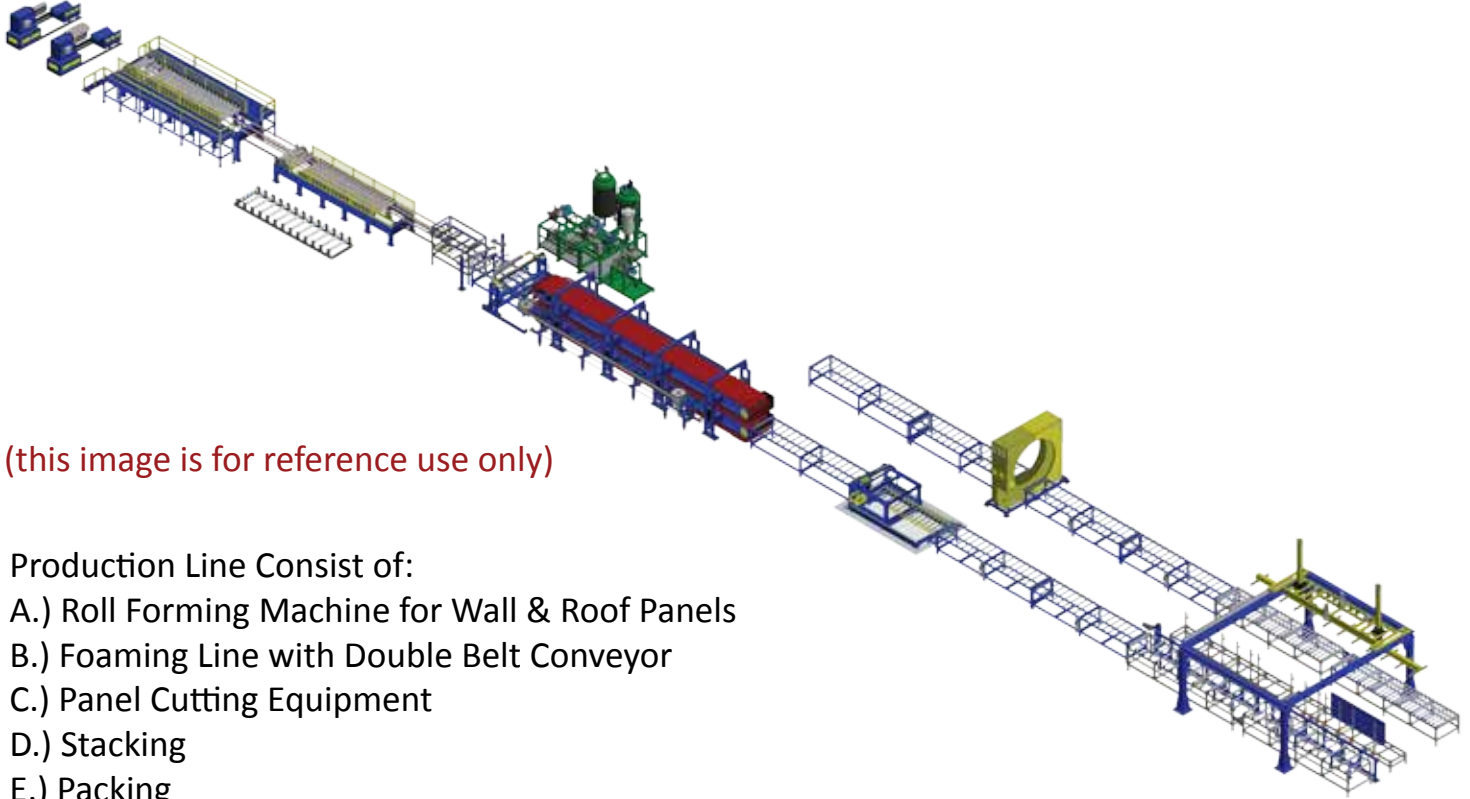




## LINE FOR SANDWICH PANELS PRODUCTION IN CONTINUOUS MODE MODEL : L - 13PUA (13meters)



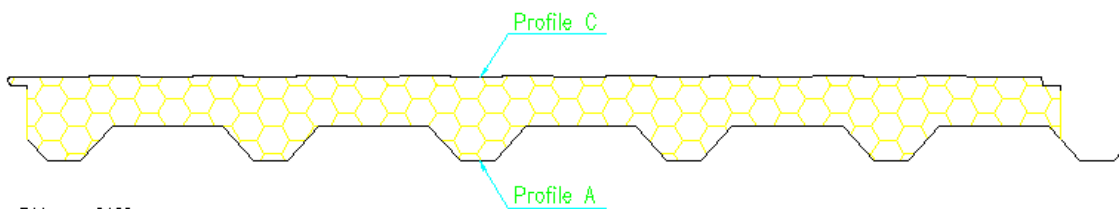
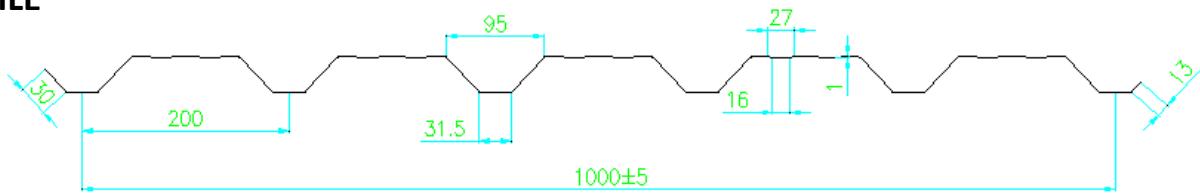
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Production Line Consist of:

- A.) Roll Forming Machine for Wall & Roof Panels
- B.) Foaming Line with Double Belt Conveyor
- C.) Panel Cutting Equipment
- D.) Stacking
- E.) Packing

