

Ebawe Anlagentechnik GmbH, 04838 Eilenburg, Germany

New carousel technology strengthens traditional firm

Forward-looking thinking has always been part of the corporate philosophy at Albert Regenold GmbH of Bühl-Vimbuch in Middle Baden. It's no coincidence that the concept of the double wall was jointly developed by the traditional precast concrete element manufacturer in the 1960s. With its latest decision to invest in modern technology and to erect a plant for the manufacture of double and solid walls as well as lattice girder floors in the existing hall, the company has secured itself a good starting position for the future. Prilhofer Consulting supported Regenold as consultant, master planner and coordinator in this project. Ebawe Anlagentechnik und Progress Maschinen & Automation, both companies from the Progress Group, were responsible for the development and installation of the plant.

Increase in efficiency, optimisation of quality, automation of production – these three catchphrases are more current than ever before, and that goes for the precast industry, too. The goal is to manufacture products in a constantly high quality, at competitive prices and in accordance with the customer's wishes. Modernisation or new construction of the production plants is often unavoidable if this is to be achieved. Albert Regenold GmbH from Bühl-Vimbuch chose the latter option and the installation of a completely new wall and floor production plant in the existing production hall. The new carousel plant has been in operation together with the modernised reinforcement production for several months now. A major part of the goals has already been attained.

The goals – to increase productivity and lower operating costs

A modernisation of the production plants had long been under discussion in the past years at Regenold. "Our equipment was already

relatively modern, which is why initially the floor slab production in particular was to be modernised", explains Harald Sommer, owner and Managing Director. "But then we decided on a complete reconstruction in order to be able to attain our goals of work facilitation, shorter routes and a reduction in the consumption of energy." This was a carefully considered step for the family-owned company from Middle-Baden, whose history stretches back over 90 years. Productivity was to be increased and operating costs lowered. The solution was a carousel plant with a high level of automation and integrated reinforcement manufacturing for the production of double and solid walls as well as lattice girder floors.

Consulting, master planning and overall design by Prilhofer Consulting, technology from Progress Group

Prilhofer Consulting, who are active around the globe in consulting and planning in the field of the industrial production of precast con-



Regenold has succeeded in increasing productivity and lowering operating costs with the construction of the new carousel plant.



The shuttering and deshuttering robot plays a key role in the increase in efficiency and quality: the Form Master carries out all the work steps fully automatically and with high precision.



The fully automatic concrete distributor ensures that the fresh concrete is discharged accurately and evenly.

crete elements, developed the concept for the new production plant and the invitation to tender for all participating machine and plant suppliers. Prilhofer Consulting also advised the precast element manufacturer on the choice of suitable technology suppliers. "Prilhofer were a great help to us with their know-how and an important backup in the selection and decision-making phase", adds Frank Frey, Technical and Project Manager.

"The challenge with this project was to integrate the existing hall and mixing plant into the concept. However, the narrow budget and the smooth transition from the existing plant to the new production plant were thoroughly demanding in their implementation", says Christian Prilhofer, CEO of Prilhofer Consulting.

The contract for the construction and installation of the new plant was ultimately awarded to Ebawe Anlagentechnik and Progress Maschinen & Automation, both companies from the Progress Group. "The two machine manufacturers developed our specified layout in the right direction and convinced us with their proposed solutions", adds Managing Director Sommer.

Comprehensive reconstruction measures

Work began on the reconstruction as soon as the last precast concrete element had left the old production plant at the end of December 2015. The production hall was enlarged by two extensions and existing systems such as the heating and recycling plant were relocated. The existing lattice girder production was also relocated so that it can continue to be used for the new carousel plant. The new plant was installed in parallel to the extension measures.

High level of automation positive for production process and product quality

Double and solid walls as well as lattice girder floors have been in production on a total of 50 pallets since last summer. Floors make up 60% of production and wall panels 40%. "We are already very satisfied with the result even now, just a few months after the start of production", says Technical Manager Frey. The high level of automation has a very positive effect on the production process and product quality at two stations in particular: the shuttering/deshut-



A straightening, cutting and bending machine of the type MSR16 BK was integrated into the carousel. Like the lattice girders, the bars produced are inserted manually.



Floor elements account for 60% of the precast concrete element production at Regold. The precast elements are used in residential, commercial and industrial construction on the German and French markets.

tering of the pallets and the discharge of the fresh concrete. "The two technical solutions used for this – the Form Master shuttering and deshuttering robot and the automatic concrete distributor – are the highlights of the plant for me", Frey explains.

Shuttering and deshuttering robot: precision guaranteed

The shuttering and deshuttering process is fully automatic. At the start of the process, a storage robot takes the required shuttering profiles out of the store and transports them to the shuttering robot. They are then placed on the shuttering surface according to the CAD specifications. At the end of the production process a scanner detects the positions of the shuttering profiles, unlocks them and feeds them to the cleaning system. The shuttering profiles are subsequently returned to the store. "The shuttering robot gives us the certainty that the precast concrete elements can be manufactured with 100 percent precision", says a satisfied Frey. "Not only that, the physical stress for the employees has been reduced to a minimum."

Fully automatic concrete distributor: efficiency as the biggest positive

According to Frey the new fully automatic concrete distributor offers similar advantages: "The biggest positive is the efficiency with which we can now discharge the fresh concrete." Thanks to automation, manual labour can be dispensed with for this production step too. "How well the concrete was manually discharged was not least always a question of experience prior to the reconstruction", Frey adds. Possible human misjudgements or errors can now be ruled out from the start.

Modernised reinforcement production

The necessary reinforcement is partly produced at the corresponding station, partly transported there and placed in the pallets. A new straightening, cutting and bending machine of the type MSR16 BK, developed and installed by Progress Maschinen & Automation, is used for the manufacture of the bars. Since the reels were positioned in a hall extension, the wires are fed to the plant via a double deflection. After being straightened and cut to length, the bars can be bent with the aid of a wire end bending device. They are then placed manually on the pallets. The lattice girders – produced in advance in another part of the hall and transported to the station by a trolley car and overhead crane – are also manually inserted.

Software as a control and analysis tool

An important component of the new plant is the software. "For me, a well-functioning control system is the most important point in a carousel!", states Frey. The Progress Group ebos® software solution was installed at Regenold. ebos extends beyond the concept of a simple master computer and accompanies all aspects of the production cycle in an integrated fashion. A series of functions supports the control and analysis of the work steps. For instance, Regenold use the analysis tool GPA (Graphical Performance Analyzer) for the examination of the production process. With the aid of this tool it is possible to play back the entire process sequence afterwards and thus to recognise bottlenecks and optimisation possibilities at a glance.

Regenold: good starting position for the future

Frey is convinced: "It was the right decision to build the plant in this form and in co-operation with the Progress Group and Prilhofer



From left: Uwe Sommer (Managing Director), Harald Sommer (owner and Managing Director) and Frank Frey (Technical and Project Manager)

Consulting. The result is ideal for us as a company." According to Managing Director Sommer, Albert Regenold GmbH is now in a good starting position for the future. "I am also absolutely positive about the future of precast concrete construction", he declares. "It's not for no reason", says Sommer, "that we have been collaborating for a long time on this future in various committees." As far as the company itself is concerned, this belief in the future was noticeable right from the outset: the first double wall, whose concept was jointly developed by the precast element manufacturer, was produced in the 1960s at Regenold. ■

FURTHER INFORMATION



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