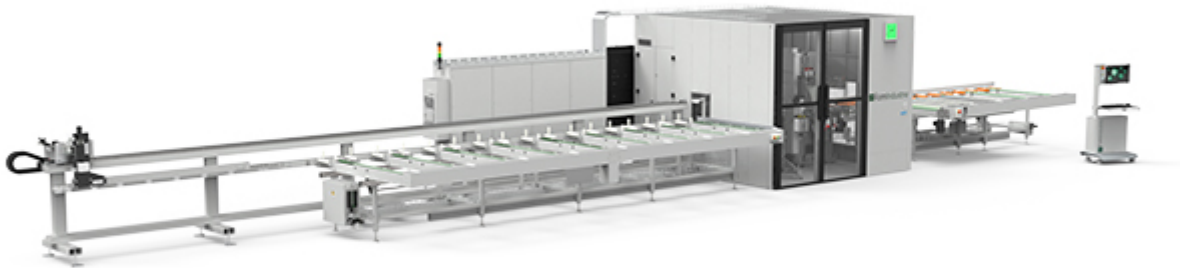


LMT 65

Machining and cutting line with frontal \varnothing 650 mm blade and bar passage 250x200 mm



CE

The machining unit tooled up with max 16 electrospindles and the cutting unit with 20° to 160° controlled blade tilt produce a continuous flow of machined and cut to measure elements. 20 different variants are available, which can be configured in terms of depth and length of material loading/unloading magazines and right or left feed direction.

Power supply	Total power installed	Air consumption for work cycle	Working pressure
3F - 400V - 50 Hz	26 kW	1570 NL/min	7 bar



BASIC CONFIGURATION:

- Loading magazine
- Bar feeder and profile pick-up system
- Central automatic greasing system and device for manual greasing
- Multispindle machining unit
- Cutting unit
- Unloading magazine
- FST Line installed on the control console
- Electric cabinet cooling plant
- Soundproof casing and safety devices
- Potentially Industry 4.0 subsidizable asset

Description of the individual line components

LOADING MAGAZINE

The system allows the profiles to be stored and then fed horizontally. It consists of 9 supports with bar traversing belts fitted with mobile inserts. The positions of the inserts can be customised according to the sections of the profiles to be machined. The simultaneous forward feed and belt phasing are guaranteed by a splined shaft that transmits the movement to all the supports. A reference stop mounted on the support nearest the machining area allows an initial alignment of profiles as they are being loaded. (PUSH)

Optional device for machining profiles with very complex and variable geometries. The magazine can be supplied with an innovative controlled axis system for automatic overturning and for ensuring the correct stability and position in the work area.



Technical specifications:

Profile presence detection with photocells
Minimum transportable profile length: 1000 mm
Maximum transportable profile length: 7100 mm (longer lengths available on request)
Useful loading capacity: 2000 mm (7020 Version) and 4000 mm (7040 Version)
Maximum permitted weight: 600 Kg (7020 Version) and 1200 Kg (7040 Version)

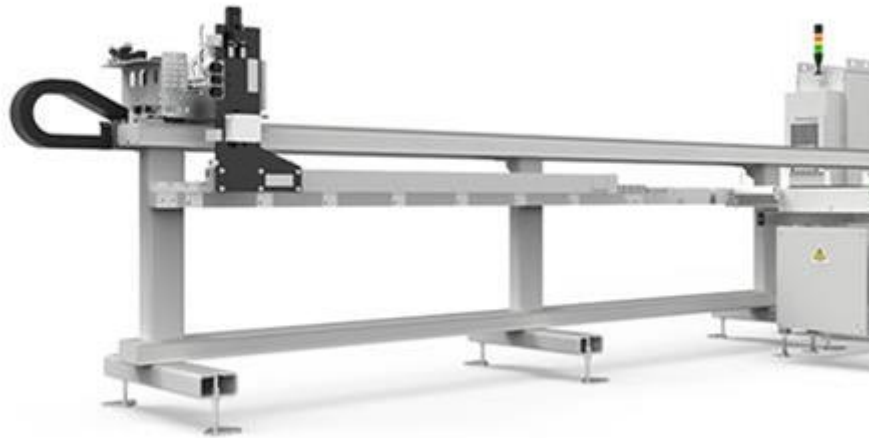
7020 Version			
Standard distance between the loading belts	300 mm	Loading capacity	6 bars
Minimum distance between the loading belts	200 mm	Loading capacity	9 bars

7040 Version			
Standard distance between the loading belts	300 mm	Loading capacity	12 bars
Minimum distance between the loading belts	200 mm	Loading capacity	18 bars

Available optional:

Intermediate supports for light profiles that tend to deform under load

BAR FEEDER AND PROFILE PICK-UP SYSTEM



Structure

It consists of a beam in electro-welded steel that guarantees stability over time.

