

New production facility in Chungju-Si, Korea

Samsung Precast Factory for Hollow Core Slabs

In 2011 Samsung C&T Corporation made the decision to strengthen and enlarge the precast production. A project team was set up for this task. As a first step the development of the world market for precast and precast machinery was checked to get an overview and to have a starting point for the development. The next step was look for help and advice in the development of the existing factories and to plan a new production plant for pre stressed hollow core slabs. At the beginning of 2011 Prilhofer Consulting was engaged for these tasks.

After checking the existing factory and making proposals for the upgrade the second step in the development was made. This was the design and purchase of a new factory in a different location for pre stressed hollow core slabs.



Samsung PC2 hollow core factory in Chungju-Si

■ Gian Piero Gagliardi, Nordimpianti, Italy
Christian Prilhofer, Prilhofer Consulting, Germany ■

In May 2011 the feasibility study was completed and the tender documents were ready for dispatch. Seven companies were invited to join the tendering process. Six companies were attending the tendering process and the winner was Nordimpianti System together with Marcantonini from Italy.

The orders were placed in August 2011. At the same time the purchase of the new land for the factory was completed. The building process for the production building and batching plant was started in October 2011. Simultaneously to the building process on the new site the production building was produced in Precast Factory 1 at Samsung.

The production building is a full precast building. The structural elements as columns

and beams and the roof element were produced at Samsung. The cladding in form of hollow core slabs was made in the test phase of the new production. The batching plant was made by Speco which is a Korean company.

The concrete distribution system has been supplied by Marcantonini and consists of a 2 m³ fly bucket with a concrete distributor that follows the casting machine along the



External façade constructed from hollow core wall panels



New area for increasing hollow core production at PC2



Fly bucket from Marcantonini



Hollow core production line

bed. The concrete distributor has also the capability to supply power to the casting machine and to lift and return it to the end of another bed without the need of an overhead crane.

The first elements were casted middle of January 2012 and the regular production started February 2012. On the 20th of April the official opening ceremony for the first stage of the development of Precast Factory 2 was held.

The Executive Vice President of the Residential Business Unit of Samsung C & T Mr. Bae Dongki was present to carry out the ceremony together with the deputy mayor of Chungju City Mr. Pil-Su Sin, the CEO of Lama building company Mr. Bok Rae Park which builds

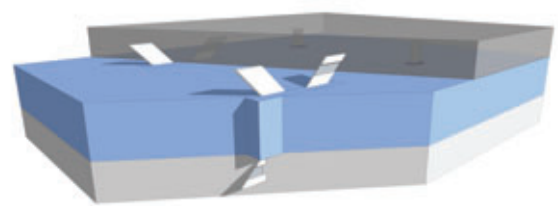


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Hollow core transport line

the production building, Mr. Gian Piero Gagliardi from Nordimpianti and Mr. Christian Prilhofer from Prilhofer Consulting who delivered the factory planning and overall setup of the plant.

The production plant in the first stage consists out of the following machines and plants.

The new hollow core production facility has two production halls both having six 150 m long casting beds. Both halls are equipped with concrete distribution lines that can automatically supply concrete to the casting machines along the length of the beds. After several visits to different hollow core production facilities Samsung decided that Extruder technology, using the new Nordimpianti Extruder EVO casting machine was best suited to their needs.

Their choice was based on the working advantages of the system. Samsung C&T carried out extensive international research before finally deciding upon a casting machine with inherent low running costs, yet able to produce high quality products. The Extruder machine range consists of 2

power units that can be fitted with different forming inserts for the production of hollow core slabs 150-180-200-265-320-360-400 and 500mm high.

For cutting operations Samsung C&T chose Nordimpianti's 500 AM Universal Multi-Angle Cutting Saw that is able to cut concrete elements up to 520 mm high at every angle including longitudinal cutting.

Elements produced in the factory are lifted by a fully adjustable lifting beam again supplied by Nordimpianti that can lift elements up to 16 m long. After the elements are lifted from the casting beds they are loaded onto Nordimpianti's transport wagon system. The wagons are double sized enabling more concrete elements to be transported at the same time to the stockyard.

After the concrete elements have been removed from the casting bed Nordimpianti's Multifunction Bed Cleaner starts cleaning the beds, laying the steel strands and also spraying the detaching oil in preparation for the next casting operation.

Samsung C&T team chose the single wire stressing system to be able to stress each wire singularly. Stressing individual strands enables each wire to be stressed with the same stressing force giving each element the best loading and design characteristics to ensure top of the range product quality. For Samsung C&T "Quality" is not a just a throw away word but an ethos that is epitomized in their motto "Zero defects make perfect".

To complete the integrated system, Nordimpianti also supplied a Plotter machine, which can wirelessly download a layout from a program and accurately and automatically mark out cutting lines and product codes on the elements. The Nordimpianti Suction machine was also supplied and is used to create openings, already marked out by the plotter on the surface of the hollow core slabs while the concrete is still fresh. Individual customer panel requirements can be met with ease.

The casting beds themselves are constructed in steel with a 10 mm top plate. The Nordimpianti casting bed offers the design



Multifunction bed cleaner



Decorative hollow core samples



Extruder and Slipformer technologies
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Why Nordimpianti

We are one of the world's leading suppliers of machinery and complete production plant for the manufacture of pre-stressed concrete elements.

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The company gives you the benefits of 40 years of international **Concrete Experience** to develop Tailored solutions that help our customers maximize their own business.



FURTHER INFORMATION



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Complete product range of hollow core production



Handover of inauguration plate commemorating the event

advantage of chamfered side edges separate from the rails on which the machines travel. This means that there is a channel between the side edges and the running rails where the cutting disc cooling water is collected during the cutting phase eliminating the time consuming job of cleaning the floor space between two beds.

Another aspect of consistent efficient hollow core production is that of element curing. To achieve this Nordimpianti designed and delivered a complete self contained heating plant solution. The curing cycles of each bed can be individually programmed with precise temperatures and times, meaning that the curing maximizes element production and quality.

All this attention to detail that Nordimpianti incorporates into all its product design was fully appreciated by the forward thinking

team at Samsung C&T who had set themselves the target of building the best hollow core production plant in the world.

Production hall 2 has already been built and will be capable of accommodating another 6 production lines with the same features that exist in hall 1. Samsung C&T plan to increase hollow core output with a particular emphasis on concrete wall panel production. For this kind of product Samsung C&T will use Nordimpianti's Slipfomer technology which is already widely used in Europe.

Factory planning and overall setup of the plant delivered by Prilhofer Consulting. Output and vision for the future add by Samsung C&T together with Prilhofer Consulting.



Cutting of the ribbon



Guests attending the opening ceremony at Samsung PC2