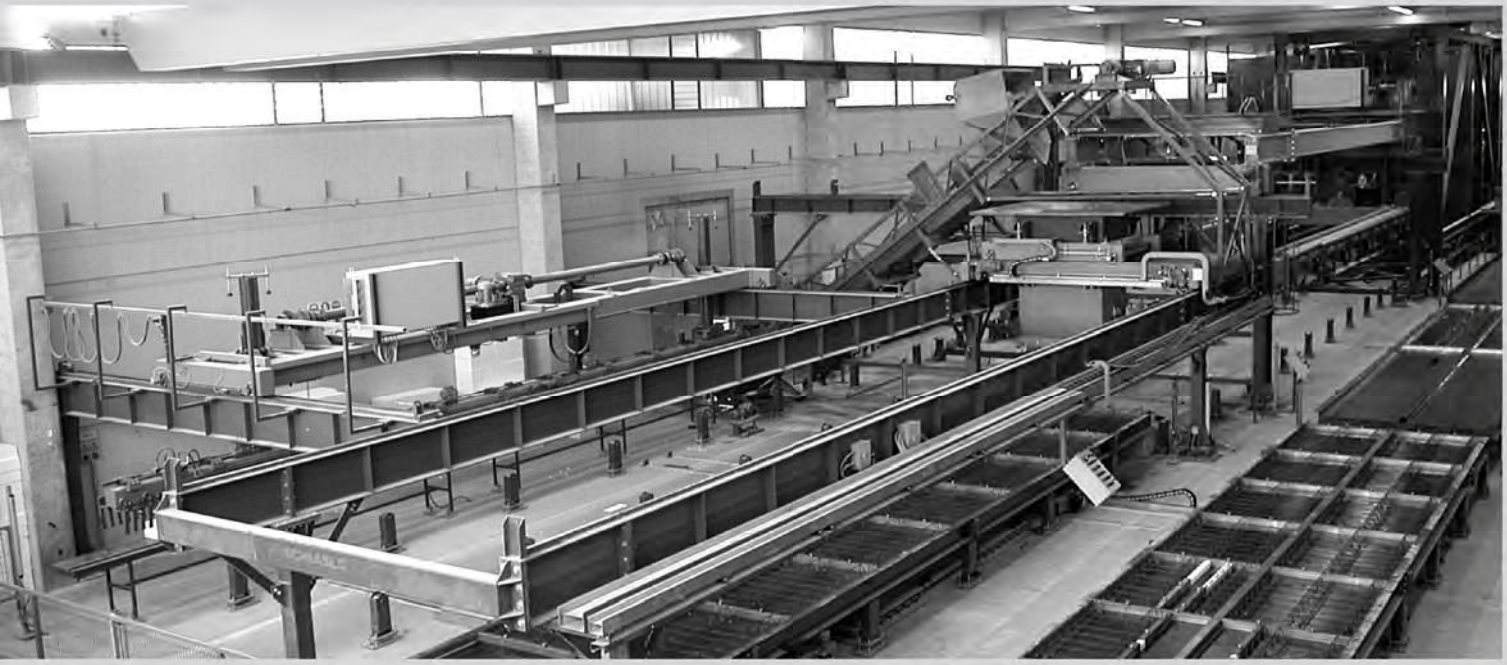
OCTOPUS

CONCRETER 125/48
Carrousel system for precast concrete wall panels and floors.

It is designed and well-tested to industrially produce cement slabs, tilt-up double-slabs and sandwich/solid concrete panels.

Highly automated system to produce structural precast and curtain, with standardized format, having a modest size, according to the dimension of the steel pallets.





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Tipical production

The types of producible precast elements comprises:

- the **solid panel**, consisting of a solid concrete casting, with 12 cm thickness
- the **slab**, consisting of a concrete plate, max. 6 cm thickness, reinforced with girder lattices up to 20 cm high
- the **double-slab**, consisting of a pair of concrete plates, reinforced with girder lattices up to 20 cm high.

Furthermore, the system is already set up for the production of **sandwich panels.**
The Sandwich Panel consists of three layers, with a final thickness of 20 cm.

- The first layer consists of a 6 cm thick concrete casting
- onto which is placed an 8 cm layer of light material (polystyrene)
- onto which is placed a second 6 cm thick concrete layer.

Two reinforcement stages and two casting stages are provided for each formwork to produce Sandwich Panels.

General description

The carousel system consists of a flat circuit for steel pallets (formworks).
Each formwork has overall dimensions of 4 m x 12.5 m, and has a work surface consisting of a single flat metal plate, on which side boards and shuttering are freely laid, up to 20 cm high.

We propose a plant with 48 forms, 40 of which are housed in the store, which consists of 4 towers with 10 levels.

MAIN DATA

In general, the main features of the plant are:

- Curing magazine with 4 TOWERS, each with 10 LEVELS.
- Hi-tech electronic control, with a set of PLCs and users connected in Profibus, with PC for supervision and remote connection.
- It includes the ROBOT with Plotter and AUTOMATIC MANIPULATING GRIPPERS.
- It includes the automatic cleaning and storage system of Shuttering.
- It includes the Automatic Grippers for laying the polystyrene, with its own vibro-finishing station.
- It includes an anti-swinging Gripper for shaking out and stacking the slabs and double-slabs
- It includes a station with rotary blade device, for finishing the upper face of the solid panels.

DAILY PRODUCTIVE CAPACITY

The maximum productive capacity in a single work shift (8 hours) is 43 m2 x 40 pallets = 1700 m2

NOTES.
1 - You can increase the daily production capacity through two shifts a day.

2 - In any case, that is, with one or more shifts a day, it is necessary to explore the opportunity to add any useful systems / additives to ensure the maturation of the precast, within 20 hours, between the time of casting and the time of demoulding.