Longitudinal axis drive and movement (X)

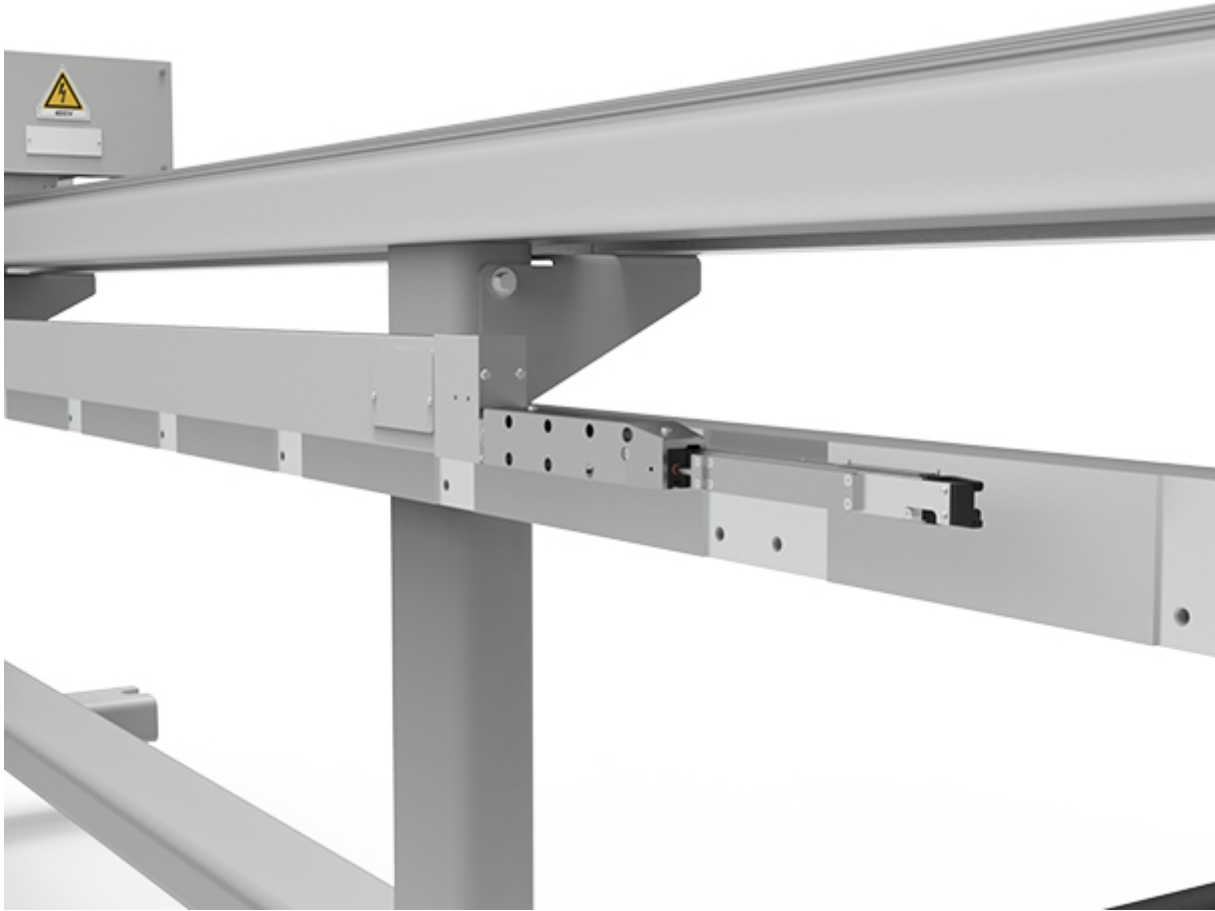
Mounted on lateral guides with recirculating ball slides and rack with helical teeth of high quality, precision, strength and reliability. The independent Axis X (longitudinal), along which the carriage with arm and collet moves, is driven by a brushless servomotor. The servomotor used allows short high-speed positioning times and rapid return. The position of the axis is detected by an encoder.

Carriage

Constructed in die-cast aluminium, it guarantees movement along longitudinal axis X, automatic pick-up of the various sections of the profiles without manual intervention by the operator, thanks to controlled axes driven by a brushless motor, Y (transversal) and Z (vertical), incorporated with it.

Profile pick-up system

Consisting in horizontal rollers and vertical rollers in non-scratch material, guaranteeing optimum movement of the profiles. The zero reference along the X-axis is a retractable pneumatic stop. The standard rotating clamp with automatic controlled positioning allows rapid and accurate adaptation of the variable and intermediate angle pick-up (+90/0°/-90°).



