

Hess Maschinenfabrik GmbH & Co.KG, 57299 Burbach-Wahlbach, Germany

## Brazil has its first big board concrete block machine with double vibrating table and high-tech hydraulic system

High-quality products with large-scale innovative solutions have been produced for the building industry in Rio de Janeiro for over 26 years by Multibloco® (Industria e Comércio de Artefatos de Concreto Ltda). The industrial plant is located in Queimados, about 50 km from Rio de Janeiro. Multibloco is one of the market leaders and the largest manufacturer of concrete products (hollow blocks, paving stones, kerbstones and pipes) in the State of Rio de Janeiro. The company is a reliable supplier to the large building contractors and engineering consultancies in Brazil and their products are used in the largest and most important projects in Rio de Janeiro. Since the company's aim is constant technical modernisation and further development of the products, taking into consideration the preservation of the environment, as well as an increase in quality and output, a decision was taken to procure a new block-making plant from the Hess Group.

The dosing and mixing plant was supplied by TGM Máquinas e Equipamentos Ltda from Corupa, Brazil. In the meantime a joint venture has also been established between the Hess Group and TGM, called Hess TGM Ltda. The dosing plant consists of 5 aggregate bunkers (capacity 40 m<sup>3</sup> each) for the core concrete. The bunkers are fed via a belt conveyor and a distributor belt. A dosing belt under the bunkers weighs the aggregates and fills them into the lifting bucket. The aggregates for the facing concrete are stored in 3 further bunkers (capacity 15 m<sup>3</sup> each), which are filled via wheel loaders. In total there are 4 cement silos (3 for the base mix and 1 for the face mix), each having a capacity of 110 ton. The colour dosing system for 4 colours comes from the Würschum company. The core concrete mixer is an SM 3750-2, which was supplied by the Schlosser Pfeiffer company (part of the Hess Group). The facing concrete mixer is a TGM-500L. Both are planetary mixers. The block-making machine is fed from the mixers via conveyor belts.

The heart of the plant is the Hess block-making machine type Multimat RH 2000-3 MVA with a board size of 1400 x 1300 mm and a production area of 1300 x 1250 mm. The latest technological developments by the Hess Group can be found in this machine;

they allow the producer to manufacture the most diverse products in the most effective way, taking into consideration high safety standards, with the simplest possible operation thanks to user-friendly operating systems. A double vibrating table with variotronic is fitted as the vibration system. This servo vibration was developed and patented by Hess.

The machine is equipped with the trend-setting MAC8 hydraulic controller from Bosch-Rexroth, which has been used by Hess in its static board machines for several years. This system enables a very accurate positioning of feed box, tamper head and mould. A facing concrete feed box with a driven smoothing roller can be retrofitted as an option. In this combination optimum product qualities are achieved with a very low cycle time. A colormix system is installed in the facing section for the manufacture of multicolour products. The company produces hollow blocks, kerbstones and paving stones in the most diverse formats.

The production boards are transferred from the machine to a lowering device, which sets the products down on a V-belt conveyor. This V-belt conveyor is manufactured as a 4-part conveyor in order



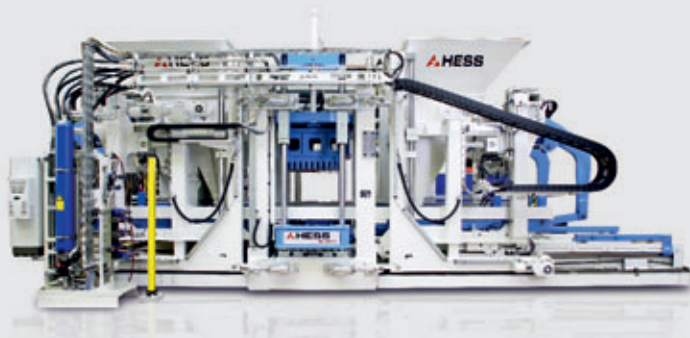
*Dosing and mixing plant*



*New block-making plant from the Hess Group*

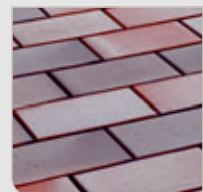
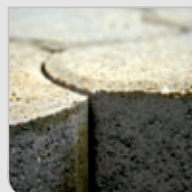
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### We make it possible.

