

BOULLEVILLE, le 27/06/2024

MAFA

CARROUSEL FOR WET CONCRETE LONG MOLDS



CONTENT

CARROUSEL FOR WET CONCRETE LONG MOLDS.....	1
SYSTEM OVERVIEW.....	2
CURING AREA.....	5
THE DEMOULDING.....	7
THE USE OF REINFORCING STEEL.....	8



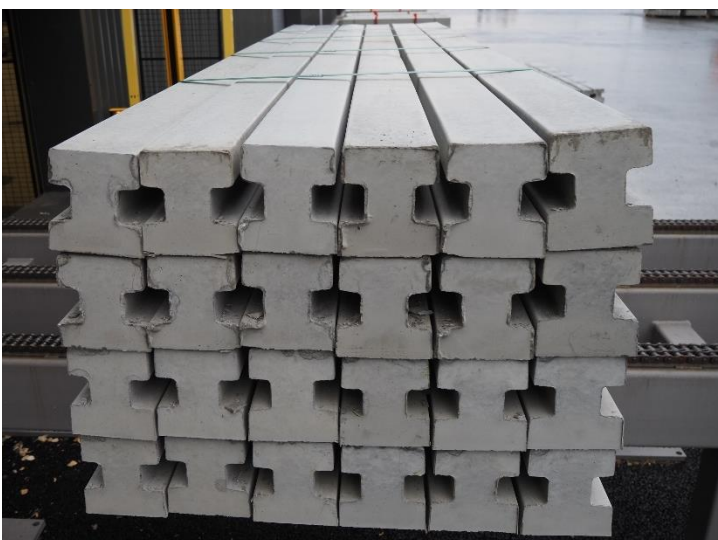
SYSTEM OVERVIEW

- The carousel allows to produce elements in wet concrete with a length up to 5 m, width of 1.1 m, height 0.35 m, and a maximum total weight of 4000 kg.
- The moulds are moved among a series of conveyors and trolley, and different stations or different tasks are implemented:
 - The filling and compaction station
 - The control station of the product
 - Curing for the maturation of concrete
 - Demoulding station
 - The positioning and insertion of reinforcing steel
 - Palletizing of the products

Each chassis is equipped with RFID identification, to check at each pass that the product corresponds to the manufacturing plan.

The demoulded product, among a series of conveyors, arrives at a palletizing area, or a robot and a series of other machines, allows palletizing and management of incomplete pallets.

Posts, slabs, gutters are the most frequently manufactured elements in this type of installation.



FAMETO INDUSTRIE SAS

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CYCLE TIME

The carousel allows the manufacture of a mold in an average time of 8 min.

For a certain product category, the process is completely automatic, for others manual operations are necessary, such as inserting the armatures or pre-opening the mold before demolding.

