

Progress Group, 39042 Brixen, Italy

Opening ceremony for the Zapad Group's new DSK Etalon precast plant in Uljanovsk, Russia

Following a construction time of barely 12 months, the opening ceremony for the new precast plant in Uljanovsk, Russia took place just before the turn of the year. Progress Group supplied everything for the plant from a single source: the complete planning service, the engineering and the technical equipment with machines and plants worth a total of 12 million euros. The new production plants are controlled by ebos®, a complete solution for work preparation, production and process analysis. Over 200,000 m² of living space are to be created per year with the new plant.

Progress Group, as a full-range supplier to precast plants, has shown once again that times of crisis are not to be equated with economic failure. There were extensive celebrations on 23 December in Uljanovsk, a city of 600,000 inhabitants located almost 900 kilometres south-east of Moscow. Guest-of-honour Mikhail Men, Russia's Minister of Construction, Housing and Local Economy, was delighted by the opening of the new plant. Other guests included Sergej Morozov, governor of the region of Uljanovsk, Nail Alimov, chairman of the construction investment company Zapad, Natalja Butovich, deputy general director of the Russian Housing Development Foundation, as well as representatives of the management of Progress Group and LiCon, its German sales agency. Together they symbolically pressed the plant's start

button to initiate the production of the first elements.

Russian housing programmes for the region

The investment and building contractor Zapad, which leads in the Uljanovsk region, is investing in the location and is building a new precast plant on a property belonging to the Russian Housing Development Foundation. Zapad specialises in the realisation of large housing projects for the Russian population. The Uljanovsk region actively participates in the programme "Living space for the Russian family". Within the framework of this programme, over 250,000 m² of affordable living space are to be created by mid-2017. The properties, the building contractors and

the projects for the execution of the programme have already been selected. The foundation launched the project for the building of the factory and supported Zapad at every stage of the realisation. The goals of the foundation are the development of the building materials industry and the creation of residential areas. It campaigns for the urbanisation of greenfield sites as well as the regeneration of unused former industrial areas.

The new production workshops at the DSK Etalon plant in Uljanovsk encompass approx. 13,000 m² and offer 200 employees a safe job. The plant produces sandwich walls with integrated thermal insulation, solid partition walls, floor elements as well as prestressed hollow-core slabs and special precast elements such as stairs and



The new and representative production hall at the DSK Etalon plant covers a total area of 13,000 m².



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With the Form Master robot system the shutters are fully automatically removed after the completion of a production cycle, supplied to a shutter cleaning unit and placed precisely on the pallet shuttering surface again for the new occupation.



The required reinforcement meshes are produced just in time by the fully automatic M-System Evolution mesh welding machine. The machine receives the required CAD data from ebos.



Vertical welding manipulator for the production of reinforcement cages



The finished shuttered pallet is ready for concreting. The concrete is discharged evenly by a screw system in accordance with the data sent by ebos. The concrete layer is drawn off and smoothed to the desired height by a vibrating levelling beam.

driven piles. The elements produced are mainly destined for the construction of flats and social facilities such as kindergartens, schools and medical centres.

The companies from the Progress Group cooperated closely for the 12-million euro order. The machinery consists of deliveries from all four of the group's mechanical engineering companies: Ebawe Anlagentechnik, progress Maschinen & Automation, tecnocom and Echo Precast Engineering. The customer can benefit from the advantage of a general contractor: everything from a single source and a central contact for all issues. This not only considerably reduces the customer's planning expendi-

ture, but can also have a positive effect on the course of the project, since there are neither complicated interfaces between different suppliers nor a multitude of software solutions.

Much use was made of automation for the new plant. A robot system, consisting of storage robot and shuttering robot with demoulding function, fully automatically shutters the pallets for the new occupation and carries out the demoulding with the aid of a scanner. Apart from the saving of personnel, the main advantage of such an automation concept is the high accuracy of the precast elements and the associated higher quality of the end products.

Production process in the pallet circulation

50 pallets that serve as carriers for the subsequent precast concrete elements are circulating in the pallet circulation. Before removal of the finished elements, a handling crane is used to remove windows, doors and attached shuttering from the pallet. The pallet is subsequently driven onto the tilting equipment in order to remove the finished wall elements vertically in the position in which it will be installed later on. Mobile steps facilitate the process for the operator. The shuttering robot with demoulding function scans the shuttering surface, recognises the shutters, picks them



The pallets are placed into and removed from the curing rack by the lifting transfer table.

up fully automatically after deactivating the magnets and then sets them down on a conveyor belt, which takes the shutters to a cleaning facility.

