

Bianchi Precast Group, 43045 Fornovo di Taro (PR), Italy

3D mould to produce precast concrete modular electrical substations in Algeria

The production of three-dimensional precast concrete elements allows a room dedicated to the electrical system with high resistance walls, without having to assemble the modules on site with savings in construction times and costs.

The precast concrete 3D electrical substations are designed to guarantee maximum safety, ensuring ventilation and waterproofing, with holes prepared for the passage of cables. The mould includes a base frame and the side panels, which can be opened and closed hydraulically or manually by means of quick coupling system. In the inner part of the formwork there is a hydraulically shrinkable core, which reduces in size before the entire core can be removed. Alternatively, the core can be built in many separate pieces that are manually

composed and broken down in a precise sequence during assembly. The floor or ceiling are produced separately, on a separate mould, and added later. The mould was complete with walkways, handrails, and access stairs to the upper part of the mould during the setup, casting, and dismantling phases. All moving parts of the mould formwork in contact with the concrete were provided with a rubber seal to avoid leaks.

The scope Bianchi Casseforme supply was the design, manufacture, and installation in Algeria included:

- 1) Modular mould for the manufacture of precast concrete substations of 30 KV and 10 KV, with a base and 4 inclined external walls (slope 1.5%) with the following sizes:



3d Modular Mould



Fixed table to produce the roof element

- variable length 4.0 or 5.0 m
- variable width 2.4 or 2.6 m
- variable height 3.1 or 3.4 m

The mould was made entirely of steel, with bent plates and structural profiles, and consisted of: Base frame fixed on anti-vibration pads, modular base 2.4 or 2.6 m wide (depending on the elements to be produced, 30kV or 10kV), made entirely steel and assembled using plate with a thickness of 8 mm, stiffened by an internal frame composed of other folded sheet plates and structural profiles. Two longitudinal sides with a usable height of 3.40 m and a useful length of 5 m with hydraulic opening and closing of the sides and manual locking against the base frame. A transversal side with a useful height of 3.40 m and a useful length of 2.6 m with hydraulic opening and closing of the sides and manual locking against the base frame. A transversal side with a useful height of 3.40 m and modular in length for substations of 2.4 or 2.6 m, moved by overhead crane to vary the length from 5.00 to 4.00 m.



Fixed table to produce floor slab



Mould with walkways and handrails

The internal finish of the substations consists of a core with a useful height of 3.31 m, consisting of 4 inclined side walls and divided into several pieces to produce two models of electrical substations with the following characteristics:

- 10kV model size 2.4 x 4.0 x 3.1 m
- 30kV model size 2.6 x 5.0 x 3.4 m

The vibration system provided consists of VFC 2000 0-100 Hz 42V electric vibrators.

- 2) Fixed table to produce the floor with the following sizes:
 - variable length 3.79 or 4.79 m
 - variable width 2.19 or 2.39 m
 - fixed thickness of 90 mm

Table composed of high-quality steel plate with a thickness of 8 mm, stiffened by a frame composed of other folded sheet plates and structural profiles and consisted of: N° 2 sides of 90 mm without chamfer and with manual inclination and N° 2 sides of 90 mm with magnetic attachment. The vibration system consists of VFC 2000 0-100 Hz 42V electric vibrators.

- 3) Fixed table to produce the roof elements for the 10kV versions
Table composed of high-quality steel plate with a thickness of 6 mm, stiffened by a frame composed of other folded sheet plates and structural profiles. The vibration system consists of VFC 2000 0-100 Hz 42V electric vibrators.
- 4) Fixed table to produce roof element for the 30kV versions
Table composed of high-quality steel plate with a thickness of 6 mm, stiffened by a frame composed of other folded sheet plates and structural profiles. The vibration system consists of VFC 2000 0-100 Hz 42V electric vibrators.



General view of installed moulds and lifting beam

- 5) 2m³ casting Bucket
For transporting and unloading concrete with manual opening and closing.
- 6) Lifting beam/frame
Lifting beam/frame with a maximum safe lifting capacity of 25Ton for lifting and to remove elements from the mould.

FURTHER INFORMATION



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