### A.) ROLL FORMING MACHINE

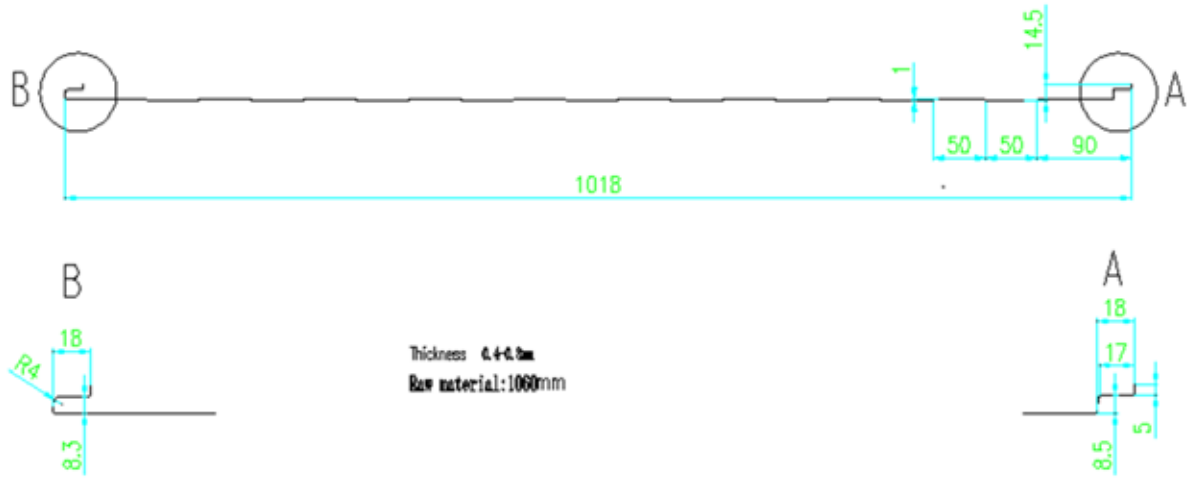
#### A - PROFILE



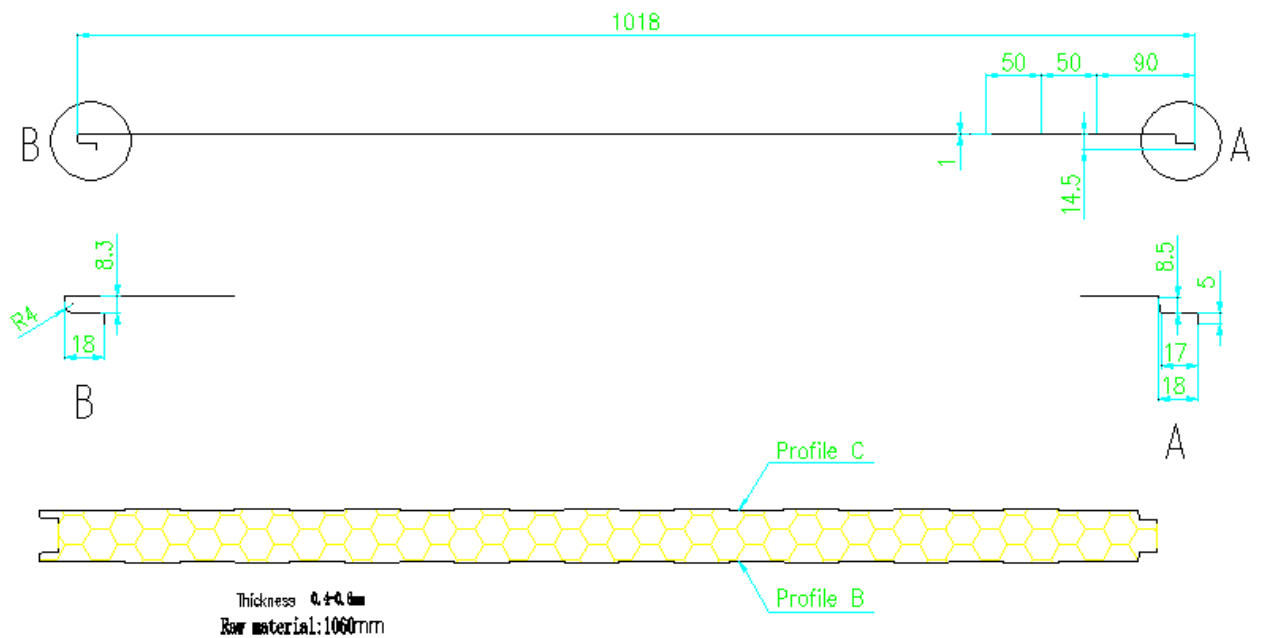
Thickness 04-08  
raw material 1220mm



## B - PROFILE

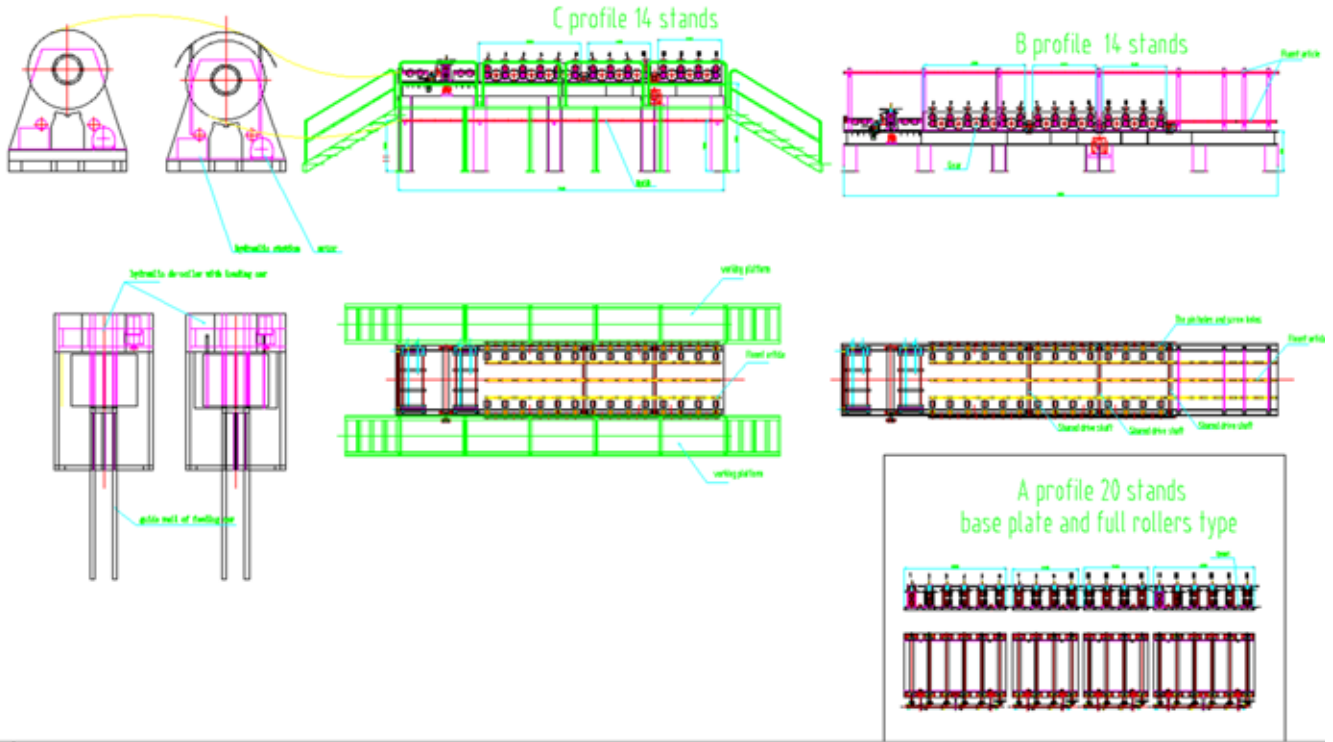


## C - PROFILE





**WORK FLOW DRAWING**



C cassettes are on the high frame, A,B cassettes are on the lower frame. For B, C cassettes, replace the main shaft with two side forming, using the rollers on the two side for forming the shoulders, leave the ribs on one stand of rollers with big diameter. As for the transmission system, we are using bevel gear system on the A cassettes, gear system on the B, C cassette. Those two types of transmission system will be no effect on the convenience of changing cassettes.

Inverter	Siemens
PLC	Siemens
Encoder	Omron
Touch screen	Siemens
Other electrical appliances	Schneider





## FOR A PROFILE (MAIN MACHINE PART)

1. Matching material: according to your drawing
