Nordimpianti System Srl, 66100 Chieti (CH), Italy

New plant launched successfully in Russia, in the city of Yakutsk

Nordimpianti System has completed yet another start-up in Russia for Sokol, in the city of Yakutsk, for the production of prestressed concrete hollow core slabs. Precast and prestressed concrete elements are used in many different construction situations not least because they can be manufactured with comparatively fast production times. Other advantages are that on-site labour costs are lower and construction can be undertaken in all weather conditions, unlike for formwork element construction methods.

These competitive drivers have been taken on board by Sokol to enlarge and differentiate their production. The hollow core slab is not a completely new product for the Russian company. They have been producing these elements using a Soviet method since 1965 but new developments in the field of prefabrication and the desire to move to the next level of production quality have pushed Sokol to invest in a method of producing hollow core slabs without the use of formworks.
The company was founded in 1957 under the name Bestyachskij initially for the sale of products to the building industry. The foundation and development of the company is directly related to the unique construction needs of the residential and industrial sectors in the Yakutsk region that, due to its position and latitude mean that these buildings must be able to withstand some of the most severe winters experienced by any city in the world. It is this local market drive, for evermore types of building products that Sokol has actively responded to.

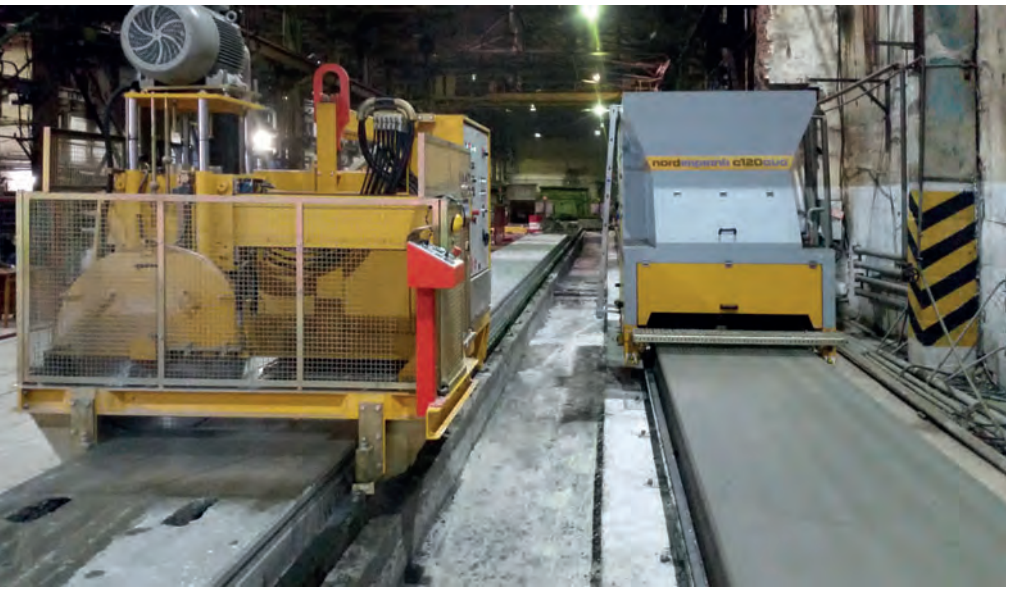
From 1967 Sokol started to supply aggregates for building needs and in 1970 began selling building materials for residential and industrial construction on an even larger scale. In 2003 the company went through an internal reorganisation becoming a limited company and changing its name to Sokol and could count in its product range various types of prestressed concrete elements such as poles, floor panels, columns, pavements, stairs, blocks, 1/2 blocks etc.

With 60 years of experience in the production of building materials and especially pre-stressed concrete elements, Sokol is one of the most important companies in the construction market in the Yakutia region. Focusing attention on the quality and reliability of the elements, Sokol has become a reliable partner for many investors.
Occupying a place as a market leader of construction products, the Russian company has managed to achieve success by following three basic principles: honesty, reliability and innovation. The company's mission has always been to pursue product quality at the most efficient cost.

