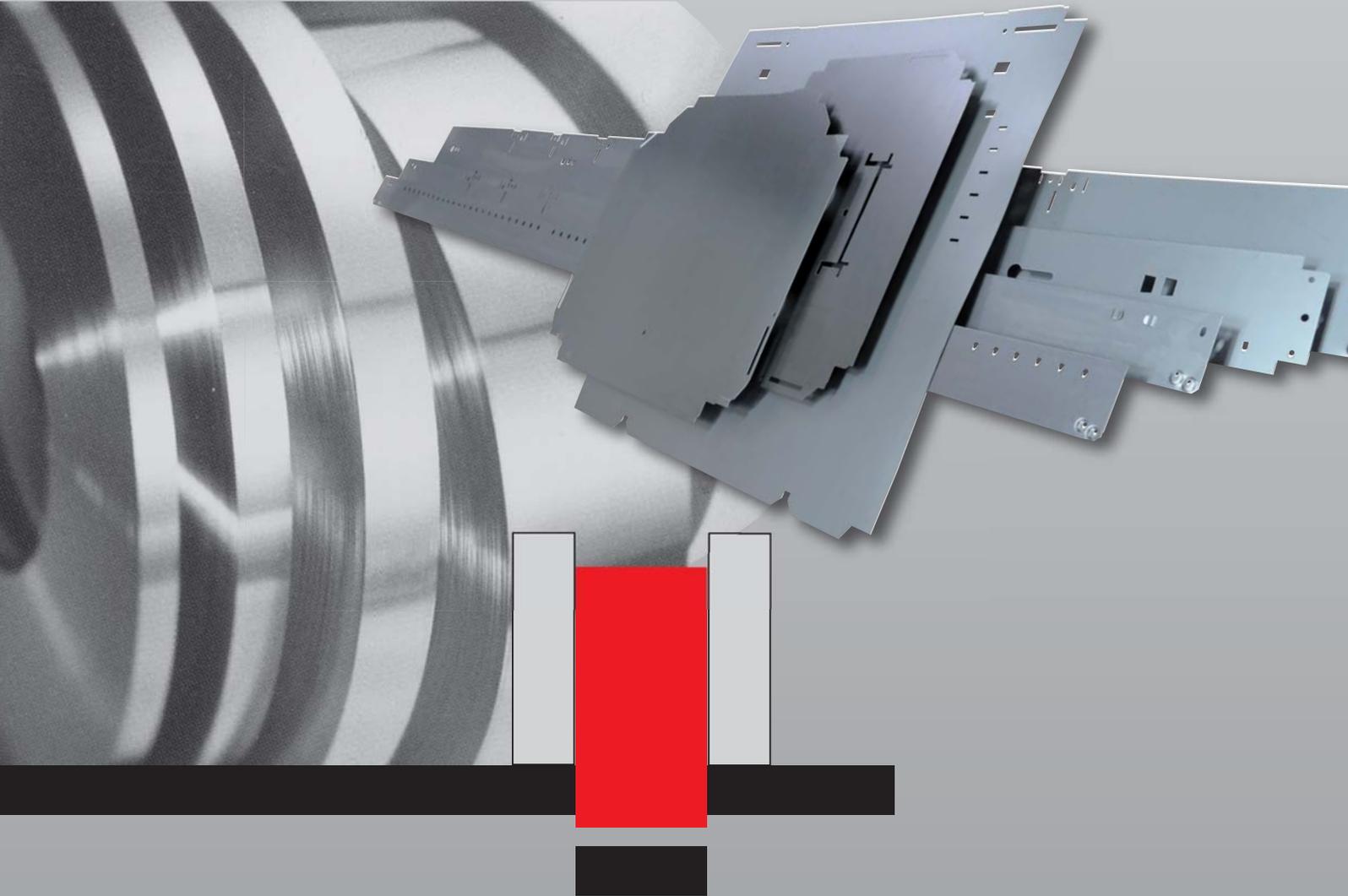


# LINAPUNCH<sup>®</sup>

FLEXIBLE COIL PUNCHING SOLUTIONS



 **DIMEGO**  
ALIPRESSE

FLEXIBLE CONTINUOUS FORMING PROCESSES

[www.dimeco-alipresse.com](http://www.dimeco-alipresse.com)

# FLEXIBLE CNC PUNCHING FROM COIL

a huge field of productivity for fabricators and stamping companies

## LINAPUNCH® Combines The Flexibility of NC Turret Punch With The Efficiency of Stamping.

### PRODUCTIVITY AND FLEXIBILITY AS TARGETS

LINAPUNCH® provides incomparable flexibility and productivity to companies wishing to increase their production capacity, optimise their cost prices and respond quicker to market requirements.

### THE MULTISTEP TECHNOLOGY

In 1975, DIMECO started to develop his proprietary MULTISTEP technology, to implement continuous CNC coil punching.

Each feed length "x" is a variable depending upon the movement to be carried out for correctly positioning the strip under the right tool.

With the LINAPUNCH®, we now bring an additional "y" moving axis to the tool.