MANPOWER

For each single shift, the production manpower includes a team of 8 persons:

- 2 persons for shaking out and recovering Shuttering;
- 1 person following automatic operations for laying the shuttering
- 2 persons for manually fitting reinforcements and accessories
- 1 person for casting
- 2 persons for preparing the upside down tipping stage or for laying the polystyrene

To achieve full productive capacity it is required for all raw materials to be prepared based on the needs and loaded or taken to site.

Based on accessories automatic machines, combined with the carousel, it remains to estimate the personnel to be assigned:

- concrete mixing unit
- preparing and feeding the reinforcement
- preparing and feeding the frames of doors and windows
- preparing and feeding the polystyrene
- external storage.

Production surfaces	Area of a single pallet: 12x3.6 = 43 square metres	Quantities of pallets: 48	Total area of pallets: 43x48 = 2064 square metres
Power	Installed power = 330 Kw	8 hours workshift consumption = approx. 640 Kwh	

Production and daily consumption over an 8-hour shift	SLAB	TILT-UP DOUBLE-SLAB	SOLID PANEL THICKNESS = 12 CM	SANDWICH PANEL THICKNESS = 6+8+6 CM
Maximum production	1700 square metres	850 square metres	1700 square metres	1700 square metres
Manpower	1 7 workers team	1 8 workers team	1 7 workers team	1 8 workers team
Ready mixed concrete supply	90 cubic metres	90 cubic metres	204 cubic metres	204 cubic metres