Technical specifications:

Maximum speed in rapid mode 135 m/min
Maximum allowable profile width: 250 mm
Maximum allowable profile height: 200 mm
Maximum allowable profile length: 7100 mm (longer on request)
Maximum allowable profile weight: 15 Kg/m

Centralised automatic lubrication system

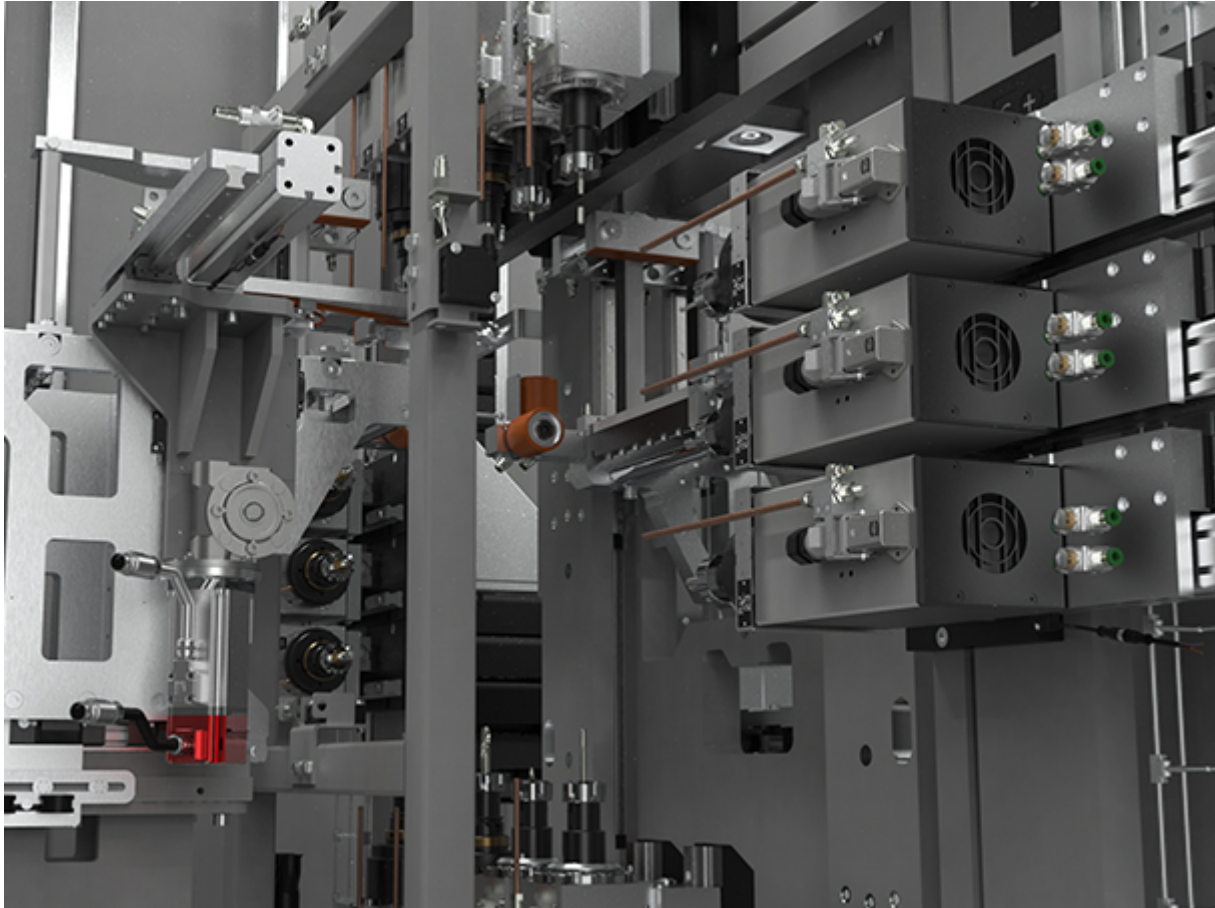
A system automatically sends lubricant to the sliding and movement elements at preset intervals without stopping the machine.

A message displayed on the monitor informs the operator when the minimum level of lubricant has been reached in the tank.

A device is also supplied as standard to carry out manual greasing when necessary.

MULTISPINDLE MACHINING UNIT

The multispindle machining unit has been designed to carry out various machining operations on all four sides of an aluminium profile.



Structure

The structure consists of three centre frames, one load-bearing and one intermediate in steel with a third in aluminium on which the electrospindles for the mechanical machining are installed. The solution adopted guarantees stability, speed and precision during machining. This construction solution offers considerable advantages in terms of maintenance.

Axes movement

The independent V (vertical) and C (transversal) axes are driven by brushless servomotors through high-precision ground recirculating ball screws and a preloaded lead nut. The digital servomotors used allow short high-speed positioning times and rapid return.

