



EQUIPMENT ENGINEERING  
AND MANUFACTURING

Maintenance and operational  
manual

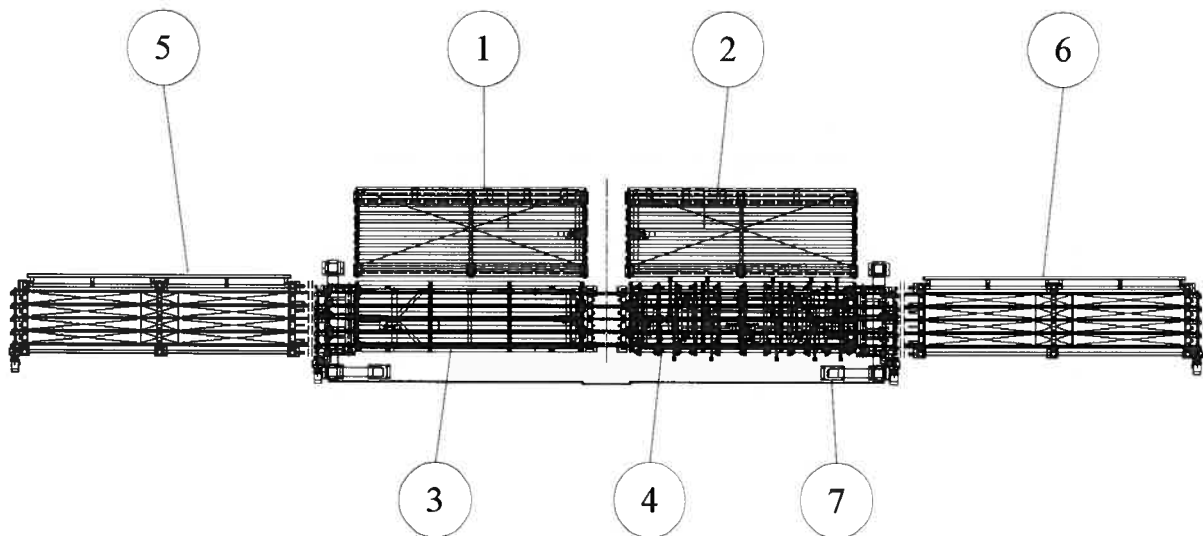
STEEL SHEET SELECTION  
LINE  
LS6000

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## 2 DESCRIPTION OF THE LINE

The steel sheet selecting line has the function of forming a stack of steel sheets with different dimensions in order to satisfy the particular needs of each Customer.

The stacks are loaded on position (1), worked on position (3) and picked up by position (5). The empty pallet is put on line by position (2), worked on position (4) and unloaded by position (6).



- 1) Stack loading roller conveyor;
- 2) Pallet loading roller conveyor;
- 3) Roller/chain cross conveyor for sheets' pick up;
- 4) Roller/chain cross conveyor for sheets' deposit;
- 5) Chain conveyor for used stack unloading;
- 6) Chain conveyor for formed stack unloading;
- 7) Portal bridge vacuum for steel handling.



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## 2.1 – Machines composing the line.

The line is composed by different machines (see the enclosed layout).