2. Material thickness range: 0.4-0.8MM
3. Main motor power: 7.5KW (Brands of motor and reducer are Siemens.)
4. Forming speed: 8-12m/min
5. Quantity of stands: 20 stands
6. Shaft Material and diameter:  $\text{C} \ 75\text{mm}$ , material is 40cr
7. Material Of The Stations: **Guide pin style**
8. Tolerance:  $3\text{m}+-1.0\text{mm}$
9. Way Of Drive: **bevel gear**
10. Controlling system: PLC system
11. Voltage: 380V/ 3phase/ 50 Hz
12. Length of the forming machine: about 10m
13. Material of forming rollers: 45#steel with chrome plate treatment
14. **The surface of the rollers will be treated with mirror polish**
15. **The spacer will be electroplating.**

## FOR B PROFILE (CASSETTES)

1. Matching material: according to your drawing
2. Material thickness range: 0.4-0.8MM
3. Main motor power: 7.5KW (Brands of motor and reducer are Siemens.)
4. Forming speed: 8-12m/min
5. Quantity of stands: 14 stands
6. Shaft Material and diameter:  $\text{C} \ 65\text{mm}$ , material is 40cr
7. Material Of The Stations: L type whole processed plate
8. Tolerance:  $3\text{m}+-1.0\text{mm}$
9. Way Of Drive: **gear**
10. Controlling system: PLC system
11. Voltage: 380V/ 3phase/ 50 Hz
12. Length of the forming machine: about 7 m
13. Material of forming rollers: 45#steel with chrome plate treatment.
14. **The surface of the rollers will be treated with mirror polish**
15. **The spacer will be electroplating.**
16. **There are special stand of rollers for forming the low ribs, the diameter of the roller is 150mm, the drive motor is 3KW (it will be Siemens brand). This will be add in the front of the frame, this stand will be on the lower frame, for B profile. As for the A cassettes, unscrew the rollers, the clearance will be enough for the material coming through and not effect on the material.**





