

Станки гибочные для изготовления хомутов Excel 3D

Технические характеристики

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Exel 3D

HYBRID

The new generation

The EXEL, born in 2021, is a progenitor of a new range.

The EXEL 3D is the most complete solution in the field of automatic off-coil stirrup machines for flexibility, productivity and obtainable product quality, therefore industrial costs per ton are reduced thanks to the use of fewer machines and operators.



Exel 3D

(*) The data may be subject to variations depending on the quality of the wires used.



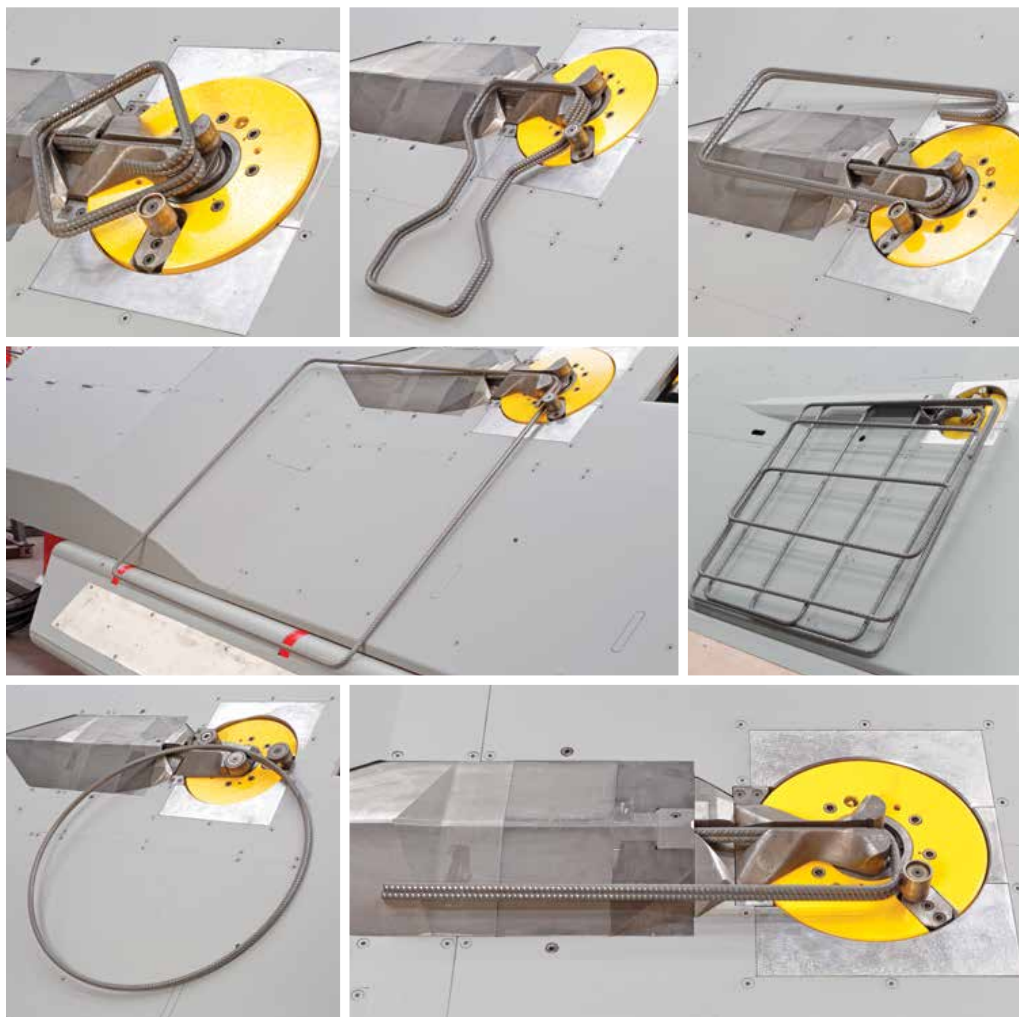
> Maximum productivity

The EXEL 3D is able to work wire in coils, within a diameter range from 8 to 16 mm. It allows to produce shapes and stirrups, straight or shaped bars with one or more bends on one side up to a maximum length of 18 m.

