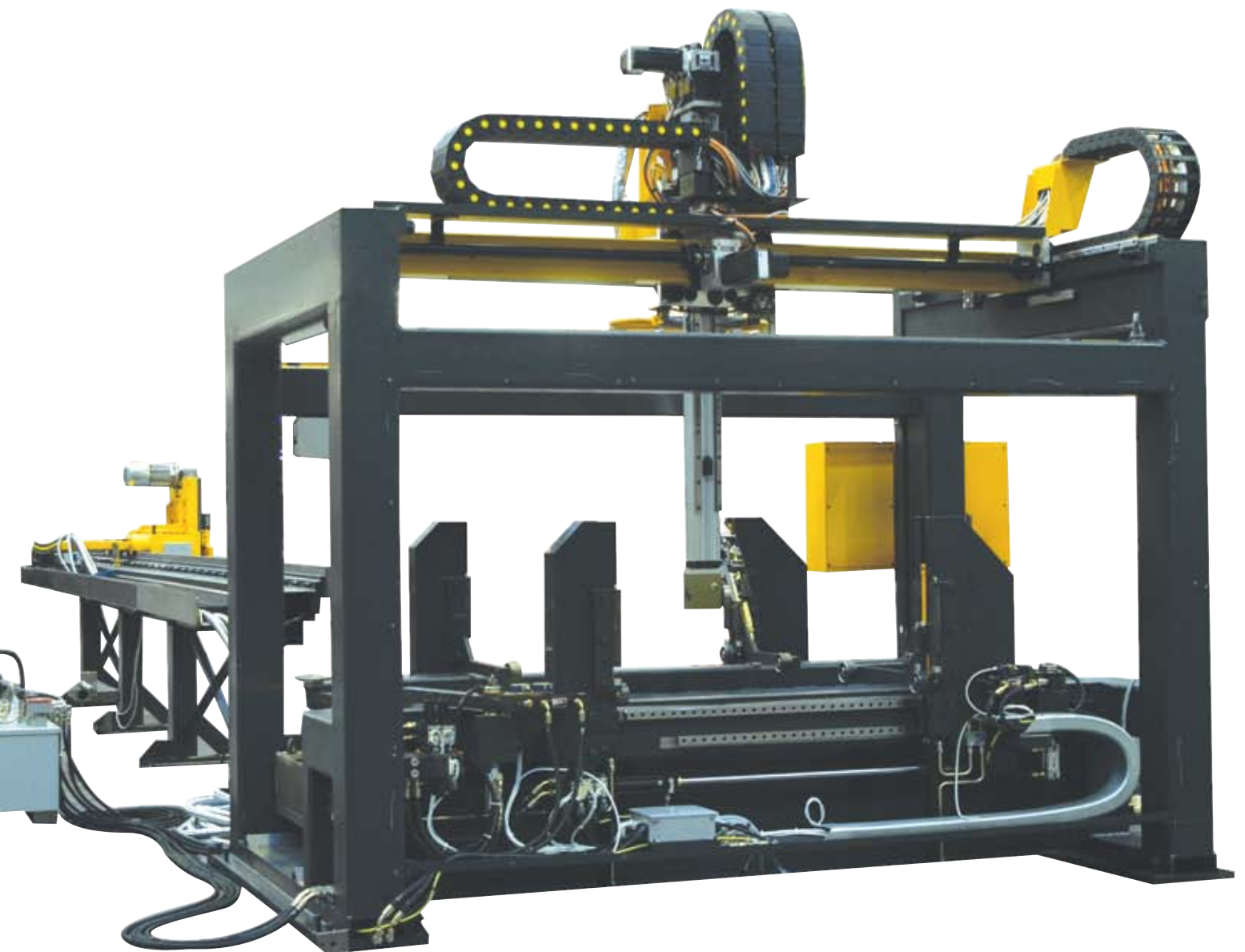
- Carriage, with a pincher that can be adjusted in all the directions, for the longitudinal positioning of 12 mt long bars. The carriage is equipped with a suitable supporting structure and allows the profiles to move on idle rolls.
- Machine chassis consisting of four columns in electro-welded steel tubes to support the robot.
- Semi-spherical cartesian robot with 6 controlled axes holding the oxycutting torch.
- Torch equipped with a device to automatically survey and compensate profiles values and dimensional tolerances.
- Automatic vices to guarantee perfect material clamping even during cuts where the material moves longitudinally.
- Hydraulic alignment device between the first two rolls of the infeed rollerway.
- System for detection and automatic adjustment of dimensional tolerances.
- 12 mt powered rollerway to unload the processed pieces.
- Ficep ARIANNA control unit the latest generation controlling 6 axes.