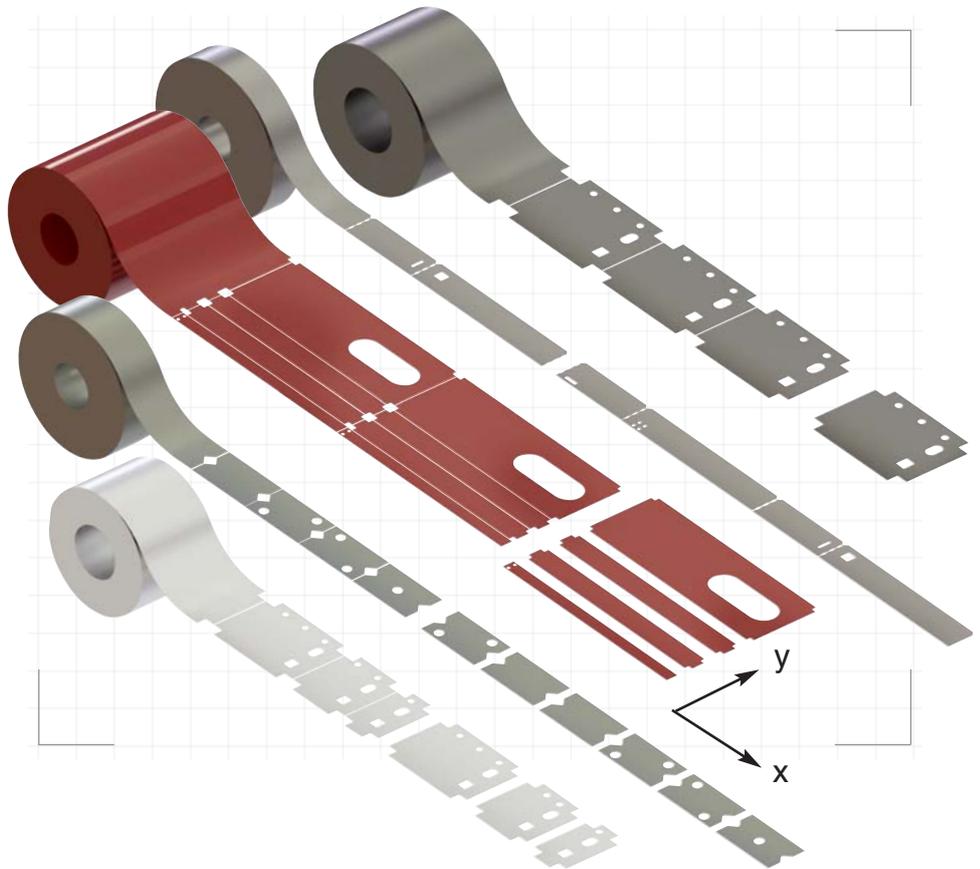
### ANTICIPATED BENEFITS

LINAPUNCH® generates considerable savings. Some projects payback in less than 6 months.

A LINAPUNCH® triggers a significant reduction of the direct cost of the part.

The material costs are reduced from 5% to 20% thanks to the use of coil material, lower material gross weight and less scrap at each production change over.

Manufacturing time is from 3 to 20 times less than with a regular turret punch. In addition, with a suitable packaging system, the LINAPUNCH® does not require the continuous presence of an operator. Labour cost saving is significant.



### INCREASING MANUFACTURING OUTPUT

A DIMECO punching line is 3 times more productive than a regular turret punch for a similar working area.

The O.E.E. (Overall Equipment Efficiency) of the installation is improved. Changeover times are reduced or even instantaneous when they are automatically carried out within the same coil.

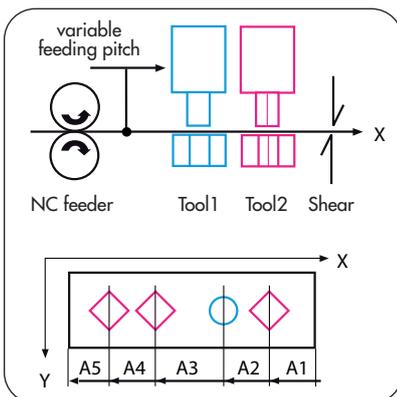
The autonomy of the line is improved by providing coils weighing 15 tons or more.

### TWO MACHINES IN ONE !

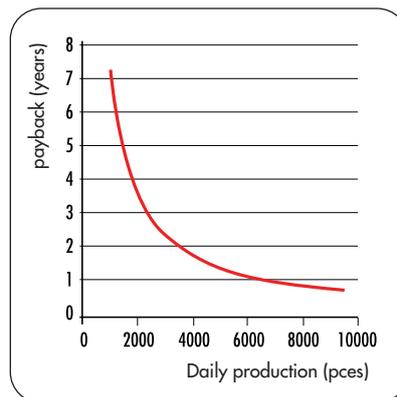
Thanks to the shear, the LINAPUNCH® line can be used as a cut-to-length line. You can produce in-house, on request, to your sizes, the blanks required by your other turret punches, lasers...

### REDUCTION IN TOOLING COSTS

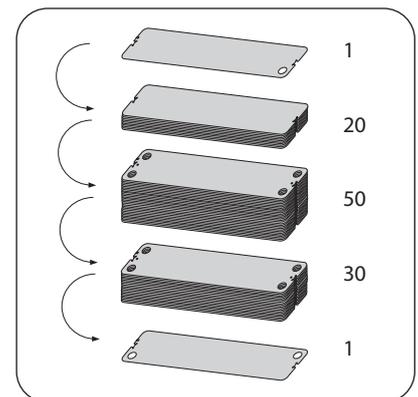
Drastic tool cost cuts are obtained thanks to the use of cartridge tools selected in the cost efficient standardised "thick turret" range.



The MULTISTEP punching technology



Profitability diagram



Chaining of parts without stop nor scrap

### FOR O.E.M. AND CONTRACT MANUFACTURERS

LINAPUNCH® is particularly suited to organisations controlling the development of their own products. DIMECO customers and engineers can more effectively optimise the whole product/process. Contract manufacturers can also find with LINAPUNCH® an effective solution maintaining flexibility inherent to their profession.