## FOR C PROFILE (MAIN MACHINE PART)

1. Matching material: according to your drawing
2. Material thickness range: 0.4-0.8mm
3. Forming speed: 8-12m/min
4. Quantity of stands: 14 stands
5. Shaft Material and diameter:  $\text{C} 65\text{mm}$ , material is 40cr
6. Material Of The Stations: L type whole processed plate
7. Tolerance:  $3\text{m}+-1.0\text{mm}$
8. Way Of Drive: **gear**
9. Controlling system: PLC system
10. Voltage: 380V/ 3phase/ 50 Hz
11. Size of the forming machine: about 8m
12. Material of forming rollers: 45#steel with chrome plate treatment
13. **The surface of the rollers will be treated with mirror polish**
14. **The spacer will be electroplating.**
15. **There are special stand of rollers for forming the low ribs, the diameter of the roller is 150mm, the drive motor is 3KW(it will be Siemens brand). This will be add in the front of the frame, this stand will be on the high frame, only for C profile.**

## SPECIFIC PARAMETERS OF EQUIPMENT

### HYDRAULIC DE-COILER / COIL CAR

- (1) Capacity: 10.0 tons
- (2) Feeding width: MAX 1250mm
- (3) Expanding range: 480-520mm
- (4) Way of uncoiling: power-driven
- (5) Hydraulic station motor, driving motor and reducer are all Siemens products.
- (6) Coil car capacity: 10 tons
- (7) Coil car rail length: 4 meters

### CONTROL BOX: BRAND SIEMENS

- (1) Voltage, Frequency, Phase: 380 V, 50 Hz, 3Phase (this can depend on customers' requests)
- (2) Automatic length measurement
- (3) Automatic quantity measurement
- (4) Computer used to control length & quantity.
- (5) Length inaccuracy can be amended easily
- (6) Control panel: Button-type switch and touch screen
- (7) Unit of length: millimeter (switched on the control panel)







## PACKING DETAILS

10.0 tons hydraulic de-coiler/coil car	2 sets
Main roll forming machine (profile A)	1 set
Main roll forming machine (profile C)	1 set
Cassettes (profile B)	1 set
Control cabinet(electrical parts: Siemens )	1 set

( ROLL FORMING MACHINE PHOTOS FROM PREVIOUS PROJECTS AS REFERENCE )



## B) FOAMING LINE COMPOSED OF

B.1) Oven for metal sheets heating, 4 m long, 20000 k/cal power, type SW4 with infrared lamps;  
Features as per infotec no. 069801001 upon request

B.2) High pressure foaming machine Composed of: 4 Components  
High pressure metering machine ULTRAMIX-PLUS 4

Essentially consisting of:

- 1 Tank station, 250 l for Polyol
- 1 Tank station, 250 l for MDI
- 1 Tank station, 60 l for Catalyst
- 1 Electric control and equipment for Tank station
- 2 Temperature control equipment for main components Polyol and MDI
- 2 Heat exchangers for Polyol and MDI
- 1 Water re-cooling unit chiller
- 1 Metering unit for Polyol mixture
- 1 Metering unit for MDI
- 1 Metering Unit for Catalyst
- 1 Metering Unit for Blowing Agent (HCFC)



B.3) 1 Foaming Portal (laydown) at FIXED DISPLACEMENT type T1700

The foaming portal's task is to apply the reactive mixture via the mix head to the bottom facing, in the DOUBLE BELT mixture dispensing zone.

The main subassemblies can be derived as follows:

- Mix head guide system
- Dispensing height adjustment max 200 mm
- Longitudinal portal adjustment with parking brake (manual)
- Mixhead with cable track
- Blowing Agent injection on the high - pressure side

B.4) Output Volumetric flow-meters, on metering line for two components complete with video operator board for production parameters control and visualization.





B.5) 1off double belt conveyor, fit to produce 13 m long sandwich panels, with following main features:

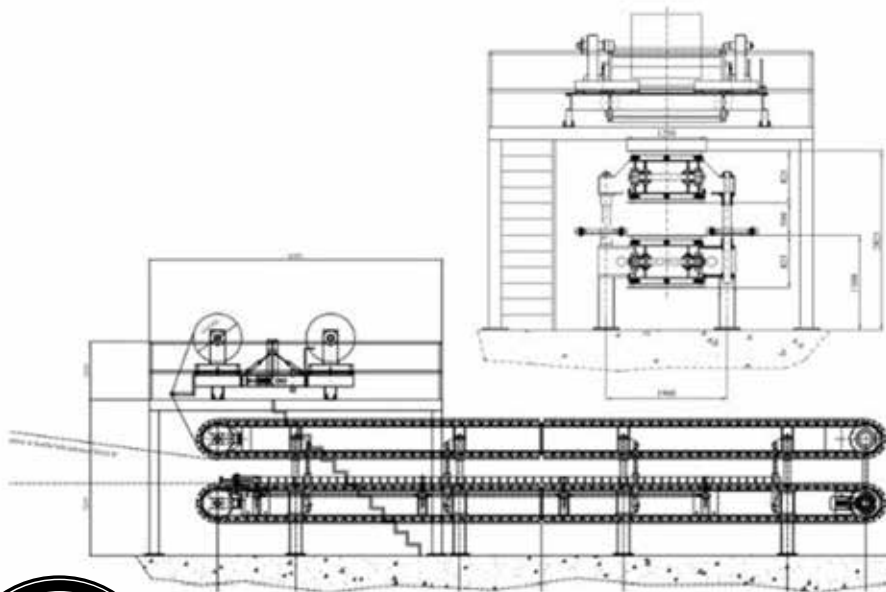
- max production speed: 5 m/min;
- slats max width: 1200 mm;
- Max thickness of panels under production: min. 20 mm., max. 240 mm.;
- integrated slats chain system, CNC machined to assure flatness and accuracy;
- double motorization synchronised by brushless motors;
- hydraulic lifting system by panel size gauges;
- Hydraulic lifting system for upper belt and balancing.

B.6) Thermoregulation system of double belt by hot air circulation by means of hot water system so to automatically assure a controlled temperature of air up to 60°C max. Power: two from 60,000kW. The control system is independent for the two belts (upper and lower), carried out by reading on slats and by electric fans that force and recycle the air inside the two belts.

B.7) Lateral caterpillars, type CTR 10 SW, each one 10 m long for producing 20 to 240 mm thicknesses. Motorization synchronised to the double belt. Side sealing system for above thicknesses not included

B.8) Set of lateral plastic-made modular containments to produce 50 mm thickness panels, c/w rapid-assembling system on caterpillar.

B.9) 3 m. long free-idle conveyor connected to cutting unit.



1off double belt conveyor 13 meters







( DOUBLE BELT PHOTOS FROM PREVIOUS PROJECTS AS REFERENCE )

B.10) Control panel. The line is managed by a control panel for the power part and by a PLC controller for the sequential part. There is also a pulpit where all the manual controls of line, the control and adjustment equipment are located. A movable push buttons panel handling the production controls is located near the production control point. The control pulpit accommodates also an OP/PC for pre-setting and controlling the production on more working pages. As explanation, we list some programming and control video pages.

**MACHINE CONDITION PAGE**

For production data setting according to used components.

**WORKING PAGE**

Visualization of all production data checked within real time.

**PROGRAMMING PAGE**

Setting of working data, cycle times and safeties.

**ALARMS**

Visualisation of all alarms with relevant code.

**CONSUMPTION**

It visualizes the consumption of used raw materials under continuous cycle.

Other necessary pages, in addition to the ones programming and visualizing the machines diagrams and PLC.

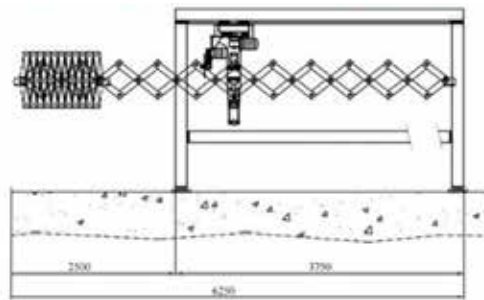




## C) CUTTING EQUIPMENT

C.1) 1off cut-to-size circular saw-operated group, for metal sheets PU insulated panels c/w control panel.  
Optional use only for Roof Panel:  
1 off additional blade for overlapping cut adjustable from 50 to 250 mm; Type TDS 1000 SW

**( THE OVERLAP CUTTING CAN BE ADDED ACCORDING TO YOUR REQUIREMENT )**





## D) STACKING SECTION

### D.1 Panel tilter

(No. 1)

Positioned laterally to the stacker bench, is utilized to tilt the panels of 180 ° . A support frame, equipped with leveling plates and fixing to the floor, supports a rotating shaft on which are fixed the arms of tipping.