Hydraulic clamping vices

Oxycutting torch





- Plasma cutting system with Hypertherm power source.
- Smoke intake system which is essential with the plasma torch cutting.
- Infeed and outfeed rollerways for 16 mt or 20 mt long profiles.
- Infeed and outfeed transfer tables with catches or carts.

1204 DFRC  
CNC Line with "TT"  
Thermal coping unit



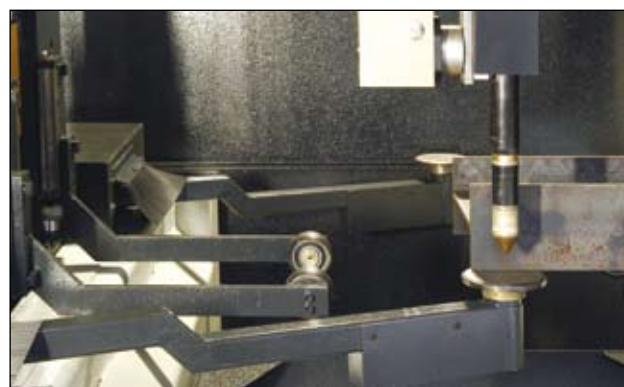


Smoke intake system

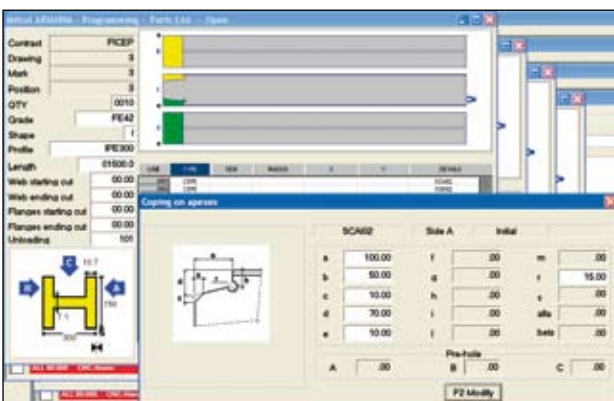
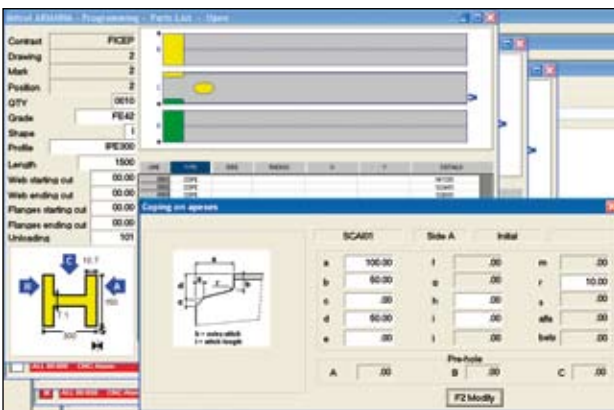
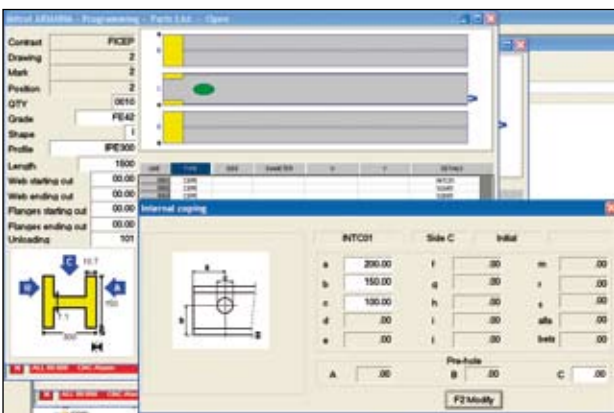
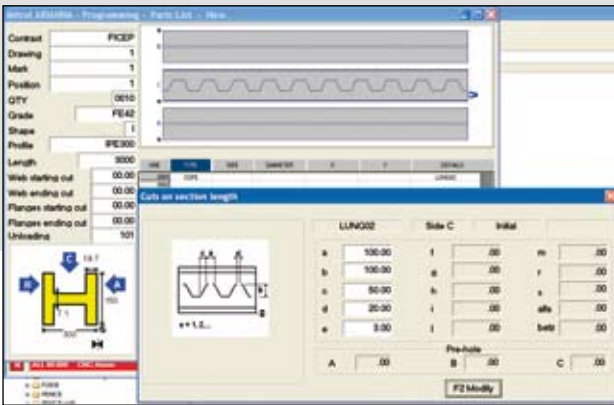
CNC Line with "RC" Thermal coping unit  
and "DF" Drilling unit in tandem