### FOR ALL MATERIALS

The majority of FLEXILINES® form steel sheets ranging in thickness from 0.4 to 4 mm. DIMECO has also developed specific know-how in forming delicate material : stainless steel, prepainted, copper, polished aluminium, composites, PVC, etc.

### NUMEROUS POSSIBLE SHAPES

LINAPUNCH® can produce the most simple as well as the most complex shapes achievable on a turret punch.

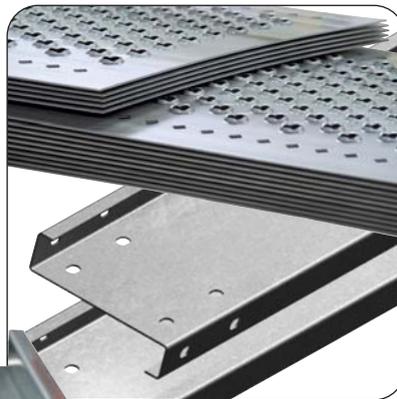
In addition to punch shapes, it can also produce pre-cuts, threads, embossings and other downward and upward drawn shapes.

### PART DIMENSIONS

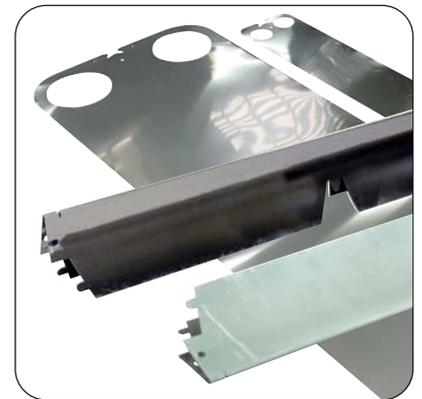
LINAPUNCH® can produce large parts, with unlimited length and width ranging from 50 to 1500 mm. The small parts can be produced by connecting them with easily detachable micro-joints.

### QUANTITIES TO PRODUCE

A LINAPUNCH® line sees rapid returns if annual production is between 100,000 and 2,000,000 parts. The LINAPUNCH® is particularly suited to the production of groups of parts requiring several variations in dimension or pattern.



Up to 4 mm thick



Delicate materials



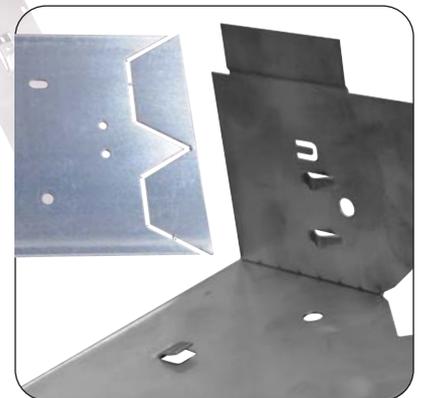
Unlimited length



Embossing



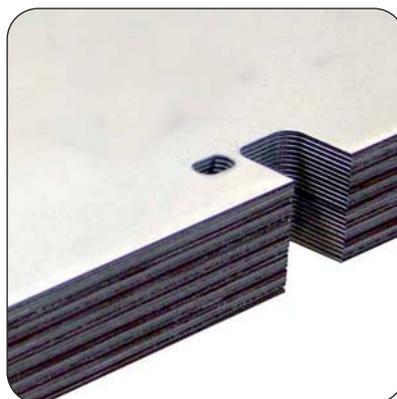
Tapping



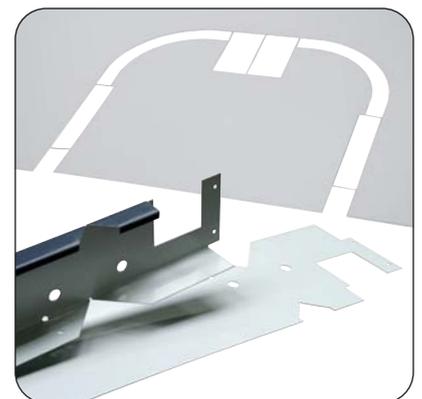
Pre-cuts



Standard "Thick turret" Cartridge tools



From 1 to 5000 pcs daily



Complex shapes



# THE LINAPUNCH® MC-E FROM EVERY ANGLE

*description of the machine*

## “Multiple Pattern” Design

## Single or Dual Head

## 2 Cassettes Per Head

### AN ORIGINAL DESIGN

The strip feeding towards "x" is generated by a MICROFEED® roll feeder driven by a servomotor. Both heads, arranged face to face, are fitted with the punching tools. Each head is independently movable along the "y" axis. The head movement is provided by ball screws driven by servomotors.

In each head, a servo actuated selector moves the striker to the right "x,y" position, just above the required tool to use.

The servomotor actuator, coupled to a knuckle system, drives the ram motion according to a fully programmable chart.