Electrospindles

These have a 4,5 kW output, an inverter controlled speed of up to 22.000 rpm and pure oil tool lubrication by means of a micro-drop concentrated high pressure spray (minimum quantity lubrication). HSK-C40 tool coupling. Available as optional extras:

- Synchronous electrospindles for mechanical machining and tapping (4 kW)
- Tilting electrospindles (for oblique machining)

The machine can house 16 electrospindles, to be selected based on the machining operations required. Their arrangement on the centre frame will be designed based on the needs of the user.

Working area

Two sets of vices are provided for the correct alignment and pneumatic locking of the profiles entering and leaving the machine tool during the machining phases.

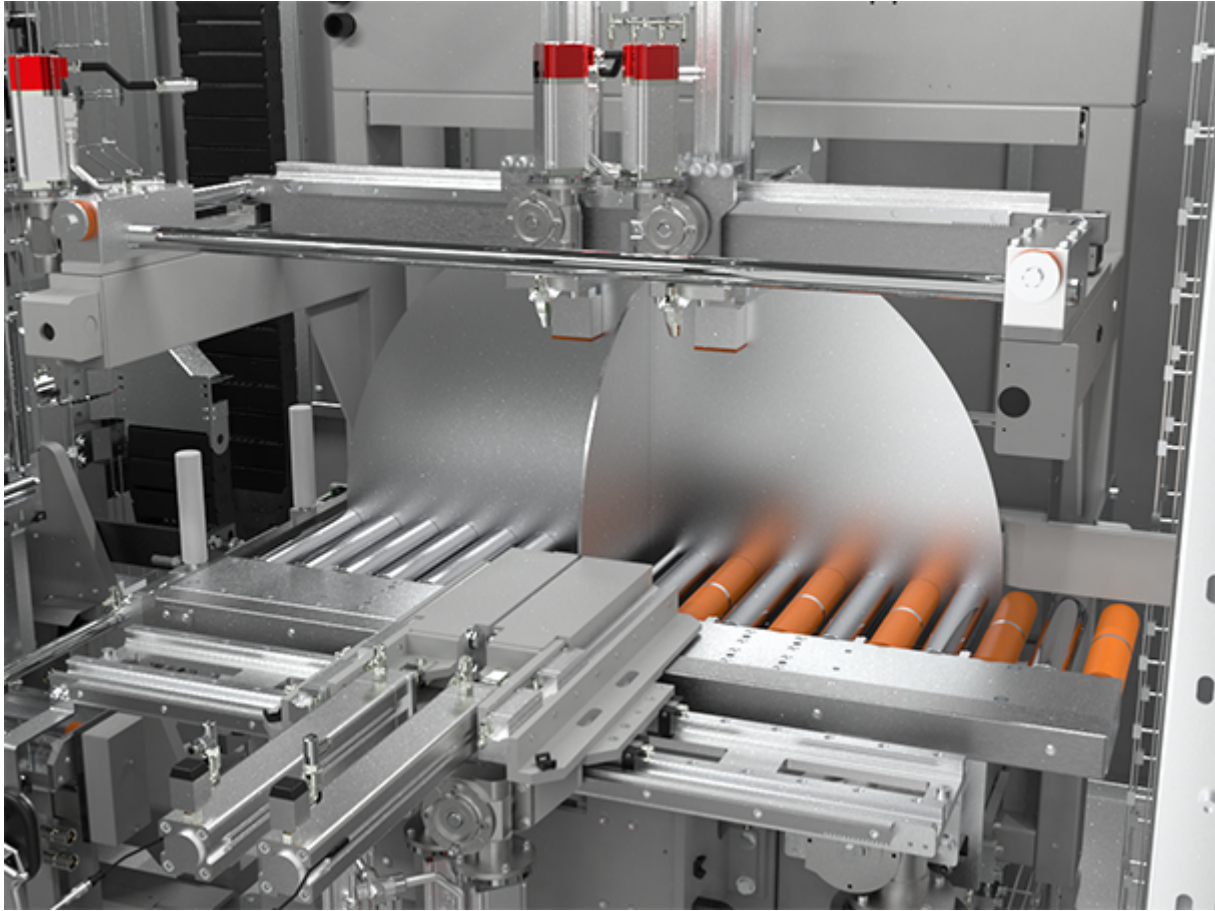
Technical specifications:

V axis travel (vertical)	400 mm
C axis travel (transversal)	700 mm
Electrospindle power rating:	4,5 kW at 22.000 rpm
Tool collet:	HSK-C40
Max tool diameter:	13 mm
Max. working capacity	250 x 200 mm
Maximum profile dimensions	See diagramm

Available optionals:

HSK-C40 4 kW/17,000 rpm synchronous electrospindle for mechanical machining and tapping
Tilting electrospindles (for inclined machinings) 4,5 kW or 4 kW HSK-C40
Sensor for tool integrity control
Unstable profile supports with controlled movements in Y and Z

CUTTING UNIT WITH BLADE Ø 650 mm



Automated single front head line sawing machine with electronic blade tilt angle control. It consists of:

Machine base in electro-welded stabilized steel, sized to guarantee stability and precision during machining.

