Schlüsselbauer Technology GmbH & Co. KG, 4673 Gaspoltshofen, Austria

Betonwerk Kühne gets set for the future with a new universal manhole riser production system

Mark Küppers, CPi worldwide, Germany

At its site in the Bavarian town of Geretsried, concrete manufacturer Betonwerk Kühne GmbH & Co. KG mainly produces precast concrete parts for civil engineering. The company has exacting standards when it comes to product quality, reliability, and punctuality. Guaranteeing that these three promises to customers are always kept takes excellent organization, motivated and capable staff, and—last but not least—cutting-edge production facilities. Ongoing investments in new, modern machines and production processes make it possible to comply with emissions legislation, optimize production workflows, reduce waste, and use materials more economically. Following the overhaul of the concrete mixing plant, the latest investment project involved replacing the existing production equipment for manhole risers and manhole cones, a 1989 Magic model from Schlüsselbauer. In spite of its robust design, the unit was beginning to show its age, and the outlay associated with ongoing servicing work could no longer be justified. However, since Kühne were still extremely satisfied with this Schlüsselbauer equipment, they once again opted for this tried-and-tested production concept and a modern Magic 1501 is now taking the place of the old machine.

Based in the Bavarian town of Geretsried, the company Betonwerk Kühne dates back to 1958. In 1964, company founder Karl Kühne and his son Michael Kühne laid the foundation stone for the production site that is in use to this day. The factory is currently managed by the founder's son-in-law Gerhard Knill, daughter Angelika Knill, and their daughter Daniela Lang and son-in-law Alexander Lang.

In its early years, the family-run company largely focused on the production and supply of articles for building construction. Hollow concrete blocks, cellar windows and light wells, concrete lintels and filigree hollow block ceilings were the mainstays. However, in the years that followed, the company found itself producing increasing numbers of articles for civil engineering. Nowadays, more than 90% of the products manufactured by the company are used in this sector.

The concrete elements produced in Geretsried are used to construct drainage and inspection shafts with a diameter of

A positive outlook for the future: left to right: Gerhard Knill, Angelika Knill, son-in-law Alexander Lang and daughter Daniela Lang.

50 cm to 300 cm, small-scale sewage treatment plants with or without a biological cleaning stage, rainwater collection systems, hydrosystems, and separator systems. Manhole bases manufactured using production technology from Schlüsselbauer Technology are also one of the company's specialties. And recently added to the product lineup are well systems for heat pumps.
Cable ducts, angle support elements, square ducts, soakaways, L-bricks, U-bricks, formwork bricks, trough bricks, Faserfix channels and waste boxes round out the portfolio. The large number of articles and the need for rapid delivery availability call for modern, flexible production and organization, as well as extensive warehousing. In total, around 30,000 metric tons of concrete are transformed into precast parts each year.

Thanks to its warehousing concept, Kühne can deliver at short notice, even in times of increased demand. While the main delivery territory encompasses the Greater Munich area and southern Bavaria, Kühne has also gained nationwide recognition in Germany and will deliver products as far away as Hamburg if local suppliers are struggling with supply shortages.

Magic 1501

A working culture built on family

Kühne employs 35 staff, whose wellbeing is always paramount. The company is committed to its culture built on family values, and takes care of each and every one of its employees. This is another area where Kühne reaps the benefits of investment in modern production facilities, since new equipment simplifies workflows, reduces manual labor, and helps make work more enjoyable for the staff.

Proven occupational safety

In 2021, Kühne received the "Sicher mit System" ("systematically safe") quality seal for occupational safety, which is awarded by the German trade association for the raw materials and chemical industry. Kühne's foremost goals are to produce high-quality products and to prevent industrial accidents and injuries. When it comes to occupational safety and accident prevention within the company, a great deal of emphasis is placed on teaching employees how to work sustainably. The company took a further step toward sustainability by procuring a solar panel system, which has been producing electricity used on site since March 2022.

Magic 1501 production system for manhole components

The Magic machine from Schlüsselbauer Technology that Kühne commissioned is a universal production system for civil engineering products and is used in concrete plants around the world. There are two versions of the Magic available: the Magic 1501 and the Magic 2500 for large-format risers. In addition, the customer can choose between two different system concepts: a standalone machine with manual product transport or fully automatic handling.