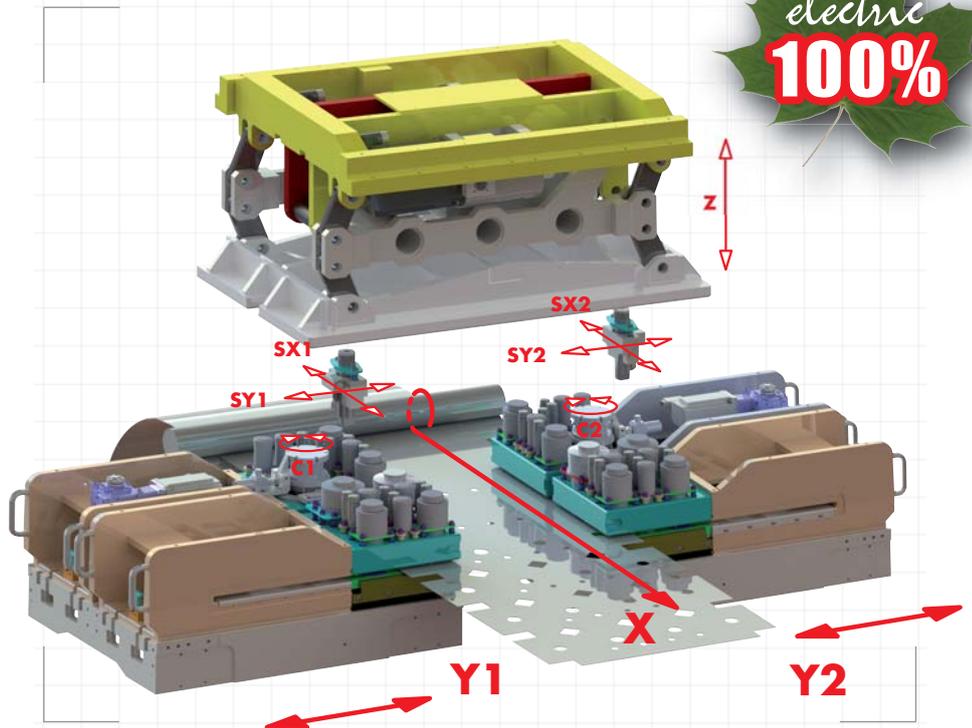
The set of servo controlled axis is monitored by the line NC supervisor.



LINAPUNCH® MC-E Width 500 mm, 1 head



LINAPUNCH® MC-E Width 1250 mm, 2 heads



### HIGH PERFORMANCES

The striking plate can develop a force of 2 x 200 KN. The strike rate reaches up to 200 Hpm or 400 Hpm when nibbling.

Both heads can simultaneously punch.

The numerical control of the actuator allows an accurate management of top and bottom dead points.

Very dynamic, the roll feeder ensures acceleration of 20 ms<sup>-2</sup> and a maximum speed of 100 m/min. The selection system is used to control a large number of tools, up to 72 tools in standard cassettes.

### A WIDE RANGE

Single head machines punch strip with maximum width of 500, 650 or 800 mm.

The dual head machines process strip of width 1000, 1250 and 1500 mm.

Each head can accommodate two tool-holder cassettes. The maximum allowable thickness of the strip is 3.5 mm or 4.25 mm in the HD version.

### A ROBUST CONSTRUCTION

The robustness of our design gives our equipment reliability and durability that have built the reputation of DIMECO ALIPRESSE.

The mechanical parts are generously sized and are often precisely machined from castings.

We develop our pneumatic, hydraulic and electronic components with world's leading manufacturers.

The straight side frame, which receives the heads of the LINAPUNCH®, ensures high rigidity and perfect punch and die alignment, this whatever the position of the tool in the cassette is.

The frequency of sharpening tools is reduced.

LINAPUNCH® MC-E	D	F	G	H	J
Coil width (mm)	500	800	1000	1250	1500
Coil width (inches)	20	31	40	50	60
Mini strip thickness (mm)	0,4	0,4	0,4	0,4	0,4
Maxi cassette #	2	2	4	4	4
Head #	1	1	2	2	2
Maxi # of punches with std cassette	26	26	52	52	52
Maxi rotary tool #	2	2	4	4	4

The LINAPUNCH® MC-E range

# multiple tool patterns, tailored to the application

## "THICK TURRET" CARTRIDGE TOOLS

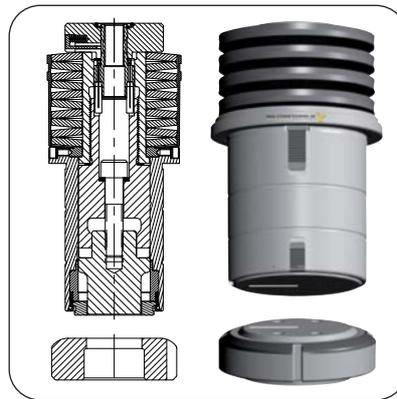
Standard "thick turret" cartridge tools are commonly used in turret punch presses.

The extensive standardization and a large number of manufacturers provide quick availability of these tools at a reasonable cost.

For flat cutting, basic tools (square, round ...) are available from stock in most popular sizes. Tools with special forms can be obtained within a few days. Each manufacturer offers further more special forming tools: extrusion, embossing, bending, semi-cutting, hinges, coining...

Several ranges are available from the cost effective basic model to the most sophisticated integrating travel adjustment, lubrication...

Tool maintenance is simple. Sharpening is very fast, performed on a special purpose device.



Standard Cartridge tool



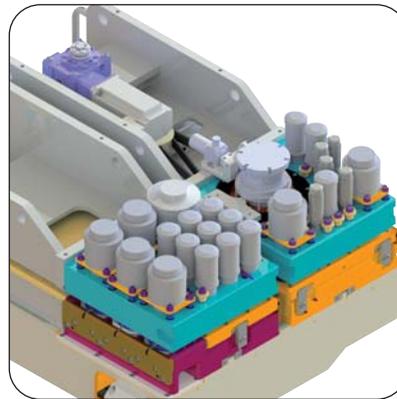
Die holder plate

## TOOL HOLDER CASSETTE

A cassette comprises a C frame made from a machined iron casting which receives a punch holder block and a die holder plate.

The various thick turret cartridge tools and the stripers are mounted on the tool holder block.

The die holder plate is easily removable for maintenance. The alignment of upper block and lower plate is achieved in our shops.