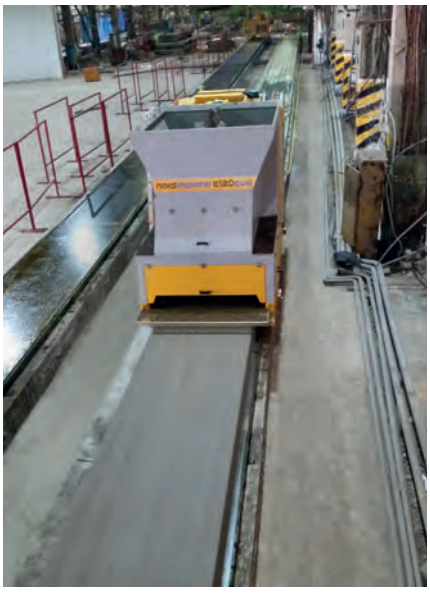
The new and modern production technology, in addition to the strict internal monitoring control system, guarantees quality assurance at all stages of production, from the aggregates to the final product.

The company's development strategy is to use the best technology available to increase the volume of hollow core slab production without compromising on quality. It has been able to do this through a combination of investment and being able to call on the expertise and experience of its staff who in turn are responsible for turning that investment into the production of products that have a competitive edge.

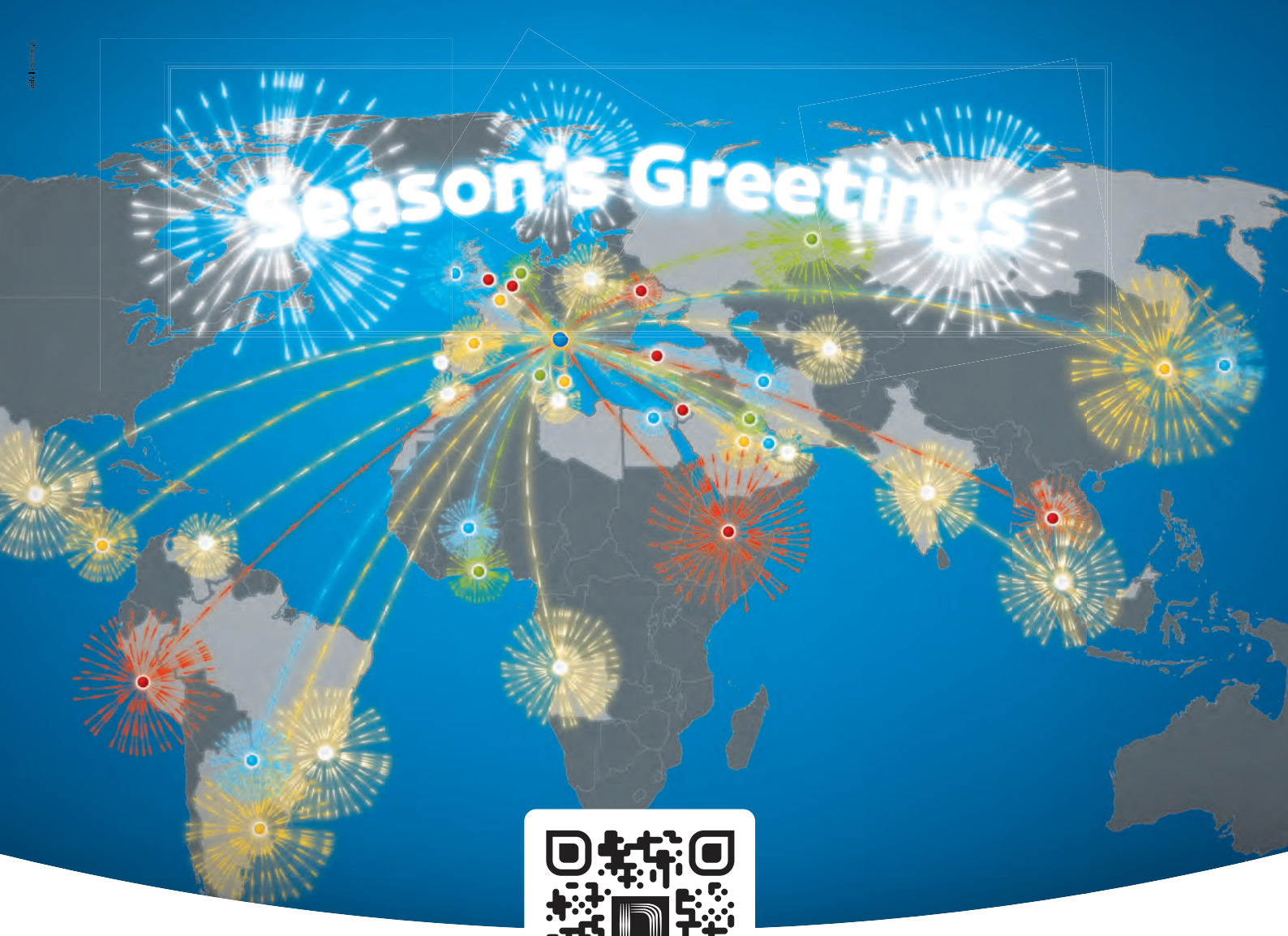
The latest initiative taken by the Russian company to meet new market demands has been the start of hollow core prestressed concrete slab production without the use of