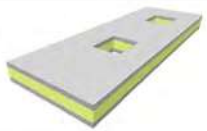
CONCRETE SLAB



TILT-UP DOUBLE-SLAB



SOLID PANELS SANDWICH PANELS

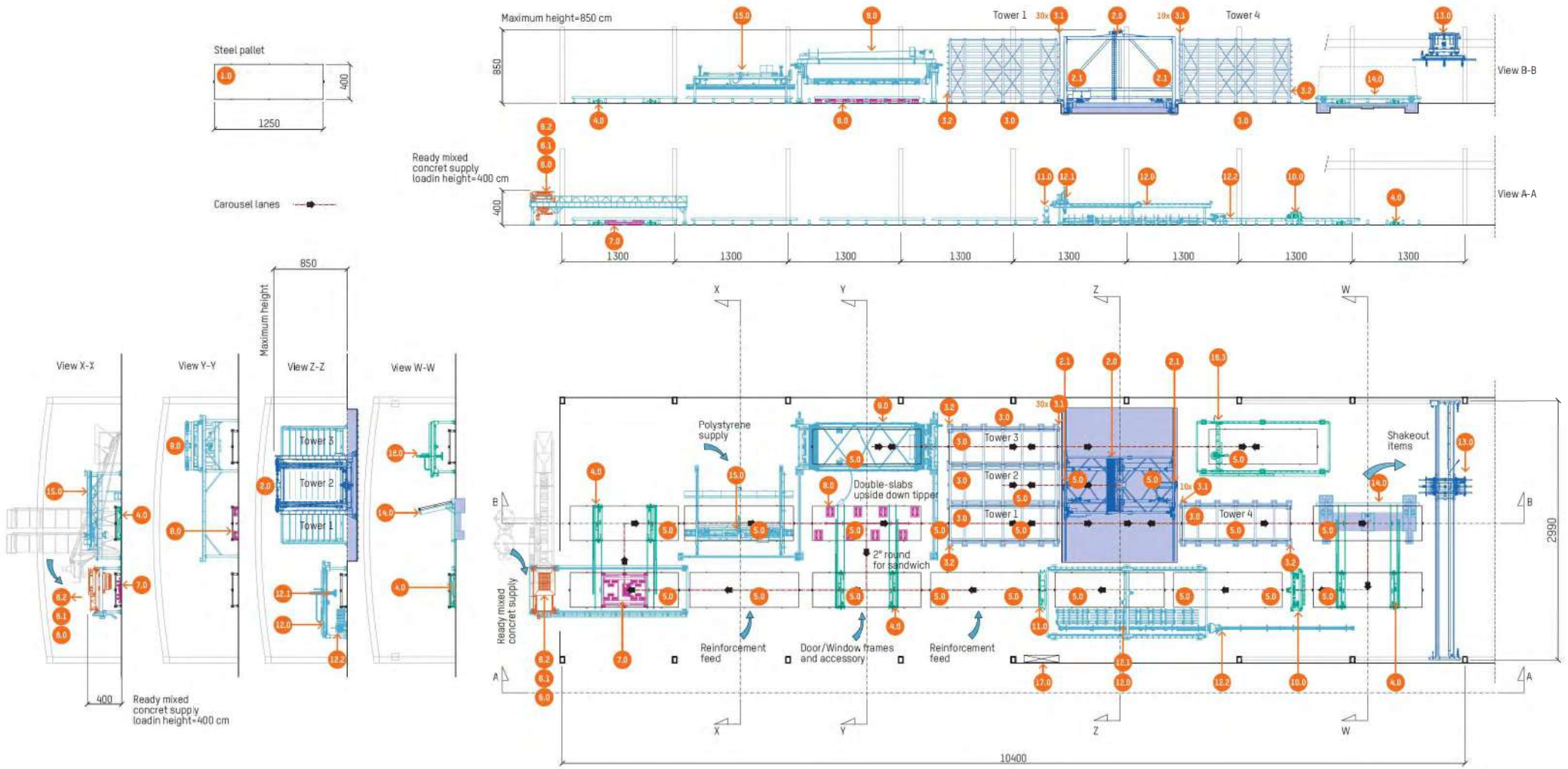


REF.	SUB	QUANTITY	DESCRIPTION	CONCRETE SLAB	TILT-UP DOUBLE-SLAB	SOLID PANEL	SANDWICH PANEL
1.0		N.48	4x12.5 m steel pallet, with useful dimensions 360 x 1200 cm	X	X	X	X
2.0		N.1	Self-propelled automatic lifting device	X	X	X	X
	2.1	N.2	Automatic door-open device, which automatically opens and closes the hatches mounted on each one cell	X	X	X	X
3.0		N.4	Storage tower, with 10 superposed levels, with a total of 4x10 = 40 independent cells	X	X	X	X
	3.1	N.40	Hatche door, with vertical running opening, to buffer the head of each cell	X	X	X	X
	3.2	N.3	Door on the ground floor, with its own, independent automatic opening device	X	X	X	X
4.0		N.3	Lateral conveyor, it is composed by a self-propelled paired of Shuttle-Carriages	X	X	X	X
5.0		N.21	Linear handling units	X	X	X	X
6.0		N.1	7-screw batcher , self-propelled carriage mobile on its own overhead track, with hooper and multi-cochlea dosing device	X	X	X	X
	6.1	N.1	Beton-Tronic system, with Sonar sensor, to detect concrete level in the hopper	X	X	X	X
	6.2	N.1	Centralised lubrication system, which includes the grease tank and the manual pump	X	X	X	X
7.0		N.1	Noiseless platform vibro-compaction system	X	X	X	X
8.0		N.1	Vibro-compaction blocks system, for double-slabs		X		X
9.0		N.1	Self-propelled carriage, with steel pallet tipper for double-slabs		X		
10.0		N.1	Automatic steel pallet sweeper, the Brushing machine	X	X	X	X
11.0		N.1	Automatic steel pallet oiler, the Lubrication machine	X	X	X	X
12.0		N.1	Shuttering station, where the Robot collects the incoming shuttering along the Unloading Belt of the Shuttering Cleaner and puts them in their place, in the storage area.	X	X	X	X
	12.1	N.1	Automatic Manipulating robot, the robot picks up from the storage area and lays the shuttering on the steel pallet, according to the work program received.	X	X	X	X
	12.2	N.1	Motorised line with metal brushes and lubrication circuit, for the recovery of the shuttering	X	X	X	X
13.0		N.1	Self-propelled demoulding overhead crane w th anti-swin-ging gripper, radio commanded	X	X		
14.0		N.1	Tilting equipment for steel pallet, with hydraulic bar to tilt-up double-slabs and concrete panels		X	X	X
15.0		N.1	Self-propelled oil hydraulic gripper, to lay rows of polystyre-ne / brick on the steel pallet	X			
16.0		N.1	Self-propelled rotary blade (helicopter), for smoothing the panels			X	X
17.0		N.1	On board electrical system, with control panels, automated control, Supervision	X	X	X	X
opt.			Shuttering with magnetic locks				
opt.			Insulation for walls and ceiling of the Towers				

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All dimensions are in centimetres.



1.0 Steel pallet, overall dimension 4x12.5 m

2.0 Self-propelled automatic lifting device

2.1 Door-open device for hatches

3.0 Storage towers, with 10 superposed levels

3.1 Hatche door

3.2 Ground floor Door, with pneumatic device

4.0 Self-propelled Lateral conveyor, made by a paired of Shuttle-Carriages

5.0 Linear handling units

8.0 7-screw batcher, multi-coclea dosing device with hopper and self-propelled carriage

8.1 Beton-Tronic system, with Sonar sensor

8.2 Centralised lubrication system

9.0 Noiseless platform vibro-compaction system

9.0 Blocks Vibro-compaction system

9.0 Self-propelled Steel pallet Tipper, for double-slabs

10.0 Steel pallet sweeper, the Brushing machine

11.0 Steel pallet oiler. the Lubrication machine

12.0 Shuttering station, including Robot, Shuttering Cleaner and Shuttering storage area

12.1 Self-propelled Manipulating Robot

12.2 Shuttering Cleaner, with motorised metal brushes and lubrication circuit

13.0 Self-propelled Demoulding overhead crane with anti-swinging gripper, radio commanded

14.0 Tilting equipment for steel pallet, with hydraulic bar to verticalize double-slabs and panels

15.0 Self-propelled Oil hydraulic gripper, for rows of polystyrene or brick

16.0 Self-propelled rotary blade (helicopter), for smoothing the panels

17.0 Onboard electrical system, with control panels, automated control, Supervision

SCHIASLO-SPIL
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REF. 01
STEEL PALLETS

PRODUCTION:
SLABS,
DOUBLE-SLABS,
PANELS

The steel pallets consist of a self-supporting metal structure, able to maintain the shape and not to bend under the maximum permissible load.

The steel pallets for carousel plants are either 120 cm, 250 cm or 400 cm wide, with maximum length of 14 metres.

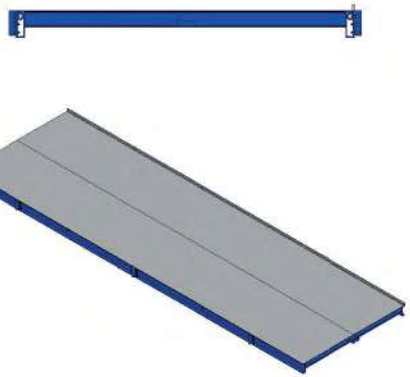
The pallet has a sturdy self-supporting structure and is designed to move on floor-mounted rollers or on suspended rollers within the setting tower.

Lengthwise the pallet consists of two heavy "C" section steel beams, which in addition to a structural function also serve as surface for its linear sliding. Crosswise, the structure is reinforced by means of thick profiles, arranged every 60 cm.