The shuttering surfaces of the pallets are cleaned by the mobile pallet cleaning facility. A storage robot sorts the shutters by length and places them back in the shuttering store. Subsequently, they pass through the release agent spraying facility on a conveyor belt. For the new occupation, the built-in components are drawn on the pallet

surface on a 1:1 scale with the help of the plotting function of the robot. The shutters are placed on the pallet by the shuttering robot with millimetre-precision and the reinforcements manufactured by the reinforcement machines are placed inside.

The pallet with the finished shuttering, reinforcement and all built-in components is driven to the concreting station. The concrete distributor discharges the fresh concrete evenly over the pallet by means of a screw system. After that the first concrete

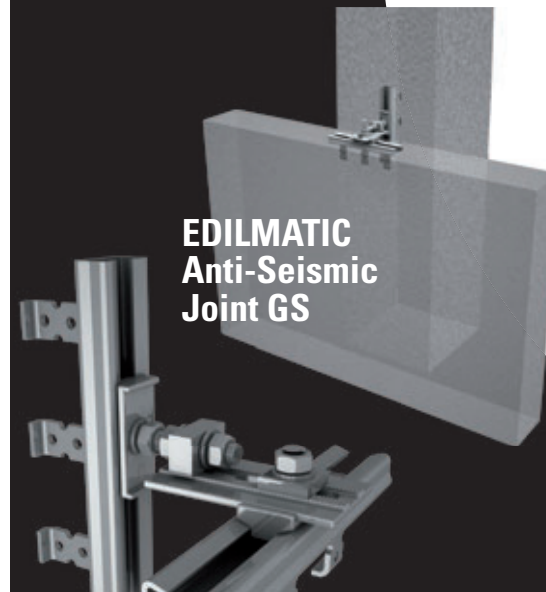
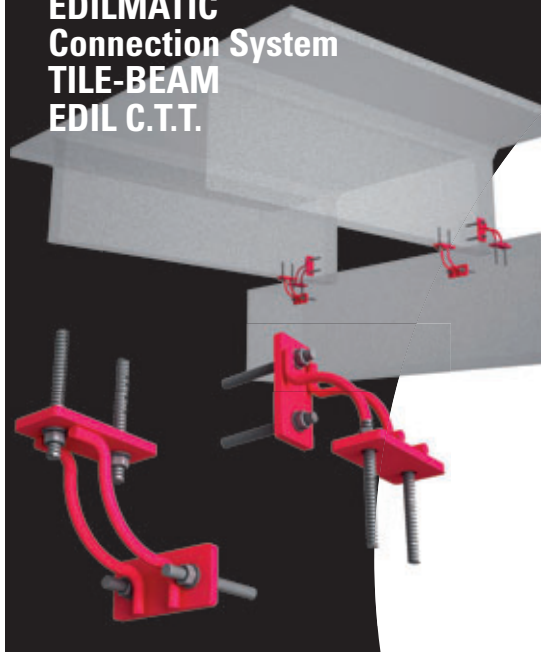


Following the pre-curing of the concrete in the pre-curing chamber the pallets are moved by the lifting transfer table to the 2nd level. A power trowel and four smoothing stations are available there for the fine smoothing.

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A tilting facility brings the pallets into an almost vertical position for the removal of the finished wall elements. Mobile steps facilitate the process for the operator.



The precast concrete elements are transported into the outdoor store by a run-off truck.



The new plant in Uljanovsk also has two tilting tables, which are equipped with a compaction and heating system.



For the production of precast concrete stairs the new production halls in Uljanovsk were equipped with two twin moulds, each equipped with a compaction and heating system.

layer is compacted by a compaction facility. To do this the pallet is set in motion in a horizontal and vertical direction and air inclusions are removed. Subsequently, the insulation and the reinforcement for the second layer are inserted. After concreting again, the fresh surface is drawn off and smoothed to the desired height by means of a vibrating levelling beam. The outer vibrators of the levelling beam are for smoothing and the inner vibrators for compacting. The pallets are then driven into a pre-curing chamber for the pre-curing of the concrete. Following a corresponding dwell time the pallets are taken by the lifting transfer table to a second level for fine smoothing. A power trowel and four smoothing stations

are available there for the post-processing of the concrete elements. Subsequently the pallets with the elements are driven into a stacking rack for curing. The rack consists of four towers offering space for 40 pallets. An integrated heating system accelerates the hardening process.

As soon as the elements are ready for removal, the lifting transfer table removes the corresponding pallets from the stacking rack. The removed wall elements are conveyed in transport frames by the run-off truck into the outdoor store and prepared there for the onward transport to the building site.

