Nordimpianti, 66100 Chieti, Italy

10 years of successful partnership with Industrial Construction Group Kovalska

The story of the partnership between the Ukrainian company ICG Kovalska and Nordimpianti dates back 10 years to 2010 when the Italian manufacturer of machinery was chosen as the supplier of a 1,200 mm wide hollow core production line to the Beton Complex plant in Kiev, which belongs to ICG Kovalska.

At that time, ICG Kovalska wanted to produce floor slabs for residential buildings, 220 mm high and with spans up to 9 m, as well as slabs for industrial applications with spans up to 21 m. In 2010 the company could not achieve this with its production method. After comparing the different options open to Kovalska the company management decided on extruder technology from one of the world market leaders in this field, Nordimpianti.

The Ukrainian company recognized the design detail of Nordimpianti's version of the extruder which allows for the production of hollow core slabs with excellent technical characteristics in an economically efficient way.

Thanks to the extruder technology the production line has a significantly higher output compared to the company's traditional production methods. A year after the order was signed production was in full swing and the design engineers at ICG Kovalska adapted many existing construction projects to take advantage of the new type of hollow core slabs.

Productivity – 20% more than expected

This first project at the Beton Complex plant consisted of five production beds, each one 1,200 mm wide and114 m long and all having a bed heating system installed to make curing and thus production times shorter. Each bed was equipped with a single stressing system for tensioning and smooth de-tensioning of the stressed strands.

The production machines supplied included an extruder EVO e120 with a set of forming inserts for various slab types, a multi-angle saw for cutting finished elements to any desired length or angle, a multi-functional bed cleaner to allow for efficient production bed preparation as well as other auxiliary equipment such as balance lifts for removing elements from the bed and service platforms for easy machine maintenance. In collaboration with other suppliers a system for the automatic distribution of concrete was also delivered and installed.
It was during this time that the true value of a successful partnership became apparent. The combination of effective plant commissioning and comprehensive staff training by

Gian Piero Gagliardi, CEO of Nordimpianti (left) and Vladimir Surup, production manager of Kovalska (right) signing the first contract between the two companies.

Hollow core slab production plant at Beton Complex factory in Kiev

The Extruder EVO e120 from Nordimpianti while casting 400 mm high hollow core slabs

Fresh concrete cutting saw 500LP, longitudinal type

Nordimpianti was integrated and refined by the Ukrainian company. Thanks to their production management skills they were able to use Nordimpianti's equipment "to the max" and achieve an output of six beds per day instead of the expected five beds, i. e. 20% more than expected.

Subsequently the plant was supplied with a longitudinal saw for use in fresh concrete. This enabled the plant to offer additional products with widths of less than 1,200 mm, which at the same time opened up additional possibilities to deal with different architectural situations.

Cutting of the ribbon during the opening ceremony of the new production line for 1,500 mm wide hollow core slabs at Beton Complex factory

The Extruder EVO e150 from Nordimpianti casting a 220 mm high hollow core slab

In terms of production the plant is able to produce 1,200 mm (or less) wide hollow core slabs, with different heights ranging from 200 to 500 mm. Annual production output amounts to 200,000 m^2.

Two widths from one production bed

Whilst the design team at ICG Kovalska was able to adapt many existing schemes to be able to make use of the new 1,200 mm wide slabs there still remained many projects where it was not possible to replace the CIS standard of 1,500 mm slabs.

In 2015 ICG Kovalska decided to meet this demand head on, implementing a second line at the Beton Complex plant. However, the Ukrainian company required something more from this second line. They had noticed that there was a high demand for 1,100 mm wide slabs. In order to reduce the waste and the inefficiency when producing 1,200 mm wide slabs and then cutting them to a width of 1,100 mm, Nordimpianti was tasked to find a solution to produce 1,100 mm wide slabs on a 1,500 mm wide bed. Thus it should be possible to produce slabs with different widths on one and the same bed.