### 2.1.1 – Roller conveyors

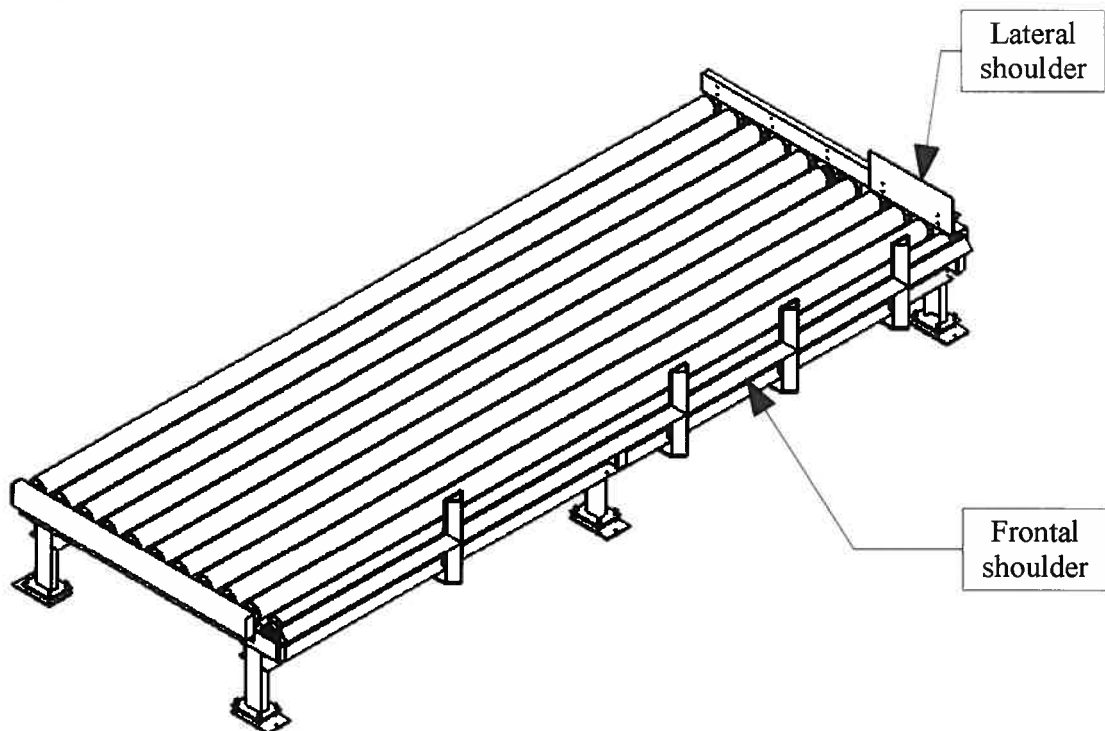
On the loading roller conveyors are put: on one side the stack to be destacked, on the other one the pallet upon which a new stack is formed. The roller conveyors have fix shoulders where the stack can be aligned by means of forklift.

The roller conveyors send the stacks and the pallets to the working area.

N.B. For the correct running of the plant it's fundamental to align with care stacks and pallets loaded against the shoulders.

Pay attention: load exclusively stacks complying with the specifications indicated on paragraph 2.5

Important: in order to obtain “pyramidal” stacks, load the stacks in sequence with decreasing surface.



Transport speed 11 m/min.



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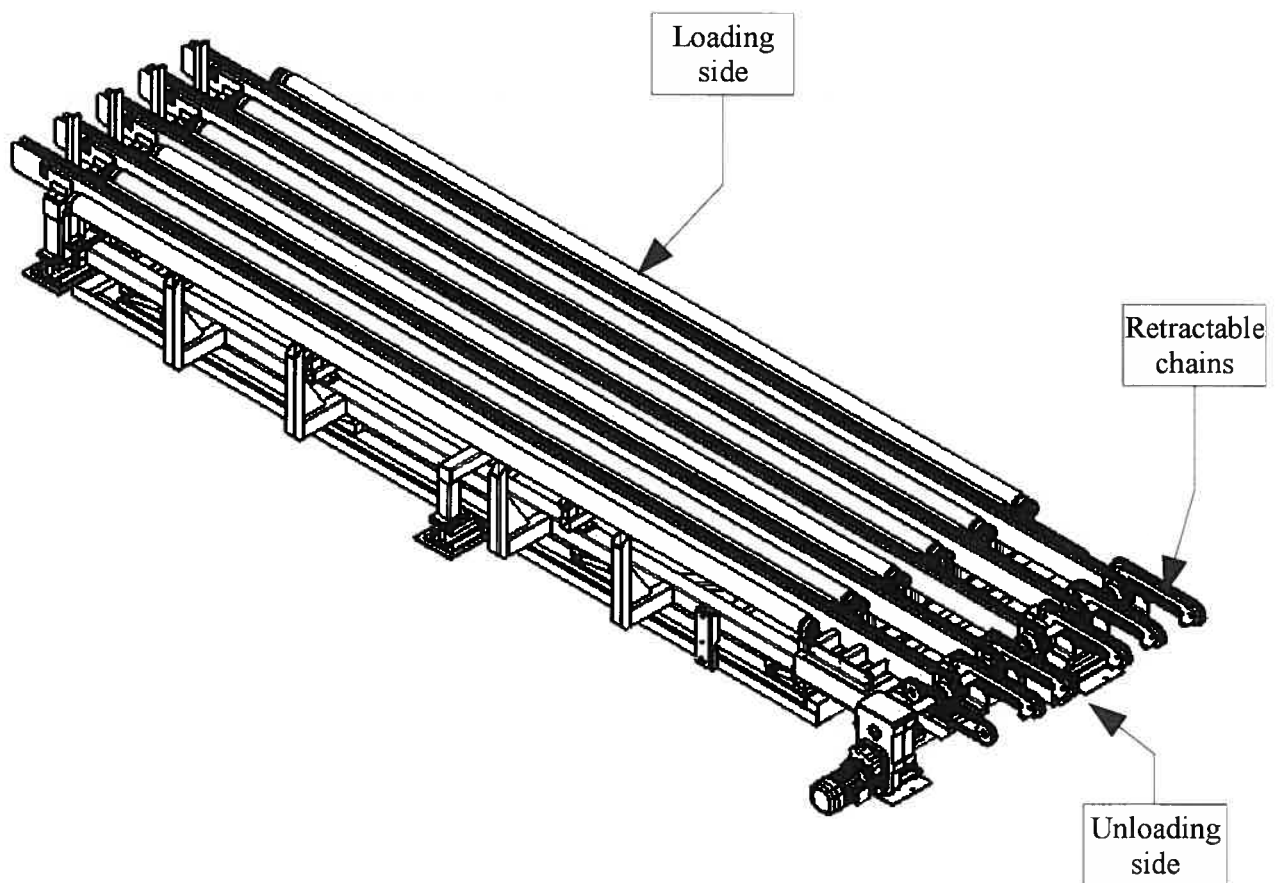
## 2.1.2 – Roller / chain cross conveyors

