

Twin Mixer Plant for the new Concrete Pipe Factory of P.V. Betonfertigteilewerke at the Nisterau site

■ Mark Küppers, CPi worldwide, Germany

The P.V. Group is among the well-established manufacturers of precast concrete products for civil engineering, infrastructure and building construction. The factory located at Nisterau in the Westerwald, has been part of the P.V. Group of companies since 2021 and plays a key role within the group. With the construction of an entirely new factory, P.V. has extensively expanded the production capacities at this site. The cornerstone of the investment is a 5,000 m² production hall with capacity to accommodate large-sized precast concrete elements as well as concrete pipes. The new factory was officially inaugurated in June 2026 and, according to the company, is the largest single investment to date in the history of the P.V. group of companies. The technical equipment includes a new twin mixer plant from Wiggert with two HPGM 1875 planetary countercurrent mixers as well as the dosing technology that goes with them. Pipes are produced on a new radial press RP from Prinzing Pfeiffer, and the required reinforcement cages are manufactured using a VTA-series cage welding machine from Progress Maschinen & Automation. For quality control of the produced pipes, there is a pipe testing line from Messmann. The following report focuses on Wiggert's mixing and dosing technology. At the time of the visit, the remaining equipment items were still in their commissioning phase and will be presented in detail in one of the following issues.

With 16 locations throughout Europe, the medium-sized P.V. group of companies designs and manufactures pipes, manholes, cable ducts, special structures and customized precast elements made from reinforced concrete. The products are used in the construction and refurbishment of wastewater channels, in rainwater management, and for the expansion of the energy and telecommunications infrastructure.

With its decentralized production structure, the P.V. group aims to combine regional customer-centric approach with industrial manufacturing expertise. In addition to standardized precast concrete elements, the P.V. group portfolio also includes customized solutions for individual projects. These projects are comprised of environmental protection products and permanently safe underground infrastructure. This includes concrete pipes made from traditional concrete and reinforced concrete, as well as sophisticated pipe and manhole systems.

System solutions for long-life sewer networks

The focus of the Nisterau site is the development and production of the Fabekun® sewer pipe system. Other products manufactured in Nisterau are various pipes, fittings, manhole base sections and customized solutions for sewer construction and civil engineering.



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Flushing manhole and Fabekun® sewer pipes.

Fabekun combines concrete and synthetic material

The Fabekun sewer pipe system is one of the most important products produced at the Nisterau plant. The system solution combines the structural properties of a pipe made

from conventional or reinforced concrete, with the corrosion resistance and hydraulic characteristics of an internal plastic pipe. While the outer concrete casing provides the necessary stability to withstand loads from soil, traffic and groundwater, the internal PVC pipe protects the system against damage

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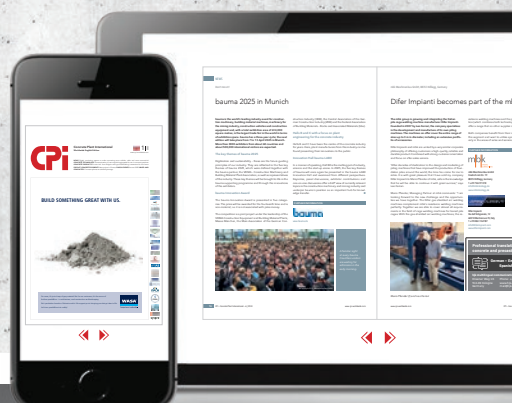
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View of the new production hall with the aggregate bins and binding agent silos.

caused by chemicals. This is particularly important for sewers, in which sulphuric acid is produced by biological processes and can harm conventional materials in the long run.

According to the manufacturer, the piping system is suitable for media in a pH range of 2 to 12. The plastic pipe is integrated into the concrete casing without fixed ribbing or anchoring. This concept allows different temperature-related longitudinal expansions of the two materials to be absorbed without generating critical stresses.

A special feature is the Fabekun double-sealing system. The pipe connection has an internal, chambered seal for connecting the plastic pipes, as well as an external lip seal in the concrete pipe. Both seals operate independently of one another. This is intended to ensure a permanently high level of sealing even with slight angular deviations of the pipe connection.