High productivity is guaranteed both in the case of series production (same diameter with two wires up to 13 mm, optional 14 mm*) as well as for processing of single elements (single round up to 16 mm).

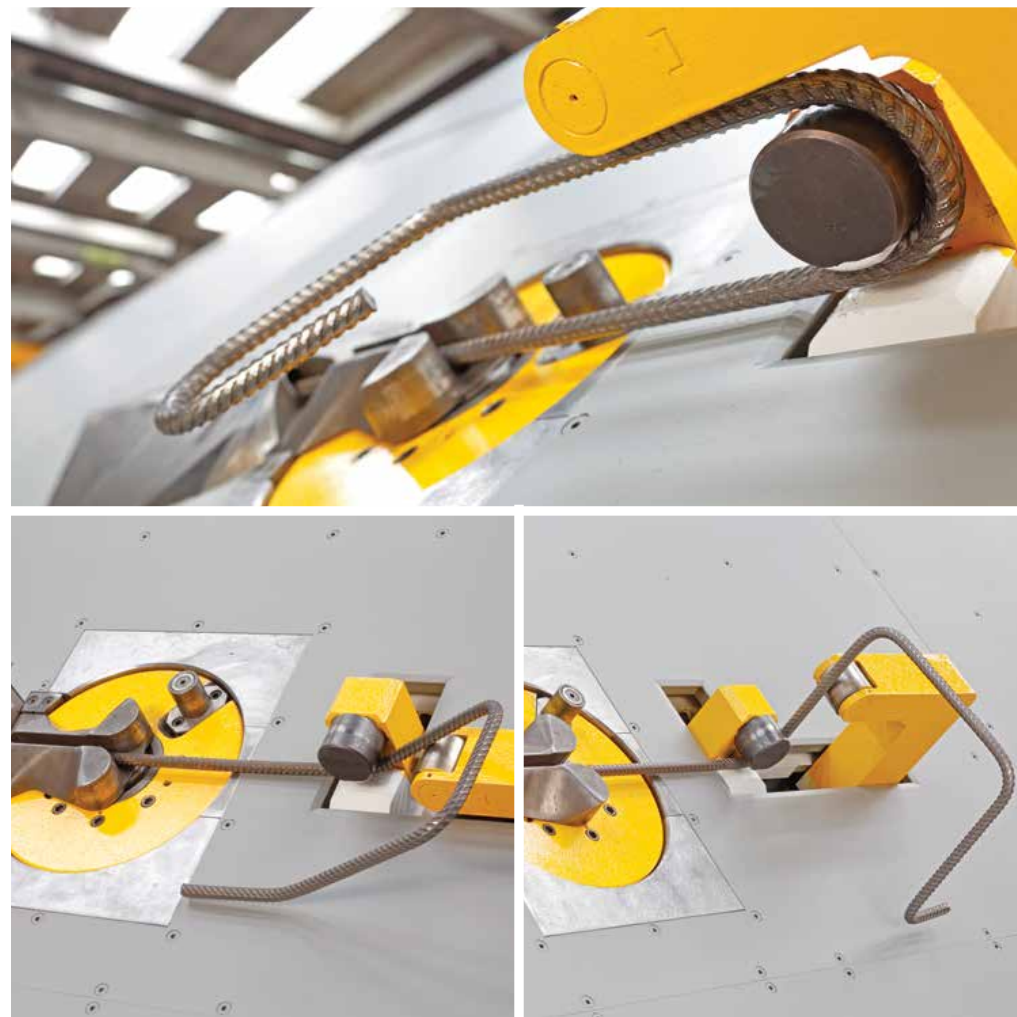
Maximum flexibility

Stirrups of very small or large dimensions, straightened bars, shaped with one or more bends on one side, circles or spirals, are realized in a completely automatic way, thanks to a complete range of accessories able to satisfy the most varied production requirements.