Blade mounting support head with special bearings designed to guarantee the absence of play and ensure precision and repeatability during rotation

Oscillating support in cast aluminium supported at the back to achieve optimum removal of chips and swarf into the lower compartment of the base.

Motor support and saw mounting shaft in cast aluminium. The solution employed allows motors with high nominal power to be used and a wide range of cutting schemes to be obtained.

The horizontal and vertical support surfaces for the profile are provided with:

Loading side traversing idle roller table with chrome plated rollers

Motorized transfer roller table on unloading side with chrome-plated and rubber coated rollers

Horizontal vices unit (2) with controlled positioning (X and Y)

Vertical vices unit (2) with controlled positioning (X and Y)

Available optional:

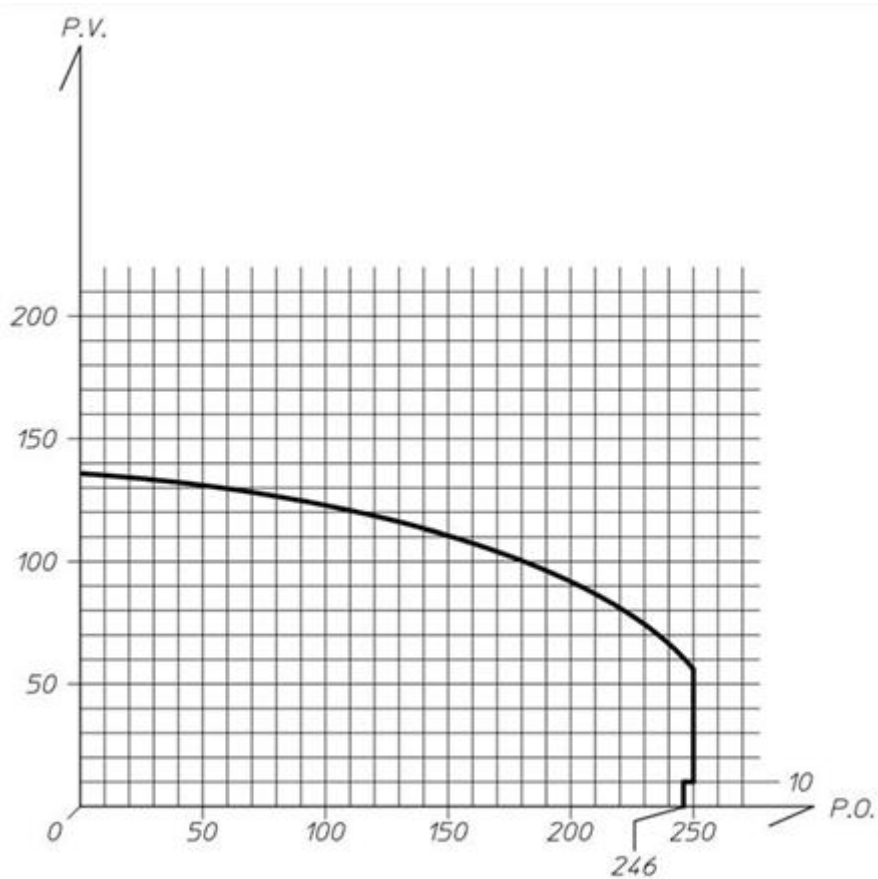
Unstable profile supports with controlled movements in Y and Z

Technical specifications:

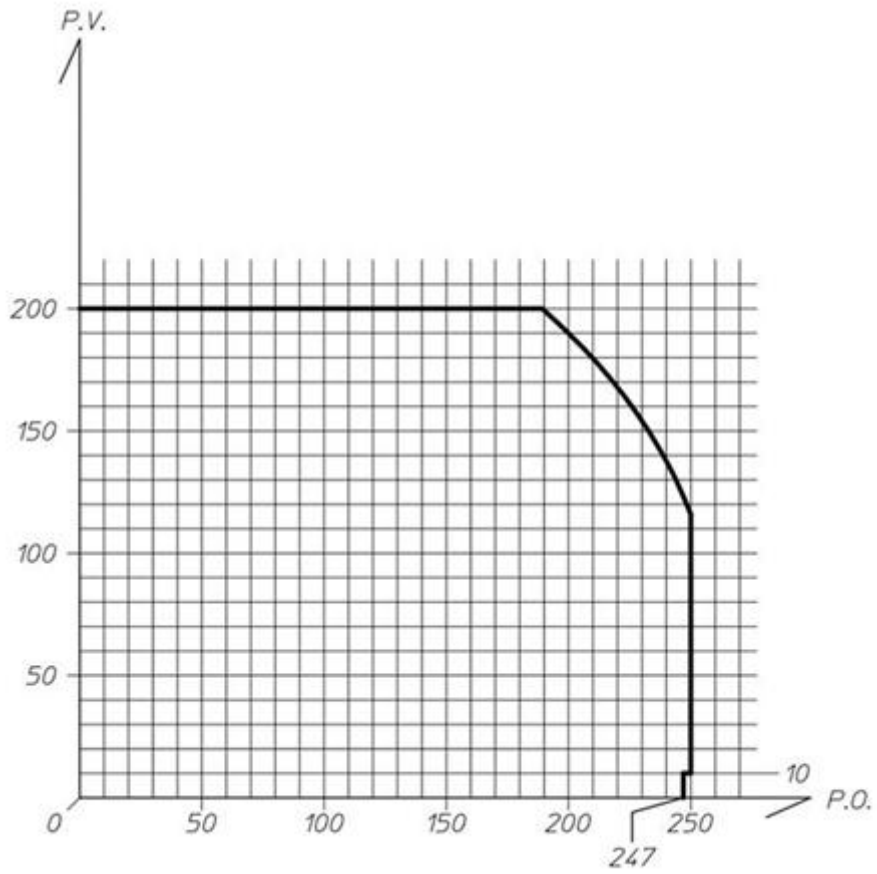
Tungsten carbide saw blade \varnothing 650, thickness 5 mm
 Hydro pneumatic saw blade advance
 Automatic adjustment of blade lead-out depth using line transducer
 Adjustable blade exit speed, rapid retraction
 Blade angle control with intermediate degrees $-20^{\circ}/+90^{\circ}/+20^{\circ}$ (from 20° to 160°)
 Set up for the forced extraction of chips
 Minimum quantity lubrication (MQL) with pure oil
 Set up to take swarf removal belt
 Blade motor power: 7.5 kW (in continuous service S1)
 Motor/saw blade transmission via a Polyflex type multiple V-belt
 Weight: 1320 Kg (without templates)

CUTTING DIAGRAM

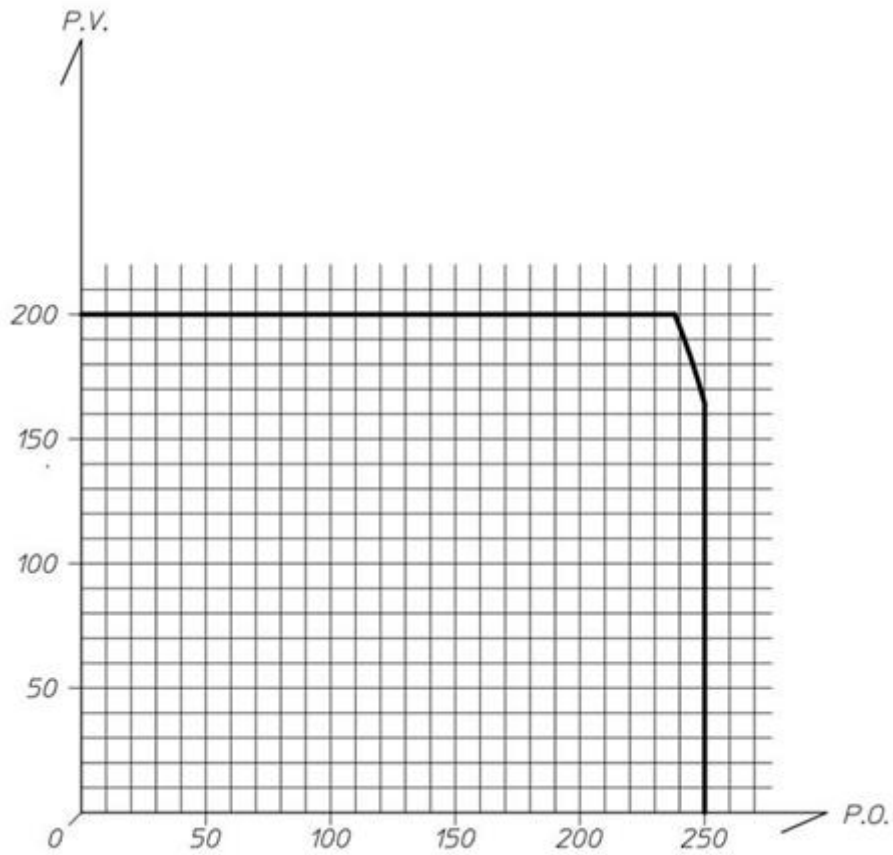
Cutting diagram $20^{\circ} / 160^{\circ}$



Cutting diagram 45° / 135°



Cutting diagram 90°



UNLOADING MAGAZINE



The system is equipped with a motorised lowerable roller table that allows the finished pieces to be rapidly extracted and stored on motorised belts and then transported towards to the operator. It consists of a minimum of 8 supports (the number varies according to the version) on which a belt runs with a shaped carrier that provides a firm base for the unloaded pieces. The number of supports can be increased and the distance between them varied in order to configure the bar unloader storage to the individual needs of the user. Simultaneous forward feed and belt phasing are guaranteed by a shaped motor shaft that transmits the motion to all the belts.