The cross conveyors have the function of receiving from the roller conveyors the stacks that will be handled by the vacuum unit. When the required sheets are loaded, the “source” stack is unloaded while the destination stack is waiting for a new cycle.

The cross conveyors receive the stacks from the roller side and unload them to the chain side, the passage is possible thanks to a pneumatic lifting system of the roller conveyor.

A particular device with retractable chains permits the continuity of the chains between the cross conveyor and the chain conveyor, during the stack translation; if you want to strap the stack, the chains move backward leaving a suitable space.

These machines are complete with load cells which communicate the weight of the unloaded material.



Transport speed on rollers  
Transport speed on chains

11 m/min  
9 m/min



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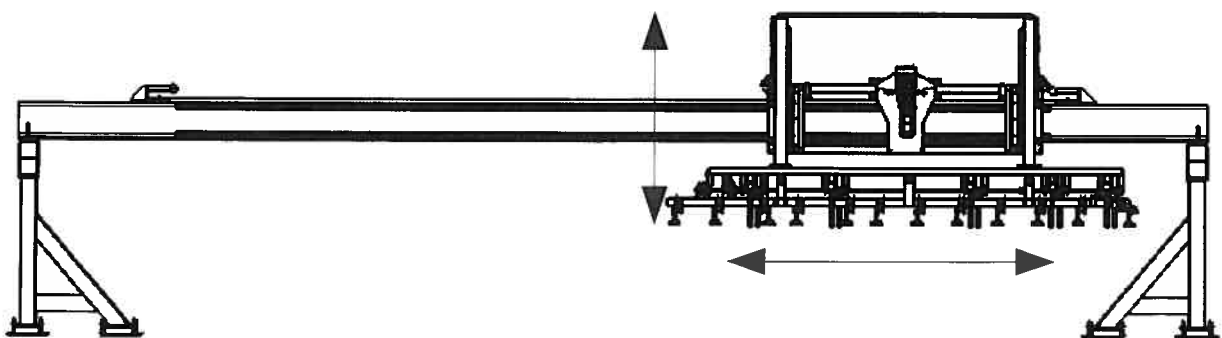
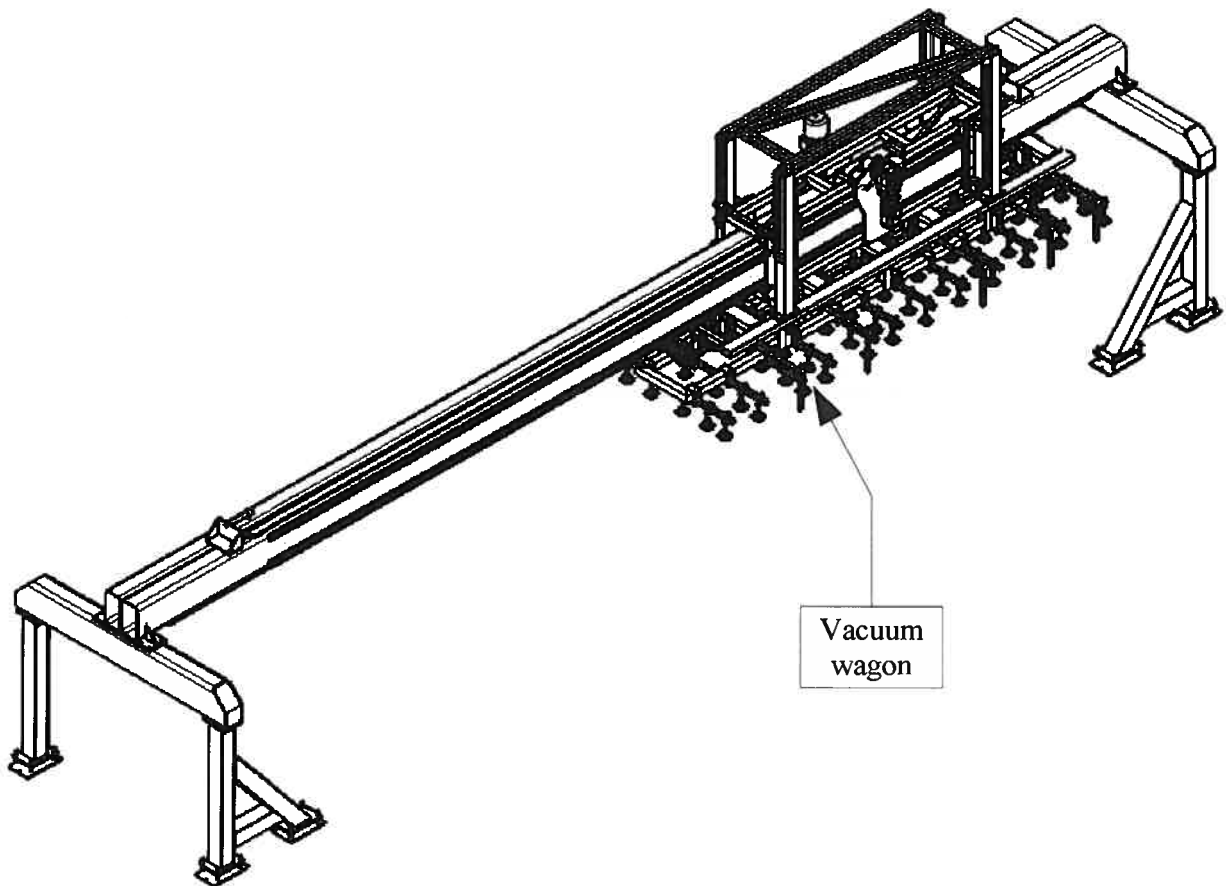
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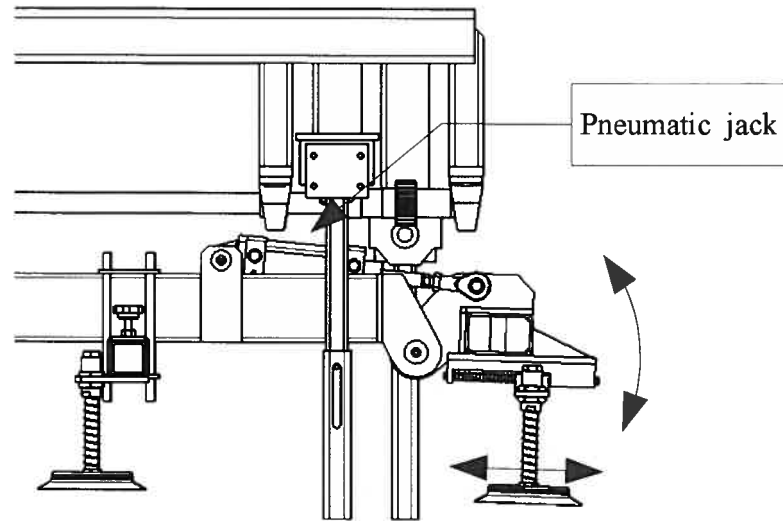
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### 2.2.3 – Vacuum system

The vacuum system picks up the sheets from the “source” stack and put them on the destination stack. The vacuum wagon has an uncoupling device to “pick up” a sheet per time and a centring device to form a stack with aligned sheets.