The arms are coated with anti-friction material to prevent damage to the panel.

#### TECHNICAL DATA:

Tilter Length	12,000 mm
Number if arms	10
Tilting time	20 s
Handling arms	electromechanical

### D.2 Automatic stacker

(No. 1)

The automatic stacker installed above the entrance bench, picks up the panel from the bench or from the tilter and it placesthe panels on the conveyorstack.

Machine is provides of a portal structure and system of suction cups.

The position of the suction cups can be adjusted longitudinally and transversely.

#### TECHNICAL DATA:

Length of chassis socket suction cup	12.000 mm
Number of. Suction cups	24
Cycle time	19 to 25 s. . Maximum
Maximum stroke	1,500 mm
Running maximum lift	1.100 mm
Maximum capacity	300 kg
Installed power	30 kW

### D.3 Stacking conveyor

(No. 1)

The staking conveyor, installed under the stacker, receives the panels for the formation of the panel packages. The support structure of the conveyor is made of sheet metal bent, reinforced with tubular and is provided with leveling elements and floor fixing.

On the support structure are welded the sliding tracks of roller chains, they are made with steel, machined in order to reduce the rolling friction of the chains.

#### TECHNICAL DATA:

Conveyor length	13.000 mm
Useful width	1200 mm
Conveyor width	1.300 mm
Step shutters	200 mm
Ground clearance	400 mm ± 30 mm
Capacity	260 kg / m
Transport speed	30 m/min. max





## D.4 Extraction conveyor

(No. 1)

On this conveyor is transferred the panel packages formed on the conveyor

The support structure of the conveyor slat is made of sheet metal bent, reinforced with tubular and is provided with leveling elements and floor fixing.

On the support structure are welded the sliding tracks of roller chains, they are made with steel, machined in order to reduce the rolling friction of the chains.

### TECHNICAL DATA:

Conveyor length	13.000 mm
Useful width	1200 mm
Conveyor width	1.300 mm
Step shutters	200 mm
Ground clearance	400 mm ± 30 mm
Capacity	260 kg / m
Transport speed	30 m/min. max

## E) PACKING SECTION

### E.1 - 2 Roller Conveyor entering the packing machine

Arranged downstream of the pallet loading station in order to transport the panel stack to the stretch-film wrapping installation.

The conveyor is designed as a 2-strand belt conveyor. The drive is provided by frequency controlled three phase AC geared motors.

### TECHNICAL DATA

Total length: approx.	13,500 mm
Useful width:	1,200 mm

### E.2 - 1 Packing Stretch-Film Wrapping Installation

The stretch-film wrapping, operated by a skilled person to be always on the machine, has an installation basically consists of:

#### - Wrapping Ring to Accommodate the Roll of Stretch Film

The wrapping ring is guided in running rollers made of high-quality plastic. The running rollers are located in ball bearings and are mounted on re-adjustable eccentric bolts. The wrapping ring is driven via 2 vulcanised frictional wheels. These are located in axial and radial bearings and are mounted on re-adjustable eccentric bolts.

#### - Roll Holder for Stretch Film

The roll holder is designed for a roll width of approx 300 mm.

Special clamping panels guarantee that the rolls of film are placed on the holder in a self-locking way.

The roll holder is equipped with a sensitive, infinitely variable brake. There is also a deflection and clamping system for the infinite and sensitive adjustment of the film pulling-off process.





#### Dimensions of the rolls of stretch film:

Width:	300 mm – max 500 mm
Roll diameter:	200 – 250 mm
Sleeve diameter:	76 mm
Roll weight: max.	15 kg

#### Automatic Gripping, Cutting-Off and Application Device for PE Stretch Film

This is a design for a smooth cut.

Film-Protection Device for the Rotation Area of the Rolls of Film

The door to change the rolls is locked by a safety switch.

If the door is open, it is impossible to operate any component of the installation.

#### TECHNICAL DATA

Wrapping length:	2,000 – 13,000 mm
Pallet width: max.	1,100 mm
Stack height:	300 – 1,100 mm
Number of bundles:	2 – 6 per stack

#### E.3 - 1 Run-Out Conveyor

Arranged downstream of the stretch-film wrapping installation in order to transport the packed panel stacks out of the wrapping installation.