A 10 mm thick plate is welded above the load bearing structure. The plate's surface will be perfectly smooth, unpainted.
On the two heads is centrally fixed the hooking bracket, required to automatically move the formwork into and out of the Towers.

4 striker plates are fixed on the sides of the formwork for using the automatic centring device, required to accurately position the formwork:
- in the shuttering station with Robot
- in the reinforcement stations
- in the casting station
- in the overlapping station for double-slabs
- in the polystyrene/brick laying station

Technical data
- **Capacity**
  approx. 500 kg / m2,
  max. capacity approx. 21000 kg
- **Work surface**
  sheet metal th. 10 mm, in steel SR-235-JR, with unfinished surface, accurately polished
- **Height of the pallet**
  approx. 40 cm
- **Overall dimensions**
  4 x 12.5 m
- **Own weight of pallet**
  approx. 7800 kg







REF. 02
SELF-PROPELLED LIFTING DEVICE

PRODUCTION:
SLABS,
DOUBLE-SLABS,
PANELS

The self-propelled lifting device can be aligned on the ground with the various operational stations; therefore on lifting it can reach every individual cell of the Towers. Even if it is sophisticated, it is the most efficient way of storing large pallets.

The Self-propelled Lifting device can be used well to:
- Automatically withdraw and deposit pallets, one at a time, in the routes of the operational stations, placed at ground level.
- Automatically withdraw and deposit the pallets, one at a time, in the individual cells in the Towers i.e. the pre-storage warehouse.

The Self-propelled Lifting device is made up from:
- a large, automatic, mobile self-propelled carriage on ground tracks. The ground track allows the carriage to move laterally in a way to align itself with the various operational stations and the cells in the Towers.
- a relevant automatic large capacity hoist, installed on the self-propelled carriage itself, complete with the devices necessary for attachment, loading and unloading of a pallet.
- the electro-mechanical DOOR-OPEN device, which automatically opens and closes the collision hatches mounted on each individual cell in the Towers.

Technical data

Ground track
- It is almost 18 m long, laid in a pit approx. 100 cm deep, approx. 13.5 m wide and approx. 18 m long

Self-propelled carriage
- **Max. Translation speed:** approx. 40 cm/sec

Lifting platform
- **Max. lifting speed:** approx. 15 cm/sec
- **Payload:** approx. 35 Tons
- **Max. pusher speed:** approx. 15 cm/sec
- **Max. door lifting speed:** approx. 5 cm/sec

Power
- **Installed power:** approx. 28.5 Kw
- **Consumption:** approx. 20 Kwh/Hr









REF. 03
PRE-STORAGE TOWER WAREHOUSE

PRODUCTION:
SLABS,
DOUBLE-SLABS,
PANELS

The Tower Warehouse is a metal structure with several levels, used to pre-store the pallets during the product hardening phase.

The Tower Warehouse can be used well to:

- Reduce the surface occupied by the carousel, developing the clearance of the pre-storage warehouse in height. The Tower Warehouse can be used immediately with a small amount of pallets, for the amount to then be doubled or tripled on requirement, without any necessity to mocify the carousel and its clearance.
- Simplify the loading and unloading organisation of the pallets. Each individual cell of the pre-storage warehouse can be accessed at any time by means of the self-propelled lifting device.

The Tower Warehouse is made up of:

- A steel structure realised with cross-members and "HEA" columns, reinforced by horizontal portal beams and appropriate bracing, in a way to create a solid grid of bridged cells
- Every cell includes the running track for a pallet, complete with large metal idle wheels, mechanical retainers and electronic sensors for automatic movement of the pallet.

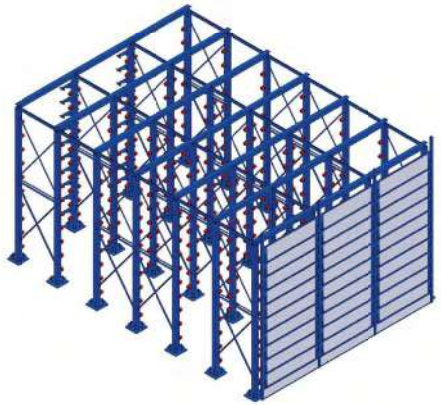
The Tower Warehouse can be enclosed in a shell of heat-insulated panels. In this case the head of each cell is buffered by an appropriate hatch, with vertical running opening. The hatches are opened automatically by a relevant device installed in the Self-propelled Lifting device.

Technical data

- **Towers:** 4 Towers, with 10 superposed levels and capacity approx. 270 Tons for each Tower.
- **Cells:** 40 cells, with idle metal wheels diam. 170mm, spaced every 240 cm, for lengthwise pallet travel
- **Capacity:** 40 pallets, one pallet per cell, each cell can be used independently
- **Internal doors:** 40 doors, opened automatically by the Shelving Unit
- **External doors:** 3 doors on ground floor, with their own automatic, pneumatic opening device
- **Safety:** Laser sensor on each Tower, to check for any protruding formwork

The structure is set up for any cladding with thermally insulating panels, on 3 sides and ceiling.

Supply by the Customer:
7 bar compressed air:
approx. 10 litres/minute









REF. 04/05
HANDLING THE PALLETS

PRODUCTION:
SLABS,
DOUBLE-SLABS,
PANELS

Pallet handling includes various motorised devices necessary to transfer the pallet flat between the operational stations.

Device for handling the pallets:

- Motorised route for the linear advancement of the pallets between the operational stations. It is composed of a double series of aligned columns. Each column can be height-adjusted and supports a metal idle wheel. One or more pairs of motorised columns, with rubberised wheels, are added to every operational station.
- Lateral conveyor, with 2 shuttle carriages, for side movement of the pallet between two or three flanked lines. It includes a pair of self-propelled trolleys on ground tracks, electro-mechanically coupled and equipped with a hydraulic circuit for lifting the pallets.
- Step-by-step Pusher- Extractor line, with retractable hook. Makes the manoeuvres necessary to position the pallets on the Lifting devices and the Towers.