The first line completed by Nordimpianti in the Yakutia region.



The implementation of the first two production beds to produce hollow core slabs, the first step towards a completely new production line at the Sokol plant in Yakutsk.



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With over 40 years of experience in the prestressed concrete industry NORDIMPIANTI's machinery is manufacturing concrete elements in over 50 countries.
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formworks. The transition from formwork methods to continuous hollow core slab production technology not only allows an improvement in the quality of the finished product but also widens the range of products that are able to be produced. This advantage should not be underestimated within the market of the former Soviet Union and the Eastern European countries that, despite the general crisis of recent years, are still experiencing the effects of the previous construction boom.

Sokol and Nordimpianti first met in 2012 when the Russian company had started preliminary negotiations with various suppliers from around the world who would be able to deliver the technology required for the production of hollow core slabs using the extrusion method. Sokol's R&D department undertook extensive detailed research on the various alternatives of machines and plant and the technical solutions offered from all parts of the world. Choosing the ideal supplier for machinery and equipment was not easy. Before making the final decision Sokol's technical personnel visited various hollow core slab production factories and various trade fairs in Europe. In particular, in 2013 the Russian company's experts visited the city of Kiev and the prestressed concrete element production facility of "Beton Kompleks: Kovalska Group", one of the most well known companies in Ukraine in the field of civil and industrial building construction.

Nordimpianti produces machines and equipment for the production of prestressed concrete elements and is able to offer the full range of casting machines such as Extruder, Slipformer and Wet casting. The choice is never easy and has to be carefully evaluated. Nordimpianti's experts are able to recommend the most suitable machine for the type of element to be produced. It was this advice and a visit to the production factory site of Beton Kompleks, a factory that already had had 5 years of extrusion technology experience supplied by Nordimpianti that dispelled all the initial doubts of the Sokol Directorate and the decision was made.

Mr. Radion Eremeev, Director of Sokol declared his satisfaction: "The hollow core slabs are the capital investment modernization of our production. Hollow core slabs are unique elements that meet specific construction conditions: The production of such elements using formworks has reached its production limitations and we have opted in the main for the extrusion technology and specifically that technology supplied from Nordimpianti. This change will enable us to increase not only our production quality but allow us to offer even more products to the market".

The Extruder from Nordimpianti is a machine specifically designed for the construction of hollow core slabs. With respect to the other technologies that Nordimpianti offers it has the following technical advantages:

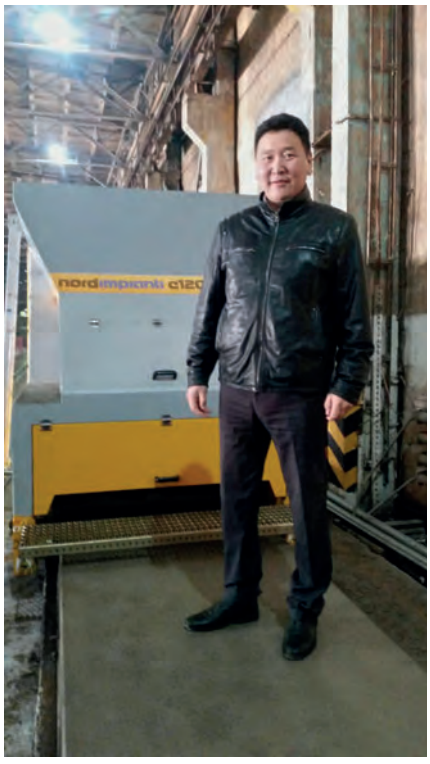
- High concrete compaction
- Minimum cement consumption per cubic meter of concrete
- Low maintenance costs
- Excellent bonding between concrete and the prestressing cables
- Ease of operation
- Excellent product surface finish
- Rapid concrete curing times