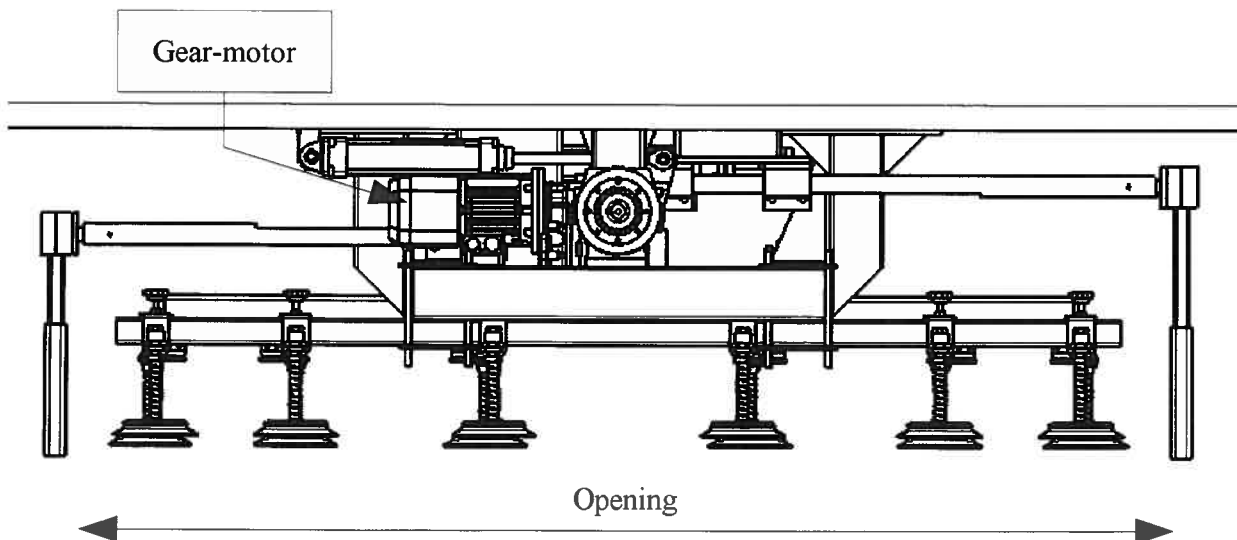


*Uncoupling device*

The uncoupling device, pneumatically driven, lifts a side of the sheet, separating eventually the sheets that remained against the first one, each suction cup is free to translate in order to adapt itself to the sheet curving. The device is complete of a compressed air blow which makes easy the separation of the coupled sheets.

*Centring device*

The forks of the centring device are connected together, the opening is controlled, on the basis of the sheet width, by a gear-motor with encoder.