Each head houses 2 exchangeable cassettes



Standard 13 slot MC ST Cassette

## THE MULTIPLE PATTERN CASSETTES

The cassette range includes three standard models:

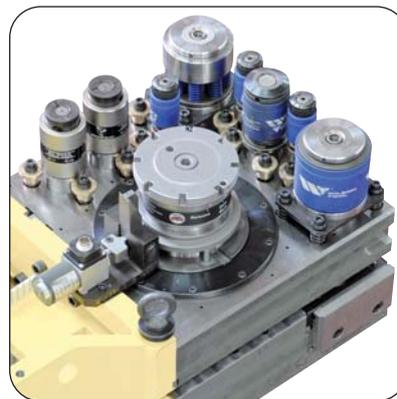
**MC ST** pattern offers 13 tools appropriate to the needs of most manufacturers.

**MC R** offers 10 slots for standard tools and a D size rotary tool holder.

This tool holder can receive an Auto-index tool, a multi-tool or a multi-Index tool.

**MC UF** "upforming" has 11 regular slots and 3 C size slots that allow upforming operations.

Special cassettes can be developed to meet a specific customer need.



MC Ri cassette with Indexable Rotary tool holder



MULTI-TOOL cartridge

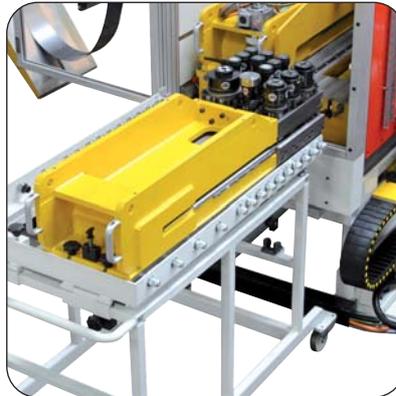
Cassette type	Cartridge tool sizes	A	B	C	D	E	Comments
	Maxi size (mm)	ø 12,7	ø 31,75	ø 50,8	ø 88,9	ø 114,3	
MC ST	Standard	6	3	2	1	1	
MC Ri	Indexable rotating holder*	5+8*	3	2			Auto-index or Multi-tool or Multi-index
		5	3+3*	2			
MC UF	Upforming*	9	1	1+3*			
MC SP	Special configuration	6	3	2	1		+ one 100 mm x 50 mm tool block
MC SP	Special configuration	27					

The wide cassette range

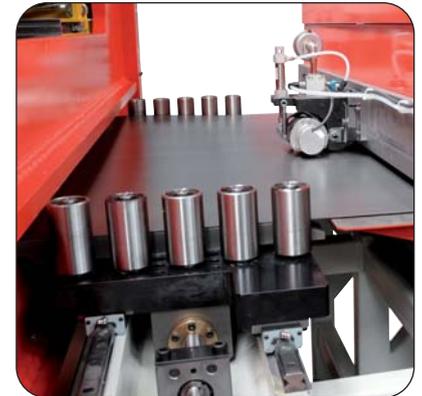
**Up to 72  
Available Tools  
With 32 Indexable**

# EFFICIENT OPTIONS AND ANCILIARIES

## Cassette Changeover In Less Than 3 Min.



Cassette trolley



Strip guides & encoder



Tapping unit

### EASY CASSETTE CHANGE

The withdrawal of the cassette is needed for sharpening tools or to implement another cassette containing, for example, tools for processing another product family.

The heads are equipped with roller die lifters to ensure easy removal of cassettes. In addition, we offer a specific 1 or 2 position carriage to facilitate handling and maintenance work.

### ADDITIONAL EXTERNAL SPECIAL UNITS

One or two tapping units can be added to enable forming of threads (up to M8 in steel).

The two units with leadscrew are fully programmable in "y" axis. Lubrication of taps is managed by the LINAPUNCH®.

Additional hydraulic units can be integrated downstream of the LINAPUNCH® for punching operations involving efforts up to 80 tons. These units are also integrated into the programming.

### EMBOSSING UPWARDS "UPFORMING"

To avoid costly rework, the LINAPUNCH® MC-E can be equipped with an optional "UPFORMING" feature that can form embossing up to 6 mm deep. A 3 "C" size tool module activated by 3 x 8 ton hydraulic cylinders is implemented on the cassette outlet side, thus replacing a row of standard tools.

### GUIDING THE STRIP

The width of the coil generally matches the width of the manufactured part. There is no scrap. The accuracy of some dimensions will depend upon the quality of strip guiding.

Roller guides are arranged upstream and downstream of the LINAPUNCH® to provide a "long" and precise guiding. Adjusting the guides can be manual or programmable.

### AUTOMATIC LUBRICATION

A centralized and programmable lubrication for tools is optional.

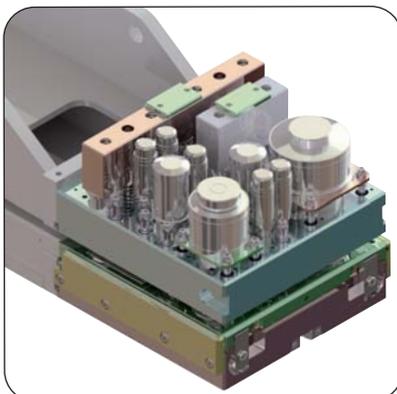
It is recommended for high speed nibbling. It involves the choice of cartridge tools specifically designed for lubrication.

### SCRAP REMOVAL

A magnetic or a belt conveyor is positioned beneath the heads in order to ensure the delivery of the chips or cuttings to a recycling bin.