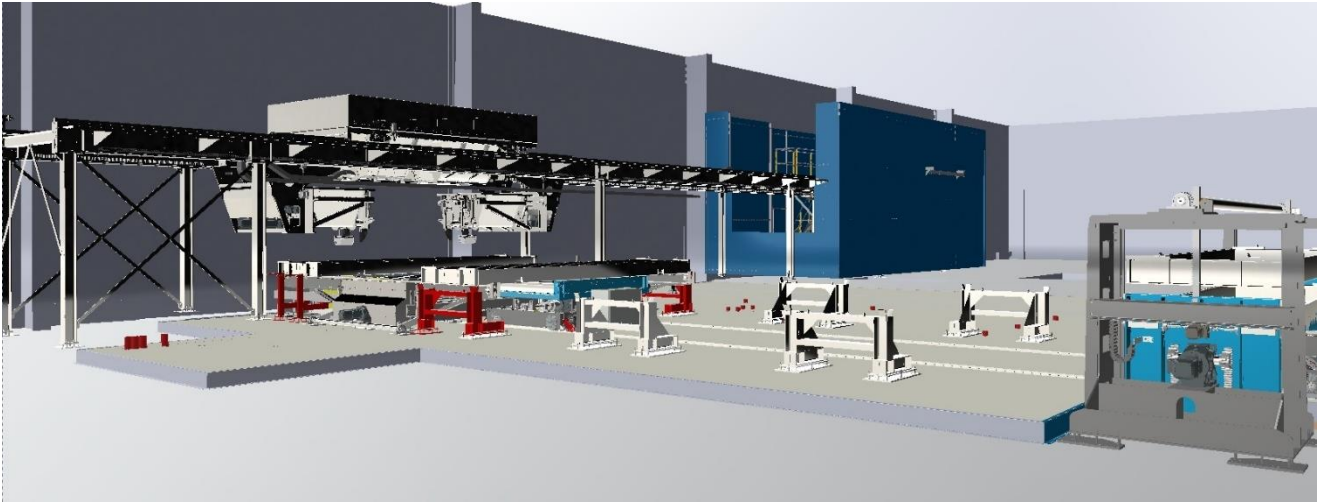


THE FILLING

The system allows to fill long products with precise dosage. Screws installed on trolleys that move on two X-Y axes with a continuous weighing, allow to distribute the concrete accurately in the mould.

A low frequency shaking table, with frequency and amplitude control, allows to start the concrete perfectly without human intervention.

This shaking table consists in a chassis freely mobile on connecting rods, that with 4 synchronized vibrators among encoders and a automaton, realize synchronized vibrations on a plane, either all along the axis X, or Y, or circular vibrations. The phase shift between the 4 vibrators allows to vary the amplitude of the shaking and ensure a good spreading.



At the end of the filling the moulds are stopped on easels that allow the operator to move around, to control the product, or to make retouch.

CURING AREA

An automatic gantry is dedicated to superimposing the moulds, once filled with concrete, one on top of the other for the hardening times.

Once the release line is empty, it takes a dry product and ready to be unmolded, and it puts it on the output line; depending on the height of the chassis it takes one or two chassis at a time. A stacker takes care of getting

out one at a time.





