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Increasing demand in private residential construction: Geelen Beton invests in new carousel plant

The traditional Dutch precast concrete element manufacturer Geelen Beton has long concentrated on the production of elements for large infrastructure installations and manufactures solid walls, lattice girder floors and insulated ceilings in its two production plants. With the trend towards construction with precast concrete elements also increasing in the private housebuilding sector in recent years, the company decided to completely rebuild the carousel plant in Wanssum. The aim was to align the production to present-day requirements: highly automated and standardised, but at the same time flexible. An appropriate plant concept was realised within a short space of time in collaboration with Ebawe Anlagentechnik, a Progress Group company.

The Dutch precast concrete element manufacturer Geelen Beton has played a pioneering role for decades when it comes to keeping machines and production processes up to date. Family owned up to the present day, the company founded in Posterholt near Limburg in 1923 mechanised its production as far back as the 1950s. In the decades that followed, Geelen Beton constantly kept up with the latest technological developments and in doing so created the basis for its current success.

Reason for reconstruction: trend towards precast concrete elements in private residential construction

The main plant in Posterholt for the production of precast slabs with in-situ topping was joined in 1987 by a second precast plant in Wanssum for the manufacture of solid walls, lattice girder floors, insulated ceilings and structural precast concrete elements. Geelen Beton concentrated for a long time on precast concrete elements for large infrastructure installations, such as hospitals, schools, prisons and office buildings. With a trend towards construction with precast concrete elements becoming apparent in the private housebuilding sector too in recent years, the company decided to completely rebuild the plant in Wanssum. The goal was to completely automate production and to standardise the end products – but at the same time to design the plant to be so flexible that individual requirements can also be met. Together with Ebawe Anlagentechnik, a Progress Group company, an appropriate plant concept was subsequently developed and implemented.

Goal: Standardised, yet flexible production



Niels van der Hulst,
Technical Director
at Geelen Beton

"With this new plant we want to support our customers in being able to work more quickly", explains Niels van der Hulst, Technical Director at Geelen Beton. "Our precast concrete elements should therefore not only be produced quickly, but should also leave the plant already containing all built-in components. It should be possible to install windows as well as water pipes and electrical cables in our factory", he adds. According to van der Hulst, the necessary precision can only be achieved by fully automating the production processes. "To do that we had to standardise the end products. That wasn't to be at the cost of flexibility, though", he adds.



One of the highlights of the carousel plant is the Form Master shuttering and deshuttering robot. Thanks to the fully automated work steps, the precast concrete elements can be produced flexibly and quickly.

Carousel plant with 46 pallets and a small footprint

Following the signing of the contract in October 2015, the new carousel plant went into operation a good seven months later in May 2016. The complete plant was installed in an existing production hall in Wanssum, onto which an extension was built. "Together with the Progress Group we have managed to achieve high production on a small area", says a satisfied van der Hulst.

A total of 46 pallets circulate in the plant. The pallets, which were manufactured by Ebawe and machined using a proprietary grinding process, are characterised by a very smooth, laser-tested shuttering surface. This is of the utmost importance for the surface quality of the precast concrete elements.

Shuttering and deshuttering robot for production continuity and flexibility

One of the highlights of the complete pallet circulation plant is the Form Master shuttering and deshuttering robot. At the start of the shuttering process, a storage robot takes the required shuttering profiles out of the store and transports them to the shuttering robot. The latter then places them on the shuttering surface according to the CAD specifications. The shuttering robot is also used for the fully automatic placement of electrical socket magnets.

Following the end of the production process, the same system scans the pallet, unlocks the shuttering profiles and feeds them to the cleaning system. The latter has been equipped with special brushes so as not to damage the aluminium-coated shuttering profiles. The shuttering profiles are subsequently returned to the store.

The Form Master makes a huge contribution towards the production continuity and flexibility in the Wanssum plant. Niels van der Hulst puts it more precisely: "We can now produce new elements quickly and at any time - standardisation and flexibility are not mutually exclusive. Apart from that, flexibility doesn't automatically mean inefficiency."

Patented system for the shuttering process

Infinity Line®, a system developed and patented by the Progress group, is additionally used in the shuttering process. It combines the shuttering profile lengths and enables the number of shuttering profiles required to be reduced to a minimum. In addition, polystyrene elements can be dispensed with, allowing gap-free shuttering. The result: a simplified, inexpensive shuttering process and precast concrete elements with flawless outer edges.

More than a master computer: the ebos® software

The entire carousel plant is controlled by the ebos software, which was developed by the Progress Group. This all-inclusive solution, which extends beyond a simple master computer, accompanies all aspects of the production sequence in an integrated fashion. Ebos' special analysis functions make a major contribution to the planning capability and transparency of the production. From work preparation to production to process analysis – ebos is an important building block in the Geelen Beton plant and ensures transparency and production continuity. Niels van der Hulst is convinced: "The complete controller is clever."

Long-term successful cooperation between Geelen Beton and the Progress Group

Van der Hulst recalls the start of the cooperation with the Progress Group: "Even when the first cooperation with Progress Maschinen & Automation (also a Progress Group company) took place in 1996, the controller of the reinforcement machines was ahead of its time." So far the reinforcement manufacturing in the Wanssum plant has been extended and modernised twice more with plants from Progress Maschinen & Automation. "I found cooperation with the Progress Group to be very simple from the very beginning", comments van der Hulst. "The team understand what we want and what



The carousel plant was installed in a hall in Wanssum onto which an extension had been built. The decision to reconstruct was taken on account of the increasing demand for precast concrete elements for private residential construction.

The new PFEIFER PCC column shoe system

Fast and secure anchoring – even when it's frosty



The type-approved PCC Column Shoes are intended for the rigid connection of precast concrete columns to the foundations. The advantages lie in the simple, load-bearing bolted connection of concrete elements and thus a considerably faster assembly.

- favourable precast element geometries – efficient precast element transport is possible by separating the foundation and the column
- no elaborate measures necessary to support the precast elements during assembly, therefore advantages through spacious, unobstructed working areas too
- flexible assembly procedure – due to elimination of the grout curing times
- weather independent – largely weather-independent assembly possible. Even in case of frost



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Geelen Beton's declared goal is to shorten the construction time. For instance, the windows are already pre-installed in the plant.

we need – in addition to which they know the production process and products precisely."

Geelen Beton: Full-range supplier with innovative products and assembly concepts

Geelen Beton distinguishes itself with innovative processes where the products are concerned, too. "We have developed a special assembly concept for our customers", van der Hulst explains. "In conjunction with the Casco walls we enable the building contractor to achieve a good result with less use of materials and in a shorter

time." According to van der Hulst it is advantageous that Geelen Beton has "control of all processes". Enormous importance is attached within the company to in-house planning and manufacturing. "Static calculations, technical drawing, reinforcement and precast concrete elements – we do everything ourselves", he says. Van der Hulst is sure that the success currently being enjoyed by the precast concrete industry in the Netherlands will continue. He says he is convinced that the precast concrete construction method will become even more important and successful in the coming years: "It is quite simply quicker and safer to build with precast concrete elements." ■



The precast concrete construction method is now also very popular in private residential construction. A special assembly concept enables Geelen Beton's customers to realise buildings within the shortest time.

FURTHER INFORMATION



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