The Russian precast concrete manufacturer DSK Blok („LSR Stroitelstvo – North-West”) modernises its St. Petersburg plant

Technology and capacity upgrade on a grand scale

About five years ago, LSR-Group, the leading construction and construction materials group in northwest Russia, took in operation one of the most advanced production plants for precast concrete parts at their plant DSK BLOK in St. Petersburg. Now the company modernised the plant for a second time and increased its capacity. And as with the first upgrade, the Russian construction company was again supported by Weckenmann Anlagentechnik.

The second stage of modernisation was triggered by the company’s success: The demand for the innovative house building system of DSK BLOK had increased enormously. This system reduces heat losses by up to 30% thanks to an energy efficient technology. DSK BLOK has been building this kind of houses since 2008. A house with this building system is completely made of precast concrete, and the building – unlike in conventional sandwich construction – consists of bearing walls with a thermal insulation composite system. Solid floor slabs, loadbearing interior walls, lift shaft elements, stairs, landings, balconies and attic slabs complement the shell construction. With this as basis, large numbers of top-quality housing units can be built.

Given the rise in the number of orders and the continuing positive trend in the domestic market, the management team decided to expand its production in the second largest city in Russia and to bring the plant up to the latest technological standard.

The technical upgrade of the plant was carried out while it remained in operation. From June 2012 to November 2012, Weckenmann specialists were on site to assist in integrating eight battery moulds and a pallet circulation system during ongoing operations. This upgrade alone allows capacity to be increased to nearly 2,000 square metres of wall panels and 1,000 square metres of floor slabs per day. The modern circulation system with its 40 shuttering pallets and shuttering robot play a crucial role in this improvement. Its operation is based on the so-called Twin-Z technology. Two synchronised vertical axes grip the shutters directly at the integrated magnets.

The result: the 3,580 mm wide and 160 mm thick solid floor slabs are produced at a cycle speed that is up to 60 per cent faster than conventional robots. In addition, the magnetic formwork enables the production of an infinitely wide range of products. This allows DSK BLOK to now offer their customers customised precast concrete parts in any shape and form.
Multifinisher thanks to a changing head
One for all challenges!

The surfaces of precast concrete parts must be smooth as needed and depending on the manufacturing method. This is where the Weckenmann machinery and equipment make fast, safe and premium-quality work of such requirements. One example is the helicopter trowelling machine with interchangeable head: This multifunctional finishing tool refines the specialised surface equipment supplied by the company.

What makes the helicopter trowelling machine different from its predecessors is that this high-performance smoothing unit has a direct drive. In addition, the head of this robust design can be changed quickly and easily. This way, various processing units with different diameters for smoothing, grinding or milling can be used.

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High-frequency vibration station with magnetic clamping

**Good good good vibrations**

Cement, water, sand, and gravel of different grain sizes:
That’s the stuff that concrete is made of. When the material is poured into the mould, its consistency determines how well it is distributed. It also tends to form an air-filled cavity or two. And the result is poorly compacted concrete parts with unclean surfaces. The solution is a bout of good and proper vibrations, preferably with high-frequency technology. The vibrations force the air out of the viscous mass, the components are compacted and the concrete can set neatly.

**Improving quality**

Weckenmann’s high-frequency vibration station with magnetic clamping has refined the technology of concrete compaction. The substructure of the shuttering pallets is fitted with optimally positioned vibration steel plates. Attached to these plates then are freely suspended, strong vibration-proof electromagnets of the vibration units that can be raised and lowered. The vibrators work with a directed vertical amplitude and an infinitely adjustable speed from 0 to 6,000 r.p.m. depending on the particular requirements to the concrete and the final product.

**Reduction in energy consumption and noise level**

The advantage of this technology is the significant reduction in energy consumption and noise level. Due to the fact that the vibrators are directly connected to the mould, the energy is directly transferred into the pallet. Another advantage is that the heavy vibration blocks fall away in this process. This means that less material is moving, so less energy needs to be used. Plus, all this makes much less noise. All for the sake of environmental protection and occupational safety.

The circulation system for floor slabs, which the company Gebrüder Kaltenbach GmbH & Co. KG in the Black Forest uses for its production, was supplemented by an offline pallet position with stands and crosslifting trucks upstream from the concreting station. This means the company can now take pallets needing intensive formwork and reinforcement work out of the circulation cycle and process these offline without time pressure. The result is efficient material flow, which is also not disrupted when time-intensive manual work has to be done.

**Good reasons**

There are several reasons why the four companies have chosen Weckenmann as cooperation partner. One is that the plant specialist never stops to invest in the development of its machine technology, which is clearly evident in the long service life of its products. This is supported by a good price-performance ratio and commendable after-sales service. Of key importance is in particular the professional advice, the reliability, the quality and the extremely satisfactory execution of customer projects, where customer wishes and improvement suggestion are incorporated seamlessly and flexibly. This is the result of cooperation that sometimes goes back many years.

"The investment in the offline pallet position has become necessary due to the increasing demands on precast concrete elements", explains Armin Kaltenbach (2nd from left). Also pictured: Dietmar Kiene (Sales Manager at Weckenmann), Werner Wossner (1st and 3rd from left) and Wolfgang Hess (right).
„What would that be, Mr Zeh?“

Benjamin Zeh joined the Weckenmann sales team more than a year ago and is responsible for ‘formwork systems’. Besides customer service and project management, market analysis is also part of his duties.

“This is a test station at which the holding force of one of our magnets is tested. The magnets in question are part of our various series of formwork systems. The formwork elements are created after extensive discussions with the customer, where the individual needs of production and the components envisaged for it are analysed. For each customer project, the ‘formwork systems’ team work closely together and incorporate all areas of the business – from sales through design to production. This is essential, because it is important to understand the final product in order to plan production efficiently or to optimise it. During these consultations it is often found that it is cheaper to develop a universal formwork system for several products, rather than a separate formwork element for each product. Basically, our goal is to develop a customised solution that incorporates the utmost flexibility for each client, regardless of whether the formwork elements are handled manually or by robot. That’s more important than ever, not least because of the increasingly complex demands and requirements to concrete construction. Because, without formwork nothing goes, it is the heart of every precast concrete plant. It is responsible for the accuracy and immaculate appearance of every precast concrete part. At Weckenmann, we know it. This is why we infuse every formwork profile manufactured here in Dormettingen with the accumulated know-how from many years of experience and expert development. Obviously, we do not rest on our laurels. And a good example of that is the new ‘MagnetBox M2413’. Despite being of the same design, with about 24,000 Newtons it has a much stronger holding power than its predecessors.”

Trainee development at Weckenmann

New trainees on board

Stefan Eisele, Dzeladin Gicic and Vanessa Beneke began a new stage in their lives at the beginning of September. They started their apprenticeships as industrial mechanics at Weckenmann Anlagentechnik GmbH & Co. KG and – for the first time in its history – as technical product designer.

This brings the number of young men and women who complete their vocational training in the company to a total of seven, among others as industrial mechanics, warehouse clerks and industrial clerks. “Promoting and supporting the youth is very important to us, not least because it is also an investment in the future of our company,” explains CEO Wolfgang Weckenmann the training commitment of Weckenmann. This includes the latest cooperation of the company with the Horb campus of the Cooperative State University Stuttgart. In future, students can do their bachelor’s degree in mechanical engineering-structural design and development there.