

## **description and specification of separate machines:**

Pos. 1: Line control cabinet, PLC controlled interfacing

This is the main control cabinet to manage the whole line. All machines can be started and stopped from one console. The units in the line are controlled by a CAN-bus. Some machines, e.g. the laminator and hologram printer have a control cabinet integrated with control via CAN.

The control cabinet is optimised for ease of operation with just a few pushbuttons. All data to set up the machines is input and saved via the display.



Pos. 2: Full CE compliance for the whole line

In order to comply with the current European legislation, many electrical and mechanical changes have been made to make the machine even more safe of operate. Unfortunately this can sometimes result in some operator burden e.g. to reset fault conditions.



Pos. 3: Decoiler, undriven with extra lead-in rolls

The decoiler takes the roll aluminium, slitted to the correct width, to unroll it. The unit is not motorised, but has a brake to keep the strip tight.

Specifications:

Coil weight: max. 600kg  
Width: max. 300mm  
Diameter: max. 1400mm



Pos. 4: Straightener, 9 rolls to flatten the coil

The aluminium strip must be straightened for further processing.

In the straightener the strip is guided by a pair of pinch rollers. All 3 upper rolls are individually adjustable to achieve a high degree of flatness.

Dial indicators are included on every adjustable roll.

Specifications:

Strip width: max. 300mm

Top rolls: 3

Bottom rolls: 4

Pinch rolls: 2

Thickness: 0,8 – 2,0 mm



Pos. 5: Foil laminator, stretching, with edge cutting knives

In the laminator the reflective foil is unwound from its roll, separated from the backing paper, and laminated on the aluminium strip with rubber rollers.

The excess width is removed by edge knives

Double strip guides hold the aluminium in place.

Some types of reflective foil come with a marking or logo already printed on the roll.

This is called graphical foil.

To process this foil a stretching laminator is necessary.

The foil is unwound under tension and fed through a torque roll. This gives the force for the offset pivot guide, to steer the foil exactly in place.

A set of electronically geared drives gives the foil a defined amount of stretch.

4 sets of dual rubberised rollers ensure a perfect result.

The aluminium strip is held in place by adjustable strip guides.

Specifications:

Foil width: 30 – 300 mm

Roll diameter: max. 600mm

Edge knives: 2, on each side, spring loaded

Foil tension: variable

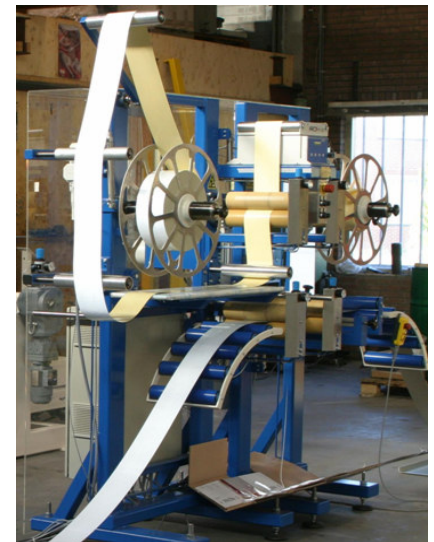
Edge steering: with Offset Pivot Guide

Speed/torque: 4 controlled motors

Speed: variable 2 – 30 m/min.

Stretch: variable 0,5 – 5 %

Backing paper rewind: automatically



Pos. 6: Loop control, multi level, speed regulating

With multi-level sensing the loop position of the aluminium strip is continuously checked and the speed of the line is adjusted.

The loop control acts as a fine tune mechanism to the pre calculated set speed.

Specifications:

Number of levels: min. 6

Loop length: min. 2000 mm

All level settings are user configurable.



Pos. 7: Press servo roll-feed unit, high speed, computer controlled

The aluminium, laminated strip is fed into the press by a servo roll feed. This unit is powered by a brushless servo drive with an over dimensioned gearbox.

The pressure on the upper roller is provided by two pneumatic cylinders.

For easy insertion of the strip, the upper roll can be lifted.

Made from high strength aluminium alloy, the frame is very sturdy and vibration free.

Feed length, speed, acceleration and max. torque are all adjustable.

A roll release for pilot-pin systems can be provided.

The unit can be mounted on any press.

Specifications:

Accuracy: +/- 0,2 mm

Speed: 0 – 96 m/min.

