

Tiba invests in new manhole component production system with high level of automation

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Tiba Austria GmbH produces a wide range of concrete products for environmental, sewerage, drainage and traffic engineering at five sites in Austria. The company also provides full project support - from professional consultation and analysis of cost-saving potential, to preparation of tender documents. In an effort to keep high quality production economical, Tiba relies on meticulous maintenance of their existing systems as well as regular modernization. A good example of this methodology is seen at their Sollenau plant, where a new Magic 1501 production system for manhole components, such as risers and cones, was recently commissioned. This new Magic 1501 system was engineered and installed by the Austrian company Schlüsselbauer Technology GmbH & Co KG, a long-term and close partner of Tiba.

Tiba Austria GmbH was founded in 2006, and in 2012 ownership was fully transferred to Kirchdorfer Fertigteilverwaltung - a company with roots dating back to 1925. Today, Tiba employs approximately 100 people. Tiba's five civil engineering sites are located in St. Margarethen an der Raab, Tillmitsch, St. Veit an der Glan, Leoben and Sollenau, where a new Magic 1501 production system was recently commissioned.

With Tiba's installation of a new Magic production system, their Sollenau plant now has three Schlüsselbauer Technology systems in operation. In 1998, prior to Tiba's purchase of the plant, the previous owner installed a Schlüsselbauer Exact plant, which is a modular, fully automatic production system for pipes and manhole components. And in 2013, Tiba installed Schlüsselbauer's Perfect manhole base production



View of the new Magic production system



The filling of the Magic production system with concrete. The compaction process and the ejection of the finished product are fully automated.

system, which enables manhole bases to be manufactured in one pour using a wet cast process. Overall, the corporate group, Kirchdorfer Fertigteilverteilung, operates ten systems from Schlüsselbauer Technology at five production sites.

Magic 1501

Schlüsselbauer Technology’s Magic production system, which is installed in production plants throughout the world, produces dry-cast manhole components for civil engineering projects, such as risers and eccentric cones with heights of up

to 1,200 mm. There are two versions of the Magic available: the Magic 1501 and the Magic 2500, with the latter specializing in the production of large-format risers.

Tiba opted for the Magic 1501 production system, which allows single or multiple production of up to six precast parts, such as guidepost bases, and is designed for maximum product sizes of up to 820 mm outer diameter in double production and up to 1,800 mm outer diameter in single production. Square profiles can be manufactured with external measurements of up to 1,270 x 1,270 mm in single production.



Insertion of sleeves for optional step pegs in the Stepmaster magazine



Electric cart for the transportation of fresh and hardened products



Fresh products in the curing area of the production plant



View of the palletizing station of adjoining, blue enclosed cleaning system and following pallet oiling station

Magic offers two different system concepts: a stationary production on a standalone production machine with manual product transport, or a fully automatic circulation system. A stationary machine is used at Tiba, paired with a very high

level of automation on the dry side with a fully automatic pallet solution, pallet packaging, cleaning and oiling, as well as a fully automatic return of the pallets to Magic's production system. Only freshly made products and the later hardened manhole components are transported by the employee in an electric cart, also designed by Schlüsselbauer Technology.



After the manipulator has lifted the manhole part and thus released it from the pallet, it is directly inserted into the cleaning station.

At Tiba, the entire production of manhole parts is operated by two employees. One employee handles all activities related to the actual production, and the second employee is responsible for the aforementioned transport of the fresh components and the dry side supply.

The concrete is supplied via the existing concrete mixing plant. The concrete is transported from the mixing plant to



The maximum stack height is 2,000 mm; this figure shows four manhole risers with a height of 500 mm each.



The cleaned and oiled pallets for subsequent use are stacked by the pallet stacking device

the production system using a bucket conveyor. The storage container is very spacious and lasts several cycles.

A high level of 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, under the production system’s pressing device. The filling of the mould with concrete, the compaction process and the ejection of the finished product are otherwise fully automated.

Stepmaster

If integrated climbing aids are required for the product, the operator places step pegs or step rungs during the filling or vibration process of the current cycle in the special magazine

of Schlüsselbauer’s proprietary Stepmaster. The Stepmaster magazine is then moved to a waiting position by program control, at which point during the demoulding process the climbing aids are transferred to the core and then automatically inserted into the following manhole element without increasing the cycle time. This optimizes cycle times and prevents waiting times.

