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Strategic decision regarding small concrete precast components – the new street drain production at Grafe Beton

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A strategy of continuous development in all four of Grafe Beton's business areas - gardening & landscaping, road & path construction, civil engineering, and ready-mixed concrete - has been adopted by the owners of this family company to enable them to adapt to the ever faster changing requirements in the concrete industry. While the ever faster changes in day-to-day business, for example communication both B2B and B2C represent a particular challenge for this long-established company, this merely drives the young generation of owners on to present Grafe Beton in all sectors as an innovative manufacturer with decades of experience in the service areas mentioned. The company's latest measure as part of its ongoing production process optimization involves the street drain product segment.

Grafe Beton has been manufacturing street drain components to DIN 4052 for the different installation variants for many years. The range includes bases and intermediate rings with and without a drain, inter parts and support rings, and shafts and manhole cones. In Central Europe, the production of these various drain parts has been carried out by small concrete plants for many decades, mostly with the need for considerable manual labor. At Grafe Beton, the strategic decision was taken at an early stage to adopt largely automated production, even for these comparatively small concrete precast components. So it was that as early as the 1990s, the drain variants mentioned were manufactured on a Magic production machine from the Austrian system developer Schlüsselbauer Technology. Grafe Beton was reluctant to abandon this



The Magic production system from Schlüsselbauer Technology produces road drain parts in double production.



The manufacturing system is designed to be operated by a single worker.

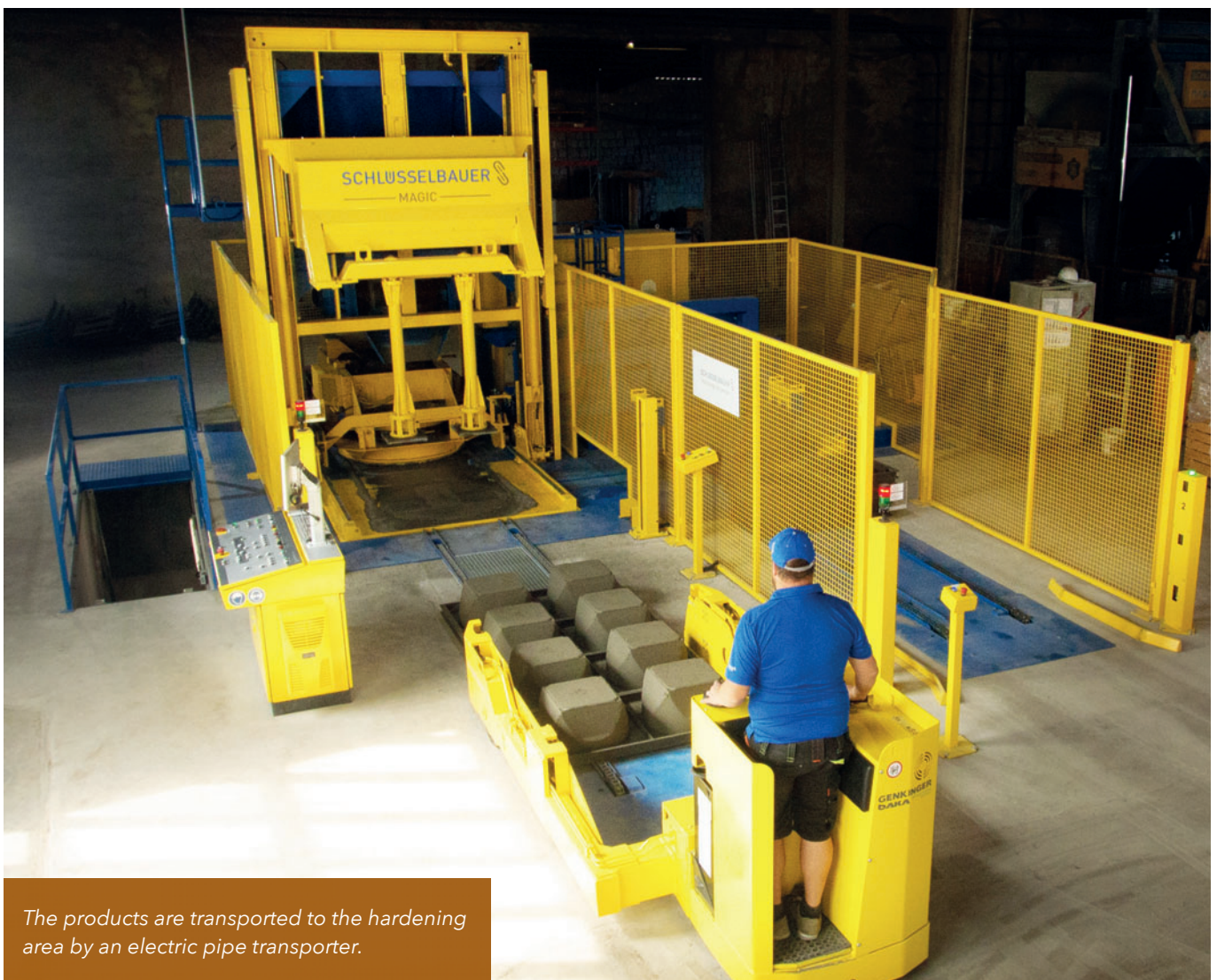
reliable production method, even as it became increasingly important to boost capacity and, at the same time, modernize this production.

