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Precast concrete elements for Brazil's construction industry

In future M3SP will produce up to 400,000 m² of solid concrete elements annually for the Brazilian market. One of the most modern precast plants in South America has been built for this in Cotia near São Paulo.

M3SP is regarded as one of the technology leaders in innovative solutions for residential and industrial construction. Established in 1999 by the present-day managing directors Marmo Pádua, Luiz Norimatsu and Marcos Roberto de Oliveira, the company specialises in building projects with up to 150,000 m2 of precast walls and filigree wideslabs. These are used to create inexpensive living space, although office buildings and shopping malls as well as schools and universities are also built today with M3SP precast concrete elements. For example, a multi-function building was recently built on the training ground of the Associação Desportiva Policial Militar in São Paulo with solid concrete elements for a span of over 20 m. On another building site, the construction area of a 15-storey office building is currently growing by 2,000 m² every week.

Until now the São Paulo-based building materials supplier has concentrated solely on stationary manufacturing methods. In July 2015, however, a highly automated precast plant was opened for the first time in Cotia, which marks a genuine milestone in the Brazilian construction industry with regard to the level of automation, the output quantities and the manufacturing quality.

State-of-the-art machine technology for a wide range of precast concrete elements

"We utilise state-of-the-art plant technology in order to manufacture the large range of elements in high quality and with the desired output quantities. Vollert convinced us 100% of its technology and its knowhow even with the first 3D simulation models", says Marmo Pádua, General Director of M3SP. "Another decisive factor was that we have a direct contact to Vollert in Belo Horizonte." The plant concept and the processes were designed to be so flexible that the output quantities can be adjusted at a later time. "We will also be able to produce sandwich and façade elements on the new plant in future, which has not been possible until now with a purely stationary production method", says Pádua.

A highly automated circulation system ensures rational work processes. Precast elements up to 13 m in size with a load per unit area of up to 250 kg/m² can be shuttered here. Concrete element heights of to 3.50 m are possible. One of the highlights is that the shuttering pallets are manufactured 100% in Brazil to the highest German technology standards. "That resulted from a comprehensive transfer of knowledge on the part of Vollert. German engineering manufactured in Brazil", says Wesley Gomes, CEO at Vollert do Brasil. State-ofthe-art machine technology ensures highly productive processes – from the fully automatic pallet and shuttering cleaning, the concreting and a high frequency, particularly cement-saving compaction station, through to the putting into storage of the precast elements in the hardening chamber and their removal again by a stacking crane. "Through

the modern curing process alone we have been able to considerably shorten the turn-around times between concreting and demoulding. A genuine cost advantage", says Gomes. A CADCAM controlled Smart Set shuttering robot takes care of the precise positioning of the shuttering profiles and the plotting of the outlines. The multi-function robot's very high axis accelerations of up to 5 m/s² considerably shorten this work process. In conjunction with the gripper, which can rotate by ± 180°, a maximum deviation of the positioning accuracy of ± 0.4 mm results. A shuttering system specially developed for M3SP by Ratec ensures smooth shuttering processes. Shuttering profiles with a total length of 3,280 m and a height of 100 mm as well as corresponding shuttering profiles for lengthwise-running partitions within the shuttering area allow the manufacture of concrete elements with widely varying dimensions. The shuttering profiles are fixed in place on the pallet at the push of a button with the Ratec Automatic system.

"The new precast plant in Cotia marks the start of further growth. Brazil will obtain previously unattained quality standards. With the new plant technology we can supply not only smaller building projects, but also the largest builders in Brazil – and we can now do that beyond regional borders", says Marmo Pádua from M3SP. "Vollert was the right technology partner for us. Not only that, Vollert also initiated the complete project financing by means of a Hermes cover of the Federal Republic of Germany."

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Press release

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Fig. 1:
In future M3SP will produce up to 400,000 m² of solid concrete elements annually for the Brazilian market

Fig. 2:
A CADCAM controlled Smart Set shuttering robot takes care of the precise positioning of the shuttering profiles

Fig. 3:
State-of-the-art machine technology ensures highly productive processes

Fig. 4:
Through the modern curing process alone it was possible to considerably shorten the turn-around times between concreting and demoulding

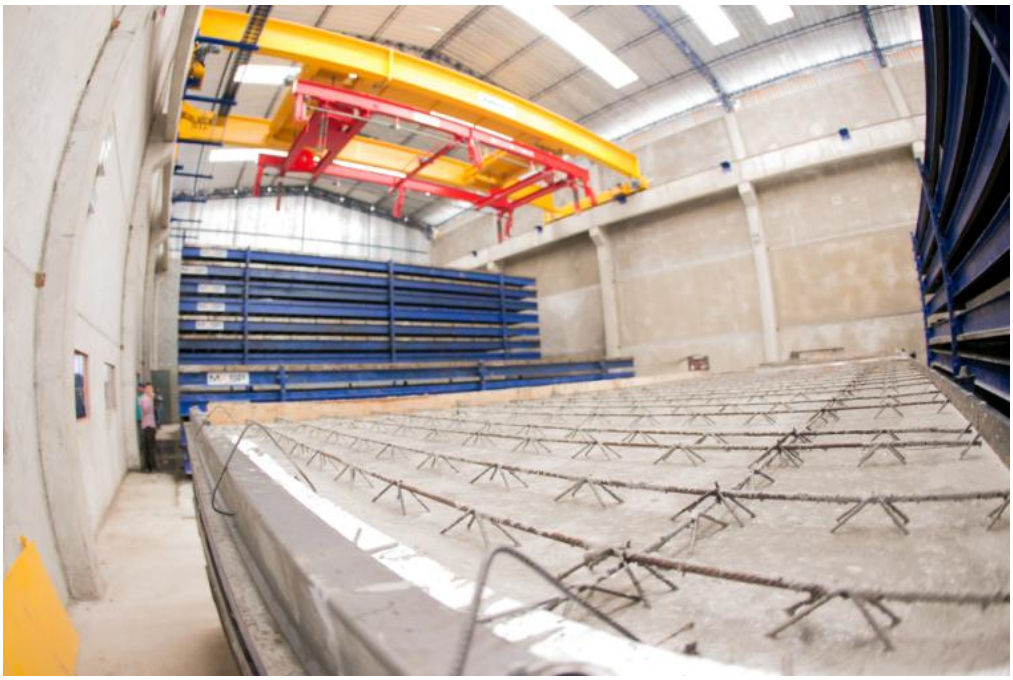

Fig. 5:
Filigree wideslabs during removal from storage

Fig. 6:
Modern cleaning systems ensure clean pallets and shuttering profiles

Fig. 7:
M3SP is regarded as one of the technology leaders in innovative solutions for residential and industrial construction

Fig. 8:
“Vollert convinced us 100% of its technology and its know-how even with the first 3D simulation models”, says Marmo Pádua, General Director of M3SP.