### INTEGRATED LOAD MONITORING

A load measuring sensor is implemented on each stricker. It stops the machine in case of overload. In addition, it allows the control of tool wear and the detection of possible faults (broken punch, scrap stuffing...).



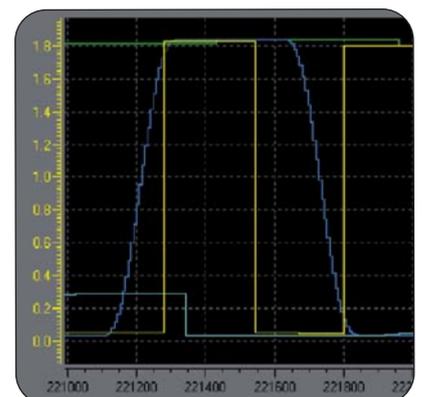
MC SP special Cassette fitted with a "Tool block"



Additional C frame hydraulic units



MC UF "UPFORMING" Cassette



Load monitoring

# LINE SUPERVISION AND PROGRAMMING



LINAPUNCH® IT integration

## EFFECTIVE LINE SUPERVISION

The LINAPUNCH® is controlled by a SIMOSTAR® numerical control system. It is built from SIEMENS SIMOTION S7 hardware, which is available worldwide.

The design and programming are entirely developed by our automation engineers.

The "man-machine" interface is particularly intuitive and user friendly. All machine controls are accessible from a wide color graphic touch screen. Remote maintenance can be performed through a telephone or internet line.

The line can be equipped with an additional supervisor (a PC) which provides a "smart" interface with the ERP system and customer's CAM processor. The supervisor provides the line attendant with local scheduling features and can ensure, for example, the dynamic generation of texts to be marked on the part.

## THE VARIOUS PROGRAMMING MODES

In the basic version, the LINAPUNCH® MC-E offers a simple and user-friendly programming interface that is perfect for the recurring production of part sequences.

A friendly part data entry assistance software also allows the development of programs on a desktop PC, which can later be transferred to the machine.

## CHAINING PRODUCTIONS

DIMECO "MULTISTEP" proprietary software features part-chaining manufacturing in the same coil: parts with different length and patterns can be produced in a row one after each other without stop or scrap.

## CAM PROCESSOR

The use of a CAM processor is recommended when the LINAPUNCH® line includes a lengthwise shear or a robotic stacking system or when users frequently create new parts.

The processor assigns the tools, the robot grippers and storage locations.

With nesting, it defines the best punching pattern optimizing the scrap rate.

The processor then automatically generates punching and slitting programs as well as the robot stacking sequence.

## INTEGRATION INTO THE COMPANY INFORMATION SYSTEM

The LINAPUNCH® line can be easily integrated into the corporate information systems.

Connected to customer's ERP management system, it allows the exchange of information in real time: sending of production programs and collection of operational parameters from the line. The CAM processor transfers through the network all the information needed to program the LINAPUNCH®.

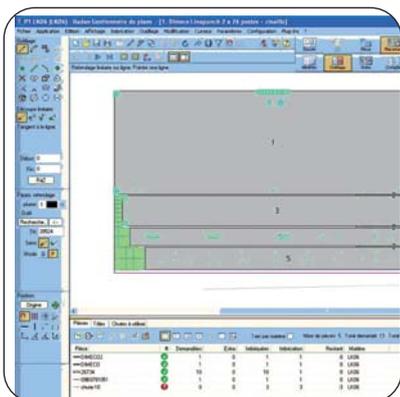
## Easy Integration Into Company Information Systems



Part Program



Job List



Nesting generated with the CAM processor



LINAPUNCH® control panel

## Safe Remote Maintenance Through VPN Connection

# INTEGRATION IN A FLEXIBLE MANUFACTURING LINE

developing your turnkey punching line

**"PITSTOP"  
Automatic Coil  
Change in Less  
Than 3 Minutes.**

**Coil of 500 kg  
to 25 Tons**



Typical FLEXILINES® layout

## DIMECO COIL HANDLING LINES

Coil handling is the original business of DIMECO. As European leader, we offer the widest range in the market with more than 500 standardised machine models.

Our engineers will choose from our PRESSFEED® range, the machines and accessories which are most suited to your LINAPUNCH® line.

We will assess your various material grades, the different coil sizes, the line environment, your operator's safety targets and required flexibility level. The use of standardised DIMECO coil handling lines in your LINAPUNCH® is the assurance of a robust, reliable and proven design. It is the guarantee of an efficient customer service and the quick availability of spare parts.

## "PIT STOP" COIL CHANGEOVER

The decoiling line should be designed in order to offer simple and quick coil change. The PITSTOP configuration enables the introduction and re-coiling of the strip without manual work in less than 3 minutes. It offers the automatic adjustment of all parameters of the feeding line (guides, roll penetration, etc.) when launching a new production batch.



PITSTOP coil handling line



15 ton decoiler



Edge trimming

## EDGE TRIMMING

If the quality of the coil is inadequate, a trimming shear with circular knives can be fitted. Located at both sides of the strip, they will enable a few millimetres of incorrect strip to be scrapped.

To a certain extent, the manufacturer can also use this device to reduce the coil width, thus dropping the number of coils kept in the inventory.

## TRANSVERSE SHEAR

After the LINAPUNCH®, the part splitting is performed with a transverse shear.

Depending upon the output rate, thicknesses and types of material to be cut, we may opt for a pneumatic, hydraulic or electromechanical shear.

## THE "2D" SHEARING MODULE

This clever configuration combines the transverse shear with a lengthwise 4 meter "slitting" shear disposed at 90°.

At the output of the cross shear, the punched blank is moved into the mechanical shear by means of a set of clamps, whose motion is programmable.