View into the production hall with an area of approx. 5,000 m².

The Fabekun sewer pipes are produced in nominal sizes from DN 250 to DN 1200 in accordance with DIN EN 1916 and DIN V 1201.

The flushing manhole uses rainwater for sewer cleaning

Another patented product from the Nisterau plant is the flushing manhole. It was developed for sewer sections in which there is an increased risk of deposits, caused by low sewage volumes, low gradients or longer dry periods.

The flushing manhole relies on a simple, purely mechanical functional principle. In a first step, rainwater is collected in a storage tank inside the manhole. Once a volume of around 600 litres is reached, the flushing mechanism is triggered automatically. The stored water is discharged in surges into the connected sewer and generates an increased drag force.



The aggregates are stored in 7 inline aggregate bins that are embedded into the foundation and have a total volume of approx. 400 m³.



The aggregates are batched via double dosing gates that are integrated into the bottom part of the aggregate bins.



Moisture measuring probes are fitted to the dosing gates on the sand bins of the aggregate storage facility.



Depending on the direction of belt travel, the distribution belt fills one of the two skip hoists.

This ensures that buildups can thereby be loosened and transported further in the direction of flow.

The system operates without an external power supply because no pumps or electrical controls are required. This reduces technical complexity and can facilitate operation, particularly in sewer sections that are either remote or hard to reach. At the same time, comparatively moderate volumes of water are used for flushing, so that there is less strain on pipes and connections than with certain conventional high-pressure cleaning methods.

Modern dosing and mixing technology as the basis for high-quality precast concrete elements

To be prepared for future challenges in terms of concrete quality, the team from P.V. Group opted for Wiggert & Co. GmbH's technology as part of the project planning for the new production hall at the Nisterau site. The initial idea was to have a plant with one mixer only. However, as the project progressed, it was decided to invest into the radial press from Prinzing Pfeiffer and pursuant to that decision, the concept



Wiggert's twin mixer plant was delivered in factory-prefabricated modules, enabling fast and easy installation.



The core elements of the newly installed double-mixing plant are the two Wiggert planetary mixers of type HPGM 1875.

was expanded to a plant with two mixers. When in operation, concrete is supplied from one mixer exclusively to the radial press, while the second mixer is used for all the remaining production.

Seven in-line aggregate bins with double dosing gates

Aggregates are stored in 7 in-line bins with a total volume of approx. 400 m³. The bins are made from reinforced concrete and lowered into the foundation. The trucks delivering sand and gravel, dump these directly into the individual bins, so that there was no need to include an aggregate loading system.

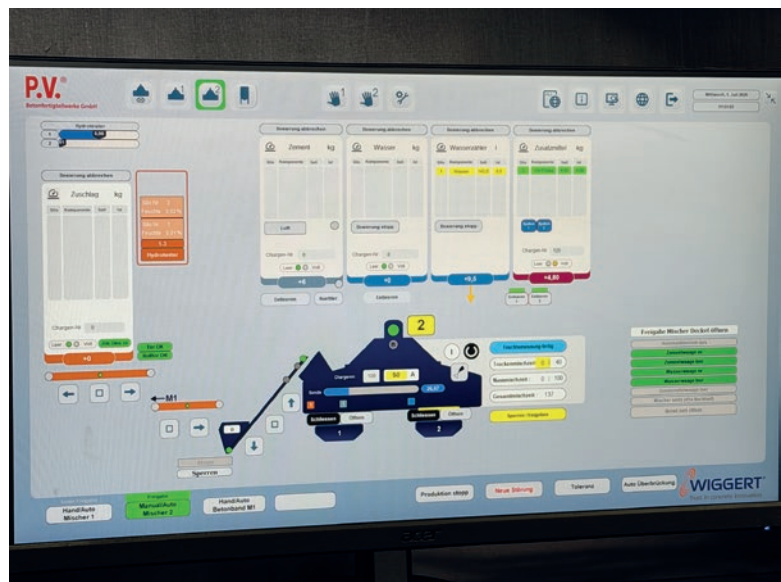
In compliance with the mix design parameters, the preset quantities of aggregates are dosed one after the other via double dosing gates mounted at the bottom of the aggregate bins onto the weigh belt arranged underneath.

