

Nordimpianti System Srl, 66100 Chieti (CH), Italy

# New flooring technology for the construction market in South Korea

The renowned Korean company Samsung C&T has started production of a new type of prestressed concrete floor slab called the Triple Ribbed slab (TRS). Samsung needs no introduction as it is one of the best known electronics companies in the world. However as well as playing a leading role in the field of electronics the company is also well known in the construction sector under the name of Samsung C&T. The construction and trading division employs more than 7000 people, with a turnover of 13.441 KRW Billion (Euro 9,8 bn) and has projects under its belt such as the Burj Khalifa skyscraper in Dubai, the tallest in the world, the Petronas Twin Towers in Kuala Lumpur and the Taipei 101 skyscraper in Taiwan as well as many others.

Samsung C&T has a leading position both globally and locally in South Korea, where there are, other than the main Samsung HQ city, two production plants for precast elements, the PC1 and PC2 factories.

The latest plant is PC2, located in the industrial area of the city of Chungju about 130 km from Seoul.

Launched in 2012, the new plant is designed to produce various prefabricated elements such as:

- Hollow core floor slabs
- Hollow core wall panels
- beams, columns and various special prefabricated elements
- prefabricated wall panels

These have all joined the range of concrete elements already being produced from the first PC factory commissioned in 1991. For the design of the overall layout of the new

PC2 facility Samsung C&T turned to the services of the precast industry respected German company Prilhofer Consulting.

The prestressed hollow core slab production provided by Nordimpianti consists of 12 production beds divided into two lines of 6 beds, each 150 m long with an element production capacity of over 2000 m<sup>2</sup> per day.

The first line, launched in 2012 produced hollow core slabs for floors using the EVO Extruder, a machine able to produce elements with heights of 150, 180, 200, 265, 300, 315, 350, 400 and 500 mm. The second line, commissioned less than a year after the first, produces hollow core panels with the SF Slipformer machine, capable of producing wall panels with heights of 100, 150 mm. Both machines, the EVO Extruder and the SF Slipformer can be used on both production lines.



PC1 factory in Eum Seong city



PC2 factory in Chungju



The new pre-stressed Triple Ribbed Slab concrete floor element

The hollow core slab is a construction element well known in the Korean construction industry but only in recent years, after serious promotion by Samsung C&T has its use undergone a remarkable expansion.

Even though Samsung C&T were at the forefront of hollow core slab technology their vision led them to develop a new floor element consisting of a base slab with prestressed wires and having three ribs which have steel reinforcement that protrudes from the top of the element.

Developed in close collaboration with Nordimpianti this element represents a significant step forward in the production of slabs for special applications that require elements that can withstand high loads and that has reinforcement steel bar protruding from the element in addition to the element's prestressing strands.

For the production of this new element Nordimpianti has developed and supplied



First hollow core plant production line with 6 beds, each 150 metres long



Left: Mr. Yong Tae Kim, Plant Manager PC2 Plant, and right: Mr. Sandro Chiurco Nordimpianti's Chief Service Engineer



Triple Ribbed Slabs during casting phase with Nordimpianti's Slipformer machine showing the protruding steel coming out 100 mm from the element

a new Slipformer machine capable of producing elements in various heights from 200, 240, 280, 320 and 360 mm while the steel bar can protrude 100 mm out of the element.

Structurally the new element has 3 ribs 100 mm wide in which the protruding steel is laid longitudinally and a bottom part of 60 mm in which there is steel mesh for reinforcement. The prestressing wire is made up of 3/8" and 1/2" strands that can give a total area of steel of 1600 mm<sup>2</sup> that allows the element to withstand loads of 3600 kg/m<sup>2</sup> in spans of 11 meters.

The new Triple Ribbed Slab will be mainly be used by Samsung C&T in the construction of floors for large logistics and industrial buildings to which the company is strongly committed.

Thanks to the presence of the reinforcement steel, protruding from the element, these elements have a higher stiffness compared

to other prefabricated floors because they can be connected to the supporting structure so as to increase the resistance to transversal forces to which the buildings are subjected.

The start of production of the new Triple Ribbed Slab represents a new delight for Samsung C&T and for the Italian company Nordimpianti. Since the beginning both companies have shown a strong desire in the collaboration driven by a mutual interest in technological innovation. One of the successes of the project for Samsung C&T is the collaboration with Nordimpianti, a partner who is capable of developing and implementing innovative ideas in the field of construction.

For Nordimpianti's part, it is a matter of great pride to count among its customers, a company such as Samsung C&T. At this moment further projects are in development which will be launched by Samsung C&T in the near future.

#### FURTHER INFORMATION

**nordimpianti** Concrete Experience...

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