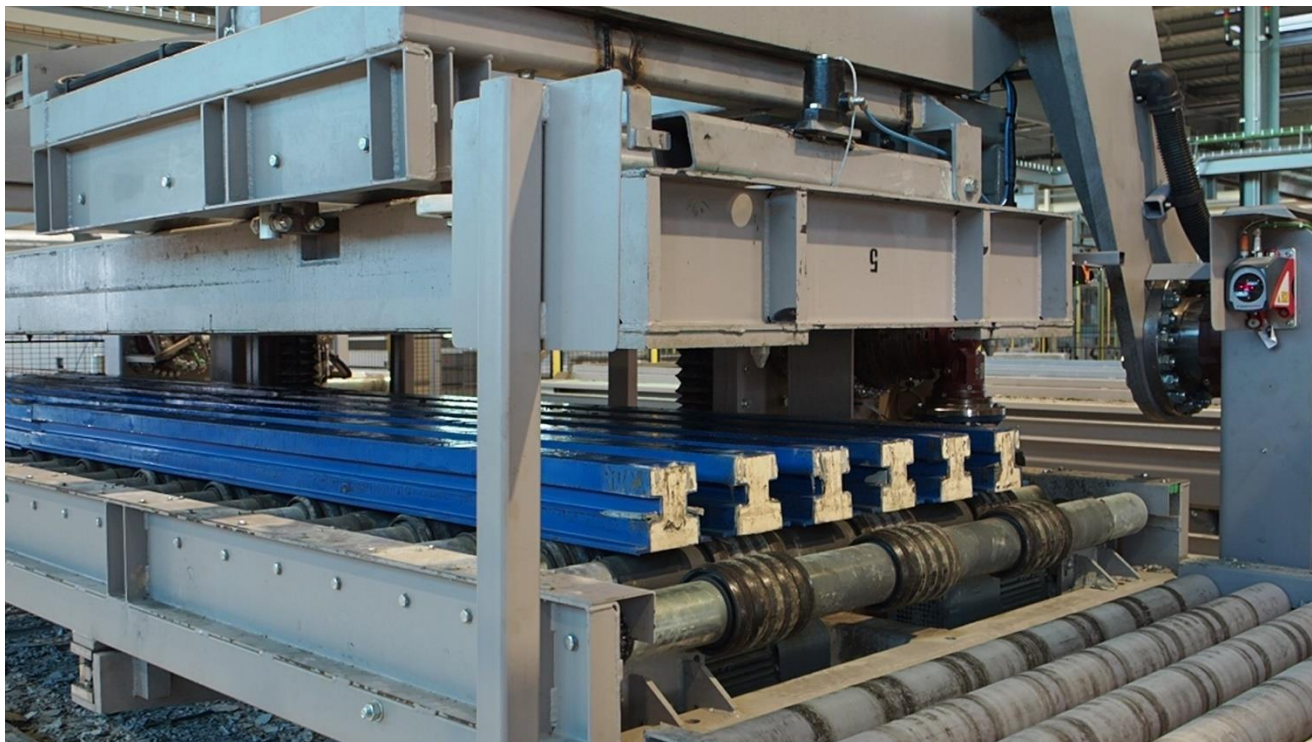
THE DEMOULDING

Demoulding of products is done automatically for most products.

A trolley with 180° turning device receives one mould and moves in front of a second trolley, which holds a conveyor roller installed on weighting cells.

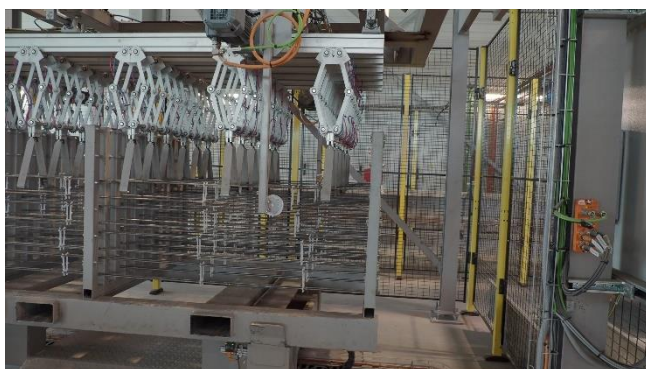
The two mate and with a synchronized rotation turn over. A shake system, and one air to open walls, if provided, on the mold, is done. The trolley lifts the chassis a little, the conveyor weighs the product to ensure that everything is well unmold, otherwise waits and gives another shake to force the product out.

The trolley moves the mold (upside down) on a blowing station and on the subsequent oiling station, so that the mold is ready to return to be filled. In the end the support on two easels or an UP/DWN trolley will take it.



