Bianchi Casseforme s.r.l., 43045 Fornovo di Taro (PR), Italy

New complete precast plant in Macedonia

Fabrikakarpos is a leading precast construction company in Macedonia. Bianchi Casseforme s.r.l supplied all the equipment for their new precast concrete production factory.

The company was founded in 1948, under the Government of the Republic of Macedonia, the Minister of Industry and Mines, to accelerate the reconstruction of the country destroyed by World War II, adopted a directive n. 1334, to reconstruct the country.

The development of Fabrikakarpos from its foundation till today has always been of growth, guided by three fundamental principles: Specialized products, constant modernization, adoption of new technologies and research.

Like many successful companies, Fabrikakarpos bases its future development in finding and adapting new trends in architecture and construction, trying to satisfy its investors with the fastest, cheapest and the highest quality.

Fabrikakarpos produces concrete and reinforced concrete elements with a well-developed range of products. The factory's activity extends from the production of reinforced concrete elements for the construction of industrial buildings, substations, transmission lines, bridges, to the production and installation of urban products.

In the spring of 2021, Fabrikakarpos decided to expand its business with the construction of a new production plant for precast elements. Their chosen partner for this new facility was Bianchi Casseforme s.r.l., an Italian family-owned company, active worldwide since 1964 with a complete range of services and products for the precast industry and industrial building precast sectors.

Equipment

- The prestressed elements production line includes: universal casting bed 100 m long and with a maximum useful width of 120 cm. The side moulds are placed on to this bed and locked by a special clamping device. Strands anchoring structures placed into pits in the floor for a prestressed force of a maximum of 1000 Ton capacity. Bianchi also supplied all hydraulic equipment for pre-stressing and relaxation strands: this included one hydraulic pump unit for the operate of simple effect relaxation cylinders, one prestressing hydraulic pump unit capable of operating alternatively two separate strand pre-stressing jacks, one 25 ton x 400 mm stroke individual strand pre-stressing jack and finally a strand pulling machine, to be placed between the strand reels and the stressing head, able to uncoil the strand and push it along the bed, with the help of a worker.

Several types of side mould were supplied for producing prestressed beams:

- T/L/R Beams: a pair of moulds length 31,5 m to produce concrete elements with rectangular, "L" or inverted "T" profile with linear section with variable base widths, and a height max. of 1400 mm. Curing of the prefabricated elements after casting is by high pressure steam that run through finned pipes placed inside these moulds.

- Double slope beams: a pair of moulds to produce precast concrete roof elements with a double slope of 12%, variable in length from 12 to 33 meters. Curing of the prefabricated elements after casting is by high pressure steam that run through finned pipes placed inside these moulds.

Mould sides for double slope beams

Mould sides for I beams

Double mould for columns

Strands anchoring structure

- Mould sides for I beams: a pair of moulds with a maximum length of 25 m to produce I beams with base width of 42 cm, height 120/140/160 cm. The side were divided into two parts and changes to the height were achieved by inserting intermediate pieces 200 mm high. Curing of the prefabricated elements after casting is by high pressure steam that run through finned pipes placed inside these moulds.

- Mould sides for T beams: a pair moulds with a maximum length of 19 m to produce T beams with base width of either 15cm or 20 cm, and adjustable in height from 60 cm to 120 cm. The side were divided into two parts and change of height is achieved by inserting an intermediate pieces of 100/200/300 mm.

All the moulds were manufactured out of sheet plate 6 mm thick, stiffened by a frame composed of other folded sheet plates and structural profiles.

Double mould for columns: Battery mould 36,00 m long of two parallel lines to produce columns rectangular in cross

Mould sides for T-beams

Self-reacting mould for TT slabs

section, variable in size from 40cmx50cm to 100cmx100 cm, with the possibility of creating corbels on three sides in predefined sections of the mould. The mould was designed with a base frame and two separate soffits adjustable in height from 40 to 100 cm in steps of 10 cm, all mounted on top of vibration adsorbing pads. The moulds surfaces were all manufactured using 5 mm thick steel plate, stiffened by a frame composed of other folded sheet plates and structural profiles. Two external sliding sides with one steel plates 100 cm high. One double faced internal fixed side 100 cm high. The initial order included One number soffit 70 cm wide and one number soffit 50 cm wide. Hydraulic plant for to open/close the laterals side; it is complete with hydraulic pump unit, cylinders, and pipes. Finally, the mould was equipped with pneumatic vibrators plant.

Self-reacting mould for T beams/purlines: One mould 18,00 meters long divided into 4 parallel casting channels each able to produce pre-stressed beam beams 100mm wide at their base and 350mm at their widest and a maximum 650 mm high, shorter elements 110mm wide at their base and 350mm wide at their widest and 450 mm high can also be produced. The mould was entirely made of steel and featured prestressing strand heads at both ends to support a maximum self-stressing load of 450 tons also include was the pneumatic vibrators plant. The strands are cut under tension, as no relaxation was required.

Self-reacting mould for TT slabs: one mould to produce 16,00 meters of pre-stressing TT slab elements with a maximum slab width of 249 cm, variable in height with a maximum depth of 70 cm, vertical ribs base of 140 mm and constant in thick. The mould is entirely made of steel and features: a base frame which supports of all the parts of mould including the sliding laterals parts of the mould, all mounted on vibration absorbers. Two hydraulic opening lateral side sliding on the base frame to maintain thickness of the vertical ribs. Two upper side shutters 50 mm which create the slab section of the beams. Two 14cm wide base soffits 16m long interchangeable if required including steel chamfer and rubber gaskets. One fixed central core made with bended steel plate 6 mm thick. The mould was entirely made of steel and featured prestressing strand heads at both ends to support a maximum self-stressing load of 300 tons, strand relaxation cylinders with collars were also supplied along with pneumatic vibrators. ■

FURTHER INFORMATION

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