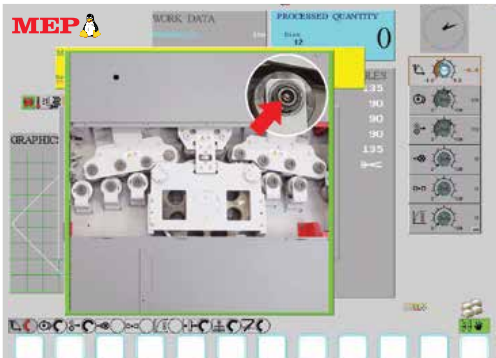
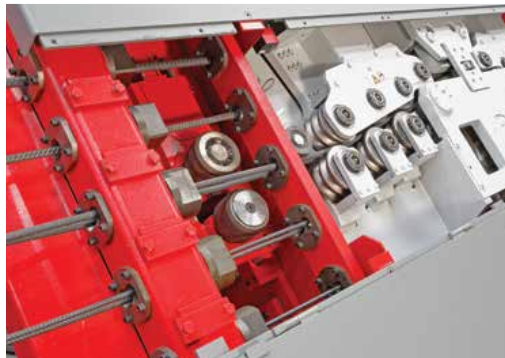
3D unmatched flexibility and efficiency

This exclusive device allows the creation of the most varied 3D shapes quickly and effectively. It is particularly used in the prefabrication sector where the shapes and sizes of elements to be produced are particularly complex.



Exclusive automatisms

A state-of-the-art drives and control systems allow for unrivalled hourly productivity levels. The manual operations entrusted to the operator are completely eliminated, which inevitably slow down the production processes, creating an optimized and continuous work cycle.



"Patented" quality and productivity

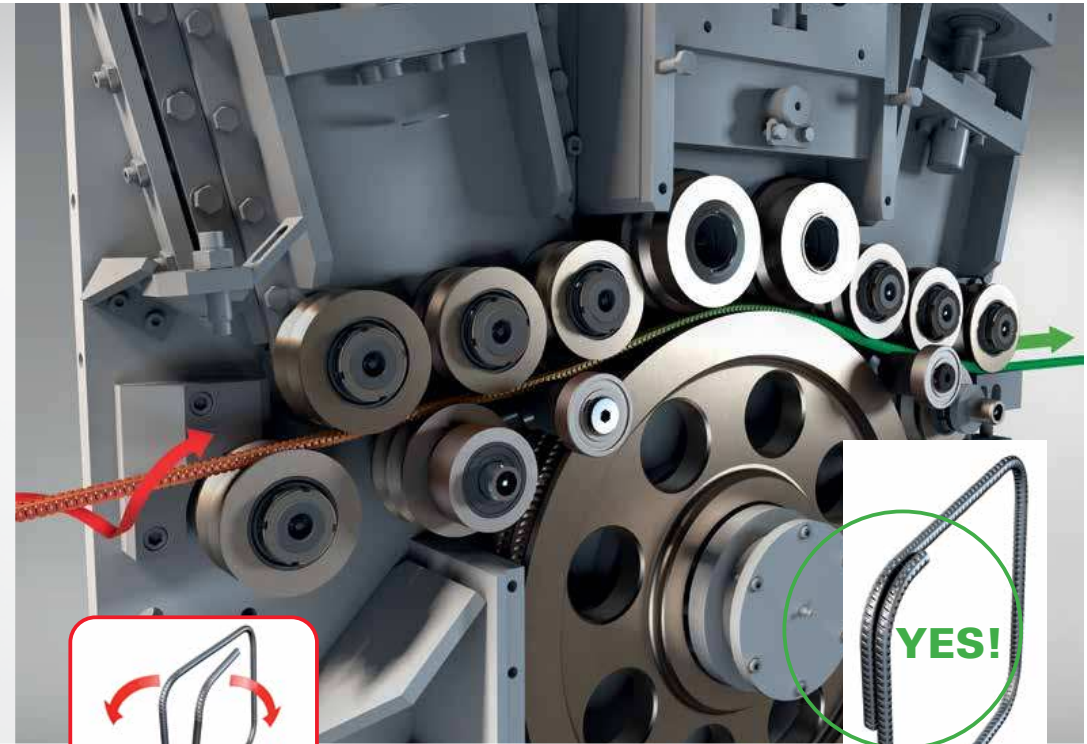
The EXEL 3D allows to obtain, in a simple way, a qualitatively superior product. The combined action of an exclusive series of patented devices, reduces set-up times deriving from complex adjustments and drastically reduces the quantity of products destined to be discarded.