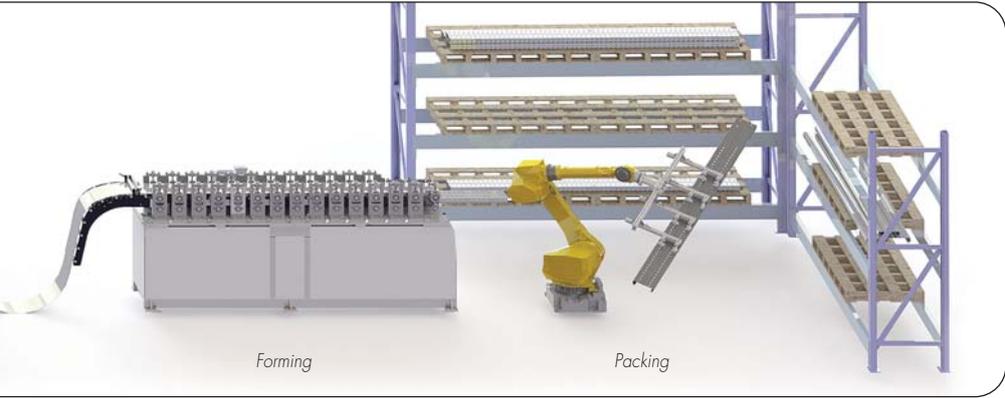
Here we open the possibility to nest several parts within the same strip width. The program allows shearing of the punched blank into 10 different parts, plus possibly a scrap.



"2D" shearing module

the various integrated technologies

## The Integration of Downstream Processes Generates Additional Benefits



### COUNTLESS INTEGRATION CAPABILITY

The profitability of a LINAPUNCH® is better when you add in the line, the automatic execution of related operations previously performed manually.

DIMECO integrates many other technologies. We install automated foil application or removal processes. We implement simple or programmed marking systems (engraving, stamping, laser, inkjet ...) and assembly technologies such as gluing, welding, crimping or clinching.

### PACKING THE PARTS

The design of the stacking system will depend upon many parameters: line speed, size and weight of the parts, material type, and complexity of the selected stacking pattern...

We can build your LINAPUNCH® line exit by selecting features from a wide range of available solutions: flap gravity stacker, cartesian manipulator fitted with suction cups or magnetic systems...

The use of multi-axis robots coupled to a suitable storage system allows you to operate the line without operator for several hours and allows more complex stacking patterns.

### THE DOWNSTREAM FORMING OPERATIONS

Workflow may be greatly simplified when integrating in the line some of the forming operations carried out downstream.

DIMECO has developed in-house comprehensive ranges of flexible roll forming machines and CNC flap folding units.

Roll forming is a rapid and cost effective process for forming metal strips. It is well suited to the forming of long parts with complex cross sections.

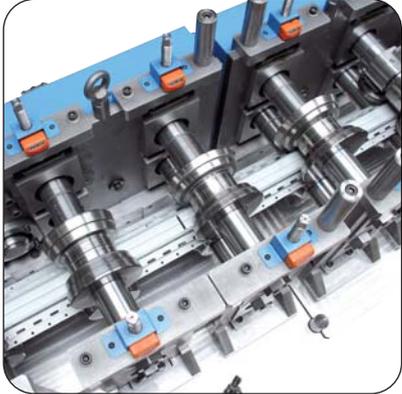
Bending technology guarantees a high geometrical quality of manufactured parts. Bending enables the cost effective production of an infinite number of different shapes with standardised tooling.



Foil application



Robotized stacking



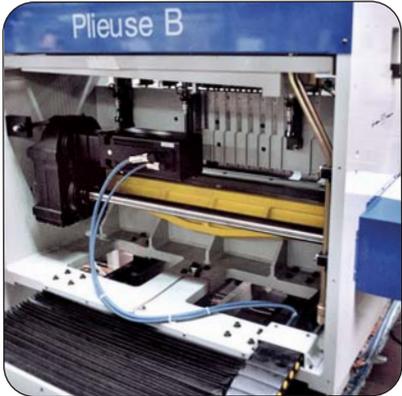
DIMECO Flexible roll former



Inkjet marking



Flap stacker



DIMEFORM® NC flap folding machine

# OTHER SOLUTIONS AVAILABLE FOR PUNCHING

hydraulic solutions

## Cost Effective Solutions Adapted to Limited Diversity of Forms and Tonnages

### HYDRAULIC PUNCHING BENCH

When the range of parts to be produced is small and the number of punch shapes limited, the punching bench can be the solution with the best trade-off between cost and performances.

A special design is developed by defining the number of cylinders and their power, according to the forms and rates to achieve.

Flexibility in the "x" axis is provided by enjoying the "MULTISTEP" technology. Any change of dimension in "y" axis will involve setting of the units.

### LINAPUNCH® "YT" HYDRAULIC SERIES

It is the predecessor of the LINAPUNCH® MC, a range of 8 ton hydraulic punch press working from coil. All shapes are programmable in "x, y" axis.

It can reach a speed of 150 Hpm (200 Hpm for nibbling).

