Factors To Consider For Precast Wall Plant Development

The benefits of building with precast are well documented – a smart industrialised way to build high quality buildings cost effectively and safely – but when starting up a precast wall production plant, some basic requirements have to be identified and quoted for in order to run a fully optimised plant that is cost effective while still offering a provision for future expansion.

In South Africa increased awareness of how precast production technologies considerably improve building project development flow and efficiencies - whether it be walls, floors or roofs – it is essential to obtain professional input on design, plant layout and correct technologies. In the South African context of housing delivery being a major high priority, and with commercial developments still increasing, it would make economic sense to increase precast production plant operations in order to achieve a faster building delivery cycle, while cutting costs and expanding production output.

Elematic, of Finland, a leading supplier of precast concrete production technologies, can offer salient expertise in precast wall plant development and design, that will eliminate start-up teething problems while delivering a production facility that is optimised to meet customer requirements.

Some of the factors that require answers include production capacity, type of wall to be produced and surface options.

Establishing how many square meters of wall panels to be produced per annum assists in the identification of the size of the precast plant required and the number of casting tables needed. Layout of the precast wall production plant can be designed for increased capacity in the initial design process.

Multiple options are offered in precast wall production, from solid walls to sandwich panels and from filigran to double walls therefore consideration to the type, size and surface of the panel to be produced is important in the layout of the plant as the production ratio impacts upon the circulation speed of a table. This speed is also dependent on the surface material used on the panels and whether or not they are insulated. The more complex the panel, the longer the table set up will be.

When tables have varied set up times, a transfer wagon can be added to the factory design. It allows the tables with the easiest panels to bypass the slower ones, eliminating any

potential bottlenecks on the production line. A transfer wagon gives maximum flexibility and therefore increases productivity.

Surface materials selected such as brick, natural stone, exposed aggregate, colored concrete, plaster, and graphic concrete are finalised at different stages of production, and therefore sufficient room is required for working stations at correct intervals. If special aggregates and colors are being used, a separate concrete distribution system needs to be included in the layout in addition to the main concrete transportation system.

Factory location

Details of any existing production halls should be made available to the plant supplier who would require all the necessary measurements, such as cross section, height, width and length. The size and shape of the hall would have a significant impact on the production line design, because the space determines the possibilities for the arrangement of the tables and other equipment needed. Similarly, if building the factory is on a green field basis, a land map with all measurements and restrictions is needed.
Even though these elements may only be estimates, they are important, in order for a specialised team from Elematic to assist in designing a factory that is optimised and that delivers the highest flexibility with the lowest operational costs and best end products.

Three Levels of Precast Wall Production Support

Elematic's production technology covers the entire range of precast walls that can be produced. The company offers three production line packages: SEMI, PRO and EDGE. The Three element philosophy comprising lowest operational costs, best end products and lifetime commitment are the principles that Elematic believes offer the most success in the precast production technology sector.

- SEMI Wall is the smart choice for a precast production solution in the annual capacity range of 70,000–150,000 m^2; and only a few predefined products are required

- If different and large volume types of precast products are needed to be produced in the annual range of 170,000–300,000 m^2 the PRO production line and equipment is most suited. All PRO key functions are automated.

- The EDGE caters for an annual capacity range of 400,000–750,000 m^2 covering a wide product range. Consisting of a circulating wall line and, as options, battery moulds and tilting tables. The tables move automatically between the production steps for high productivity. Logistics are solved with a central transfer wagon that provides a smooth traffic and productivity flow.

Elematic’s battery mould is the most efficient way to produce all kinds of solid wall and floor slabs in the precast process. It offers a high production capacity in a very compact format, that does not encroach over vast amounts factory floor space. All handling is done in a vertical position, with the battery mould being quick and easily installed.

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Available in both, one-sided and two-sided versions, the two-sided versions enable both sides to be used independently. The Elematic battery mould is easy to customise. The number and size of its casting cells as well as the mould furnishing can be selected to meet the individual needs

of a factory. Additional casting cells can be added to an existing mould if needed, or to upgrade a traditional mould into a cold shuttering version. Elematic’s cold shuttering system doubles the capacity of a traditional battery system and speeds up the production cycle by allowing two castings per day to be performed.

Elematic’s precast production plant team has a global footprint, with South Africa being serviced via their Dubai operation.