

Bianchi Casseforme srl, 43045 Fornovo di Taro (PR), Italy

Concrete prefabrication in Ukraine in partnership with “made in Italy” machinery for moulds and concrete distribution

ZZBK1, one of the biggest precast manufacturers in the Kiev area, renews his production facilities with Bianchi Casseforme equipments and Structurama engineering know-how. Private Joint Stock Company PJSC «Plant of Reinforced Concrete Construction N° 1 (better known as ZZBK1) today produces a wide range of concrete and reinforced concrete elements. The production capacities of the plant allows to produce in the shortest possible time the quantity of production necessary to meet the needs of the customer. Concrete and mortar production lines allow the production of all existing grades of concrete and mortar. The production capacities of ZZBK1 plant allows for the production of all types of reinforced concrete elements and structures. The range of products satisfies the needs of the most demanding customers.

Quality control of products is carried out in the production laboratory of the plant using modern measuring instruments and testing equipment. Production of ZZBK1 plant meets all standards, which is confirmed by certificates of conformity of the State Certification System of UkrSEPRO.

Taking into account the extensive experience and production capacities, the plant offers to its customers a complex of services at all stages of cooperation, namely: production of complex reinforced concrete elements according to the individual

project and according to the customer's sketches, certification; guarantee of receipt of products of reliable quality and timely delivery to the objects of construction; specialist consultations; delivery of concrete and mortar; design and installation work; delivery of reinforced concrete elements.

ZZBK1 plant produces the whole range of concrete (heavy concrete, light concrete, specialized concrete) as well as all types of mortars. Concretes and mortars are delivered directly to construction sites. The production facilities allow to release up to 7 concrete mixers and 2 dump trucks at the same time from automatic computerized lines. Production capacity is up to 40,000 m³ per month. The annual volume of concrete products and mortars is about 240,000 m³.

ZZBK1 plant has manufactured and built 16 and 22 storey buildings on the basis of the "T" series, made of exterior and interior walls, floor slabs. The finished volume is 90,000 m² of housing elements or 65,000 m³ of concrete production.

Also, the ZZBK1 plant produces about 80,000 m³ of a wide range of individual construction products per year: piles, foundation blocks and strip foundations, floor slabs, sections, fences, ventilation units, volume elevator shafts, stairways, stairs, stairs, stairs heat cameras and more.



Front View of tilting table raised



Back View of tilting table with vibration plant and hydraulic displacement of upper side detail

ZZBK1 can also perform a full range of construction and installation works such as the installation of panel houses, the construction of brick houses, the construction of monolithic frame buildings, electrical work, plumbing, landscaping, and all other works that needed in housing construction.

ZZBK1 has decided between 2017 and 2019 to reinforce and renew his potential in the field of industrial, logistic and commercial precast engineering and production capabilities and has selected Bianchi Casseforme as partner for the supply of moulds for production of facade panels and TT slab, as well as for the distribution of concrete from batching plant to the production. Structurama has been chosen for the supply of technical and engineering know-how services and consultancies.

Bianchi Casseforme and Structurama are represented in Ukraine by the society Portugalskyy A.L. FOP.

In 2017 a new tilting table has been supplied. Total length of the equipment is 60 m. The tilting table is made of: Steel plate size 60 x 2,8 m; Steel casting plate 1 cm thickness stiffened by metal profiles forming a strong frame; laid and welded on basic longitudinal structure; the upper part is fabricated by panels and bolted and welded on site during the assembling operations; The steel surface is as natural steel; Neoprene anti vibration plate bearings placed under the structure on

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intermediate supports; the Hydraulic rotation allows 75°-80° maximum inclination, made by a Hydraulic plant with telescopic jacks, pipes for oil distribution and connection to the hydraulic power unit, check valves for controlled descent speed in case of pipes breaking; Casting level is envisaged at about 85 cm from the ground level; the table is Sized for 750 kg/m² of concrete overload; Dimensional flatness ±1.5mm over 3m

The sides supply is made of one lower side, two lateral hinged sides and one upper side that can open and close hydraulically. All the sides are sized for manufacturing flat concrete panels of H = 16cm with provision to be raised up in the future.

The table has been supplied completed with a vibration plant made of pneumatic vibrators type VP4000, fixed on cradles, welded onto the table structure in order to diffuse vibration as much as possible. Vibrators are connected together with a pneumatic air distribution system built onto the table itself, with partialising valves each vibrator.

A curing plant completes the supply: underneath the casting plate there are finned pipes with fins width for the circulation of curing steam or water in a recirculating circuit.

In 2017 also a new Concrete Distributing Vehicle mod. Speedy has been commissioned to ZZBK1. The machine has a 4 m³ hopper where to discharge concrete from the batching plant, is self-propelling moved by a turbofed Diesel Engine Mod. Perkins 1104D 4400 cm³ displacement, 4 cylinders in line - 74,50 kW (102 Hp) power at 2200rpm, electric ignition from driving place, water cooled with radiator. The engine is

protected by a soundproofing cover steel panels and expanded acoustic insulation material.

The discharge of concrete is made by a screw conveyor housed in an arm protected with a long length opening grid and an internal anti-abrasion lining, the hopper can have full 360° rotation by a reduction gear; the lifting of the group screw/hopper can arrive up to an angle of inclination equal to 16° thus allowing to cast up to an height of about 3.500 mm; the movements are controlled by the driving place.

The traction on differential back axle by means of a closed-circuit hydrostatic transmission with variable-displacement pump mod. Rexroth. The cockpit on the mobile upper front part is complete with protection steel roof against the risks of concrete overflow. The cockpit is covered with a cabin soundproofed with expanded acoustic insulation panels, complete with wind-screen wiper, internal plant hot air and air conditioning.

