Prinzing Pfeiffer, 65552 Limburg an der Lahn, Germany

Klartec invests in pioneering machine technology for manhole production

The demands placed on modern manhole production are constantly increasing – in terms of product quality, flexibility and efficiency. By investing in the Tornado 150/150 from Prinzing Pfeiffer, Klartec has taken a decisive step towards sustainably strengthening its market position in the civil engineering segment. The high level of equipment promises innovative technologies, high flexibility, product diversity and a wide range of further expansion options.

Corporate strategy: Focus and transformation

Klartec, based in Trnava, Slovakia, has decades of experience in the field of environmental technology. The company initially specialised in the technological development and manufacture of oil separators and grease traps, storage-, retention- and fire- fighting water tanks, pumping stations, water meter manholes and measuring systems.

After a phase of diversification, including concrete block production, the company has strategically realigned itself and now also focuses on the manufacture of sophisticated precast concrete elements for civil engineering projects. The decision to expand the manhole manufacturing segment is based on a clear growth strategy and the goal of positioning itself as a quality supplier in the Slovakian market.

From specialist to full-service provider: Klartec focuses on partnership and innovation

When Martin Karlubík and his team were looking for a partner for plant engineering in 2019 to expand their product portfolio for civil engineering elements, one thing was certain for the family-owned company Klartec: It had to be more than just a machine supplier. They were looking for a partner who not only supplied machinery, but also had experience and innovation in this sector. Klartec found this counterpart in Prinzing Pfeiffer, thus laying the foundation for a successful collaboration.

Since the Tornado 150/150 was commissioned, Klartec has been able to supply even higher quality manhole components to the Slovakian market. The decision to invest in the automated system was not only a response to increased market demands, but also an expression of a clear vision: to be able to serve customers in Slovakia comprehensively and flexibly, with the highest level of reliability and service.

Klartec particularly values its close partnership with Prinzing Pfeiffer and the reliable service provided by the after-sales team. "We appreciate not only the technical expertise, but above all the personal support and the relationship of trust that has developed," emphasises Managing Director Martin Karlubík. "A business relationship has long since developed into a friendship, and we are moving forward into the future together."

The investment is paying off: The manhole components manufactured on the Tornado are in demand, the product portfolio has grown and Klartec can adapt to new market requirements. For the team, one thing is clear: With strong partners at its side and the courage to innovate, it is well equipped for the future.

Tornado 150/150: Automatic underfloor vibration machine for the production of manhole components and related precast concrete elements

Proven technology: The Tornado 150/150 in detail

The Tornado 150/150 impresses with its modern system design. The modular design allows the machine to be adapted to a wide range of customer requirements and local conditions. Extensions and adaptations can be implemented easily, which offers a decisive advantage in a market characterised by individual customer requirements and changing product standards.

The Tornado 150/150 enables Klartec to cover a wide range of production: From grade rings and drainage inlets to large-format DN 1500 (60") manhole components with a maximum product length of 1.5 m (5'), almost any requirement can be flexibly met.

A key feature of the Tornado 150/150 is the sophisticated interaction of all core components, which together ensure high flexibility, efficiency and product quality. At the heart of the system is the basic module with its robust main frame, which guarantees stability and durability. The machine carriage is equipped with maintenance-free roller guides and a hydraulic mould clamping system, which enables quick and safe mould changes. This is a decisive advantage when it comes to flexible production processes and short changeover times. Precise and demand-oriented concrete supply is ensured by the generous material silo with a capacity of approx. 2.50 m³

Manhole cone DN 1000/625 height: 600 mm with offset entry, manufactured fully automatically on the Tornado 150/150

and the electrically driven, speed-adjustable dosing belt, so that the right amount of concrete is always available for the production process. An electrically driven distributor star with variable speed ensures uniform and rapid material feeding, contributing to short cycle times and consistent product quality.

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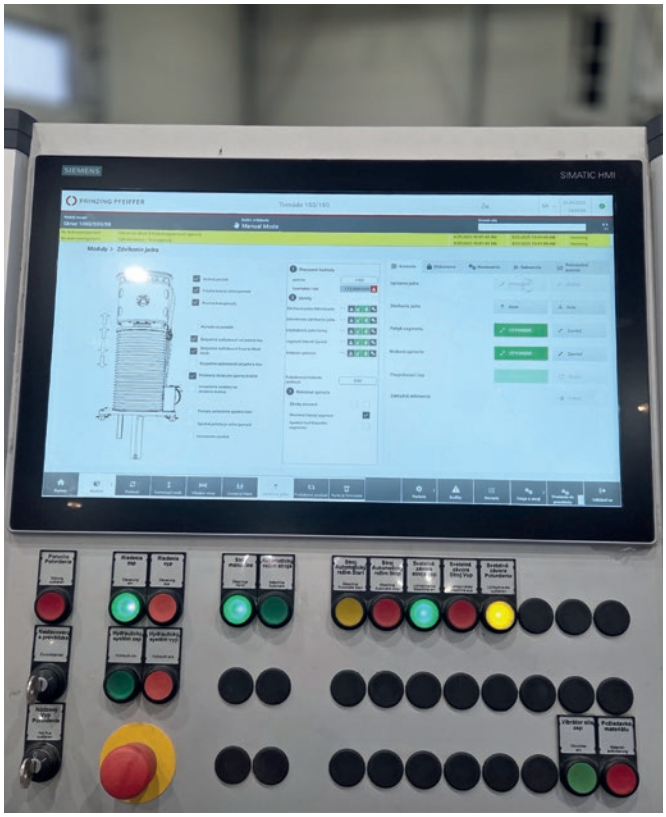

