

Quadra, 74130 Contamine-sur-Arve, France

# A new range of patented vibrating presses



Located in Coubert, south of Paris, Sotubema is an industrial company that has been manufacturing and marketing precast concrete elements for public works and civil engineering since 1955. It currently has two production plants: Coubert and Saint-Astier (South of France). For more than 65 years now, Sotubema has been working, via its R&D department, to create new products, materials and processes that are efficient, reliable and safe, adapted to living spaces: the well-being and safety of people in their environment being at the heart of its priorities. In partnership with local councilors, designers and professionals, Sotubema develops concrete solutions for urban design, in order to contribute to the creation of sustainable spaces that are rich in terms of quality, aesthetics, comfort and conviviality, in harmony with the requirements and values of our time.

New concept of vibrating press with immediate demoulding characterized by the fact that this equipment can produce according to two different modes of operation:

- A demoulding mode by turning the mould over
- A demoulding mode by raising the mould

This special vibrating press has thus the ability to manufacture a wide range of products. The production is fully automatic with particularly optimised industrial production rates.

Sotubema has a wide product range and the company was looking for an extremely versatile and productive piece of equipment that was not available on the market at that time.

After consulting several suppliers, Sotubema was convinced that this equipment did not exist and that it was necessary to convince a manufacturer to commit to the development of a new vibrating press technology.

The relationship initiated with the manufacturer Quadra quickly gave a clear vision of the project that met all the characteristics of the specifications. Attracted by the technical solutions proposed, Sotubema finally placed an order with Quadra.

It is in this context of trust between the two partner companies that the development of such a daring project became possible. Indeed, the conditions were met to take up the challenge and launch the realization of the study within the Quadra research and development department.

The technical means implemented mobilized many resources to define and carry out such a project. The innovative character of this vibrating press concept, particularly interesting, was moreover the subject of a patent application.

## Versatility and flexibility in manufacturing

Mainly dedicated to the manufacture of products for roads, road markings, road safety, underpinning and green spaces, this vibrating press is particularly versatile. The products man-



Concrete products on pallets



ufactured can reach the following dimensions: 1200 X 1100 X 500 mm; weight of concrete products per panel: 900 kg; size of the moulding panels: 1300 X 1150 mm.

This production unit consists of the following elements:

- the vibrating press with the automatic feeding device for the demoulding pallets
- the handling conveyors bringing the pallets to the elevator
- the automatic finger car circulating in the curing chambers
- the lowerator
- the dry side conveyors
- the robotic palletizing
- packaging of products on pallets
- and pre-storage in the outdoor park.

This fully automated production unit is supervised by an operator and can produce at a rate of 60 to 180 pallets per hour, depending on the product. All the advantages of a traditional vibrating press have been integrated, in particular the quick changeover of production: a significant flexibility thanks to a mould replacement carried out in less than 10 minutes, remotely controlled by the operator located in the safety zone. As with traditional vibratory presses, the manufacturing recipes are recorded and the machine settings are directly applied.

### Latest generation vibrating press

The vibrating press is equipped with a concrete receiving hopper, which has a helmet at the bottom. The opening and closing movements of the helmet are controlled by the PLC in order to precisely dose the quantity of concrete feeding the filling drawer. An agitator located in the feeding box of the drawer is driven by an electric motor. It moves back and forth to ensure that the concrete is filled quickly and evenly into the mould. The speed of the agitator is adjustable from the control panel.

In addition, the vibrating press is equipped with a state-of-the-art vibration system. Indeed, Quadra offers a vibrating table system with adjustable force by electronic phase shift and variable frequency, which enables the vibratory characteristics to be modified according to the type of product being manufactured.

The adjustment parameters are set from the control panel and stored in the manufacturing recipes. The vibratory force is variable according to the manufacturing phases, ranging from zero to a maximum value of 27,000 DaN. Two vibrators are connected to the vibrating table. The rotation speed of the vibrator shafts is programmable according to the different types of production and the different phases of the cycle (from 0 to 75 Hz). The four guiding columns ensure a precise movement of the tamper head and the mould supports.