Production of prestressed concrete elements/prestressed hollow-core slabs

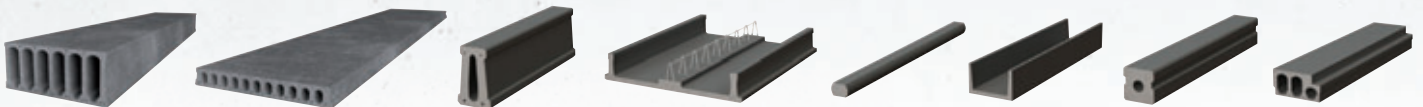
The prestressed concrete elements are manufactured in a separate hall aisle. The slip-former and all other machines (universal saw, multi-purpose truck, etc.) operate on a total of 5 production lines, each with a length of 126 m, on which prestressed hollow-core slabs in thicknesses from 6 to 40 cm can be manufactured. Beyond that this machine is also used for a completely different product range for the manufacture of joists, lintels, driven piles, etc. Compaction takes place with the slipformer by means of vibration technology and movement of the pipe and mould set.



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The cured concrete elements can be shortened to the desired length with the aid of the multi-angle sawing machine.



The finished prestressed hollow-core slabs are stored outside, waiting to be loaded and taken to the building site.

Stationary production

The new plant in Uljanovsk is also equipped with stationary production facilities. Concrete elements can be manufactured independently of the circulation on two tilting tables measuring 13 x 4.50 m. The tilting tables are equipped with a compaction and heating system. A levelling beam with attached power trowel serves to draw off and finely smooth the concrete. Prefabricated concrete stairs are manufactured with the two twin moulds.

The plant is now running so well that the customer has additionally ordered two battery moulds for the vertical production of interior walls. The moulds are to be supplied and installed by the summer.

Reinforcement production

The reinforcement meshes are produced just-in-time and in precise sizes on a mesh welding plant. The machine automatically receives



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the required CAD data from ebos. For the further production of reinforcements the new plant also has an EBA S 12 stirrup bending machine for the manufacture of stirrups and bars in the diameter range from 5-12 mm, plus a ladder welding machine for the manufacture of straight and curved ladder-shaped meshes off the coil, a machine for the processing of rebars and a Cage Star for the manufacture of welded reinforcement cages.

Zapad also invested into a completely new mixing plant from Wiggert, which supplies the required fresh concrete for the complete product range. A bucket track system, also new, conveys the concrete in sufficient quantities to the various discharge points. Mikhail Men, Russia's Minister of Construction, Housing and Local Economy, was clearly very positive about the construction and opening of the modern and efficient manufacturing plant. "It is an event with great symbolic significance", Men stressed, expressing his optimism despite the difficult economic conditions. He said that there weren't too many reserves in such times, but the construction industry is one of them. The investment in the new plant was an important contribution to the regional economy. 1.3 million m² of affordable living space is to be built by 2020. The team will even operate in 3 shifts in order to achieve the goals of the business plan. Zapad's chairman Nail Alimov also plans to deliver the finished elements outside of the Uljanovsk region. ■

FURTHER INFORMATION



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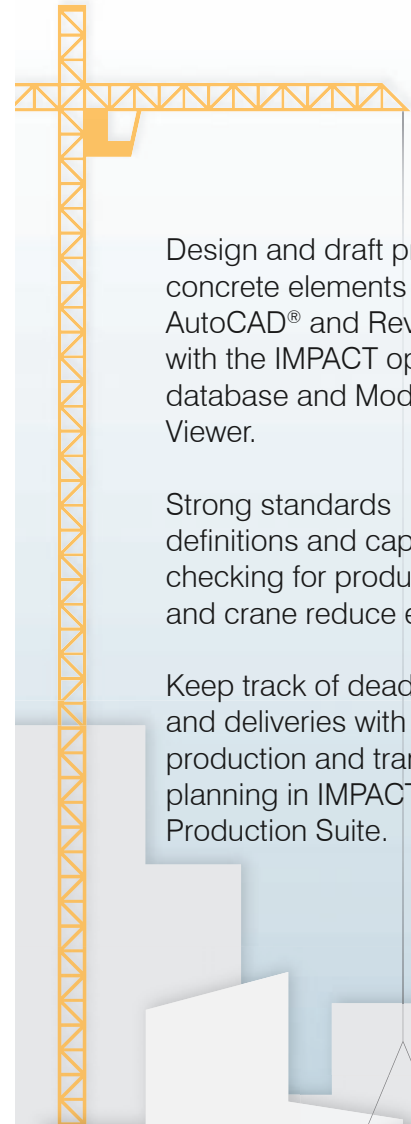


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