Functioning

All movements are recognised by the Supervision, that keeps track of the work and therefore of the position of the individual pallet along the entire production route. The content and status of the pallets can be viewed at any time: from laying out, to reinforcement, casting, vibration, pre-storage, to demoulding.

Technical data

REF. 04/ SHUTTLE CARRIAGE

- **Max. translation speed:** approx. 30 cm/sec
- **Max. stroke on ground track:** approx. 770 cm

Lifting

- **Max. lifting speed:** approx. 20 mm/sec
- **Max. lifting stroke:** approx. 100 mm
- **Payload:** approx. 35 Tons

Power:

- **Installed power:** approx. 17.5 Kw
- **Consumption:** approx. 1.4 Kwh/Hr

REF. 05/ LINEAR HANDLING UNITS

- **Motor units:** 21 3 Kw units, driven by inverter
- **Max. translation speed:** approx. 30 cm/sec
- **Capacity of each post:** approx. 5 Tons

Power:

- **Installed power:** approx. 63 Kw
- **Consumption:** approx. 12.5 Kwh/Hr

REF. 04
Lateral conveyor



REF. 05
Linear handling units









REF. 06
AUTOMATIC AUGER FEED DOSING DEVICE

PRODUCTION:
SLABS,
DOUBLE-SLABS,
PANELS

Developed during the'80-s, the MULTI-COCHLEA dosing device immediately demonstrated noteworthy gifts of precision, reliability, speed and strength.

The MULTI-COCHLEA dosing device can be used well to:

- Automatically fraction the casting of an entire pallet; in automatic miss the shuttering robots, miss the empty areas and respect oblique edges.
- Quickly perform the casting of narrow high kerbs on large pallet, also more than 3 metres; typical execution for the production of Sandwich Panels and Panels in brick-cement.

The MULTI-COCHLEA dosing device is composed of:

- Hopper with cylindrical base with special anti-wear internal covering.
- Mixer Unit with horizontal axis, for continuous service.
- Series of screw-feed pumps with large diameter; each pump is independent and driven by inverter and includes a hydraulic gate valve to close the flow of concrete, useful for cleaning and maintenance operations.

Particular data:

- Large capacity loading hopper: from 2000 to over 3500 litres, on the basis of customer request.
- Loading hopper positioned on the Loading Cell: detects the hopper weight changes in a way to automatically adjust the flow rate of the screw-feeders on the basis of the advancement of the dosing device (opt.).
- Automatic Lubrication Plant: it includes an automatic greasing plant, complete with grease pump, distribution circuit, filter and tank.
- Beton-Tronic system with SONAR probe: detects the filling level in the hopper and activates an alarm signal when the level of the concrete falls below the reserve limit.

Technical data:

BATCHER CARRIAGE

- **Max. lengthwise speed:** approx. 30 cm/sec
- **Max. lengthwise stroke:** approx. 1450 cm
- **Max. crosswise speed:** approx. 20 cm/sec
- **Max. crosswise stroke:** approx. 190 cm

HOPPER WITH 7 SCREW MULTI-COCHLEA DOSING DEVICE

- **Useful capacity of the hopper:** approx. 3000 litres
- **Blade Stirrer speed:** approx. 0.3 rps
- **Max. capacity of each screw:** approx. 3 litres/sec

Power:

- **Installed power:** approx. 31 Kw
- **Consumption:** approx. 19 Kwh/Hr









REF. 07/08
VIBRO-COMPACTING ON PALLETS

PRODUCTION:
SLABS,
DOUBLE-SLABS,
PANELS

The vibration and compaction of the concrete are obtained by mechanical oscillation of the pallet.

The Vibro-compacting on the pallets, in general

The operation is necessary to guarantee the spreading and levelling of the mass of concrete in the volume to fill, as well as the necessary surrounding and seizing of the concrete onto the reinforcement wires.

The rotation of eccentric parts is used to make the pallet shake, according to two possible solutions:

REF. 07/ VIBRATION WITH OSCILLATING PLATFORM

This compactor device is made up from a strong base to be fixed to the floor, onto which a strong oscillating slide is installed and moved by a relevant motor unit. The shaking is transmitted to the pallet by means of special hydraulic vices, which hold the pallet tightly to the slide in a way that all noise caused by metal shaking is prevented. The amplitude and the frequency of the oscillations can be adjusted on the basis of the type of product.

REF. 08/ BLOCK VIBRATION UNITS

This compactor device is composed of two series of small platforms with high-frequency electric vibrators, positioned on two parallel rows under the pallet to be vibrated. Every platform has a suitable pallet attachment system using vices. This holds the platform tightly blocked and prevents all noise from shaking metal. The vibration cycle can be adjusted depending on the type of product.

Technical data:

REF. 07/ VIBRATION WITH OSCILLATING PLATFORM

The oscillating platform includes:

- 1 4 Kw motor unit, with inverter, for vibration
- 1 3 Kw oil hydraulic unit to actuate the blocking jaws

Power:

- **Installed power:** approx. 7 Kw
- **Consumption:** approx. 0.5 Kwh/Hr

REF. 08 BLOCK VIBRATION UNITS

Vibration

- 8 2.2 Kw electrovibrators

Clamping

- 7 Kw Pneumatic Compressor

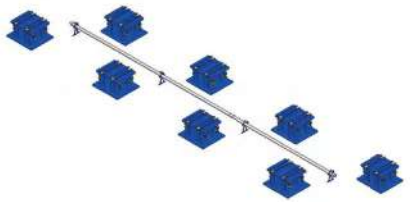
Power:

- **Installed power:** approx. 24.5 Kw
- **Consumption:** approx. 1.8 Kwh/Hr

REF. 07/ Noiseless platform vibro-compaction system



REF. 08/ Blocks Vibro-compaction system, for double-slabs







REF. 09
PALLET TIPPER FOR DOUBLE-SLABS

PRODUCTION:
DOUBLE-SLABS

The Pallet Tipper is advantageous to perform a unique operation, the tipping and overlying of an entire pallet of hardened sheets above the corresponding pallet of fresh sheets.