Width: max. 300 mm

Roll diameter: 60 mm

Pressure: adjustable

Roll surface: wear resistant rubber.



Pos. 8: Hydraulic press, 50 tons, minimum 30 cycles/min.

The finished blank is formed in the hydraulic press.  
Different tools can be mounted in this unit.  
The blanks are ejected on the side of the press, the customer can choose which side.  
An operator takes the ejected plates and puts them on a conveyor.

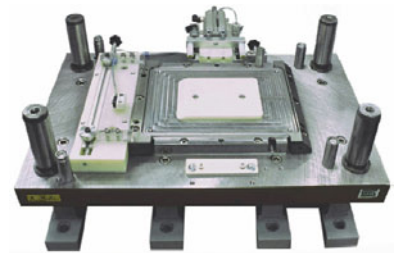
Specifications:

Cycle time:	adjustable, min. 30 cycles/min.
Force:	max. 500 kN
Loading height:	900 mm
Open daylight:	450 mm
Tool area:	700 x 400 mm
Width:	950 mm
Apr. weight:	1800 kg
Height:	2300 mm
Power:	9 kW
Pressure:	max. 250 bar



Pos. 9: Cutting/embossing tool with sensor

A special tool is mounted inside the press, and in one cutting – embossing cycle the registration plate is formed.  
The tools come standard equipped with a pneumatic ejector device for the plates and blow-out nozzles for the “dog bone”.  
Every tool has its own sensors to position the plate. The hologram will be on the right spot, even if the distance varies.  
The tool has knives on both sides, thus ensuring proper size of every plate.



Specifications: (520 x 110mm tool)

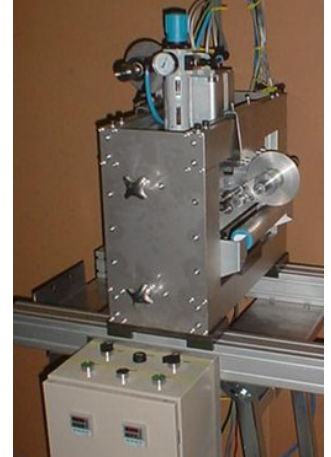
Tool size:	700 x 400 mm
In feed height:	196 mm
Apr. weight:	360 kg
Height:	310 mm
Emboss pressure:	aprox. 30 ton



## description and specification of optional items

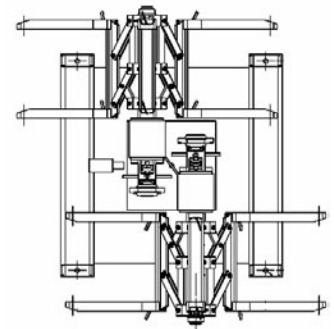
Option 1:  
Hologram printing machine

Capacity: min. 50 holograms/min.  
Pressure: adjustable up to 1000 kg.  
Width adjustment: min. 220 mm.  
Aluminium coil width: max. 310 mm.  
Temperature range: 50 – 200 °C.  
Accuracy: +/- 1 °C.  
Variable positioning motor speed  
All process values adjustable on the control PLC.  
Fiber optical sensor for precise positioning  
power supply: 230V, 50Hz, max. 4A  
compressed air: min. 8 bar  
In-line or stand alone use.



Option 2:  
Double decoiler, with changeover mechanism, for 2 coils.  
This allows quick changeover of coils. The next coil can be loaded while the line is running.

Coil weight: max. 2x 600kg  
Width: max. 300mm  
Diameter: max. 1400mm



Option 3 :  
Additional custom tool with cutting/embossing action,  
ejector and graphic sensor.  
(maximum plate size: 540 x 220 mm)



Option 4 :  
Additional custom cutting/embossing tool for small sized  
plates, max 340 x 150mm, with ejector and sensor.

**Option 5:**

Cutting tool with sensor to cut flat plates, without border.

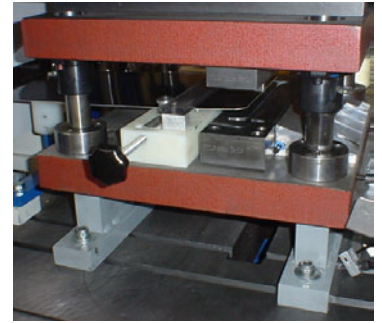
The plates can have graphics.