Nordimpianti duly rose to the challenge. Using its expertise and knowledge gained over nearly 50 years, the company produced its "slide chamfer system". This system uses one of the production bed's existing side edges and imitates the other with a sliding chamfer. Other available systems have this slide chamfer connected to the side former and thus it oscillates with the side former which can cause a wavy surface of the slab. However, Nordimpianti's slide chamfer is a separate part and does not oscillate, it moves only as the extruder machine moves. It is geometrically positioned like a fixed side edge would be. This gives the slab a much better surface finish.

In 2016 the plant was up and running in the second production hall of the Beton Complex plant. It again consisted of five production lines and was supplied with much of the equipment of the 2010 plant, only this time the saw supplied was a transversal cutting saw.

The extruder supplied was the EVO e150 with the "slide chamfer" system, able to produce elements with a width of 1,500 mm and also, after having been adapted, quality elements with a width of 1,100 mm on the same production bed.

The total production capacity of the Beton Complex plant at the end of 2016 amounted to 435,000 m^2 of hollow core slabs but the demand for hollow core slabs was still not fully met. The Ukrainian company was even still producing hollow core slabs with the old traditional method. With this level of demand the management of ICG Kovalska decided in 2019 to purchase, install and commission another production line, this time at Stromat factory. Once again the Ukrainian company turned to its trusted partner Nordimpianti.

Automation for increased efficiency and safety

The project at Stromat threw up many technical challenges, which were solved through close cooperation between Nordimpianti and ICG Kovalska. The production halls were shorter than desired, so, in order to make full use of the space available, some innovative solutions were implemented:

- Reduction of the service area so that the production beds could be as long as possible.
- Transportation of finished products through a 90° turn to access the warehouse
- Installation of a 90° smooth turn in the concrete supply system from the concrete batching plant

The Stromat plant consists of five production beds, each 105 meters long, and again with much of the same equipment supplied to the Beton Complex projects. However, perhaps the greatest leap forward concerned the extruder and saw machines that Nordimpianti was now able to offer and which bring high levels of autonomy, control and safety.

The extruder supplied by Nordimpianti is the next generation EVO 2 e120 machine and has several new key features which bring significant benefits and cost reductions. Fitted with load cells and controlled by software developed in-house by Nordimpianti, this extruder can automatically adjust the compaction of the machine without an operator having to constantly monitor and adjust the machine's components to take in such variables as humidity. This directly increases quality and consistency of the finished product.

Furthermore, this extruder of the new generation has independent drives for the screws. Without independent drives all the screws must rotate at the same speed and the speed is dictated in part by the speed of the outer screws, which must transport the concrete to the side former. With independent drives the operator can adjust the speed of the inner screws with respect to the speed of the outer screws resulting in less wear on the inner screws, which will not need to be replaced as often as this happened before.
The closed oil bath gearbox from the previous generation is retained and joined by an upgraded smoother with added protection for the drive belt making it less liable to debris ingress and easier to clean.

Vladimir Surup confirming the quality of the hollow core slabs produced in the factory with the EVO e150 Extruder from Nordimpianti

The most outstanding machine of the supply is the transversal cutting saw. With a laser rangefinder system coupled with intelligent software this transversal saw from Nordimpianti can operate completely automatically. It is only necessary for the operator to program the cuts required – an easy operation. After that just press start. The saw will work independently

The new Extruder Nordimpianti EVO2 e120 casting a hollow core slab at the Stromat factory in Kiev

along the whole length of the bed with no operator required. Not only does this save labour costs but the cutting process is speeded up, because the positioning is carried out in the most efficient way.

Of course, safety is of paramount importance and the saw is equipped with anti-collision devices that will stop the saw in case there will be any danger to life or to the machine.
These three major projects together make it possible for ICG Kovalska to produce 615,000 m^2 per year. The collaboration of the two companies during the last ten years, has demonstrated many things, e. g. foresight and organizational skills of ICG Kovalska group, innovation and technical ability of Nordimpianti. But most of all it demonstrates the value of fostering good business relationships over many years, built on trust and excellent communication. Both ICG Kovalska and Nordimpianti believe that for a successful partnership these attributes must be a strong part of the DNA that make up a company. ■

FURTHER INFORMATION

ПРОМИСЛОВО-БУДІВЕЛЬНА ГРУПА КОВАЛЬСЬКА

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Nordimpianti's 300 ETR automatic cutting machine