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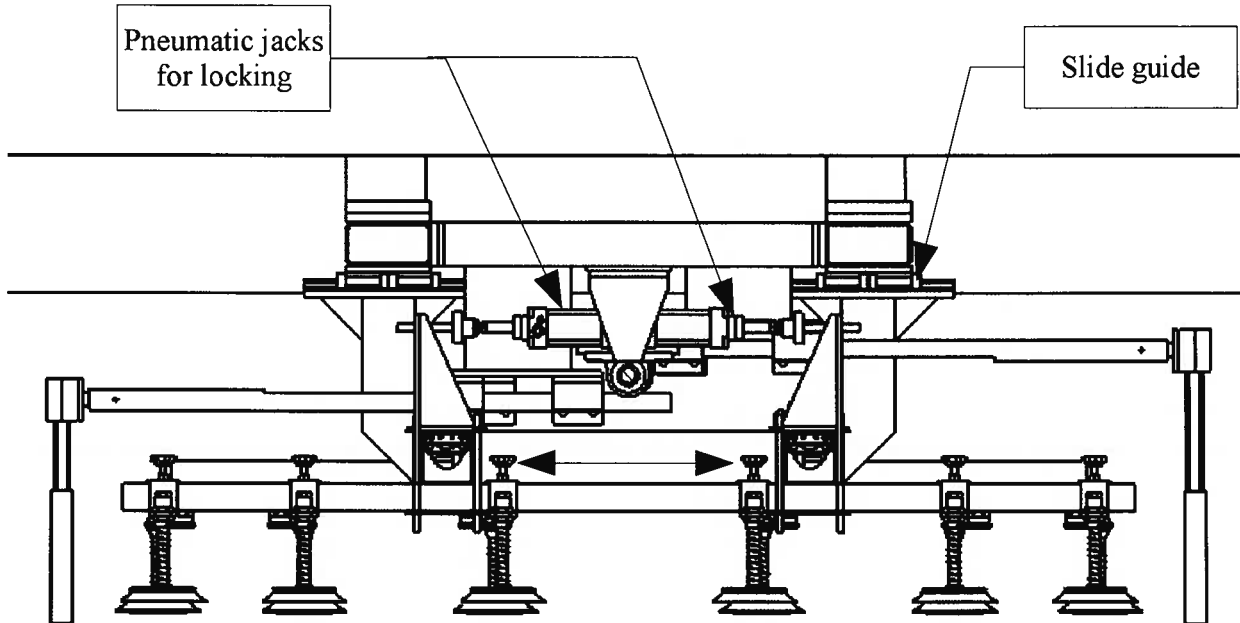
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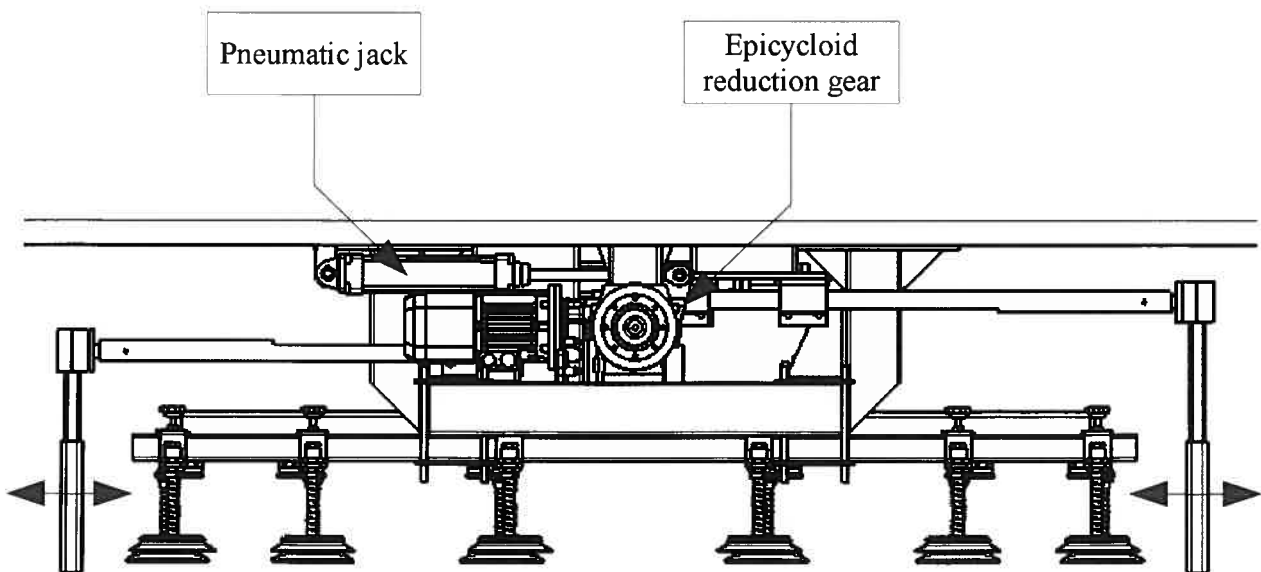
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Two pneumatic jacks release the vacuum group and let it free of translating transversally, necessary condition for the centring operation. The vacuum group is supported by slide guides.



The centring operation is obtained by the action of a pneumatic jack which closes the forks of a space necessary to get them in contact with the sheet, the jack operates independently from the gear-motor, operating on the external gear of an epicycloid reduction gear.





