

Kniele GmbH, 88422 Bad Buchau, Germany

Runkel Fertigteilbau equips its plant for even more demanding tasks

■ Mark Küppers, CPI worldwide, Germany

The Runkel group of companies has its roots in Remscheid, where a construction company was founded in 1898. The opening of a branch in Siegen followed in the 1934. It continued as an independent company in 1954. The enormous housing shortage after the war was also decisive in housing forming the initial focus of business activities. That led to the establishment of the Runkel Freien Wohnungsunternehmen - today's Runkel Treubau - which is successful in the project development and developer field. In addition, Runkel Hochbau undertakes turnkey development of projects in residential and commercial construction as general contractor. Due to its expert, reliable development of construction projects, it is a sought-after partner of small and medium-sized companies for turnkey building projects of every kind. Production and delivery of large-format precast concrete elements such as columns, girders, wall elements and demanding individual building components for trade and industry began with the foundation of Betonwerk Dielfen (today Runkel Fertigteilbau) in 1962 in Wilnsdorf-Niederdielfen. Some time ago, the decision was made to invest 4 million euros in a thorough modernisation of the precast plant, including new mixing technology, which was supplied by the Kniele company. A stated goal of the modernisation project was high-quality precast architectural concrete elements.

Runkel produces precast concrete elements at two locations. The Siegen company became involved in the new federal states at an early stage. This led to the construction of a second precast plant in Emleben near Gotha. This location has also produced high-quality precast concrete elements since May, 1993. Today, the management team at the head of the Runkel group of companies from Siegen, with its 135 employees, consists of Dipl.-Kfm. Friedhelm Runkel, Dipl.-Ing. Reinhard Willmes and Dipl.-Ing. Peter Körner. Modern, environmentally-conscious production technology and qualified, highly motivated employees serve a supra-regional base of primarily industrial and trade customers.

Runkel relies on close ties with its employees. Thus, both Runkel Fertigteilbau plants primarily use their own staff. All of the employees come from the region and have close ties to the company. And with 4 female employees in production, the staff composition is not really typical of the industry.

Step-by-step to the goal

To achieve the stated goal of significant growth in the high-quality, precast architectural concrete elements field, Runkel has modernised the precast plant in phases. Firstly, it involved adapting or expanding the facilities for the new requirements and secondly, creating excellent working conditions for the staff.



The Runkel precast plant in Siegen



KKM 2250/3375
cone mixer

The mixing principle of the Kniele cone mixer is based on a cone-shaped mixing trough.

In the first step, the production building was modernised, the work places were equipped with optimised lighting and dark radiator heating created very efficient, comfortable temperatures in the production area. The radiator heating warms the bodies of personnel, but not the air in the hall. This makes it very energy efficient.

A conical mixer as the basis for success

In the course of this restructuring, expansion of the mixing tower was also essential. Runkel had two essential requirements that had to be implemented. The production output had to be increased and additional aggregate silos had to be installed for special ingredients in the production of architectural elements.

1st building phase

In the first building phase, a 2.0 m³ KKM 2250/3375 conical mixer was installed alongside the existing concrete mixer. A stronger drive was planned for the internal agitator so larger quantities of self-compacting concrete could also be produced in the future.

Kniele cone mixer – „ successfully in operation since 2000

The mixing principle of the Kniele conical mixer is based on a conical mixing trough. A homogenous mass is created in a short time due to the two counter-rotating agitators.

Two coaxial agitators are installed on the central axis of the Kniele cone mixer. One agitator consists of a cylindrical or conical screw or helical blades while the second agitator has mixing arms with mixing paddles that scrape the mixer container surface in contact with the mix.

The central helical agitator drives the mix upwards in a vertical direction, imparting a rotational movement to the mixture forwarded by the screw. The outer mixer arm agitator counteracts this rotational movement. A powerful whirling and a fast, thorough mixing of the entire mixer contents are achieved due to these opposing, transverse mix flows.

With its cone mixer, Kniele's promises include streak-free blending of colours and no loss of quality when mixing minimum quantities. The cone mixer can be com-

Kniele mixers and plants

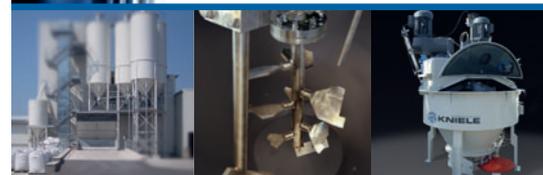
Mixing plants made to your requirements:

- Fiber concrete
- Foam concrete
- Styrofoam concrete
- Mineral cast
- Ultra-high performance concrete
- Self-compacting concrete
- Dry mixtures
- Dry mortar
- Suspensions
- Floor screeds

Mixing systems for:

- Pocket silo plants
- Row-type silo plants
- Batch plants
- Special mixing plants
- Mobile plants
- Renovations, modernisations
- Pharmaceuticals and chemistry
- Foodstuffs
- Recycling
- Laboratories

HighTech - Made in Germany



pletely emptied a short time and the funnel-shaped construction is very space-saving.