Plasma torch

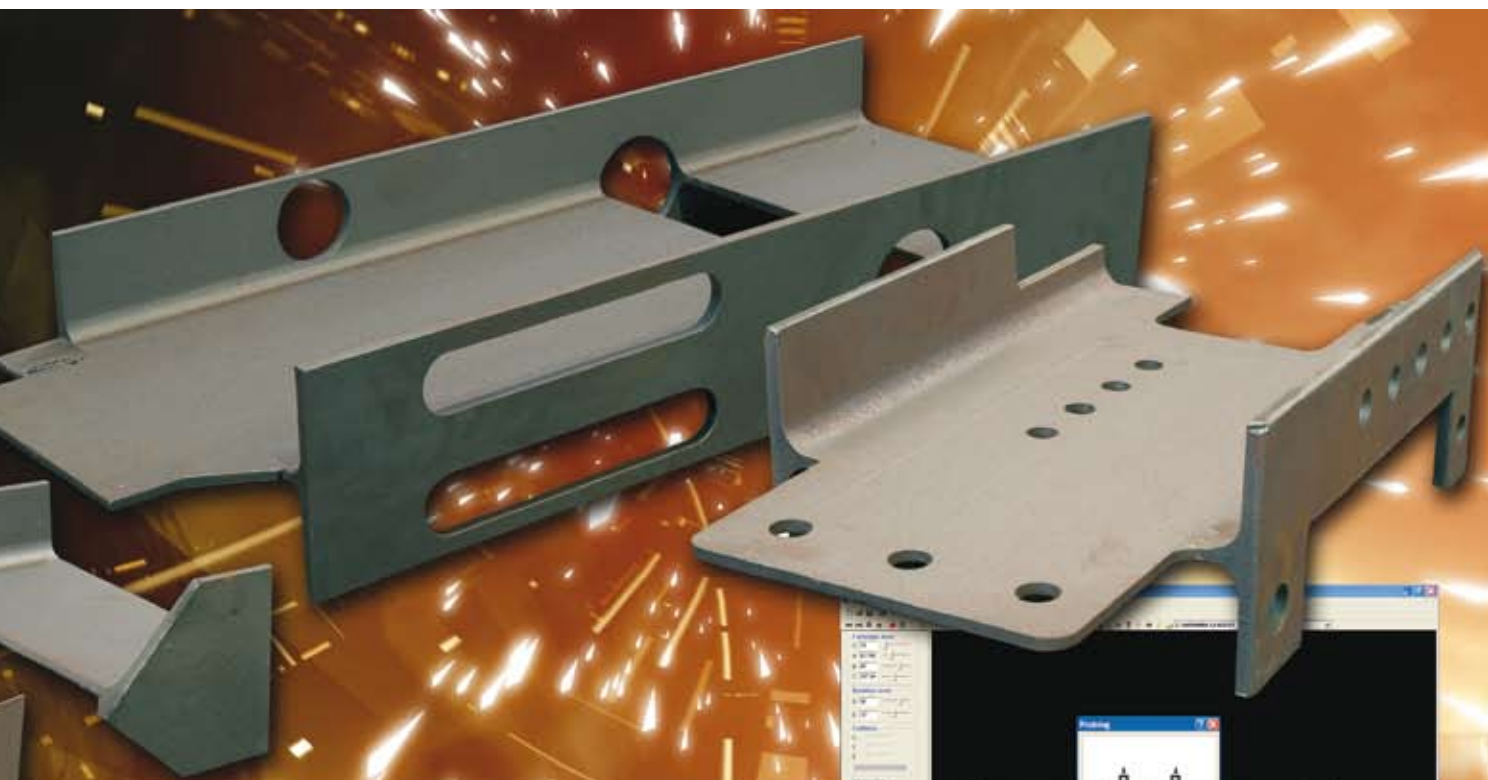
Mobile system to survey the piece values  
on the lower side