Max. plate width: 220mm.

(these plates can have a variable length,  
from about 50 to 999mm)

The scrap ("dog bone") is dropped through a slot in the press.

The plate ejects in the feed direction.



**Option 6:**

Installation of the line in your factory by our  
technicians/electrician

(utilities, materials, crane etc. to be provided.)



**Option 7:**

Marking laser (Dynamic-YAG)

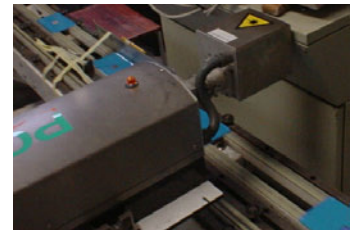
Integrated system, with conveyor and sensor.

Complete with PC and software, stand alone or in line



The laser is mounted on top of a conveyor belt. As the plates  
pass under, the marking is made dynamically.

An encoder on the conveyor automatically compensates for  
speed changes.



Laser power: 20 W

Marking speed: > 80 plates/min

Laser control: internal PC with serial number generator

**Option 8:**

Stacking robot, stacks plates per 50 pieces.

(includes conveyor belt with >8 stacking positions)

The stacker has its own power supply and control cabinet  
with a small PLC. It can function stand alone or in the line.

Speed: 60 plates/min

Plate weight: max. 300 g

Plate size: max. 540 x 220 mm

Stacker size: 1200 x 800 x 1600 mm (l x w x h)

power supply: 230V, 50Hz, max. 4A

compressed air: min. 8 bar



Option 9:

Control system with CCD camera to check every plate (this system comes with an extra robot to sort out the defective plates before they are marked with a laser coding, thus saving time and ensuring a good product)



Option 10:

MMI panel with touch screen on control cabinet. All data to run the line can be stored in a PLC to save the values and facilitate a very quick changeover to different plates. The system also tracks the operator, production rates and number of plates. Line errors are also recorded and can be checked later by factory management. Modem/internet connection possible for on-line problem solving sessions.



Option 11:

Custom colour scheme with max. 3 RAL colours



Option 12:

Additional laminating roll shaft for double foil laminating, incl. a set of rubber rolls and a guide roller. E.g. solid foil or removable foil for the "French system" (note: there is no steering head on this roll, accuracy is limited, foil must be precisely located)



Option 13:

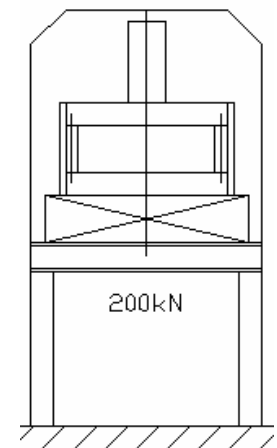
Hydraulic cutting press, 20 tons, min. 35 min<sup>-1</sup>, with hydro power pack. This is a smaller and less powerful press, which replaces Pos. 8 on the basic line.

It is used with a cutting tool like option 5.

The press has no moving top plate, only a cylinder, and the guiding must be provided by the tool itself.

Specifications:

Cycle time:	adjustable, min. 35 cycles/min.
Force:	max. 200 kN
Open daylight:	450 mm (stroke 100 mm)
Tool area:	600 x 400 mm
Apr. weight:	1200 kg
Height:	2300 mm
Power:	4 kW



## GENERAL :

Power supply: 400V 50Hz , 16kW (Laser separate 2.5kW)

Supply failures can cause erratic behaviour of the machine. Use of a stabilized electrical supply is recommended.

Other voltages can be accommodated, please enquire.

Maximum ambient temperature 35 °C. Please note, at temperatures above 28 °C the laminator requires cooling to prevent the reflective foil from stretching too much.

(local air cooling in the laminator cabinet is sufficient)

Typical line overview:



Installation of the line in your factory by our technicians/electrician:

With help of customer personnel our technician will perform the following:

- Align the machines in the factory.
- Check the electrical main connection on the machine.
- Connect all wiring and pneumatic parts.
- Test run the machine.

Please note that the following is NOT part of the installation:

- Unloading of the machines from the truck
- Placement of all machines at the approximate position (within 1 meter)
- Lift truck, crane driving, machine lifting etc.
- Electrical mains cable and connection
- Pneumatic main connection

For more information, contact:

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