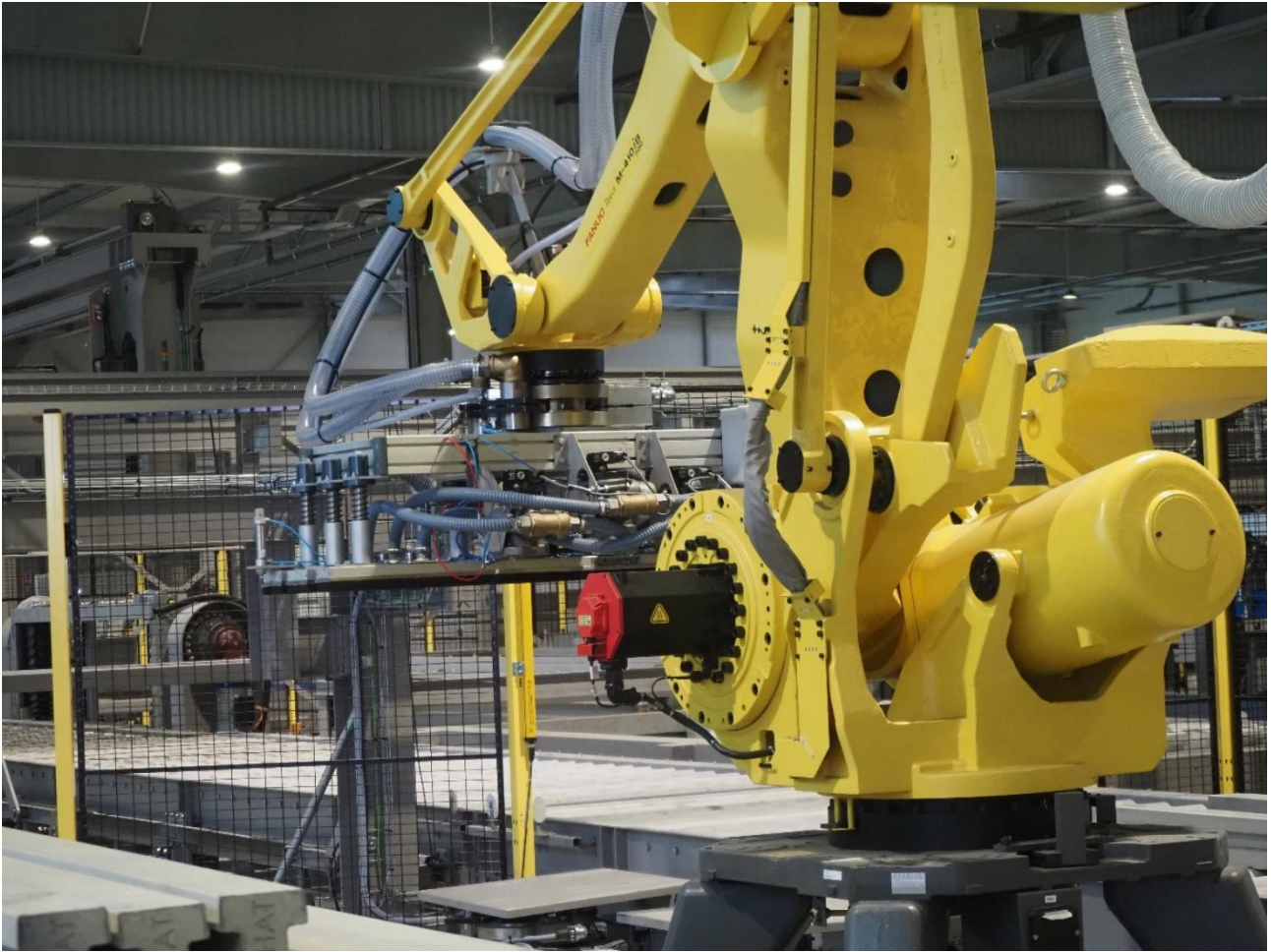
THE USE OF REINFORCING STEEL

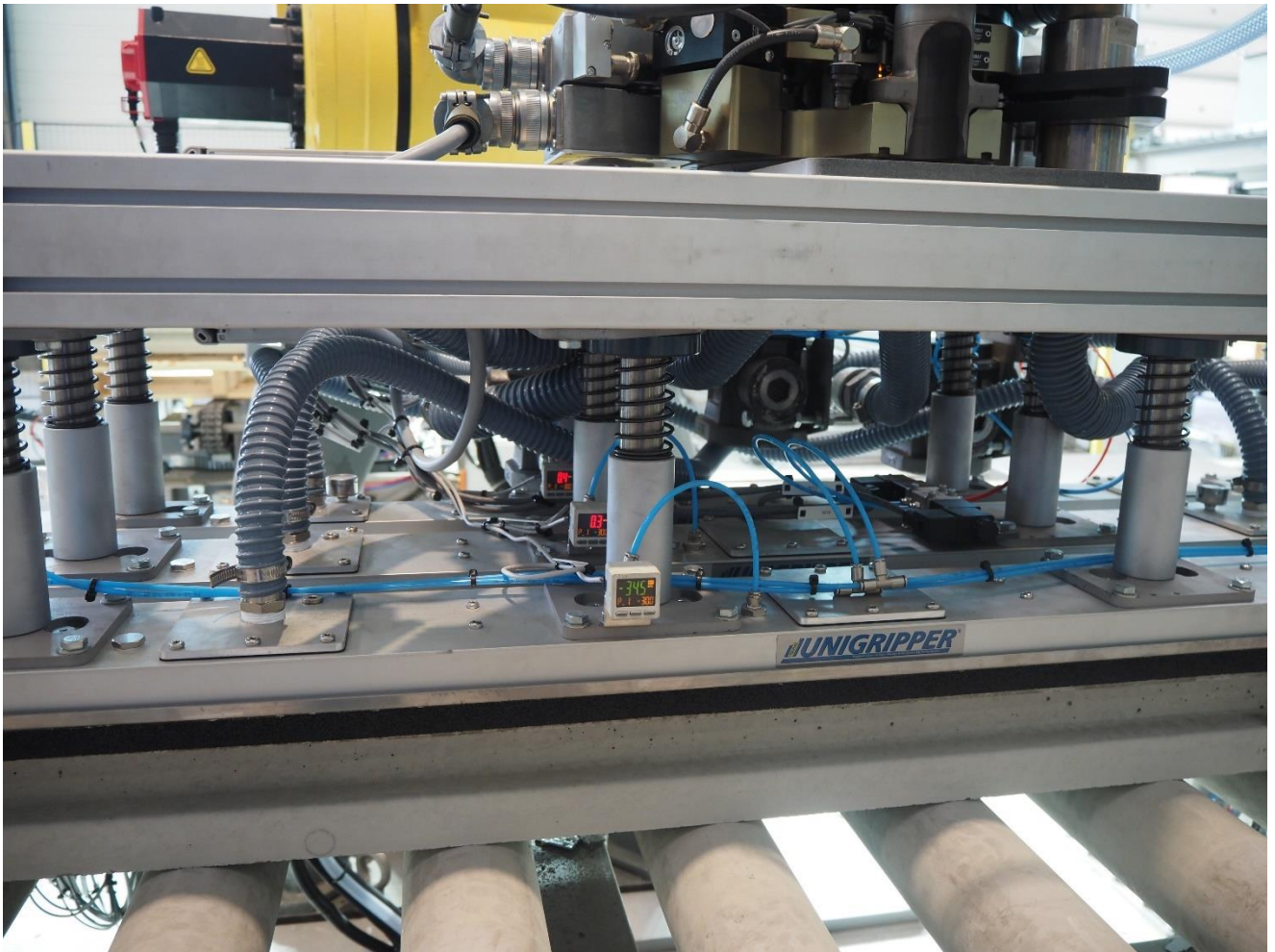
For most products, the armatures are automatically inserted into the mould through a Cartesian clamp. The armatures must be predisposed on racks, which will allow the clamp to take a layer and insert it into the mold, which is on the other side of its rails. The operator comes notified by automation if in the rack there is the right frame on the rack, to allow him to replace it in advance.



PALLETIZING THE FINISHED PRODUCT

To allow palletizing of products, quite different from each other, a robot was prepared with an automatic tool exchanger, which allows it to take the ideal gripper for each product. An infrared photography system allows the robot to identify the exact position of the product, also in the case that it arrives a little shifted, to allow the capture in the right point and with the right inclination.







Several temporary parking spaces are planned for pallet management "incomplete"
In the case that a pallet is incomplete and comes back a different product, the pallet comes parked temporarily and taken back to complete it when the same product arrives again. A gantry strapping machine will put the strap once the pallet completed must come out for sale.