Tornado operating panel with HMI touch screen

Vertical compactor VTA 150 with amplitude control and lifting device

The vertical vibrator with amplitude control ensures tight and uniform compaction quality features that are clearly evident in the end product. A synchronous cylinder press with integrated tamper head vibration ensures very high compaction and shaping of the spigot end. Thanks to additional electric press adjustment, quick adaptation to the production of non centric products is possible.

The system is supplemented by numerous control enhancements. These include hydraulic spigot ring attachment, the patented GEBA process for precise and consistent construction height, infinitely variable amplitude control and the vertical vibrator's lifting device. These functions offer a very high degree of flexibility and precision throughout the entire manufacturing process.

The Tornado 150/150 also scores highly in terms of handling and product transport: An electrically driven double ratchet feeder for simultaneously inserting the base pallets and pushing out the demoulded product that completes the production process. Furthermore, hydraulically operated transport devices, which can be attached to standard fork-lift trucks, enable safe and efficient transport of the freshly demoulded products from the production machine to the curing area.

Tornado mould equipment is individually designed. The combination of precisely manufactured mould jackets and cores, robust wearing rings and intelligent solutions for inserting manhole step elements (rungs) or lifting anchors results in manhole products that impress both in standard designs and in customised special designs.

The entire control and operation of the Tornado 150/150 has been taken to a whole new level with the new NextBase platform. The NextBase platform offers an intuitive, touch-based user interface that clearly displays all production steps and significantly simplifies operation. Error diagnostics are performed at the touch of a button. Safety areas are displayed from a bird's eye view and all relevant production data is visualised on the HMI. All essential data is stored in a central database. The platform offers a web-based HMI and can therefore be accessed not only directly on the machine, but also from the office or from any location. This ensures a high level of transparency and flexibility throughout the entire production process.

Another highlight is the unlimited, versioned and fail-safe recipe management. This enables continuous process optimisation and complete traceability. Hardware diagnostics, the alarm and information centre, and the visual display of interlocks and safety circuits reduce downtime and facilitate plant maintenance.

NextBase is based on state-of-the-art Siemens technology with integrated S7 Safety and is fully IoT and cloud-ready. Communication takes place via ProfiNet and OPC UA, enabling open and secure connection to ERP systems, cloud services or other machines. Simulation and virtual commis-

sioning are also possible, which speeds up the introduction of new functions and facilitates the training of operating personnel.

The software for the Tornado 150/150 from Klartec is already prepared for future upgrades such as the Data Analyzer (statistics software). In addition, digital services such as mobile process queries, online support, SmartParts (innovative spare parts documentation) and SmartCheck (digitally supported plant inspection) are already available.

Project implementation: Challenges and success factors

The project was implemented during a period marked by the effects of the COVID-19 pandemic. International supply chains, construction site operations and assembly processes were affected by delays. Thanks to clear communication, close coordination and solution-oriented cooperation between Klartec and Prinzing Pfeiffer, the project was nevertheless implemented on schedule and in a structured manner.

Particularly noteworthy is the customer's own contribution to the product handling, which could be seamlessly integrated into the overall processes. The partnership-based cooperation between the Prinzing Pfeiffer fitters and the local assembly team was characterised by mutual respect and a high level of competence.

Economic and strategic advantages

With the Tornado 150/150, Klartec has a modern, powerful and flexible machine for manhole production. The partnership with Prinzing Pfeiffer and the Topwerk Group ensures long-term service, spare parts supply and technical development – a decisive factor for sustainable investment planning and production reliability.

Technical data for the Tornado 150/150:

- Modular design for very high flexibility
- Product heights up to 1.50m (5'), possible internal diameters up to 1,500 mm (60")
- Patented GEBA process for precise construction heights and homogeneous concrete compaction
- Short cycle times because of automatic demoulding in the machine
- Vertical vibrator with amplitude control for easy adjustment of parameters to different product geometries.
- NextBase as the central control and digitalisation system: Touchscreen operation, web-based platform, open interfaces, simulation, data analysis and future-proof integration into the digital factory.
- Integration of digital after-sales services (SmartParts, SmartCheck), which enable modern production statistics, spare parts documentation, digitally supported plant inspection including spare parts recommendations on any mobile device.

Manhole base DN 1000 (42") with support element for curing, also manufactured on the Tornado 150/150

Conclusions

With the Tornado 150/150, Klartec is positioning itself as a reliable supplier in its market for civil engineering products. The combination of innovative machine technology and a family owned company forms the basis for future success. ■

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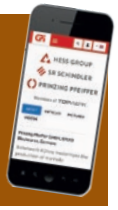

FURTHER INFORMATION

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