The cone mixer has very diverse applications. Due to independent control of the speeds of both agitators – especially the inner agitator – both liquid and earth-moist concrete can be produced with the cone mixer. Furthermore, according to the manufacturer, this mixer type is also especially suitable for special concretes, such as UHPC und SCC, fibre reinforced concretes, lightweight concretes, heavy concretes, etc. The infinitely variable control enables precise adjustment to the specific mixture and significantly reduces the mixing time of these special concretes thanks to this optimisation.

The new mixer was equipped with a mixer flush to enable fast product changes and reduce final cleaning to a very short period. There is very little contamination due to the installation of forced dust removal. Additional technical equipment includes a double-chamber cement scale for grey and white cement, a negative scale for the water and a 2-chamber admixture scale.

Bikotronic control

Runkel again commissioned the Bikotronic firm for enhancement of controls, since the existing mixer tower was equipped with Bikotronic controls and Runkel was very happy with these controls and Bikotronic in general.

Industrial trucks from WMW Industrieanlagen

The mixer empties directly into the concrete bucket, which sits on an industrial truck from WMW Industrieanlagen. The concrete is transported to both production halls using these industrial trucks. The trolleys are automatically directed to the halls by means of points in the track.

2nd building phase

The second building phase took place approx. one year later. An in-line silo (4 chambers) with movable scale was installed.

Vibrating chutes were included for fine batching. Filling the in-line silos is carried out with a material crane bucket, because space conditions do not allow any other charging.

The mixer is charged with aggregates using a special hoist that runs through the existing supporting structure of the tower system. This hoist was equipped with fall protection, which prevents a fall by means of a second cable. In addition, the plant was also expanded with an additional cement silo for special cement in the first phase of mixer modernisation.

Kniele was completely convincing

The managing director, Dipl.-Ing. Peter Körner, and the director of production and concrete technology, Dipl.-Ing. Frank Siedenstein, agree that "Kniele has done a super job." "The Kniele team had made an inventory review and measured the entire mixing tower before we even properly discussed our ideas and requirements for modernisation of the mixing technology. The knowledge obtained in the process was the basis of further planning. Everything was done very professionally", Peter Körner says, praising Kniele's work.

And Kniele also fulfilled all expectations during implementation of the project. It should also be mentioned that there was no stoppage of concrete production during the conversion and no interruption of overall production. Installation of the new plant went completely according to plan, without unforeseen difficulties.

"The conical mixer delivers outstanding results. Furthermore, we were able to reduce cement consumption in the new recipes without any loss of quality. The new mixer supplies us with the concrete that we need for our architectural concrete projects and meets our high quality standards. Whether the conical mixer produces 2 m³ per charge when fully loaded or we produce lower quantities at only 10% of capacity, the results are always impressive", is how Peter Körner and Frank Siedenstein express their conviction that they made the correct choice with the KKM 2250/3375 conical mixer.



In-line silo (4 chambers) and special hoist



Vibrating chutes were included for fine batching.



The mixer empties directly into the concrete bucket, which sits on an industrial truck from WMW Industrieanlagen.



Direct access to the control is also possible in production.

New tilting tables, column formwork and magnet technology

In addition to the new Kniele mixer and the industrial trucks from WMW, Runkel has also invested in additional production equipment, thus comprehensively modernising further parts of production. The Beta company supplied 5 new tilting tables and has completely overhauled the existing tilting tables. The Avermann Company supplied two column formworks and magnets from Elematic now make shuttering easier on the tilting tables.

Five new tilting tables from Beta

The Beta Maschinenbau company supplied a total of 5 new tilting tables in lengths from 8 to 18 m for stationary production of flat precast concrete elements such as slabs, walls, facade panels and sandwich elements in massive or lightweight concrete.

Beta tilting tables are robust, have proven themselves over several decades and achieve very good dimensional stability and fair-faced concrete quality in concreting. The sheet sheets



- Dosiermaschinen für Pulver, Compact-Pigmente und Granulate
- Faserdosiermaschinen für Kunststoff-, Glas- und Naturfasern
- Flüssigkeitswaagen
- Labor- und Kleinmengemischer EasyMix
- Dosing machines for powder, compact pigments and granulates
- Fibre dosing machines for synthetic, glass and natural fibres
- Liquid weighing systems
- EasyMix small quantity and laboratory mixer



Dosier- und Mischtechnik
Innovation von Anfang an

Batching, dosing and metering equipment
Innovation right from the start

KI MI DO
KINDLER GMBH

Misch- und Dosiertechnik
Siemensstraße 11
D-72160 Horb a.N.
Fon +49 (0) 74 51 10 22
Fax +49 74 51 66 22
info@kimido.com
www.kimido.com



Transport of the concrete to both production halls is carried out using industrial trucks.



The industrial trucks are automatically directed to the halls by means of points in the track.