AFS4

Advanced Feeding System

Anti-twisting and straightening system

The **AFS4** (Advance Feeding System 4) is a revolutionary straightening system patented way back in 1997, now in its fourth generation it has been used in more than 7000 machines. It allows to control the rotary effect of the wire on its own axis, which can characteristically happen during wire feeding. As a result closed stirrups and straight bars are obtained.



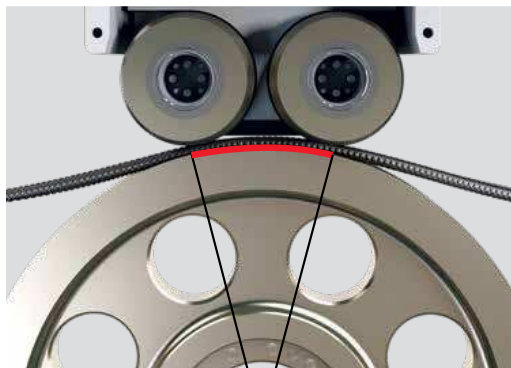
Any rotation of the wire during the advancement phase generates open stirrups.

The **AFS4** system guarantees superior straightening of the wires and closed stirrups.



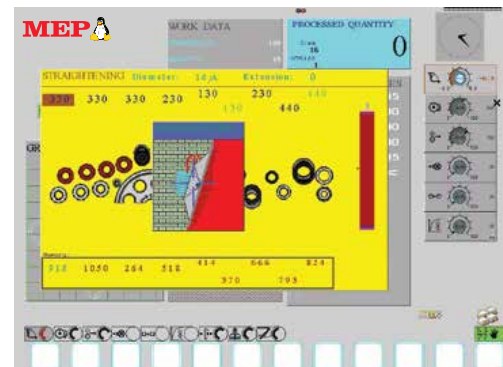
> Guaranteed quality

The innovative configuration of the rollers arranged on a single plane greatly facilitates the control of the straightening of the two wires being processed, with a consequent increase in the hourly productivity of the plant and the drastic reduction of non-compliant products destined to be discarded.



> Unfailing traction with minimal wear

The wide-surfaced feeding roller, unique in its design, guarantees a large contact surface with the two wires being processed. This ensures superior control of feeding and anti-rotation (anti-twisting), as well as decreasing the wear by at least 10 times, when compared to other feeding systems which are based on much smaller rollers, thus significantly reducing the costs for each ton produced.