Technical specifications:

Minimum unloadable bar length: 250 mm standard
Minimum length from 40 to 140 mm (optional): with unloading transversal belt in front of the sawing machine
Minimum length from 141 to 250 mm (optional): with unloading transversal belt external to the casing
Optional minimum length: for lengths shorter than 40 mm subject to technical verification
Maximum length: 2500 mm, 5000 mm or 7000 mm, depending on the requested version
Useful depth of storage: 2000 mm or 4000 mm, depending on the requested version
Profile presence detection: by photocell
Complete storage unit: by photocell
Profile anti-drop safety device: by safety micro

On request: label printer

Extremely fast, manages various barcode formats. The printer must be positioned at the profile unloading end for manual application of the labels.

Available optionals:

Ribbon kit which allows using thermographic or normal paper
Different label formats and oriental languages can be managed

CONTROL CONSOLE

Compact control console mounted on wheels for executing programs.



Technical specifications:

Mobile control console
24" Display
Touch screen monitor
Standard mouse and keyboard
CN box Power-Family

PC comprising of:

Solid state hard disk
2 Net interfaces
USB ports
3-year international "on site" warranty for commercial PC
Operating system Windows ®

With the following applications installed:

FST LINE

Software characteristics

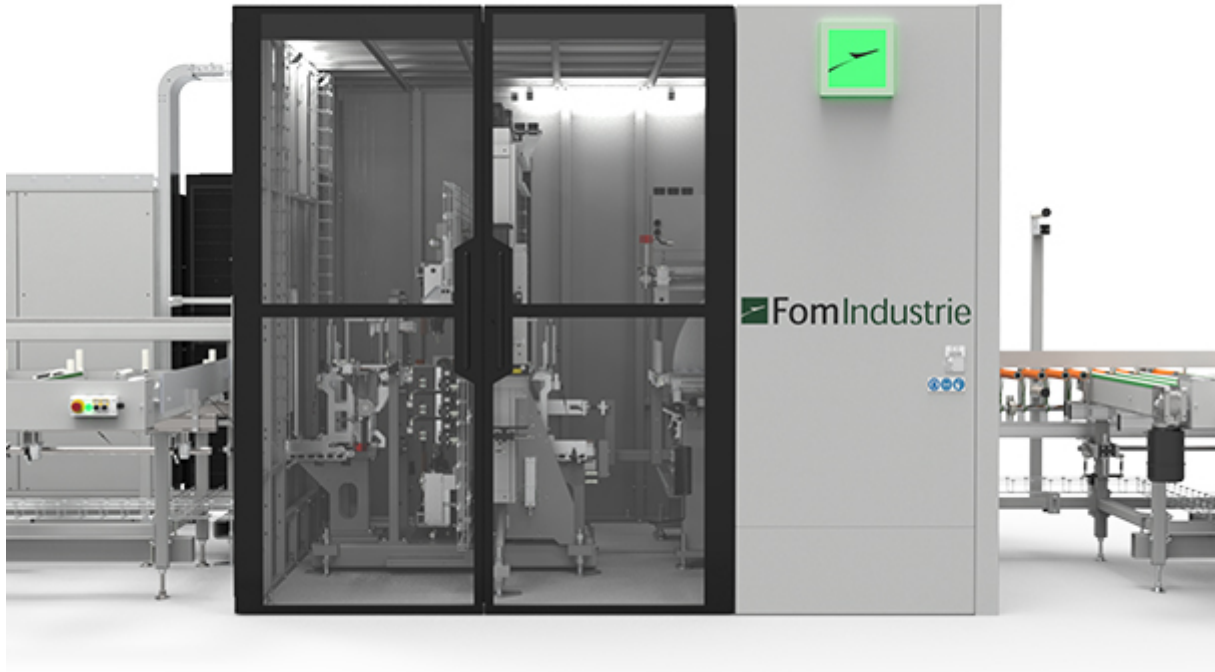
Cutting and machining lists entered via an operator interface
Cut optimization with reversibility and symmetry management
Inline re-optimisation with exclusion of ruined parts
Re-use of offcuts
Profile graphic archive
Three-dimensional macro archive (or macro creation and management)
Import and export of data from XML
Display of the workpiece and machining operations in a CAD 3D environment
Simulation of the machining operations
Display of technical features of pieces and tools
Graphic user interface
Import of geometries in DXF format

ELECTRIC CABINET

Equipped with filters for protection against emission and reception (EMQ) disturbances and with air conditioning system for the cooling of the electrical/electronic components. It has an IP 54 protection grade against dust and liquids.