This motto has made us the technological leader in concrete block / concrete pipe machines and concrete mixing plants. If you are willing to accomplish something extraordinary, then our innovations could be the advantage you need to extend your lead over your competition.



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to ensure accurate positioning in the downstream units. All drives are controlled in order to ensure gentle transport of the products.

A washing device is installed on the fresh concrete side. Special products are washed out with water under high pressure here in order to refine the surface structure. The surface is cleaned after washing by means of a clear rinsing system. The production boards are raised up for the washing-out process in order to allow drainage of the water.

Located in front of the elevator is a tipping station. Concrete residues that accumulate during the emptying of the machine when changing the product or at the end of a shift can be automatically disposed of into a waste container here.

Located at the end of the transport section is an 24-tonne elevator with 22 levels. The products are stacked here and transferred to the finger car for transport into the drying rack. The elevator is located in the large chamber in which the racks are also accommodated. This ensures that the products are already in the air-conditioned area shortly after production. This guarantees optimum product quality and excludes environmental influences as far as possible. The large chamber supplied by Rotho is equipped with an air recirculation system that ensures even distribution of humidity and temperature.

The 24-tonne finger car is equipped with 22 single-board levels and a rotation device. The lower platform is supplied with power via an energy chain, while the upper

platform is supplied with power via a cable drum. The lower and upper platforms are positioned by laser measurement, which together with the controlled servo drivers, allows highly dynamic, precise positioning. Following the drying process the products are transferred from the finger car to a mobile buffer rack and from this to the downstream lowerator. The buffer rack allows the uncoupling of the wet and dry sides to a certain extent.

The products are transported further by a walking beam conveyor. Due to the lifting of the boards they are transported entirely without wear. The feed is controlled by a servo motor.

A stone releaser with a 4-sided gripper releases the products on the board and pushes them together. After being pushed together the products are marked with a marking device if necessary.

The fully automatic servo cuber takes the products from the production board and forms a block packet on the discharge unit. A vacuum plate is provided if required for the assembly of thinner products into packets. Operation is possible with and without transport pallets. A slat conveyor belt with a length of approx. 28 m is used for discharging. The slat conveyor is equipped with a transport pallet silo for the automatic feeding of the transport pallets. After the packet has left the packet assembly position, a cover sheet is placed on top at the next position to protect the surface of the package. This is followed by the horizontal strapping of the products. Vertical strapping takes place at the next station. Finally the packet can be completely protected with a

plastic film applied by a stretch wrapping machine. Afterwards the block packets are taken by fork-lift truck to the warehouse.

The empty production boards are first cleaned automatically with a scraper and a brush. The cleaned boards are turned over and fed to the machine's board silo by a transverse transporter. In front of the machine is a spraying device for applying an emulsion to the production boards. A board changer above the transverse transporter with downstream board buffer track serves the buffering-in and out of the boards.

The operating devices and control cabinets are located in a booth installed centrally in the plant. Siemens S7 controllers with the Siemens WinCC visualisation provide for simple and safe operation of the plant. Local operation is performed using a mobile panel. Fault diagnosis in the case of trouble or remote maintenance of the unit is possible via teleservice.

Since power cuts or extreme voltage fluctuations occur frequently in Brazil, the plant is equipped with a state-of-the-art UPS (uninterruptible power supply). This system, which is equipped with high capacity batteries and its own controller, supplies power not only to the process computer, but also to the PLC. A special feature is the maintenance of the 24 V power supply, via which the position data of the controllers and the entire safety signals are supplied among other things. This allows production to be resumed without having to reference the plant again.

With its investment in the flagship of the Hess Group, the RH 2000-3, Multibloco



RH2000-3 MVA



Drying rack



Walking beam conveyor on the dry side



The fully automatic servo cuber takes the products from the production board and forms a block packet on the discharge unit.

has built itself one the most modern concrete block plants in South America. It puts Multibloco in the position not only of being able to increase capacities, but also to manufacture top quality products and to extend its product range. Multibloco was also future-oriented in the planning of the plant. Hence, the layout and the building allow the possibility to install a second identical plant.

“We are very satisfied with our partnership with the Hess Group as they have so far demonstrated that they can meet our high expectations in delivering the latest and most updated technology available in the world to enable us to please our customers by producing, in high scale and lower

costs, the best quality concrete products while protecting our human resources and environment” said Marcelo Kaiuca, Marketing & Commercial Director of Multibloco.

FURTHER INFORMATION



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