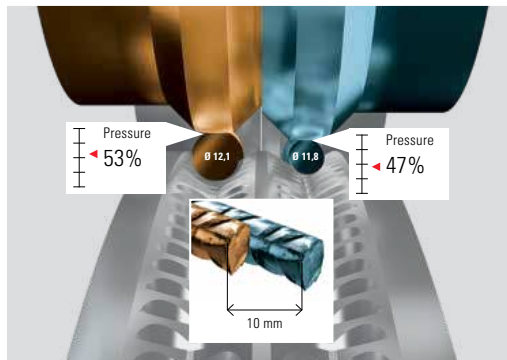
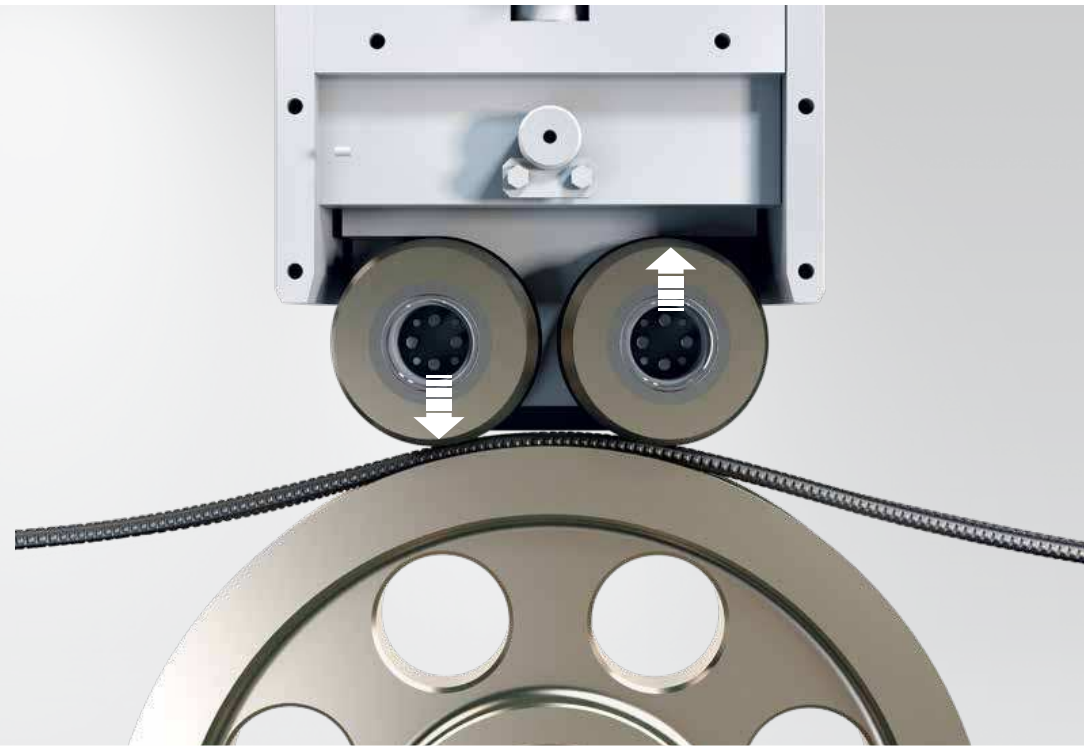
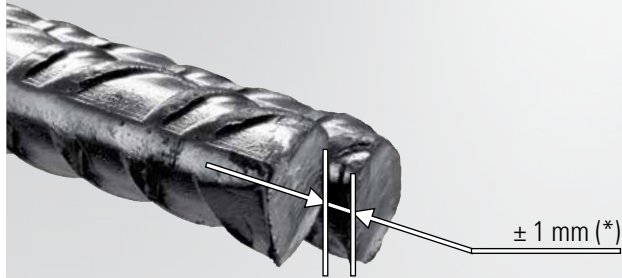


> Straightening under control

The combined action between the **AFS4** system and the "user friendly" electronic pointer allows to automatically manage the individual straightening of the wires even during the work cycle. Various settings can be stored depending on the quality/type of the material, diameter or simply of the manufacturer.

Unparalleled precision

The **AFS** is the only system available on the stirrup bender market that allows the control of the feeding of the two wires independently and efficiently. An exclusive mechanical system adapts to the different sections of the two running wires as well as automatically compensating for the negative effects due to the wear of the two channels of the main feeding roller, therefore the length variation between the two wires produced simultaneously are eliminated, reaching tolerance levels up $\pm 1 \text{ mm/m}$ (*).

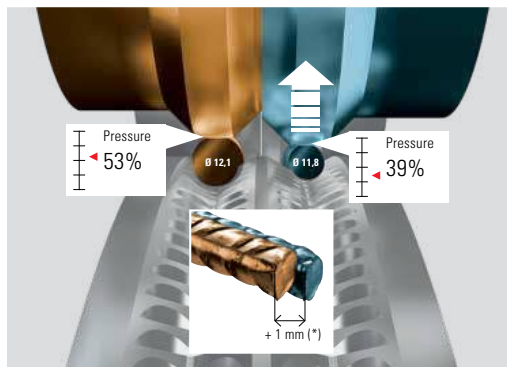


> Pressure under control

The control of the lengths of the straightened wires, is managed to the action of individual independent actuators which act on the two "contrast rollers" which bear down onto the main feeding roller.

