

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

New production facility at Litecast Precast



Established in 1998, Litecast Ltd. has since become a leading manufacturer of precast concrete floor beams in the United Kingdom. They specialise in the design, manufacture and supply of precast concrete floor beams for use within a multitude of purposes. The rapport that they have established with their clients has been built up through many years of excellent service. With quick lead times for designs, quotations and materials they can ensure a prompt and efficient service from point of contact to delivery on site.

All beams produced by Litecast are wet cast in precision moulds, providing a smooth finish and avoiding defects that are commonly associated with extruded beams. They manufacture beams in 25mm increments allowing versatility in designs. The pre-stressing at manufacturing stage provides beams with a robust structure, allowing beams to span substantial lengths. One of the company's main strengths is its ability to deliver materials within 3 to 5 business days from project order approval.

Expansion with a new facility

With the ever-increasing request for beams, in an extremely vibrant housing market, the directors in Litecast realised that they had reached their production capacity at their old facility. A decision was taken, that, in order for the business to grow, they needed to find a new location and create a new facility.

The location chosen is within the existing industrial estate at Pipers Lane, Nuneaton which is not too far from their old factory. This completely new facility would also allow Litecast to incorporate many new solutions which were not possible previously. Through its agent for the United Kingdom, PUK Services, Bianchi Casseforme srl have been involved in this project from the conceptual/planning stage right the way through to final installation and commissioning.

Litecast also purchased from Bianchi a Tilting Table to allow them to also supply themselves with 'wall panel elements' and ground beams which were being used in the construction of their new production facility.

At the beginning of 2020 an initial order was placed with Bianchi Casseforme S.r.l for the supply of four self-reacting and multi-stressing beam moulds and five dedicated machines which would enable Litecast to perform, removing many of the previous manual processes and replacing them by machines, in order to be more efficient. As the project progressed two additional self-reacting and multi-stressing moulds were added to bring the total number of mould to six. Started in 1964, Bianchi Casseforme Srl, is an expert partner in the design, manufacture and commissioning of plant and machinery for the precast concrete industry. The company is able to offer modern technological solutions, which are highly personalized and flexible to guarantee economic efficiency and ease of use in a continually changing market, while still respecting the needs of their clients.



The multipurpose cleaning, de-moulding and transfer machines

Installation of the first four moulds and commissioning of the machines



Scope of the project - moulds

Five 200 ton self-reacting and multi-stressing beam moulds - each of these moulds has an effective length of 98m, with an external load beaming frame. The internal profile of each of these moulds is composed of profile bent steel plates to produce twelve T beams 150mm deep and 42/92mm wide. Under each mould finned heating pipes are positioned to

evenly distribute the heat generated by the heating system as well as insulated sandwich panels which help to contain this heat. Each mould can produce 1,100m of T beam per cast. The normally fixed end of the stressing head, has been designed to be removed, thus allowing them to be used to run the wires along each mould, in combination with the Multipurpose Cleaner Machine.

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Rotator stacker in operation

One 200 ton self-reacting and multi-stressing beam mould – although similar in construction to the other five moulds, this mould has an effective length of 90m, composed of profile bent steel plates to produce eight T beams 225mm deep and 82/136mm wide. Under this mould finned heating pipes are positioned to evenly distribute the heat generated by the heating system as well as insulated sandwich panels which help to contain this heat. The mould produces 720m per cast. The total production capacity per cast cycle is approximately 6,200m. All the moulds are fed from a new batching plant and concrete distribution system along with casting machines which were supplied by MCT Italy

Machines (all running on steel rails cast into the floor running parallel to the moulds)

Multipurpose cleaning machine

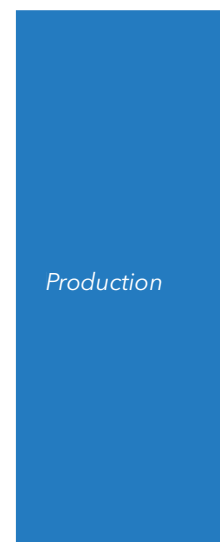
Based on a portal frame running on four electrically driven wheels including side protection panels and laser protection scanners, this machine performs three tasks in one single operation: running all the wires (a maximum of 48 wires) – this operation is achieved by two pneumatic cylinders that pick up the fixed head from the end of the mould and carries it to the stressing end of the mould, where all the wires are then fed through the fixed head and anchored in position; cleaning the moulds with a rotating set of brushes and a scrapper for the larger items, a dust extractor and filter arrangement is incorporated; finally application of the release agent by means of dedicated nozzles, while moving over each mould in one single operation. All controls are by touch screen.

Beam de-moulder

Similarly based on a portal frame design including protective side covers this machine, battery powered, moves over each mould. With the use of twelve high tensile lifting hooks, and hydraulic cylinders it lifts the precast beams out of the mould using the exposed wire between each stop-end and places the beams on top of timbers above the mould. Located within the machine is a storage box for these timbers, once placed the beams are then ready to be cut.

Wire saw

Enclosed by sound absorbing material this electric powered portal framed machine, travels over each mould by four electric motors, equipped with a double blade with a diameter of 500mm mounted on a cross travelling guided set of tracks, and with the aid of a laser line indicator. In one single automatic operation it cuts all the wires exposed between two sets of beams (approximately 80mm wide). To stabilise the beams during cutting two sets of hydraulic cylinders apply downward pressure on the beams to stop them moving. Also forming part of this machines is a special device that ensures





The first four moulds installed

the beams are aligned and kept straight. All controls are by touch screen.

Rotator and stacker

Driven by four electrically driven wheels also mounted on a portal frame this piece of equipment has two independent longitudinal travelling motorised trolleys each equipped with hydraulic clamping fingers at each end, to grip all twelve beams and rotate them by 180°. Once rotated the machine then stacks the four beams one on another. Once each "stack" is complete, the machine picks up each stack and passes it on to the waiting trolley. With the aid of encoders, laser guides and video cameras the process is controlled by a PLC and this ensures the minimum amount of operator input/information to carry out these tasks. Beams of varying length from 1.5m to 6m can be stacked. Safety is taken care via a laser scanner which is constantly scanning and if there is a person or obstacle in the way of its travel the machine stops immediately.

Transfer trolley (battery powered)

This device has two functions - to move machines from bed to bed and also to take beams out of the factory. The machine is capable of lifting all machines mentioned above between all moulds and eliminates the need for an overhead crane making this a far safer process. The second function for this battery powered trolley is that it receives and transports elements that have been placed on it from the rotator and stacker. These stacks are then moved transversely and longitudinally out of the production hall whereby they are then lifted off by one of Litecast's side loaders and placed in the storage facility.

Bianchi has successfully ensured that the project and possibly one of the most modern production plants for the production of T Beams was delivered to Litecast with minimal delays despite the problems that were encountered due to the ongoing Covid-19 Pandemic. Bianchi and PUK thank Litecast for their faith and support during challenging times and look forward to a long-lasting relationship with Litecast. ■

FURTHER INFORMATION



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