Moisture probes

To ensure exact compliance of the batch with all applicable mix design parameters, several features were implemented both in the dosing system and on the mixers themselves. For sand weight correction, moisture probes are mounted on the dosing gates of the sand bin of the aggregate storage facility. The opening times of the dosing gates are adjusted automatically based on the probe's measurements of the sand's moisture content, so that the sand quantity for the respective mix design is batched.

Automatic coarse and fine dosing

Weighing by means of electronic load cells ensures high accuracy and trouble-free operation. Automatic coarse and fine dosing of aggregates in combination with integrated tailing correction ensures high repeatability of the dosing procedures.



All parameters at a glance: The concrete batching & mixing plant is operated via Wiggert's WCS control system.

Following batching of all aggregates, the material is transported from the weigh belt via a distribution belt to the bucket of one of the two skip hoists and from there to the corresponding planetary countercurrent mixer.

Twin mixer plant

The core elements of the newly installed twin mixer plant are the two Wiggert HPGM 1875 planetary countercurrent mixers, each with a compacted concrete output of 1.25 m³ per mixing cycle. As already mentioned, one mixer is used for drycast concrete, whereas the second one is used to produce easy-to-process concrete for the remaining production.

The mixer lining with Wicodur 4000 composite armoured plates guarantees a long service life. The mixers were also equipped with an automatic high-pressure mixer cleaning system to minimize cleaning times when switching to a new mix design and at the end of the work shift.

The water scale mounted on the mixer allows fresh water to be pre-dosed to shorten water addition times. Cement is delivered to the plant via screw conveyors from binding agent silos arranged directly at the production hall. The silos are equipped with state-of-the-art features like aeration devices, air-shock filters, overfill protection and radar level indicators.

Microwave probe

A microwave measuring probe is integrated into the mixer bottom for determination and regulation of the preset moisture value. Following discharge of aggregates, cement and – if required – further materials into the mixer, dry mixing takes place as a first step. Upon expiry of a defined dry mixing time, the installed probe determines the moisture content of the batch inside the mixer and compares it to the value being required for this mix design. Any additional water necessary



Radial press RP from Prinzing Pfeiffer, a high-performance machine for the production of pipes made from conventional concrete and reinforced concrete as well as for pressure pipes in various sizes, and the first reinforced concrete pipes produced in Nisterau.



to obtain the target value is added to the mixer via a water meter. Once the subsequent wet mixing time has elapsed, the drycast concrete is discharged onto a conveyor belt and transported to the production plant for pipe elements. The easy-to-process concrete produced in the second mixer is discharged via a chute into a mobile concrete bucket.

WCS control system and mobile Touch Panel

The mixing plant is operated via Wiggert's WCS control system that has been developed in-house. It is based on the

Microsoft Windows operating system and a Siemens PLC. The control system provides simple and clear monitoring of all plant functions. These include mixer status, moisture correction, plant status, management of mix designs and storage data administration.

Production of the required concrete is initiated via a mobile Touch Panel that is hand-carried by the forklift operator. Among other parameters, the Touch Panel allows selection of mix designs and input of the required quantities.



Progress cage welding machine of the VTA series for the production of reinforcement cages.



The pipe testing line from Messmann is used for quality control.

Concrete call is also possible via a level sensor that is installed in the feed hopper of the processing machine. Following concrete call, the batch is produced according to the mix design stored in the main control system and then automatically conveyed to the pipe machine.



Very satisfied with the new production, plant manager Fabian Fasel (right) toured the site together with Rainer Schiefer (left) from Wiggert and Mark Küppers from CPI worldwide.

Long-term commitment to the site

The investment into the new concrete factory not only strengthens the position of the Nisterau site within the P.V. group, but also improves the supply of products for infrastructure projects in the Rhineland, the Rhine-Main region and beyond. At the same time, the company is thereby making a long-term commitment to the production site in Nisterau and to industrial value creation in the Westerwald.

FURTHER INFORMATION

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