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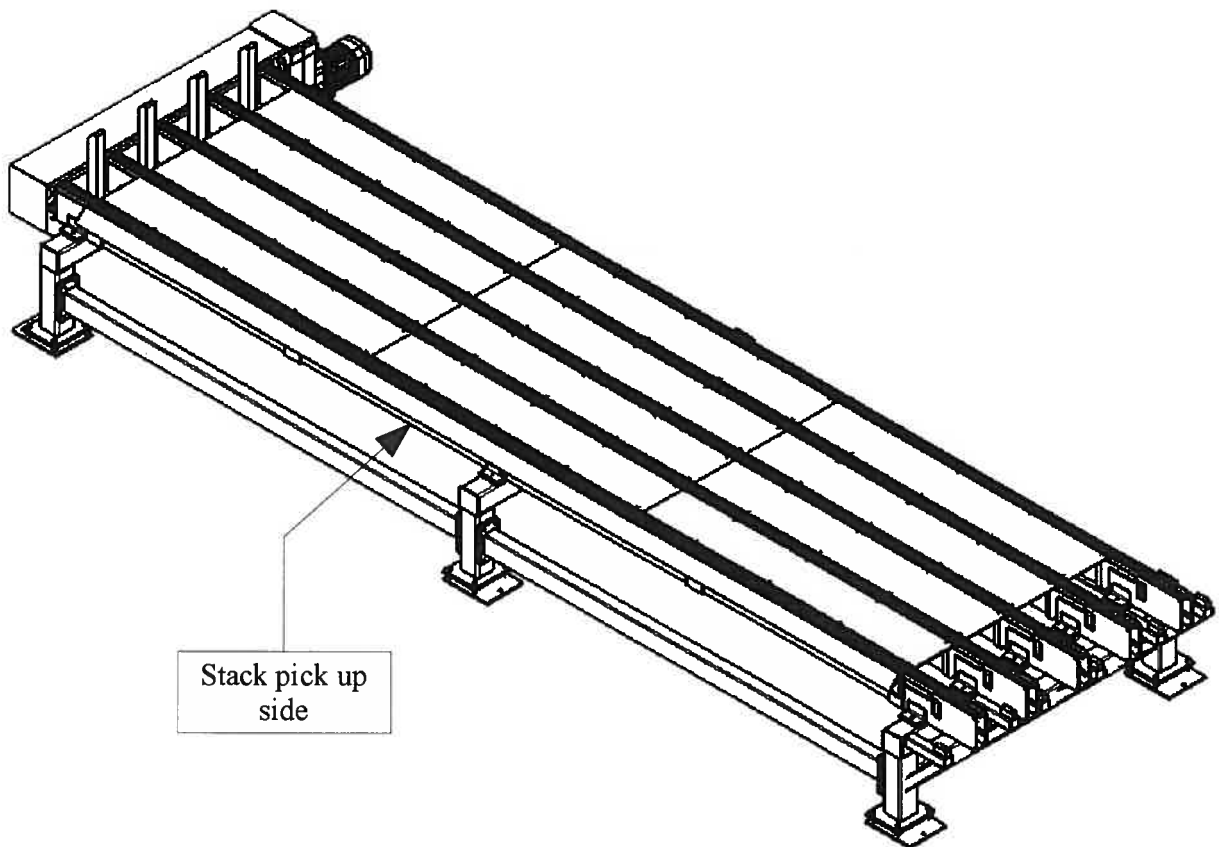
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## 2.1.4 – Chain conveyors

The handled stacks are unloaded from the line by means of chain conveyors, the trampling surface on the chains' level makes easy the stack strapping operations.



Transport speed      9 m/min



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## 2.2 – Control devices

The line is controlled by a control desk with keyboard and control board.