The concrete bucket is then transported to the installation location by a crane.

are fine-levelled and highly polished. The tables can be hydraulically tilted to 80°. The upper part is decoupled from the tilt frame by rubber springs.

New column and beam forms from Avermann

The Avermann company supplied two columns forms for production of rod-shaped concrete elements. The 15 and 18 m long forms were manufactured as twin forms and are equipped with foundation base forms at the ends. With the twin forms, two rod-shaped precast elements up to 18 m in length and two up to 15 m in length can be manufactured at the same time.



The Beta Maschinenbau company supplied a total of 5 new tilting tables



Three of the four female employees in production are in the picture



One of the two new Avermann column and beam forms

Above all, the Averman formwork technology for production of structural concrete elements is distinguished by its accuracy, reliability and long service life.

New magnets from Elematic

In addition, new magnets from Elematic were tested. The results were so convincing that all tables were equipped with the new magnets.



Button-operated Elematic magnet



SKIP CONVEYORS | CONCRETE DISTRIBUTOR SYSTEMS



More than 950 facilities worldwide

- Rollover bucket up to 6.000 l
- Concrete distributor systems
- Flap bucket up to 8.000 l
- Weighing bucket
- Double chamber bucket
- Special constructions



Rollover bucket 4.500 l



Rollover bucket in a 32° inclination = 60%



Double chamber bucket 3.000 / 1.500 l



Rollover bucket and concrete distributor

Extreme conveyor systems are our standard

WE OFFER SOLUTIONS

innovative | individual | competent | **WORLDWIDE**

DUDIK International Kübelbahnen und Transportanlagen GmbH

Mackstraße 21 Tel.: +49 (0) 7581 - 8877 E-Mail: dudik@t-online.de
 88348 Bad Saulgau / Fax: +49 (0) 7581 - 4692
 Germany

www.dudik.de



The button-operated magnet from Elematic has a very simple fastening and opening mechanism that can also be used in tight spaces. The magnet can be attached by pressing or stepping. The opening angle is normally 180°, which is why no free area is required around the magnets. This allows the magnet to be removed very easily with the release level. The need for cleaning is minimal, due to the enclosed design. It prevents concrete and other contaminants reaching the interior. ■



Watch a video about the modernised production at Runkel Fertigteilbau. Simply scan the QR code with a smart phone and start the video.

The precast elements are transported to the storage yard by three heavy duty trucks with Kampa A-trestles.



Runkel specialises in precast architectural concrete elements.



FURTHER INFORMATION



Runkel Fertigteilbau
Fertigteilwerk Siegen, Industriestr. 9, 57234 Wilnsdorf-Niederdielfen, Germany
T +49 271 393350
siegen@runkel-fertigteilbau.de, www.runkel-fertigteilbau.de



Kniele GmbH
Gemeindebeunden 6, 88422 Bad Buchau, Germany
T +49 7582 9303 11, F +49 7582 9303 30
info@kniele.de, www.kniele.de



Avermann Betonfertigteiltechnik GmbH & Co. KG
Lengericher Landstraße 35, 49078 Osnabrück, Germany
T +49 5405 5050, F +49 5405 6441
info@avermann.de, www.avermann.de



BETA Maschinenbau GmbH & Co. KG
Nordhäuser Straße 2, 99765 Heringen, Germany
T +49 36333 6660, F +49 36333 66618
info@beta-mb.de, www.beta-mb.de



Bikotronic Industrie Elektronik GmbH
Im Hohen Acker 7, 67146 Deidesheim, Germany
T +49 6326 96530, F +49 6326 965350
info@bikotronic.de, www.bikotronic.de



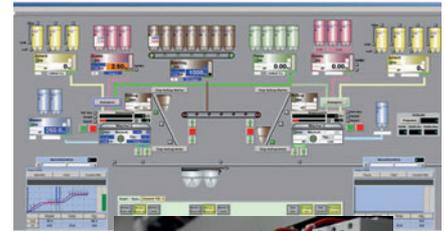
Elematic
Aiolantie 2, P.O. Box 33, 37801 Akaa, Finland
T +358 3 549511, F +358 3 5495300
info@elematic.com, www.elematic.com



WMW Industrieanlagen GmbH
Tobelacker 1, 88273 Fronreute-Baienbach, Germany
T +49 7505 95730, F +49 7505 957320
info@wmw-industrie.de, www.wmw-industrie.de

Modular process controls

- Automated control systems
- Experience in special concrete types like SCC, UHPC, foam and wood concrete, glass fibre reinforced concrete



Microwave moisture measurement in concrete and sand

- Integrated in the control system or as a separate device
- Wireless concrete moisture measurement for mixers with a rotating mixing pan
- Portable sand moisture meter



Bikotronic GmbH
67146 Deidesheim - Germany
www.bikotronic.com



PAVERS - PRECAST PARTS - PIPES - DRY MORTAR - GRAVEL - SAND CONDITIONING - READY-MIX CONCRETE