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Concrete Manhole Risers with Fully-Automatic Transport Anchor Installation

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In recent years, concrete manhole riser manufacturers have focused almost exclusively on boosting capacity. Despite the difficulties of keeping an ample workforce, the number of manhole risers produced in one shift has continuously needed to increase. Schlüsselbauer Technology recognized this trend early on and embraced its development. The maximum attainable production capacity represents an increasingly important competitive factor for both partners in system investment; for the individual finished part producers in local competition and for Schlüsselbauer Technology in the global competition between system manufacturers. However, there are other important aspects for Schlüsselbauer, which it can use to achieve a unique selling point in the market. At the same time, Schlüsselbauer can also give their partners an ideal position in their own business environment. This includes ensuring the best possible product quality whilst simultaneously maintaining optimum production capacity and ongoing process optimization for rapid production of concrete precast components. All in all, it was these performance factors which were ultimately decisive for the Czech manufacturer Zábójník s.r.o. in choosing to invest in the Magic manhole riser system from the Austrian provider Schlüsselbauer Technology. In addition to Magic's short machine cycle time, the automatic insertion of transport anchors - independent of the cycle time - was a particularly important decision-making criterion for the owner of the family-owned company.

The original objective for Jaroslav Zábójník, the owner of Zábójník s.r.o., based in Veselí nad Moravou, Czech Republic, was to combine the production volumes of his three old vibratory compaction machines into one new, highly-automated system. In doing so, Mr. Zábójník's would also simultaneously create additional production capacity and increase his company's growth opportunities. When specifying the products that ultimately needed to be produced on the new system, it quickly became clear that achieving volume requirements would only be one aspect of the company's future-oriented production concept. Meeting increased quality requirements for precast parts and process optimization in excess of the company's previous level would also be important for the promising equipment. In order to achieve the best possible product quality at Zábójník s.r.o., the freshly demoulded products needed to be taken on a frame pallet to the hardening area, which represents the basis of quality-oriented produc-



The new Magic production system at Zábójník s.r.o. in Veselí nad Moravou



Ball head anchors, securely compacted into the concrete using vibration, provide the basis for safe handling through to its installation on the construction site. © Vojtěch Peša



Manhole risers are normally produced in two different wall thicknesses, each available in three construction heights.
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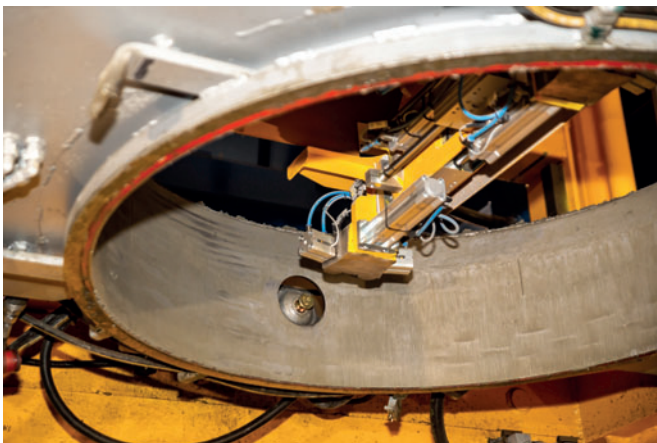
In addition to lifting anchors, step rungs are also automatically transferred to the machine independently from the cycle time and compacted into the component using vibration.
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tion throughout the entire production cycle. However, for Zábojník s.r.o., product quality does not just mean producing the precast component with constant concrete compaction and surface finish. The quality of all installations, such as step rungs or the Czech Republic's typically used step boxes, are also decisive for the acceptance of the components in the market. In addition to climbing aids, Zábojník s.r.o., was also giving themselves another challenge—from now on, transport anchors would also be reliably installed in almost all products and with minimum work.

Transport Anchor and Climbing Aid Installation—Automatic and Independent from the Cycle Time

The safe handling of concrete precast parts from the production site through to installation at the construction site is increasingly becoming a basic requirement for winning orders. As a responsible producer, Zábojník s.r.o. has always paid great attention to optimally equipping their components with transport aids that are securely integrated into the concrete. Today, ball head anchors are mostly used for manhole com-

ponents which ensure the elements are able to be moved as safely as possible until their installation. For production of manhole risers in the past, this meant workers had to manually equip the moulds with anchors, which were then compacted by vibration. This manual installation equated to interrupting production during each individual cycle and it also resulted in comparatively long production cycles. In the new Magic manhole riser system, however, a new technique was implemented for the automatic supply of transport anchors to the outer mould. In this process, while the fresh product is being moved out of the machine, anchors for the next production cycle are attached by a manipulator to the outer mould and are fixed in place. As soon as the fitted mould is lowered again and clamped to the bottom pallet, the filling and compaction of concrete begins. While the outer mould is being fitted with anchors, another manipulator—known as the Stepmaster—transfers the prepared step rungs to the core, if necessary. This production step is also carried out independently from the cycle time. The system operator only needs to insert the number of step rungs required, based on the component's height, into the Stepmaster transfer unit.



A decisive aspect of the automation system for Zábojník s.r.o.: the automatic attachment of ball head anchors to the mould unit.
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The machine operator sets-up the step rungs that are needed in each case for automatic transfer to the machine.
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Warehouse overall view © Vojtěch Peša

Production Directly on Pallets—the Basis for Long-Term Consistent Product Quality

The new system at Zábójník s.r.o. is designed for the production of DN1000 manhole risers and cones, which are available in two wall thicknesses. In order to ensure the consistent concrete quality of the components through to the area of the joint, the risers are produced with outer moulds that stand directly on bottom pallets. The same applies for the production of road drainage components, which are produced in double production on the Magic system. The optimum production parameters for eight different types of drain components in various construction heights and with optional installed parts are saved in the production machine. All fresh products are moved out onto the stable bottom pallet in frame construction with an electric pipe transporter for efficient and gentle transport.

Concrete Quality as a Pillar of the Corporate Philosophy

For many years now at Mr. Zábójník's two production sites in the Czech Republic and Slovakia, the company has been committed to the strategy of producing uncompromising product quality and the resulting satisfied customers will be the basis for the company's constant growth. Accordingly, Zábójník s.r.o. was one of Europe's early investors in Schlüsselbauer

Technology's Perfect manhole system. In 2008, Zábójník s.r.o. set up the then revolutionary production system in Velké Úľany, near the Slovakian capital Bratislava (see report in CPI 05/2009). Since then, Zábójník s.r.o. has produced and sold thousands of Perfect quality manhole bases, thereby creating a new awareness of quality in the construction companies and municipalities involved. Driven by the same expectation of undisputed product quality, it was an easy decision for Mr. Zábójník's to invest in Schlüsselbauer Technology's new Magic manhole riser production system. By choosing the production system described, Mr. Zábójník will be assured of meeting the industry's growing requirements for high-quality, safe components, and of meeting the rapidly changing demand volumes in the Czech Republic and Slovakia's increasingly dynamic and often project specific underground engineering market.



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FURTHER INFORMATION



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At the second company site, Perfect concrete manhole bases are produced with tailor-made channels and, in most cases, integrated gaskets.