

Progress Group, 39042 Brixen, Italy



One of the biggest automated precast plants in Hungary started production

Viastein - Bayer is one of the most famous construction companies on the Hungarian market and has now invested significantly in automation and the fitting software as well as the innovative building system for some of the most advanced precast concrete products available on the world-wide market. Therefore, the company sets new standards and has invested in a bright future.

Building and securing the future with automation

Belonging to the 100% Hungarian-owned Bayer Construct group of companies, Viastein Kft., in addition to its existing paving stone factory, started production in its precast concrete element plant equipped with the most modern technology at the Biharkeresztes Industrial Park, located in the south-east of Hungary. Thanks to the investment, the costs of construction projects and the construction time are significantly reduced, because the assembly of the building itself can become much more efficient. With its 20,000-square-meter production hall, the newly commissioned unit is the largest automated plant in Hungary. The investment created 220

new jobs in the region. Built on a total area of 14 hectares, the plant enables the production of 60,000 m³ of elements and the construction of 2,000 apartments and 3-400 family houses.

The investment, which opens a new chapter in the field of pre-fabrication technologies in the construction industry in Hungary, serves the construction of industrial facilities, office buildings, residential buildings with products such as walls, floors, stairs and other supporting structures. Among the products, Bayer produces solid walls, thermo walls, twin walls, climatic slabs, insulated sandwich panels, stairs, columns, beams and much more.

The new plant provides state-of-the-art solutions

A precast plant as modern and automated as this one consists of many innovative machines working seamlessly together. In this case, the industry front runner chose another leader in its field for supplying the machinery and the relevant technology, the Progress Group. The company group



Viastein Kft belongs to the Bayer Construct group and is one of the biggest precast plants built in Hungary.



The new machinery from Progress provides an automated, more secure and cleaner production with higher quality products, made in a shorter amount of time.



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The finished prefabricated concrete walls and slabs can be produced under any weather condition and thus ensure a secure planning of the building.



The production hall has 20.000 m². With the different working stations more than one pallet can be worked on at the same time.

can provide complete solutions due to its various companies in the different fields. The machinery for the precast element production, the reinforcement production as well as the software has been delivered from this one source - the group companies Ebawe Anlagentechnik, Progress Maschinen & Automation, Tecnomcom and Progress Software Development. In addition to the sheer production methods also the produced elements are state-of-the-art licensed elements from Green Code. The system can provide a perfect indoor climate and additionally save energy while being the most efficient in heating and cooling as well as with highest air quality while also being acoustically optimized.

Managing Director of Viastein KFT, Kovács Zsolt explains the investment decision: "The main reasons for the choice of the Progress Group as supplier were the forward looking and highly automated approach of the company in all aspects of the precast building starting from the design to the production. The fulfillment of the customers' needs, in a way, in which the productivity and quality remains on the highest level, is impressive." and adds: „The knowledge center and experience "warehouse" of Green Code is boosting the development of the precast business in all areas. Quick reactions and well-aimed support are essential in order to reach the highest needs. With the help of Green Code and Progress Group, the learning curves can be shortened dramatically and the learning costs can also be minimized."

Modern production on pallets

The production of precast elements consists of three essential parts: the rebar and mesh production, the software system and of course the carousel plant technology from Ebawe Anlagentechnik in which the pallet is circulating with the precast element and transporting it to the various steps of produc-



The marker for the placement of the shutters are made precisely with the help of the integrated software and fine lasers.



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tion. Within the carousel plant, the first step is always to clean the pallet, which has been released from the rail-mounted pallet stacker. There the finished elements were stored for curing and have been made ready for shipping with the help of the highly functional tilting equipment and the run-off carriage with a load capacity of 25t. After being de-shuttered automatically and cleaned on the pallet cleaning device, the pallet is sent back into the system for a new production sequence. The shuttering and de-shuttering robot Form Master, a highly automated machine, is working with the provided CAD/PXML data. The data is being transferred onto the pallet with a fully automated plotter, which is marking where the shutters need to be put, including a highly accurate laser positioning system.

