

Tecnocom, 33100 Udine, Italy

## Kenya: Commissioning of the first modern precast concrete plant

Recently a new precast concrete plant began operation in Kitengela in the south of the Kenyan capital, Nairobi. Boleyn Magic Wall Panel Limited, the operator of Kenya's first modern precast concrete plant installs precast concrete elements for residential, commercial and infrastructure construction. The company's goal is to establish construction in precast concrete in Kenya and to make a contribution to the solution of the chronic housing shortage in this country in East Africa. Echo Precast Engineering and Tecnocom, both companies in the Progress Group, supplied and installed a plant for the production of hollow core slabs and other equipment for the manufacture of structural, pre-stressed and loosely reinforced precast concrete elements.



Using plant and mould systems from Echo Precast Engineering and Tecnocom, Boleyn Magic Wall Panel is manufacturing hollow core slabs, sandwich walls, columns, beams and other structural precast concrete and special elements.



An S-Liner T40 slip former is used for the production of hollow core slabs. These can be manufactured in four different heights, two different widths and with 6 or 11 cores. In addition, the slip former can be converted to the production of pillars.

The commissioning of the works by Boleyn Magic Wall Panel is an innovation for the Kenyan construction industry, which is still strongly influenced by the tradition of constructing with stone and mortar. With a capacity of 20,000 dwelling units in one year it intends to contribute to relieving the national housing shortage. Kenya's need to catch up in this area is clarified by a figure from the Ministry of Land, Housing and Urban Development: up to 200,000 housing units are needed every year. Now a State construction programme is promoting alternative construction methods alongside the traditional methods, in order to remedy the deficit. Construction with precast concrete elements is attractive because of its many advantages.

Also Jack Liu, the Managing Director of Boleyn Magic Wall points out the potential of precast concrete technology, because it

is not only construction time, which is reduced, but also the costs. "We can anticipate a cost reduction of about 20%," explains Liu. This makes it possible to meet the increasing demand for cost-effective living space. In addition, according to Liu, precast concrete technology is also a means of assuring the quality, which should prevent the frequent cases of building collapse caused by structural defects.

### **New plant for hollow core slab production from Echo Precast Engineering**

The new plant for the manufacture of hollow core slabs has been planned in collaboration with Echo Precast Engineering and comprises four production beds, each 1.2 m wide and 102 m long. Both beds have been custom-built and their distinctive construction ensures the optimum quality of the hollow core slabs produced there.

The hollow core slabs themselves are produced with the S-Liner T40 slipformer. The machine has been supplied with six different tube and mould sets. This allows the production of hollow core slabs in four different heights from 15 to 40 cm, two different widths (60 cm and 120 cm) and there is an option of 6 or 11 cores. Thanks to the modular construction of the slipformer, changing the tube and mould sets is quick and easy. In order to support both the manufacture of hollow core slabs and the production of pillars, the slipformer can be fitted with an additional tube and mould set.

Once they have been cured, the concrete elements are lifted from the bed by a special hoisting unit and stored or loaded on to HGVs and then transported to the construction site.



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PROGRESS GROUP





*A total of six moulds, each 18 m long, are used for the manufacture of columns for commercial construction.*

**Various mould systems, tilting table technology and pallets from Tecnom**

In its capacity as a company specialising in special moulds, Tecnom has installed a total of ten mould systems for the manufacture of columns, various beams, plinths, staircases and New Jersey barriers for streets. Furthermore, Tecnom has supplied modern tilting table technology for the production of sandwich walls. In addition, just recently Boleyn Magic Wall has ordered another 20 pallets for the carousel system.