The Pallet Tipper can be used well to:
Perform all tilting and overlaying operations with an entire pallet necessary to couple the first face (already hardened) with the corresponding second face (still fresh) of one or more double-sheets. During the pallet tipping and overlaying operations, the Pallet Tipper also de-moulds the hardened sheets in a way that the double passages are eliminated, otherwise necessary with the traditional Tipping Table, which in order to overlay the sheets (one sheet at a time) requires the previous demoulding of the sheets themselves.

The Pallet Tipper is made up of:
- A strong Self-propelled carriage, mobile on airborne tracks mounted on appropriately braced columns. The Carriage has four vertical guides on which the two support frames for the large motorised horizontal axles runs. This supports the Support Counter-frame and allows its rotation.
- The Support Counter-frame, realised with large steel pipes, is a large metal frame designed to contain a pallet and its content. The following are installed on the Support Counter-frame:
- The hydraulic device to attach and hold the pallet.
- Four mechanical centring devices to guarantee alignment of the pallets to be coupled.
- A series of hydraulic presses positioned along both sides of the pallet, used to mechanically block the support beams: The latter are metal rods with suitable strength that are manually positioned along the perimeter of the pallet. Once pressed, the rods must prop and therefore anchor the hardened sheets to the pallet itself.

Technical data:
- **Max. horizontal speed:** approx. 20 cm/sec
- **Max. lifting speed:** approx. 10 cm/sec
- **Max. rotation speed:** approx. 180° in 30 sec

Power
- **Installed power:** approx. 38 Kw
- **Consumption:** approx. 6.5 Kwh/Hr









REF. 10/11
BRUSHING MACHINE AND LUBRICATION MACHINE

PRODUCTION:
SLABS,
DOUBLE-SLABS,
SANDWICH PANELS

While the pallet transits, the Brushing machine removes the residues of cement and the Lubrication machine spreads a thin layer of disarming oil.
These are the first automatic operations that the pallet meets during its daily route.

REF. 10/ The automatic Brushing machine is made up of:
- A series of steel blades that go automatically to touch the horizontal surface of the pallet, by means of a pneumatic circuit.
- One or more motorised transversal brushes, mounted on horizontal axles, which can be height-adjusted. Useful for cleaning the horizontal surface of the pallet along its entire length.
- A collection tank, installed under the machinary, which can be easily removed. Useful for collecting the residues removed by the Brushing machine.

REF. 11/ The automatic Lubrication machine is made up of:
- A frame with metal hood, which can be inspected. In outfeed it has a bar with felt, which rests along the entire length of the pallet. This is useful to prevent and oil stagnation.
- The hydraulic circuit, including the can for the disarming oil, the purifying unit, the pump and most of all the series of precision nozzles, which allow the adjustment of the quantity of nebulised oil and the size of the micro drops that will be deposited on the surface of the pallet in a way to create a thin uniform layer, as well as the relative piping.
- The suction circuit, including the suction device and the filters for recovery of the excess nebulised oil. This will be put back in the can, with a great saving of product and most of all protection of the environment, as its dispersion into the air is prevented.

Technical data:

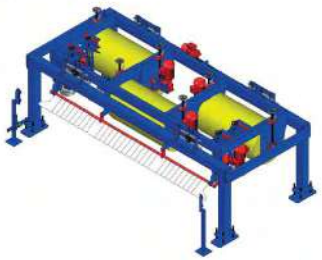
REF. 10
THE AUTOMATIC BRUSHING MACHINE
Power
- **Installed power:** approx. 9 Kw
- **Consumption:** approx. 2 Kwh/Hr

Supplies by the Customer:
- **7 bar compressed air:** approx. 10 litres/min.

REF. 11
THE AUTOMATIC LUBRICATION MACHINE
Power
- **Installed power:** approx. 2.6 Kw
- **Consumption:** approx. 0.7 Kwh/Hr

Supplies by the Customer:
- **7 bar compressed air:** approx. 10 litres/min.

REF. 10/ The automatic Brushing machine



REF. 11/ The automatic Lubrication machine







REF. 12
MARKER AND SHUTTERING PANEL LAYING ROBOT

PRODUCTION:
SLABS,
DOUBLE-SLABS,
SANDWICH PANELS

The Marker and Shuttering panel laying Robot receives drawings from the office and takes them to real scale on the pallet. It also lays the shuttering panels on the pallet, thus improving the speed and precision of the execution.

The Marker and Shuttering Panel Laying Robot, in general:
Is an integrated system that receives the data transmitted by the technical dept. and acts directly on the pallet:
- The marking of the drawings.
- The withdrawal and automatic laying of the magnets and shuttering panels.
- The brushing and storage of the recovered shuttering panels, in automatic mode.

It eliminates the manual measurement and laying of the shuttering panel on the pallet, with labour saving and greater precision.

The Station Shuttering includes:
- A robot mobile above the pallet and the shuttering panel warehouse. The rotating head of the robot is activated on 4 interpoled axes (2 horizontal axes + 1 vertical axis + 1 rotation axis). It supports the circuit with coloured liquid marker and one or more pneumatic grippers to pick-up magnets and shuttering panels.
- Automatic deposit for storage of magnets and shuttering of various sizes, with separate compartments.
- A motorised line with metal brushes and lubrication circuit, for the recovery of the shuttering and magnets. The line is supplied with a series of sensors that automatically distinguish the shuttering panels on the basis of type and length, in a way to put them in order.