The operator can vary the pressure independently on each wire directly from the control panel, allowing him to correct any errors between the two wires to gain the required tolerance.

The adjusted data is memorized so that each time the wire size is changed from one wire to another (automatic diameter change) the system automatically readjusts itself to the previously stored settings.



> Non-damaged ribs

The **AFS** is a system that allows control of the pressure on the two running wires individually, therefore it contains the superficial crushing of the "ribs" typical of traditional roller systems or those based on rotor technology.

Traditional systems



(*) The data may be subject to variations depending on the quality of the wires used and the state of wear of the rollers.

Bending quality

Back in 1970, MEP introduced an innovative bending machine, equipped with a special bending pin, characterized by a central channel able to act as a guide and a point of contrast for the wires during the bending phase. This avoided the undesirable deforming action (unwanted curvature of the side) that otherwise originated in the case of pins with a circular shape.

The stirrups and shapes thus obtained are characterized by always straight sides and very precise angles, avoiding subsequent problems or manipulation of the products made during the assembly phases (welding or tying).

A special software feature included allows to create bends with variable bending radius using the same central pin, through the "virtual pin" function typically appreciated when large bending radii are required.



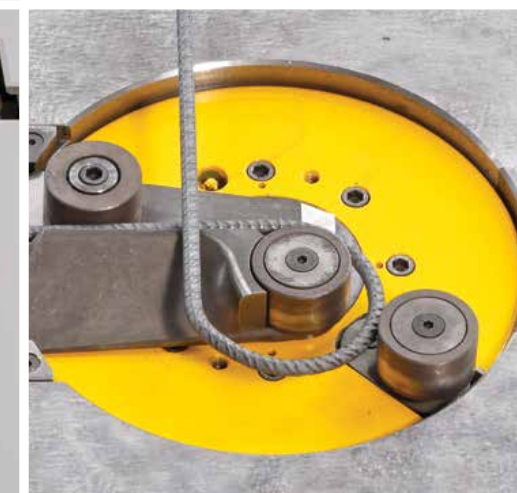
> Bending pins

Complying with international standards, they are "customizable" (optional) through the use of various bending radii and geometrically different shapes depending on the element to be produced.



> Pins for circles and spirals

Available on the EXEL 3D (optional) and in two different versions, they are suitable for the production of circles and curved elements.



Management of the coils and collection of stirrups and shapes

The entire production process that begins from the loading of the coils up to the collection of the finished product, passes through a series of devices that allow an optimal management. All this translates into efficiency and productivity.

> De-coiler automation

The latest payoff generation are suitable for the use of both the "wild coil" (wire rod) or "compact coils" (spooled) of different weights (up to 3.2 to 5 t) and dimensions, through a series of customizations (spacers) and optional.

Available in the two formats, the "LC" or the "LCM" version, which provide a braking system that is automatically controlled according to the shape to be produced. The "LCM" series includes automatic motorization which is necessary if you wish to use coils weighing more than 3.2 t.

"CE" protection fences and gates, are also available that allow access to a common area where all the payoffs are positioned, or for independent access to each single coil (optional). In the latter case, the operator can prepare the new coil while the machine is working. This is in compliance with the highest safety standards, and thus increasing the efficiency and safety of the system.



> Inserting the wire has never been easier

The winch (optional) is equipped with a locking device that allows the fixing and control of the start of a new coil and allows it to be dragged and threaded through the various guides up to the machine inlet.

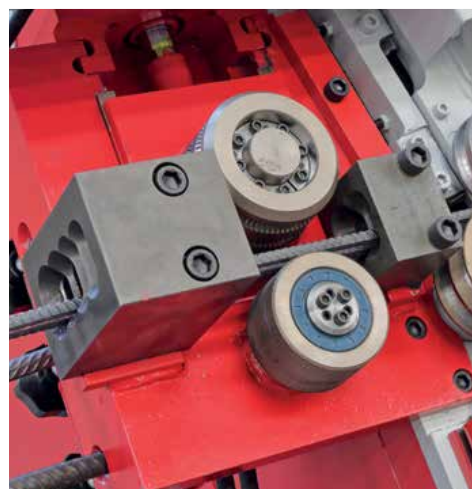
The portable, hand held straightening device (optional) is recommended in case of continuous use of large diameters or in cases where the coils are of poor quality.