SOUNDPROOF CASING

Soundproof cabin with extended visibility, with luminous FOM logo indicating the machine status.



SAFETY DEVICES

The plant is provided with CE marking in accordance with the requirements of Directive 2006/42/CE (Machinery Directive). Design and construction comply with the safety standards currently in force in the European Union and in the main industrialised countries (USA, Canada, etc.). In particular, for the European Union, the plant complies with the following legal requirements: Directive 2006/42/CE (Machinery Directive), Directive 2006/95/CE (LVD) and Directive 2004/108/CE (EMC). The plant is also equipped with safety devices in accordance with product standards and those governing health and safety at work:

Safety cabin fitted with front and rear access points interlocked using an electric lock
Barrier with interlocking gates protecting the rear and sides

The electrical system has been engineered in compliance with the provisions contained in European Union directives 2006/95/CE (LVD), 2004/108/CE (EMC) and conforming to the applicable standards governing the safety of electrical systems (EN 60204-1, EN 61000-6-2 and EN 61000-6-4). Special care has been given to the provision of emergency cables and to the system for activating and resetting them. If any faults occur, the operator is alerted by light signals and messages on the monitor. In the event of faults or breakdown, The protection devices inside the panel are designed to prevent injury to persons and/or damage to the machining centre itself.

In the case where the interaction between the plant and the environment in which it is installed adversely affects the above conditions, a global solution must be agreed with the buyer in order to render the location suitable and safe for the installation of the plant.

LINE OPTIONALS:

Swarf and chips removal belts

Available in different lengths and heights, they can be positioned at the rear of the cutting machine to remove the chips and swarf produced by the cutting. The addition of other belts allows chips and swarf to be removed away from the machine, including outside the safety fences.

TRANSVERSAL BELT 3700 x 1600 (H) mm ramp 40° + TRANSVERSAL BELT 2100 x 400 (H) mm ramp 20°

as an alternative:

LONGITUDINAL BELT 5500 x 2200 (H) mm ramp 40° + TRANSVERSAL BELT 2100 x 400 (H) mm ramp 20°

Unloading transversal belt in front of the sawing machine

Positioned under the cutting machine, it allows cut pieces of length between 40 and 140 mm to be unloaded (shorter lengths to be technically assessed case by case). An automatic baffle allows the cut profiles to be separated from the waste material, which is transported towards the rear chip removal conveyor.

Unloading transversal belt external to the casing

Positioned downstream of the cutting machine and upstream of the unloading magazine, it allows cut pieces of length between 141 and 250 mm to be unloaded.

DUST EXTRACTOR

The cutting machine can be connected at the rear to a suction unit that removes the chips by means of an 80 mm dia. tube. A kit is available for cleaning the workshop and the areas around the operating machines.

FUME EXTRACTOR (50 Hz)

Positioned above the operating machine's soundproof casing, it allows any fumes generated during the profile cutting and machining operations to be extracted.

55" LCD DISPLAY

It is located in the loading zone for displaying programs and bars to be loaded

Printing device with support for manual labelling

Electrical connection

Power supply voltage: 400 V three-phase + earth with neutral (50 Hz) in a TT type system for connecting to the electrical cabinet.

The three-phase power supply must have the star centre connected to earth (TT, TN-C, TN-S diagram). Otherwise, the customer must install a star/star isolation transformer with the star centre connected to earth upstream of the electric cabinet.

When installing the machine, make sure that the power supply line is of good quality and reliable, protected by an automatic line switch and connected to a good earthing system.

The 400 V power supply cable must be protected against overload and short circuit using a suitable thermomagnetic switch. Protection against indirect contacts must be by means of a differential switch with a differential current rating $I_d \geq 0.5$ A.

The 230 V single-phase voltage for the connection to the PC is inside the electric cabinet, protected by a differential switch with differential current rating $I_d = 0.03$ A. An external UPS can be connected to the main cabinet switch for use by the PC.

Operating conditions

Lighting: min. 300 lux. Also check that the location in which the plant is to be installed does not have any zones in shadow and that there are no excessively bright lights or stroboscopic effects (reflections-reverb).

Standard accessories

Plant installation layout

Pack containing service keys, floor anchors and a spiral hose for compressed air connection

Use-maintenance manual for the plant, including list of recommended spare parts

Use-maintenance manual for the main machines of the line (sawing machine, multispindle, extractor)

Software instruction manual

Software installation CD

Compact flash (memory card) containing a backup of the numerical control, software and main electronic components

User manual for the principal electronic devices (drives, inverters, printer)

Remote Assistance

The plant is fully set-up for the remote assistance service. The customer must possess Internet access from the PC on the control console.