The robot supply includes:

OVERHEAD TRACK
It is approx. 17.5 m long, placed at a height of almost 3 m, supported by a sturdy metal gantry frame with 6 braced pillars to be installed on the floor.

Technical data:

ROBOT
- **Max. lengthwise speed:** approx. 110 cm/sec
- **Max. crosswise speed:** approx. 50 cm/sec
- **Max. lifting speed:** approx. 40 cm/sec
- **Max. rotation speed:** approx. 0.5 rps

SHUTTERING RECOVERY AND CLEANING LINE
- **Belts feed speed:** approx. 50 cm/sec

Power
- **Installed power:** approx. 28.8 Kw
- **Consumption:** approx. 16.8 Kwh/Hr

Supply by the Customer:
- **7 bar compressed air:** approx. 70 litres/min.







REF. 13
DEMOULDING OVERHEAD CRANE

PRODUCTION:
SLABS,
DOUBLE-SLABS

The Demoulding Overhead Crane allows a single operator to quickly perform all operations necessary to pick-up the hardened products from the pallet and stack them on the ground or on the deck of a vehicle.

The Demoulding Overhead Crane, generally:
It is designed to de-mould slabs and double-slabs, with width from 50 to 360 cm and length from 1.5 to 9 metres and height up to 40 cm.
With relevant telescopic extensions from the head of the beams it is possible to de-mould products with length exceeding 12 m.
All controls are given on the relevant Radio-control, which allows a single operator to perform demoulding and stacking of more than 1000 m² of sheets in 8 hours.

The Demoulding Overhead Crane includes:
- A relevant transversal trolley, mobile on two-beam overhead crane, with rigid lifting system, formed from two large section telescopic columns, with straightened guides and contrast rollers in high tensile steel, which can be adjusted to annul play. The telescopic columns allow movement of the load without undesired rotations and swinging.
- A horizontal frame, mounted under the telescopic columns, with mobile beams and cross-members to support the Pneumatic Hooks. The sheet is gripped by 3 sets of pneumatic hooks with Double Body; the nine hooks can move along the beams and cross-members by means of servo-mechanisms. The three central hooks are retractable, in order to also grip very narrow sheets. Telescopic extensions are mounted on the head of the beams with 3+3 manual hooks, useful for demoulding very long sheets.
- Motorised centre bearing, carries out the 180° rotation of the horizontal frame.
- Radio-control with push button control panel. It includes all lifting, widening, lengthening and hook opening controls, as well as rotation of the Centre bearing and the positioning of the overhead crane.

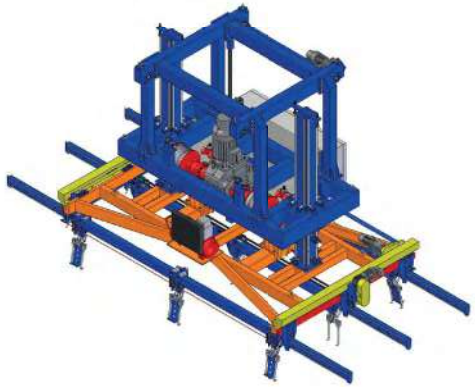
Technical data:

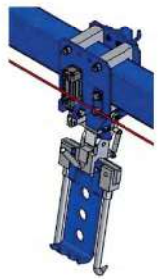
Gantry crane
- **Max. lengthwise speed:** approx. 100 cm/sec
- **Max. crosswise speed:** approx. 80 cm/sec
- **Max. lifting speed:** approx. 15 cm/sec

Shakeout grippers
- **Max. crosswise opening speed:** approx. 20 cm/sec
- **Max. lengthwise opening speed:** approx. 20 cm/sec
- **Max. rotation speed:** approx. 0.1 rps

Power
- **Installed power:** approx. 40.5 Kw
- **Consumption:** approx. 16 Kwh/Hr

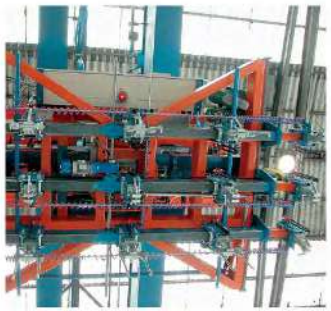
Supply by the Customer:
The double girder gantry crane with its own overhead track
This is a heavy gantry structure, to be installed on a suitable overhead track, housed on the shelves of the shed's pillars.
At least, it must have:
- gauge approx. 29 metres
- payload at least 25 Tons











REF. 14
TILTING EQUIPMENT TO DE-MOULD PANELS

PRODUCTION:
DOUBLE-SLABS,
SANDWICH PANELS

The panel tilting equipment lifts a long side of the pallet in a way to make demoulding easier. The pallets are withdrawn immediately and transported vertically.

The Tilting equipment for demoulding panels is optimal for:
Demoulding the products that are immediately withdrawn and positioned vertically, such as the Double-slabs, the Concrete panels and the Sandwich Panels.
It allows the inclination of the entire pallet from the horizontal to vertical plane. When the pallet is inclined, the operator can easily lift the goods vertically and position them in the storage area or on the carriages.

The Tilting equipment is made up of:
- A solid steel **swivelling frame**, placed on relevant bases on the floor. The swivelling frame is lifted by a hydraulic circuit, by large retracting cylinders, positioned in a pit under the floor itself.
- An eventual **Hydraulic Levelling** device, composed of a long retracting hydraulic bar, positioned along the support side. Before lifting, it will approach the panels and will support them during the inclination operation and successive withdraw.