**N.B. The instructions concerning the controls are indicated on the Electrical manual.**

## 2.3 – Electric switchboards

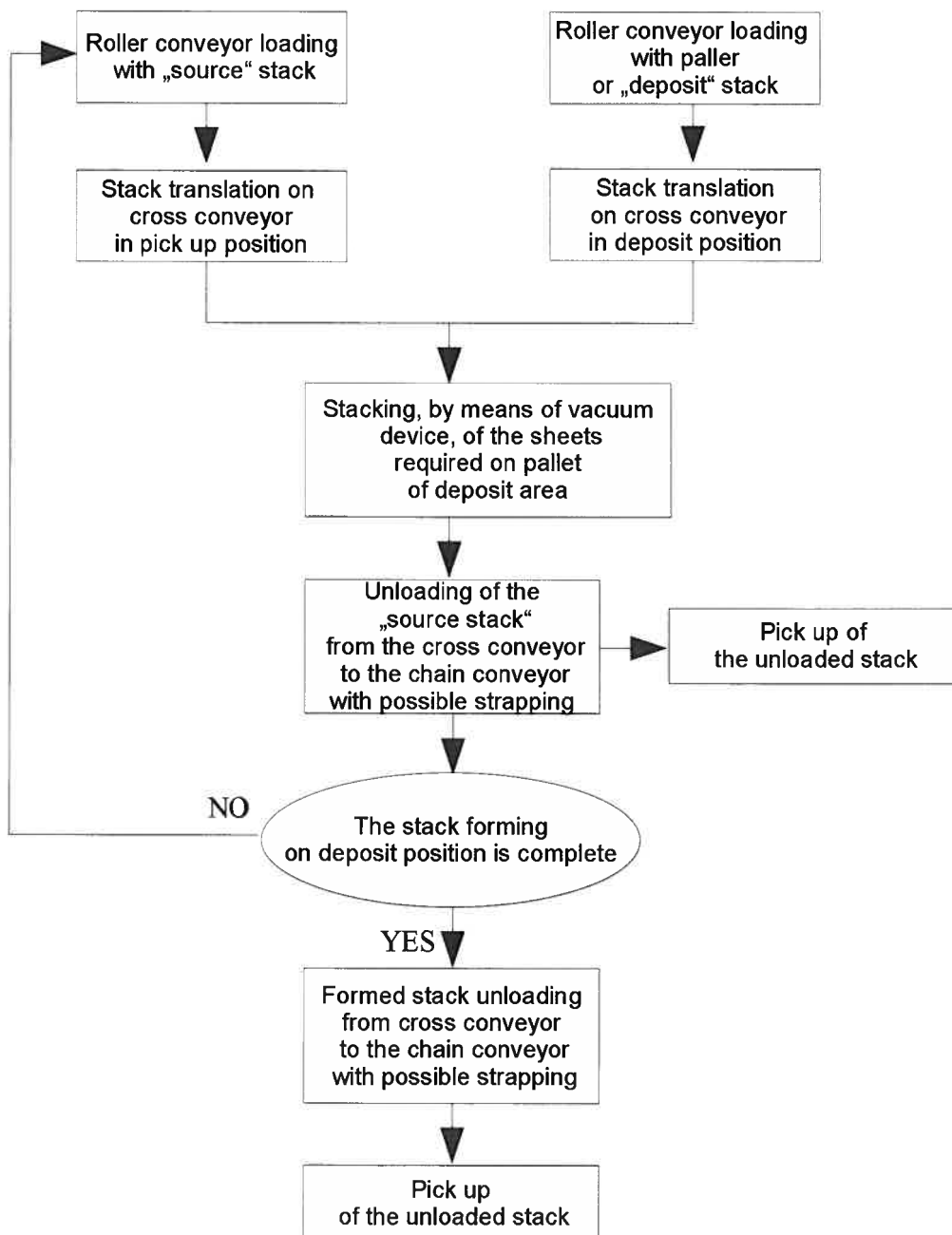
The line is powered by means of an electric switchboard which has a logic section and a power section.

**N.B. The wiring diagrams are indicated on the Electrical manual.**



## 2.4 – Working cycle

The logic of running of the line is shown by the following flowchart:





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## 2.5 – Working conditions.

The line can be loaded with sheets on pallet, the stacks handled by the line must respect the following specifications:

<i>Stacks</i>	<i>Max</i>	<i>Min</i>
Length (mm)	6000	2000
Width (mm)	2000	800
Height (mm)	300	-
Mass (kg)	5000	-
<i>Sheets</i>	<i>Max</i>	<i>Min</i>
Length (mm)	6000	2000
Width (mm)	2000	800
Thickness (mm)	12	0,5
Mass (kg)	1200	-

**\*Pay attention\***

The machine must be loaded ~~exclusively~~ with sheet stack on pallet  
with the above mentioned characteristics