FRENCH MANUFACTURER of Equipment for the Concrete Industry

## TURN-KEY PLANTS

**VIBRATING PRESS**  
«High efficiency»

State-of-the-art  
handling system

Robotic solutions  
for tailor-made installation







Front view of the patented press

The movements of the mould and the tamper are controlled by proportional drives and the continuous control of the position is achieved by linear sensor.

### Operation mode with demoulding by turning over

The rotation movement of the mould clamping system, driven by a geared motor controlled by a frequency converter, is in operation. The tamper head is equipped with spray nozzles. These are located above the mould and their spray rate can be adjusted.

When the mould is in the lowered position, laid on the vibrating table, the tamper head is positioned to spray the release oil against the mould walls. The mould is then filled and compacted and clamped to the vibrating table. The pallet is then fed onto the top of the mould and is held clamped against the mould while the whole assembly is turned through 180° to deposit the demoulded product on the panel above the vibrating table. This pallet loaded with fresh product is then immediately discharged.

### Operation mode with demoulding by raising the mould

The rotation movement of the mould clamping system is switched off, the mould is in a horizontal position. The tamper head is equipped with the corresponding tamper for each mould.



The pallet is fed on top of the vibrating table. The mould is in the lowered position, laid on the pallet clamped to the vibrating table. Then, the filling and compacting phase, with the mould clamped to the vibrating table. During the compaction phase, the tamper head goes up to mechanical stops ensuring the precise height of the finished product. The demoulding operation follows in the same way as a traditional vibrating press. The pallet loaded with the fresh product is then removed immediately.

### Pallet handling

At the press exit, the products are gently transported to a 10-level elevator. A space is provided at the press exit for visual quality checks. The finger car handles the pallet of fresh products and takes them to the 10 drying chambers. The crossing of the rails without any jolting, as the trolley has 8 wheels and a motorised centring device for precise guidance and positioning in front of the tracks. The tracking of the finger car is continuously controlled by a laser sensor managed by a PLC in WIFI connection with a dialogue screen installed in the operator's cabin. The ease car is driven by servomotors to ensure progressive acceleration and deceleration. The dry products are then taken to the lowerator. The unloading transfer from the lowerator moves the pallets to the palletizing station.

A Kuka KR 700 robot palletiser is installed at this station, which is particularly well suited to the wide range of products.





*Finger car with dry products*

The gripping device supported by the robot has been designed for the most stable, economical and safe packaging. Depending on the size, weight and position of the products, the robot either picks up all the products on the pallet at once or only a part of them. The use of robotic palletising has made it possible to optimise the packaging on pallets, which would have been impossible to achieve with traditional equipment. The empty pallets are then brushed and turned over before being fed back into the press.



*Palettization robot in operation*



## THE ALLROUNDER THE NEW KBH „DANCING WEIGHTS” SYSTEM

- REGULAR PAVERS AND SLABS OF ANY SHAPE, STYLE AND SIZE
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### Supervision of the installation

The production unit is supervised by an operator. The working and safety conditions have been taken into account and are very significantly improved. Acoustic attenuation has been an important point to reduce the noise level in the operator's cabin to about 65 db.

The machine is managed by a programmable logic controller, whose operator interface is via a touch screen that allows him to set and view all the manufacturing parameters easily and quickly. The operator thus becomes the supervisor of the entire process. The modern and comprehensive control software is entirely developed by Quadra.



Control room

### Conclusion: an innovative vibrating press with turn over device

Sotubema's investment in this innovative equipment from Quadra is a story of trust and collaboration. The development of this new equipment to meet the specifications was a challenge.

Of the wide range of products manufactured by Sotubema, the Evergreen® tile is the flagship product.

The commitments in terms of production performance, cycle time and quality were quickly met. The manufacturer Sotubema has every reason to be proud of its investment in the future and shows its satisfaction with its first collaboration with the manufacturer Quadra.

This vibrating press with its new and innovative features once again demonstrates Quadra's technical competence and expertise in the development of new production processes. The press is available in several versions and allows different handling solutions. Quadra can thus meet individual requirements.

As an expert in automated processes and vibration systems, Quadra has been recognized in the concrete industry for more than 25 years and applies its proven technology from its vibrating presses to the manufacture of other types of concrete products with high added value. ■

### FURTHER INFORMATION



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