Technical data:
Tilter capacity:
approx. 35 Tons

Timing:
- **Time for closing the clamps:** approx. 4 sec.
- **Time for opening the Support:** approx. 5 sec.
- **Lifting time:** approx. 30 sec.

Power:
- **Installed power:** approx. 15 Kw
- **Consumption:** approx. 2 Kwh/Hr









REF. 15
OIL HYDRAULIC GRIPPER FOR POLYSTYRENE/ BRICK ROWS

PRODUCTION:
SLABS,
DOUBLE-SLABS

The oil hydraulic gripper for carousel plants consist of a self-propelled, it is designed to be laid directly on board of the pallet the lightening blocks.

The oil hydraulic gripper picks from the preparation bench an entire row of polystyrene at a time and places it directly on the pallet, on the freshly cast concrete.

It automatically performs the placement operation on several parallel rows, complying with heights and centre distances, based on the plotting data, as previously used by the Robot.

While placing the polystyrene, the Gripper vibrates and slightly sinks it in the concrete, to assure maximum levelling and grip.

Thanks to its sturdiness, the Oil Hydraulic Gripper is suited to picking an entire row of brick blocks, which may be used in place of the polystyrene blocks.

This device has a large self-propelled carriage, mobile on its own overhead track. 2 orthogonal units with vertical pillars, anti-swinging, are positioned on the self-propelled carriage. The frame of the Oil Hydraulic Gripper is hanging under these. Each orthogonal unit includes a double series of ground metal rollers, juxtaposed, with adjustment screws for recovering gaps.
The **oil hydraulic gripper** consists of a heavy metal frame, with two juxtaposed vertical combs, made up of a thick set of vertical metal blades with rubber inserts; maximum opening between the combs is approx. 55 cm, and is mechanically connected and jogged in four points by means of racks on crosswise slide.

Technical data:
- **Max. lengthwise speed:** approx. 70 cm/sec
- **Max. lifting speed:** approx. 30 cm/sec
- **Comb closing time:** approx. 6 sec.

Power:
- **Installed power:** approx. 11 Kw
- **Consumption:** approx. 3.3 Kwh/Hr









REF. 16
SMOOTHING HELICOPTER

PRODUCTION:
SOLID PANELS,
SANDWICH PANELS

The sandwich/solid panel is smoothed by means of a suitable device with rotary blades, called Helicopter, which is installed on a suitable self-propelled carriage.

The panel smoothing station is in free position, released from the sequence of the carousel operative cycle. In this way the operator may choose at will the best panel hardening time, i.e. the time between the casting stage and the subsequent smoothing stage.

By working in this way, the Shelving unit is required to make a special outbound and return journey for each individual pallet to be smoothed, between the Curing Towers and the smoothing station. The whole is managed automatically, with no work load for the operators.

The device, called Helicopter, is installed on a suitable self-propelled carriage, which may operate manually and in semi-automatic mode, moving along the two cartesian overhead tracks, so as to be positioned at will on any point of the panel.

The diameter of the rotary blades is approx. 80 cm. The operative height of the rotary blade/ helicopter is adjusted by the operator, by means of a suitable motorised lifting device.

Technical data:

- **Max. axis X speed:** approx. 50 cm/sec
- **Max. axis Y speed:** approx. 30 cm/sec
- **Max. lifting speed:** approx. 15 cm/sec

Power:

- **Installed power:** approx. 13 Kw
- **Consumption:** approx. 6 Kwh/Hr



REF. 17
ELECTRONIC CONTROL SYSTEM

PRODUZIONE:
SLABS,
DOUBLE-SLABS,
SANDWICH PANELS

The operability of the carousel provides that each individual pallet is stopped in the operating stations, for the time necessary to the corresponding phase.
All units are controlled from the console of Supervision, according to the remote PLCs, installed on board.

Separate data management

The exchange protocol used between PLCs and Supervision is based on a marked separation between the physical handling of the pallet and the production flow, in other words:

- the machinery's PLCs are responsible for handling the steel pallets
- Supervision is responsible for automatic management of the pallet content, with the required operative choices based on product features.

Based on this solution, it is true that the pallets may always be handled in manual mode, i.e. even without switching on the Supervision; subsequently, when it is switched back on, the Supervision takes over the situation again, with no loss of data, and may therefore proceed with production activities, in automatic mode.

Control circuits

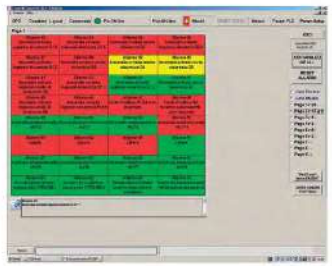
The machine includes safety circuits for movements, wiring all sensors, all limit switches and all control panels in the various operative stations. The parts of the machinery communicate through a dedicated network.
The supply includes:

- active safety devices (e.g. light curtains)
- passive safety devices (e.g. the fences closed by gates with booking lock) as set forth by current regulations in force in Europe.

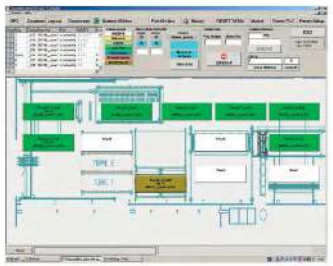




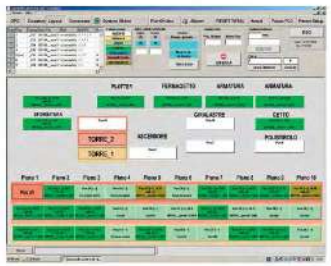
Example of Alarms screen
(1 of 9 pages)



Graphic display of carousel layout,
with pallets in the operative stations



Symbolic display of all pallet contents,
in the carousel and in the Towers



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