**Six column moulds and one plinth mould for the construction of industrial halls and multi-storey car parks**

The six 18 metre long column moulds, which have been installed on the production line for the production of structural precast concrete elements, are being used to manufacture columns, plus their consoles. A hydraulic system adjusts the width of the columns by up to 500 mm. The maximum height of the elements is 1000 mm. The end products are used in the construction of industrial halls and multi-storey car parks. The plinths for the columns are manufactured using a specialised mould. At its base



*A mould with a self-stressing system for preloaded stresses can be fitted with various lateral shutters and insets. This allows flexible production of various types of beams.*

this has a diameter of 2 m; it is 1.3 m high and tapers towards the top. A multi-frequency vibration system ensures optimum curing of the concrete.

### Flexible mould system for various types of pre-stressed beams

In order to keep the production of beams as flexible as possible, Boleyn is using a mould system with independent absorption of the pre-loaded stresses, which can be fitted with a variety of lateral shutters and insets. In this way space is saved and roof trusses, T-beams, L-beams, right-angled beams and I-beams can be manufactured. The overall length of the mould system is 60 m. It can be used independently of location and smoothly installed at other production sites.

A staircase mould and a battery mould for New Jersey barriers complete the stationary production of precast concrete elements.

### Versatile, efficient production

In close cooperation with Boleyn Magic Wall Panel, Echo Precast Engineering and Tecnocom have provided custom-made solutions for the Kenyan market, which allow production to be both versatile and efficient. "The cooperation with both companies was excellent at all times - and it still is," says the Managing Director, Jack Liu with satisfaction, as he expresses his confidence in the perspectives for the new construction method in Kenya. "I am convinced that the many advantages of precast concrete construction will convince even the remaining sceptics and that this technology will become established here as well." ■

#### FURTHER INFORMATION

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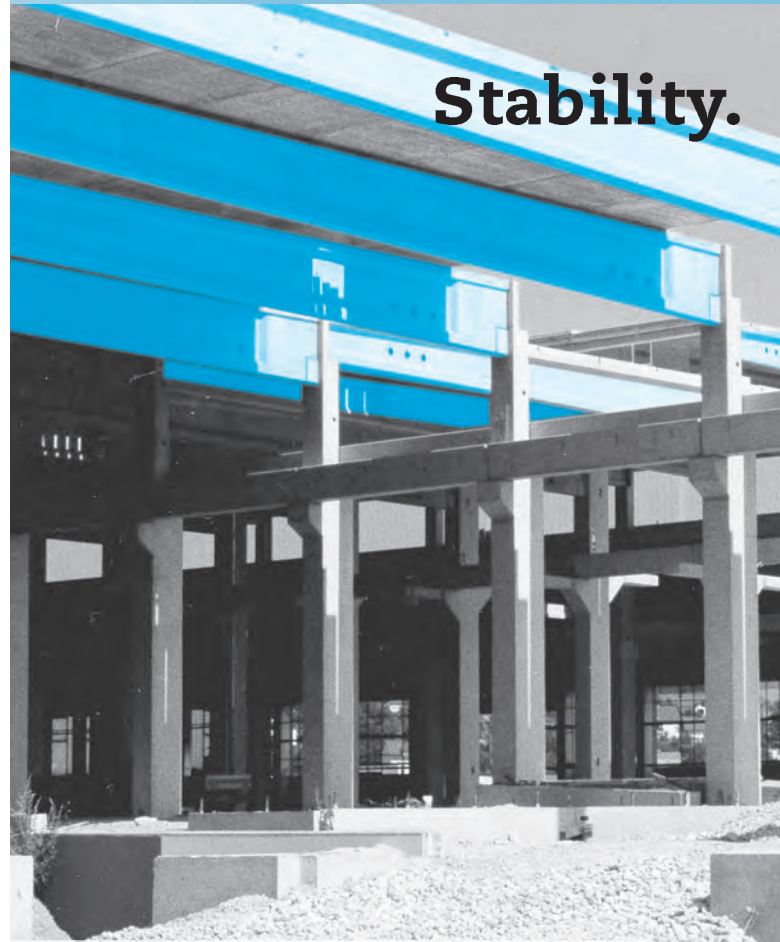
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