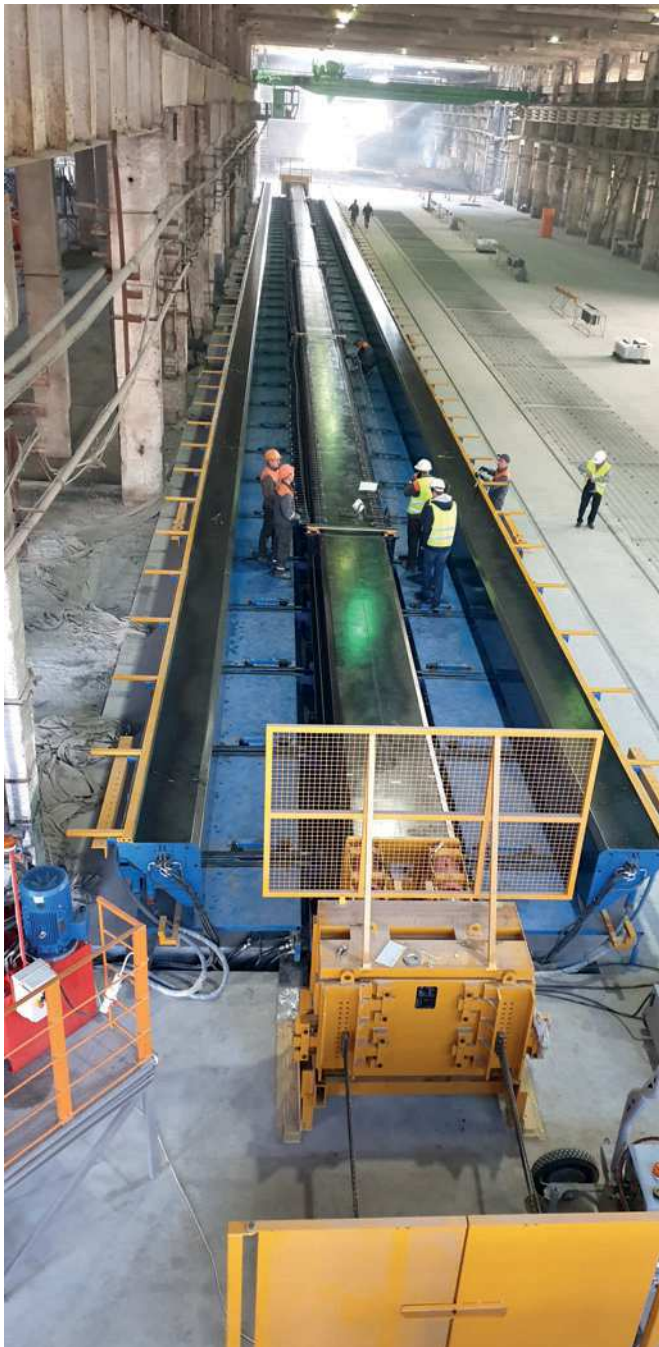
In early 2019 the Company ZZBK1 has decided to commission to Bianchi also the supply to a 84m long flexible TT mould. The new TT mould is 84,00 meters long, and allows for the production of TT elements with slab variable from 2000 to 2495 mm, slab thickness 5 cm, variable height from 30 to 70 cm, step 10 cm. Vertical ribs has constant cross section, base thickness can vary from 120 to 200 mm with the help of interchangeable soffits. Since mould is self-stressing (meaning it can support itself the force of the prestressing strands that are pulled before TT element casting), it can be elongated up any measure in the future.

The mould is made by: one base frame as support of all parts of mould and sliding plan of laterals, layer on stop vibrations



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Aerial View of TT mould

absorber; one central core made with bended steel plates and sheet near the concrete 6 mm thick, stiffened by transversal and longitudinal profiles; self-resisting structure planned for a pre-stressing force of 400 ton isolated from sheet near the concrete to avoid local deformation over the medium and long-term. Internal self-resisting beams are placed in the central core along the whole length of mould; two anchoring pre-stressing heads; a set of hydraulic relaxation cylinders simple effect type; two laterals sides sliding on the frame base and pushed by means of an hydraulic device. The lateral sides, during the dismantling operations will be opened to have min 50 cm passage from central core and a side. Sides are supplied with hydraulic locking system to block the mould before casting; two upper sides to be placed at 249 cm size for any

reinforcement solutions



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TT mould ready for casting

rib base, manually operated; two supports for interchangeable soffits, and complete with a completely hydraulic system in order to allow a quick change in height of precast elements; all the needed soffit and separators; a vibration system consisting of cradle support welded on the mould, pneumatic vibrators type VP4000, air distribution system; curing plant composed of finned pipes and insulating sandwich panels for the whole perimeter of the mould.

The mould is complete of anti-vibration supports and fixation plates, all the hydraulic equipment to move sides and soffit, all the prestressing equipment to pull individual strands at the desired force (prestressing central units with jacks, all set of clamps) and all the detensioning equipment to release residual tension on the strands before demoulding.



Group Photo after mould test with personnel of ZZBK1, Fulvio Beretta (Managing Director of Structurama) and Paolo Sterzi (Sales Area Manager Bianchi Casseforme).

The tilting table and the Speedy unit are operating since 2017 at full speed with complete satisfaction of the customer, while final test on the TT element production has been successfully terminated in the month of October 2019, at the presence of both Structurama and Bianchi technical and engineering team.

FURTHER INFORMATION



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