> Pre-feeding group

This unit is equipped with a motorised roller which being operated by means of a manual selector switch, allows the two ends of the new coil to be easily fed into the machine.

It is used in the initial feeding phase of new coils, (from the entrance guide through the roller guides leading up to the **AFS4** feeding unit) and as an extraction unit for the last part of the coil (in the opposite direction).

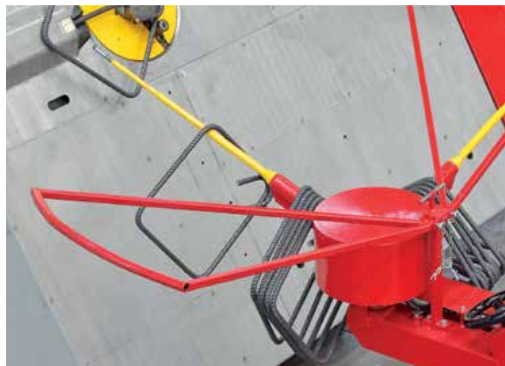


> Automatic wire-change in seconds

The exclusive multi-wire pre-feeder (optional) automatically performs the change of the wires in a very short time. At the same time, the **AFS4** straightening system reconfigures itself according to the diameter of the coil to be processed using the pre-stored data. Thanks to this solution, the machine is ready to resume production in a matter of seconds without any manual intervention by the operator.

A special device (optional) allows the processing of "tags" with even or odd quantities in a completely automatic way, combining multiple sequences that require the processing of two wires simultaneously with those with a single wire.





> Safety and ergonomics

The **AFS4** allows to obtain closed shapes and stirrups, eliminating any dangerous manual intervention of the operator during the bending phase.

The exclusive design of the worktop, equipped with a lower folding shelf, allows the easy production of large-sized stirrups (maximum distance between the central pin and the ground 1900 mm). This tilting shelf is operator configured to become a collection support for the stirrups, preventing them from falling to the ground. The operator therefore always works in conditions of high safety and in an extremely ergonomic environment.

> Stirrup collectors

Available in different configurations, both in the versions with oscillating arms and those that include conveyor belts (optional) allow the collection and transfer of the stirrups produced to an area adjacent to the operator, facilitating collection in total safety and efficiency.



Aron "state of the art"



> Robotic solution

ARON is a customisable system (optional) dedicated to "smart factories" which collects, stacks, packs and labels the stirrups and shapes produced in a completely automatic way.

It uses the "GSA" technology (Grid- vision Straightening Adjustment) able to automatically adjust the **AFS4** guaranteeing a constant high quality production.



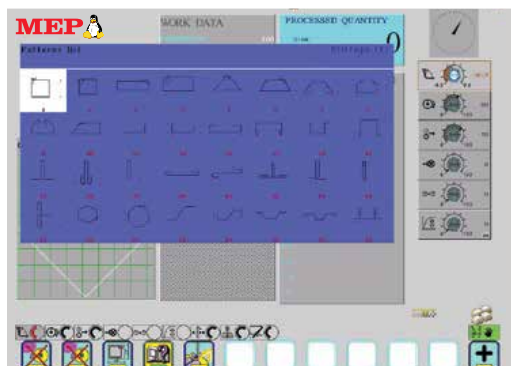
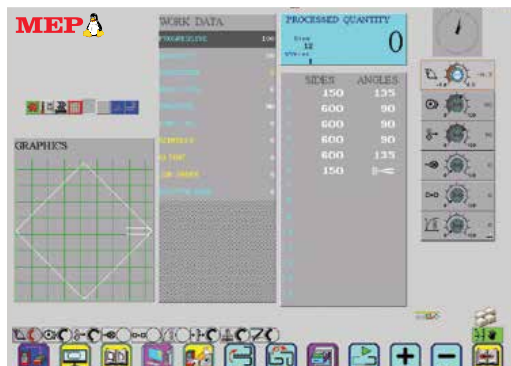
MEP World System: total control

The World System, through a “user friendly” interface, allows total control of all the devices of the system, enhancing its performance.