Since it is unforeseeable whether or not step pegs will be required for later use with standard DN1500 elements, punch sleeves can be placed by Stepmaster so that climbing aids can be punched into the sleeves at a later date, if necessary.

In addition to the visual monitoring of Magic’s production, the operator is also responsible for inserting reinforcement rings into the machine and minor tasks such as placing set rings on the tops of the manhole parts or spray-painting the company logo on the product, for example.



External storage area at the Sollenau factory



The modular, fully automatic Exact production system for pipes and manhole components has been in operation at Sollenau since 1998.

Electrical cart for transportation

The second employee uses an electric cart for transportation to move fresh products from the production system's buffer zone to the indoor storage area for hardening. When handling smaller products, it is possible to transport several units simultaneously.

The employee also uses the same electric cart to drive the hardened products from the previous day's production to the automatic depalletizing and loading station.

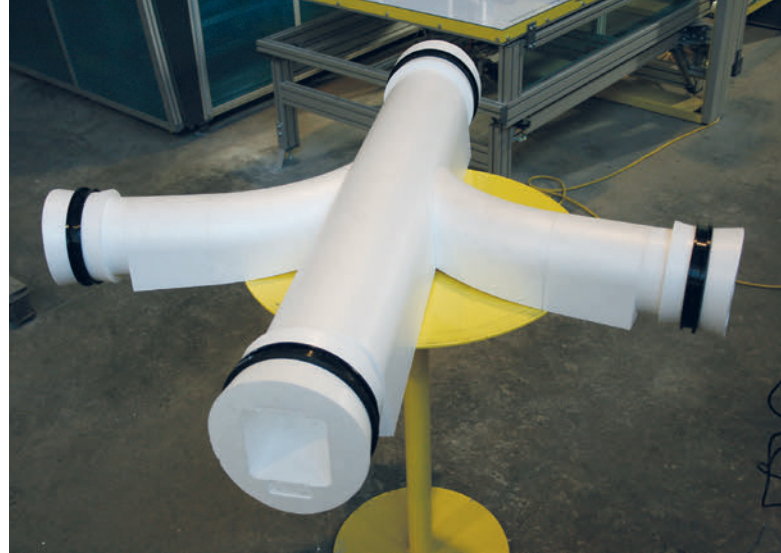
Depalletizing and loading station

After the manhole elements have hardened, the second employee uses the electric cart to transfer the products from the curing area to the buffer conveyor, which then takes them to the palletizing, packing and exit stations. During the palletizing process, the manhole components are transported to the station on their pallets. The product crane gripper then

grips the component securely on the walls and the crane lifts it slightly, detaching the pallet from the manhole. When the pallet has been removed from the product, the pallet is automatically transported to a cleaning station and the crane takes the product to another conveyor belt at the packaging station, where it is gently placed on a wooden pallet and then transported to the exit station. Depending on the size of the product, the crane may also form a stack of several elements on the pallet with a total height of up to 2 m.

The conveyor belt is continuously supplied with new wooden pallets via the pallet magazine, which is also located inside the plant. Two wooden pallets can be inserted for larger elements. These pallets enable the elements to be gently handled until their arrival at the construction site.

The wooden pallets loaded with one or several elements are transported to the outside via the conveyor belt. Once outside, the precast concrete parts are brought to their temporary destinations in the external storage area by forklifts.



In use since 2013: The Perfect manhole base production system with which manhole bases can be manufactured in one pour using the wet cast process.

Cleanmaster

After the pallet is removed from the product, the pallet is transported directly to the fully automatic pallet cleaning station. This dry cleaning is carried out using brush technology. The cleaning systems automatically adjust to the various pallet dimensions, thereby minimizing brush wear. The Cleanmaster is completely enclosed, which prevents dust build-up in the plant. After cleaning, the cleaned pallets are fed in cycles to the downstream pallet oiling system.

Pallet oiling

At the pallet oiling station, the supplied pallets are automatically oiled. Here the pallets are set in rotation by a turning mechanism, and a sponge that applies the oil release agent in a proportioned manner adjusts itself according to the respective pallet dimensions. This entire unit is also enclosed to prevent oil vapor from escaping.

The pallets, which have now been oiled and are ideally prepared for the next use, are discharged from the pallet oiling system and stacked in cycles. Once the desired stack height has been reached, the pallet stacks are conveyed to the Magic 1501 production machine via chain conveyors and then fed back to production again individually. ■

FURTHER INFORMATION



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Video of manhole ring production at Tiba with the Magic 1501



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