Kühne opted for the Magic 1501 as a standalone machine. Owing to the limited space available, the other concept would not have been feasible. The production halls are fully occupied and there is no possibility of further expanding the production area at the current site.

Convenient operation at the control panel

Automatic pallet infeed

Inserting the reinforcement ring during manhole riser production

Production of a manhole riser with the Magic 1501

The Magic 1501 is a production system for manhole components such as risers and eccentric cones with heights of up to 1,500 mm, as well as for various civil engineering elements in large quantities. The machine allows single or multiple production of up to six precast parts and is designed for maximum product sizes of up to 1,800 mm outer diameter in single production. Kühne uses the Magic 1501 to produce manhole risers and manhole cones.

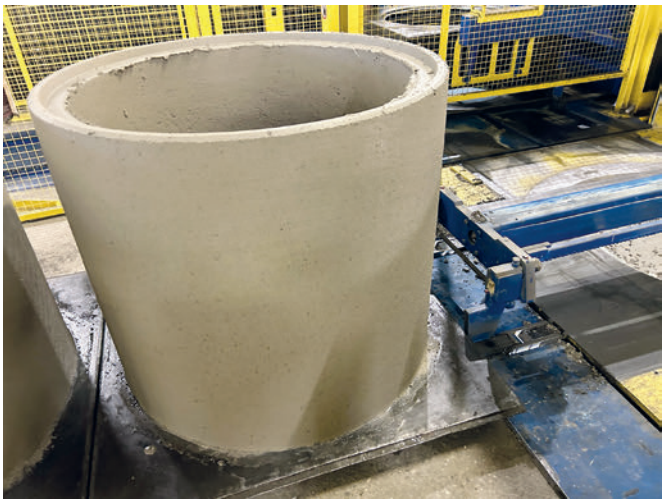
Automation facilitates work

The production of a manhole element begins with the transfer of a cleaned and oiled pallet by means of the automatic bottom pallet infeed to the production system. All that the worker needs to do is make sure that the automatic bottom pallet infeed is always equipped with sufficient pallets. To do this, the worker sets the pallet stack on the buffer belt upstream of the bottom pallet infeed. The bottom pallet infeed receives a complete stack each time, and pushes the pallets into the machine individually in time with the production cycle.

The next steps, which essentially consist of filling the mould with concrete, compaction, and ejecting the finished product, are fully automated and are simply monitored by the operator. The only manual work that needs to be performed by the operator is inserting the reinforcement ring into the mould. The operator then starts the filling process from their operating panel.

Electrical transporter

The finished products are pushed onto two slide rails upstream of the pressing station. From one cycle to the next, the products on the pallets are pushed forward incrementally until they reach the pickup position. Another employee then uses the electrical transporter to move the products from the production system's buffer zone to the indoor storage area for hardening. The electrical transporter is designed so that it can always accommodate two bottom pallets with products for highly efficient transport. Before being transported away, the fresh concrete manhole elements undergo another visual inspection and are fitted with a set ring that remains on the manhole element during the early hardening phase.
At Kühne, the entire production process for manhole parts is handled by three employees, even if two would suffice at this level of automation. The result is a less stressful working environment, and this also means that production can continue even if one employee is unavailable, as there is always more than one person assigned to the system.



The fresh product is lifted out of the machine on the bottom pallet

Another employee then uses the electrical transporter to move the products from the production system's buffer zone to the indoor storage area for hardening.

Another advantage for Kühne was the fact that the old bottom pallets can still be used with the new machine. The same is also true of the numerous moulds that can continue to be used for the production of manhole components following an overhaul by Schlüsselbauer.

Significant quality gains

With this new production system, Kühne is ready to see in the new generation. From the very first day, waste from manhole riser and manhole cone production was reduced to virtually zero, which in turn entails considerable cost savings. What's more, the already excellent product quality received a noticeable boost. ■

The site of the Kühne concrete plant in Geretsried, near Munich

Video to the report

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FURTHER INFORMATION

Betonwerk Kühne GmbH & Co.KG
Sudetenstr. 70, 82538 Geretsried, Germany
T +49 8171 93966
info@betonwerk-kuehne.de
www.betonwerk-kuehne.de

Schlüsselbauer Technology GmbH & Co. KG
Hörbach 4, 4673 Gaspoltshofen, Austria
T +43 7735 71440
sbm@sbm.at
www.sbm.at