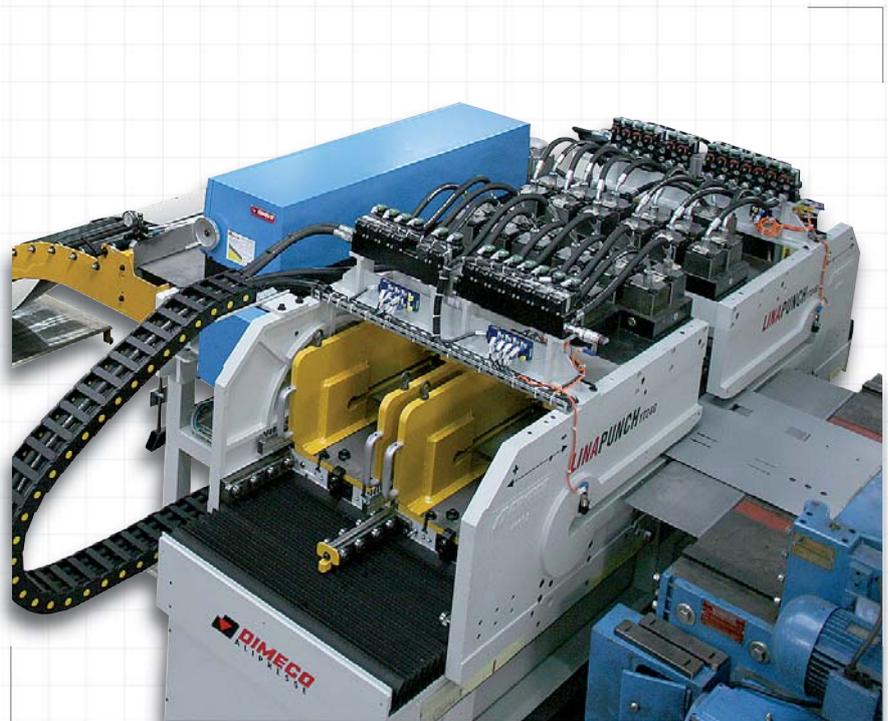
Available in widths of 300 mm to 1250 mm, it may receive one or two heads.

The YT6 head has 6 cylinders (optionally 7) and receives a single cassette. The YT12 head comprises 12 cylinders (14 optionally) and hosts two cassettes.

The number of tools per cassette is limited and fixed when ordering the machine : 3 "B", 2 "C", 1 "D".

Optionally, you can add to the back of the cassette a 10 ton "notching" tool of maximum 120 x 100 mm size.

Each standard cassette can be replaced by a cassette receiving a rotary tool holder. It hosts a "D" size AUTO-INDEX or MULTI-TOOL cartridge and allows nibbling of complex shapes.



## LINAPUNCH. YT



LINAPUNCH® YT12 head : 2 x 6-cylinder cassettes

		HYDRAULIC ACTUATOR	ELECTRIC ACTUATOR
number of NC axes	1	<b>PUNCHING BENCH.</b>	
	2	<b>LINAPUNCH YT-12</b>	<b>LINAPUNCH MC-12</b>
	<6	<b>LINAPUNCH YT-24</b>	<b>LINAPUNCH MC-24</b>



3 station punching bench



AUTO-INDEX cassette



10 ton notching unit



**FLEXIPRESS**

**Up to 200 Spm**  
**40 Selectable Tools**

**THE FLEXIPRESS® UP 150 TONS**

This is an ideal solution for making long parts requiring heavier tonnage at high speeds or producing parts with complex and precise shapes.

In this configuration, punching force is provided by a mechanical column press, the crankshaft of which is located under the table. The tonnage of the press is available on the very large surface area of the bolster.

All of the tools necessary for the production of a group of parts are implemented on the bolster. Each tool is operated by a selector which introduces a wedge between the ram and the tool. Selectors are controlled by the part program. The rate can reach 200 Spm and the power 150 tons.

Flexibility in the "x" axis is provided by enjoying the "MULTISTEP" technology. Any change of dimension in "y" axis will involve setting of the unit.

**THE FLEXIPUNCH®**

This is a fully electromechanical 2D punching solution which combines the benefits of the high tonnage available on a FLEXIPRESS® with the flexibility of programmable "y" axis of the LINAPUNCH®.

In addition to the tools implemented on the bolster of a FLEXIPRESS®, one or several heads moving transversely support the tooling cassettes.

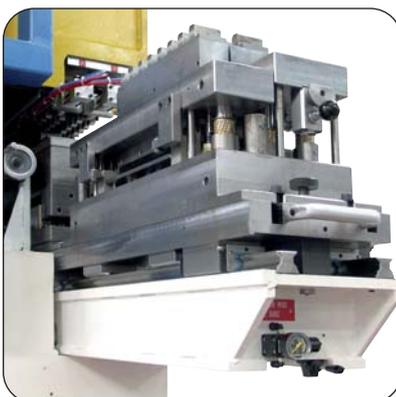
The tools fitted in the cassettes are also activated through selectors

As for the LINAPUNCH®, the FLEXIPUNCH® cassettes may be equipped with rotating tool holders to receive a "AUTO-INDEX" or "MULTI-TOOL" cartridge.

	MECHANICAL ACTUATOR special press	MECHANICAL ACTUATOR traditional press
	<b>FLEXIPRESS</b>	<b>DECOPRO</b>
<b>CH.</b> <b>E</b>	<b>FLEXIPUNCH</b>	<b>DECOPUNCH</b>
<b>CH.</b> <b>E</b>	<b>FLEXIPUNCH</b>	



C frame tools with selectors



Tool combining cropping with end bending



24 track selector



6-axis FLEXIPUNCH®



### **FLEXILINES**

Flexible  
manufacturing  
systems



### **PRESSFEED**

Press automation



Coil handling  
& quick die  
change systems



Hydraulic  
presses

 **DIMECO**  
ALIPRESSE

 **MIB-HYDRO**

 **DIMECO**  
Diseño Mecánica y Construcción, S.A.

 **ROTOBLOC-PSP**

your dealer