The programming of the production cycle allows to use the pre-memorized parameters related to speed, compensations, etc. relative to shape, dimensions and diameter of each single element.

The operator panel P.C. Industrial MEP “World System” is composed of:

- “Touch screen” LCD screen.
- Compact (“embedded”) low absorption (“fanless”) microprocessor equipped with “compact flash disk” without moving parts (“diskless”).
- Linux operating system.



> World System software

The software specially developed by MEP allows:

- Programming of “user friendly” 2D or 3D shapes supported by active graphics, or through a library of predefined shapes and dimensional feasibility monitoring through the “dynamic simulation” function.
- Advanced features for searching the shapes saved in the archive.
- Import of programming data according to the most common protocols: BVBS, Unitech, British Standard, MEP-U2000.
- Creation of lists containing progressive memory in sequence or possibility to import them from the office.
- Storage and archiving of data related to work cycles and generation of daily production statistics (progressive memory, diameters, times, weights, etc..) and possible “remote” display from the office.
- “Active diagnostics” system for a constant monitoring of the functioning of the main groups of the plant and possible single and sequential movement of the same.
- Automatic activation of the programmed maintenance.
- Advanced functions for the calibration of the measurements of the sides and of the bending angles.
- Optical barcode reader (optional) via USB or RS232 serial port.
- USB port connection.
- Possibility of connection to the company network through RJ45 Ethernet port (LAN port) or RS232.
- Ready for remote assistance via Internet (company network for remote diagnosis).
- Can be interfaced with external “ROBOT ready” systems.
- “Industry 4.0 ready” certification.

Technical and production characteristics



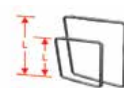
SINGLE STRAND PROCESSING WIRE DIAMETER 2D

cold drawn, hot rolled, smooth or ribbed wire



DOUBLE STRAND PROCESSING WIRE DIAMETER 2D

cold drawn, hot rolled, smooth or ribbed wire.



SQUARE STIRRUP DIMENSIONS

minimum with single strand (optional bending pin)

maximum if clockwise

maximum if counterclockwise

maximum if counterclockwise with optional cover extension



BAR LENGTH STRAIGHT AND CUT TO SIZE

minimum

maximum (if equipped with optional collecting bench; other sizes on request)



CENTER BENDING PIN DIAMETER

minimum

maximum



MAXIMUM DISTANCE BETWEEN CENTRAL BENDING PIN AND GROUND

standard

optional upon request



OPERATING TEMPERATURE

standard

optional upon request



INSTALLED POWER

maximum (other upon request)

THE PLANT DOES NOT REQUIRE COMPRESSED AIR.

$f_y = 600 \text{ N/mm}^2$: max. unit yield point - $f_t = 700 \text{ N/mm}^2$: max. unit tensile strength (other on request)

* available as an option



EXEL 3D

Ø 8 - Ø 16 mm | #2 - #5

Ø 8 - Ø 13 mm | #2 - #4
optional 14 mm | #4

100x100 mm (Ø 8 mm) | 3.94x3.94" (#2)
1400x1400 mm | 55.12x55.12"
1500x1500 mm | 59.05x59.05"
2000x2000 mm | 78.74x78.74"

5 mm | 0.19"
12000* mm | 472.44"

32* mm | #10*
160* mm (2D) | 6.30" (2D)

1900 mm | 74.80"
> 1900 mm | > 74.80"

-5° C / +40° C | 23° F / 104° F
-15° C / +55° C | 5° F / 131° F

97 kW

Customization

● Standard equipment ● Equipment available as an option ○ Equipment not available

Portable straightening device

●

Winch

●

Multi-wire pre-feeder (single wire / double wire version)

●

Pin for circles/spirals

●

Collecting bench length from 6000 mm (20') to 12000 mm (40'), height 1200 mm (47.24") (other sizes on request)

●

Elevation spacer for compact coils “spooled”

●

Stirrups collector, conveyor belts, robotic solutions

●

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