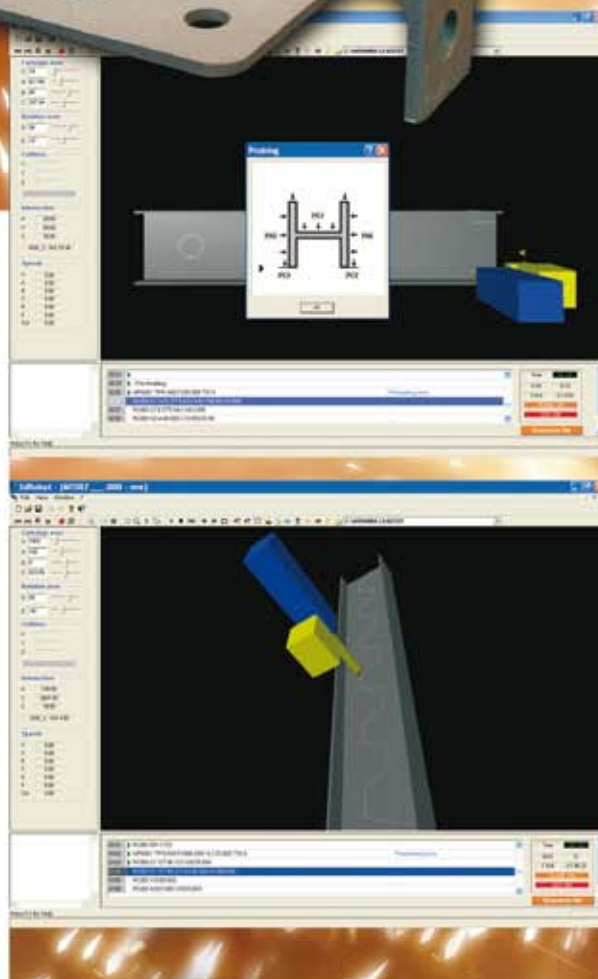






3D graphic simulator of the robot this show's the virtual processing to be done.

- Point-to-point LEAD CUT programming done directly by the on-board CNC;
- Programming through graphic macros that are already stored and registered in the relevant library;
- Programming through data import from an off line computer;
- Automatic survey of the component for precise torch positioning



## HARDWARE and SOFTWARE



The new generation control unit, with controlled axes, is based on a fieldbus CANopen technology.

The CNC is positioned on a pedestal in a mobile control panel, so that the operator can have a complete view of the machine.

All the input and output cards are connected to the bus and lodged on the machine, if it's possible.

The CNC is equipped with:

- digital inputs (24V – optoinsulated)
- digital outputs (24V – protected transistors)

The control panel is an industrial PC containing the CNC and having the following specifications:

- 600 Mhz CPU with L2 512 KB “cache”
- 512 MB RAM memory
- Touch screen colour video TFT 12.1”
- Keyboard panel and auxiliary pushbutton panel
- 10/100 RJ45 Ethernet port
- USB modem
- 1 additional USB port
- WINDOWS XP Embedded operative system
- Teleservice software

### Programming

- Simplified data input (with tables and workpiece on-screen graphics)
- Absolute and incremental values
- Nesting of equal or different workpieces into the same bar, with on-screen graphics
- Automatic nesting

### Processing

- Automatic tool assignment
- Unit offset sum
- Values ordering

- Automatic optimization on the basis of the quantities left for each single workpiece.

### Execution

- Automatic survey of the bar length, and re-calculation of the optimized accumulation

*All the indications are clearly displayed on the screen, and concern:*

- Current program indication, with clear description of the program running at the moment
- CNC inside and outside alarms
- Registration of the date and time of the last 100 alarm messages
- Diagnostic messages to the operator.

*The supply also includes:*

- **Software “GS-TT” package** to program coping shapes through preset parametric macro-graphics, as shown in the attached table.
- **Software package to obtain equal or different pieces from one bar** with the coping shapes of the “GS-TT” software package.



## TECHNICAL SPECIFICATIONS & PRODUCTIVITY DATA

The manufacturer reserves the right to make product design and engineering changes without notice. All the specifications on this catalogue are mere indicative and not binding for the manufacturer. The above mentioned data refer to R=45 kg/mm<sup>3</sup> material. NOTE: Dimensional tolerances of the raw sections are to UNI 5783-5784/73 standards.

Models	1201 RC	2061 TT
<b>Profiles that can be processed:</b>		
<b>I-Beams</b> (without camber)		
Web height	min. mm 80 max. mm 1220	min. mm 200 max. mm 2000
Web height	min. mm 42 max. mm 600	min. mm 60 max. mm 600
<b>U-channels</b> (web downwards)		
Web height	min. mm 80 max. mm 1220	min. mm 200 max. mm 2000
Flange width	min. mm 45 max. mm 600	min. mm 60 max. mm 600
<b>Angles</b>		
Flange height (unequal flanges as well)	min. mm 80x80x8 max. mm 300x300x50	min. mm 200x200x15 max. mm 500x500x40
<b>All sections</b>		
Maximum length (can be expanded with options)	mm 12000	mm 12000
Minimum transferable length (with longitudinal copes on both heads having a maximum length of 400 mm on the lower half flanges)	mm 2500	mm 2500
Positioning weight	Kg 6000	Kg 10000
Linear weight of the section	Kg/m 375	Kg/m 500
Carriage speed	m/min 40	m/min 40
CNC Ficep Minosse axes	no. 7	no. 6





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