Despite the wide range of variants – the street drain product range encompasses around 15 different components – the company needed to achieve maximum output on a produc-

tion machine that took up as little space as possible. After weighing up multiple manufacturing methods, the decision was taken at Grafe Beton to manufacture these products in double production in the future. With an optimized cycle time for concrete filling and compaction, this would enable at least 500 components to be produced in each 7-hour shift. Schlüsselbauer Technology was able to fulfill this requirement to the customer's full satisfaction by adapting the versatile Magic production system. In addition to rapid filling and compaction, the use of this system also reduces the times for upstream and downstream work steps such as pallet infeed and product ejection to a minimum. With the first mould that was commissioned for double production, the company was able to achieve a cycle time of less than 80 seconds, meaning that at full capacity a figure of more than 600 products can reliably be achieved in single-shift operation.

Reliable One-Person Operation and Rapid Mould Changes

At Grafe Beton, fresh products are transported from the Magic production system to the hardening area by an electric pipe transporter. This pipe transporter, which is also supplied by Schlüsselbauer Technology, enables maneuvering that is both



The products are transported to the hardening area by an electric pipe transporter.



Products in the hardening area of Grafe Beton's production hall.

rapid and gentle, and enables the products to be set down in a space-saving way. If the drain parts are not equipped with installed parts that have to be continually fed into the machine by the worker, only a single worker is required for the entire production process, including the moving of the components to the hardening area. The production process in the machine takes place fully automatically and without any intervention by the operator.

If the production volumes exceed current requirements, production can be switched over to another type of drain part within half an hour. This is all the more important as it enables the company to react to short-term fluctuations in requirements and also prevents them having to produce and store additional volumes of less popular components. In addition to changing the outer moulds, the cores can be quickly mod-



Automatic feeding of the bottom pallet into the production system.

ified for the next drain, if required. Grafe Beton has the option of producing DN1000 manhole elements up to a product height of 1000 mm in single production on the Magic system that it has now put into operation, as well as the street drain production on which this investment decision was based.

Tradition Meets Innovation

Grafe Beton is a family company founded in 1903. It currently supplies customers far beyond the borders of the federal state of Saxony, where it is based, in countries such as the Czech Republic and Poland. Grafe Beton was awarded the Saxon State Prize for Quality and the title of "TOP Innovator 2011" in recognition of its continuous development and innovation, as reported in CPI 5/2012.



Presentation of the Perfect Pipe concrete-plastic composite pipe at Grafe Beton's factory site in Stölpchen, near the German city of Dresden.



The Perfect concrete manhole bases are monolithic and produced in one pour - custom fabrication with the efficiency of an industrial manufacturing process.

In addition to investing in quality assurance and capacity expansion for the established range of street drains and manhole risers, Grafe Beton is taking deliberate steps to bring about progressive innovation with new product types. The introduction of the monolithic Perfect manhole that is produced in one pour was followed around five years ago by the setting up of production for mould-hardened concrete and steel reinforced concrete pipes. In addition to pipes with a particularly leakproof concrete structure and resulting minimal water penetration, this production line is also used to manufacture concrete wastewater pipes with an HDPE inner liner (see the report in CPI 3/2016), enabling Grafe Beton to once again supply pipes for wastewater projects, where in recent years tenders were increasingly dominated by other materials. The Perfect Pipe concrete-plastic composite pipe gives the manufacturer Grafe Beton the opportunity, in addition to supplying the required manholes, to bring added value back into concrete production with the manufacture of this pipe. ■



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The Magic production machine
in use at Grafe Beton.

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