Flexible Mesh production with high output

The bespoke mesh for the precast elements is also produced highly automated with the innovative M-System Evolution mesh welding plant from Progress Maschinen & Automation. Through its high output and automated production this plant is offering an even higher flexibility of production of the tailored mesh ensuring every combination of lengths, widths and pitches as well as bar sizes of up to 16 mm. The resistance spot welding robot and the integrated production process control system are the corner stones of this plant. The CAD CAM data input capability, the system monitoring and the error diagnosis are essential features of the system. The welding is carried out by the gantry welding robot, which is computer-controlled, and with that guarantees precise production and efficient energy usage. Furthermore, the wire changeover is performed fully automatically, and all wire diameters are permanently clamped into their own rotor and available just in time. The run-off is pneumatically driven, 10 m long and equipped with catching stations on its entire

length. The facility is also equipped with a mesh stacking carriage and an automatic magnetic traverse, for the mesh transport. The complete mesh for the pallet is removed by the magnetic traverse in the determined sequence, guided by CAD CAM instructions and then placed on the correct pallet.

Automation and software - the dream team of modern production

After the positioning of the reinforcement into the element, the pallet moves on to the next station. A fully automatic concrete spreader accelerates and for compaction of the freshly poured concrete, compacting devices are installed suitable for variable and particularly heavy loads ensuring a high-quality element surface at the same time. After curing, the pallets containing the finished precast elements are de-stacked from the curing rack by means of an automatic controlled pallet stacker. In the background, the software from Progress Software Development, is ensuring a high-quality production. With the implementation of the MES system ebos®, the plant has an overall solution that takes over production planning and accompanies every step of the manufacturing process: from data input, work preparation to production control and process analysis. All aspects of the manufacturing process can be carried out in a single user-friendly system. The innovative 3D visualization of the carousel plant makes it even easier to keep an eye on production from everywhere. The mobile application "ebos, providing information on the complete production process, contributes to a paperless factory and ensures an even more sustainable production.

ebos is part of the digital platform and together with e[®]ebos®, guarantees a seamless vertical integration of all the business and production processes of Viastein Bayer across the different plants.



The shutters are placed exactly and automated according to the CAD planning.



The M-System mesh welding plant is providing a high output with very high flexibility and automation and is producing directly from coil.



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Viastein Kft. hall with the moulds for the production of columns, beams and stairs

The e^{PC}bos solution, which was especially developed for the precast concrete industry, functions as a higher-level ERP system and provides specific industry functions in order to support the business processes. From sales, project management, engineering to production, assembly planning, logistics and supply chain management, everything is perfectly integrated and managed in this central system. The complete project life cycles are constantly updated, making it easy to keep costs and time under control at all times. Real-time decisions can be made based on production, capacity, and costs.

Moulds for beams, columns, and stairs

Within the new plant, various forms of moulds have also been installed. With a special mould from Tecnocon, beams with a total length of up to 50 m can be produced. Another shutter secures the production of columns of up to 20 m in length. In addition to that also the stair production has been automated and can be ensured by two innovative new mould systems.

A vertical staircase mould with landings which can produce stair elements with up to 18 steps and an electric adjustable horizontal staircase ramp, which secures the flexible production of staircases in different inclinations as they can be adjusted from 25 up to 40 degrees of inclination. On the top and bottom parts of the mould, there are two landings with 2x3 m hinges, and the inclination is managed by electric motors.

Ready for the future

“The Progress Group fulfilled our expectations with the quality, support and mentality they deliver. For example, the Progress Software Development provided us with a great roadmap for the implementation, support and maintenance of the e^{PC}bos and ebos systems belonging to the production lines. The custom needs were handled and the customization of the solutions (machines and software) were done on a high level.”, said Viastein KFTs managing director.



The beams and columns can be produced in the factory and then installed in no time at the construction site.



One of the biggest first projects, which has been built with the concrete elements was a Hotel in Gyergyóremete.

The new factory ensures that the challenges arising in the construction industry in terms of capacity, construction time and quality can be effectively handled with the most modern possible solutions. The production of precast products also serves this very purpose, with their help, construction costs and construction time are reduced and individual construction projects become much more efficient. ■

Bayer is a proud Green Code partner - for sustainable construction

Green Code is an innovative and sustainable building system that consists of insulated wall elements and acoustically as well as thermally optimised floors. The entire system is aimed directly at architects, developers, and investors. For precast concrete plants, the Green Code system offers comprehensive service and training, continuous product, component, and approval development as well as ongoing quality support through standards, guidelines, and documentation.

FURTHER INFORMATION



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