This latter point was a particular factor, confirmed by Beton Kompleks that, during the summer period is not necessary to heat the production beds, while in winter, the concrete curing of the hollow core slabs can be achieved in record times, in fact a second casting phase can be started within 8-12 hours. In the harsh climate of Eastern Europe, the ability to cure the concrete is a decisive factor in the choice of which production technology to use.

Sokol, has also been able to benefit from several design advantages of the Extruder: the gear box working in a constant oil bath, fully protected mechanical parts, combined compaction system, with a control system for consistent production and zinc plated parts.

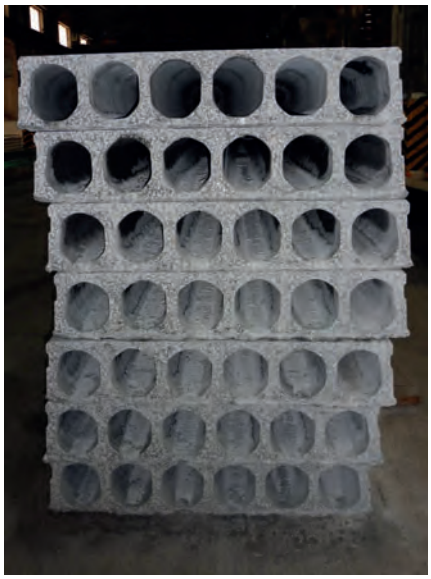
One particular innovation feature launched by Nordimpianti is the new two piece Archimedean screw design which means that instead of having to replace the whole screw when part of the screw is worn, it is now possible to replace only the part subject to the most wear. This can be done 3 or 4 times before the other part of the screw needs to be replaced resulting in a drastic reduction in production costs per square meter.

With the design solutions mentioned above as well as other measures such as the use of wire-guides within the machine to maintain the reinforcing wires in position during the casting stage, the Extruder helps avoid waste linked to the production of low quality products. The weight of the machine (approximately 8 t) is an indication of how the Extruder can ensure the necessary tie between the concrete and the reinforcement during the casting stage thus ensuring the desired geometry of the hollow core slab.



Mr. Radion Eremeev, Director of Sokol demonstrating his satisfaction with the quality of the first slab produced during start-up of the Extruder.

Optimum surface quality of the finished panel.



High level of hollow core slab geometry attained from the Nordimpianti Extruder.

Specialists from both companies working closely together to achieve a high quality result.

The contract to purchase a production plant for the production of hollow core slabs was finally signed in September 2015. At all stages of the project the two companies had, as a local partner, the services of the company Anton Ohlert, (Nordimpianti's agent for Russia and the CIS countries) who supported the collaboration and gave voice to the needs of both parties.

The contract determined that the modernization process would be done in several stages. The plant was designed with 4 production beds with all the machines and equipment necessary to meet the daily production quota of 520-650 m² of hollow core slabs.

The first modernization phase of the production line was carried out last August: 2 production beds, each 114 meters long, reaction beams up to 300 t, auxiliary equipment such as the single stressing machine, transversal element cutting saw, lifting beam with clamps for stocking the finished elements.

Staff training and the commissioning of the equipment took less than two weeks and was carried out by specialists from Nordimpianti in conjunction with the technical team from Sokol. This resulted in the intelligent choice of the aggregates and design mix as well as the correct setting up of the casting machine before the first test run of the hollow core slab production. To the all round delight of both technical teams not 1 square meter of concrete was deemed defective.

The execution of this innovative modernisation project is the result of the joint forces and the close cooperation between the two companies involved: long experience, the constant presence in various markets and a deep comprehension of the buyer's needs were the real key to the success achieved.

Both companies have achieved the desired results: Sokol can count on a reliable partner and enter its own local market with a completely innovative product, while Nordimpianti can look forward with confidence to being a major presence in the market, that of the Yakutia region, which has very strong economic and construction potential.

FURTHER INFORMATION

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