The conveyor is designed as a 2-strand band conveyor.

The drive is provided by frequency-controlled three-phase AC geared motors.

#### TECHNICAL DATA

Total length: approx.	13,500 mm
Useful width:	1,200 mm





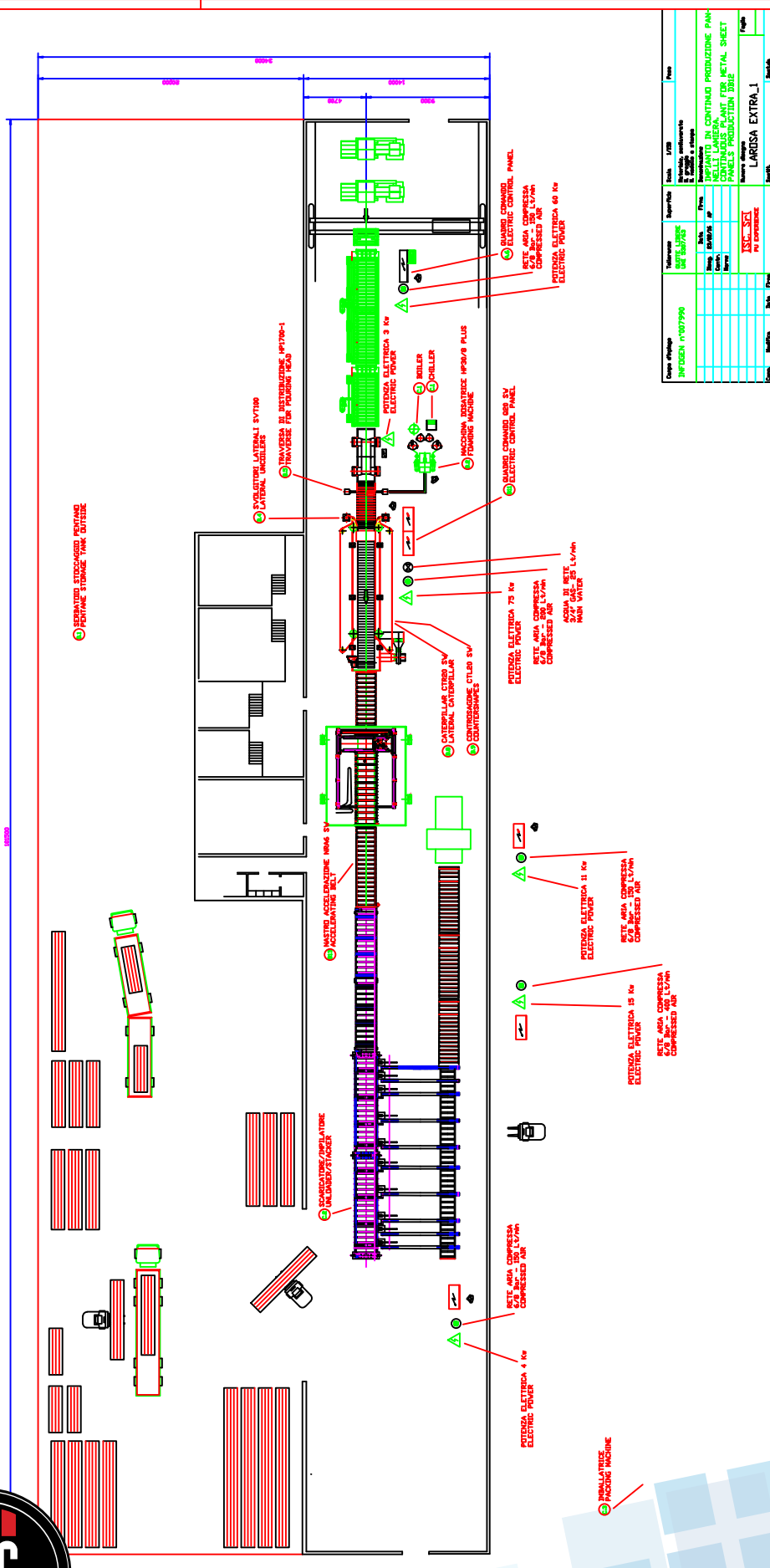




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