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Flexible manhole base production that also impresses with its efficiency and overall performance

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Ameritex Pipe & Products, LLC has been recognized as one of the fastest growing manufacturers of precast concrete components in the USA for a number of years. The owner and management are equally committed to this pronounced growth strategy in which increasing product quality and productivity is always an essential parameter. Ameritex Pipe & Products has taken a remarkable step forward in its continuous growth in 2022. Ameritex has installed 2 automated precast plants for the production of Perfect manhole bases and precast components utilizing the wet cast process. The two Perfect Manhole systems are installed at Ameritex Pipe & Products facilities in Conroe and Gunter, Texas.

This growth-oriented strategy will produce a number of results for Ameritex Pipe & Products. First, meeting project-specific requirements on each individual manhole will raise the quality of these critical infrastructure components to a whole new level. Second, the automated wet cast production, which Schlüsselbauer Technology is constantly developing, sup-

ports the demand for high productivity and industrial-scale production. The production output which that will enable, measured in man-hours per ton, is unprecedented for concrete wet cast production for manhole components.

Custom

Custom manhole bases have been manufactured efficiently using the Perfect production method developed by Schlüsselbauer Technology since 2005. A smart system of prefabricated EPS moulded parts and easy-to-use plants with which to process them are now recognized and used globally. At Ameritex Pipe & Products, manhole bases with nominal diameters of 48" and 60" are manufactured on the new wet cast plants. For channels with diameters ranging from 10" to 36", EPS moulded parts are assembled in very few work steps. A characteristic of the Perfect method is that the inclines in the channel are continued in the pipe connection. This improves the hydraulics of the individual pipe-manhole connection and ultimately of the entire sewage network.



The first location of Ameritex Pipe & Products to be equipped with a highly automated wet cast production plant from Schlüsselbauer Technology in 2022.



The installation enables a production output of significantly more than 100 components per extended shift.



In all operating positions, value is placed on user-friendliness and efficient division of labor.

To reduce the working hours required to manufacture and install negative channels in the casting moulds, the entire plant concept is designed for maximum throughput. All the necessary work steps are carried out in predefined places using suitable tools. Even activities such as cleaning or lubrication of moulds, or setting up the reinforcement in the moulds are taken into account in the overall concept as predefined work steps. To accommodate mould set-up, which can vary in complexity depending on the product to be manufactured, to continuous wet cast production, the Ameritex Pipe & Products plant was equipped with several set-up locations. There, staff can carry out all the necessary work steps outside of the safety area of the automated plant and return the set-up moulds to automatic operation at the push of a button.

Ameritex Pipe & Products pays particular attention to concrete engineering and efficient handling of fluid concrete. The filling of moulds with self-compacting concrete (SCC) is closely timed in the plant area, in which the moulds can be raised and lowered to optimize the concrete filling height. Two filling stations ensure that no cycle time is wasted on handling the empty and filled moulds, and that the concrete can flow almost continuously. All plant components from the mixing plant to the bucket conveyor to the filling station for different product or mould types have been designed for efficient processing of SCC.

Industrial

The team at Ameritex Pipe & Products think big and act accordingly. The number of casting moulds, the mixer capacity, and the handling of materials inside and outside the production hall speak for themselves. Rocky Lorenz (President of Ameritex Pipe & Products) makes it clear that, along with the generation of new production capacity at two locations, the high degree of automation must change the man-hours per ton rate drastically: "We invested in two new Perfect plants



Continuous processing of SCC constitutes a vital basis for efficient operation of an industrial wet cast production plant.

to raise both the product quality for standardized products, and increase the daily man-hour-per-ton-rate!"

The use of an automated Transexact crane to move the filled moulds is vital to the productivity in the factory. The Transexact places the moulds that have just been filled with SCC in a predefined position in the curing area. Following the daily production schedule, the Transexact then picks up a mould containing the hardened product and moves it to the demoulding position. An automated product gripper removes the component from the mould and places it in the desired position on the outgoing chain conveyor. The EPS negative channels are removed from the manhole bases and recycled in compact form. The EPS consumption of the Perfect production system is a fraction of that of other known production techniques.



Transexact - Automated crane operation and mould management system in one.



The custom channel formation is the essential characteristic of Perfect manhole bases.



In addition to custom monolithic Perfect manhole bases, rectangular and standardized manhole components are also manufactured on the plant.

Flexible

In addition to individual, circular manhole bases of two nominal widths either with or without protection against uplift, standardized rectangular components and manholes are manufactured on the plant. The workflow, from opening the moulds and demoulding the products to preparation and re-filling, is essentially the same. Owing to the number of set-up locations, moulds with varying set-up times can be guided flexibly through the production without bottlenecks arising at any point in the process. And the daily production plan can simply be adjusted as needs fluctuate, without the tasks for each individual staff member needing to be redefined every day. This means that, in a flexible production concept

with clearly defined processes, significantly more than 100 mould-hardened products can be manufactured in one extended shift.

As has already been reported a number of times in CPI, the Perfect manhole production has proven its high flexibility with regard to designing individual manhole bases. While the standard design calls for the production of channels for manhole bases with an inner diameter of up to 60" (1500 mm), the same simple production technique is used for inner manhole diameters of 84" (2100 mm). In all cases, the height and incline of the channel and pipe connections can be adjusted as required. The user interface of the Perfect software enables employees to plan the geometry of the channel and pipe



Several set-up locations for wet cast moulds ensure that there are no delays in the overall system despite varying set-up times.



With the highly automated wet cast production plant from Schlüsselbauer Technology, Ameritex Pipe & Products is setting new standards in the precast concrete parts industry in the USA.

connections without the need for special programming skills. A plausibility test integrated into the software warns users if production tolerances are too low, such as inlets placed too closely together. At the same time, the system software and hardware supports staff in sequential or parallel processing of multiple manholes, inserting each individual channel component in accordance with the plan. That way, an experienced member of staff can manufacture all the channels required on one production day in compliance with requirements, without a hitch. Alternatively, of course, the channels for production on the following day can be manufactured. Thanks to the clear part name, which, in the interest of logistics, is displayed on a sticker right up until installation at the construction site, the manufacture and installation of channels can either be strictly synchronized or decoupled.

Perfect Forming Technology

The wet cast concept which Schlüsselbauer Technology has been developing constantly for two decades now does not just enable integration of wet cast production into a fully automated handling concept; Perfect Forming Technology also represents, in particular, high-precision, manufactured moulding components as the basis for a very high concrete component quality. All the contact points that have sealing, set-up, or driving functions are machined fully automatically in the Schlüsselbauer Technology mould construction department. Individual mould components such as bottom pallets or cores are integrated into the moulds in an adaptable manner. Easy-to-mount holders for built-in parts and gaskets on relevant contact surfaces are also among the essential features of Perfect Forming Technology. This creates the basis for the longevity and profitability of the invested mould station. Moreover, Perfect Forming Technology is a basis for high-quality components without compromises on accuracy of fit, tightness, and surface quality.

In addition to Schlüsselbauer Technology's many years of experience in the implementation of automated wet cast

plants, the mould quality was a vital criterion in Ameritex Pipe & Products' decision to invest. Rocky Lorenz: "We surveyed suppliers of wet cast moulds around the world before we decided Schlüsselbauer was the best company to supply us with high end wet cast mould equipment for several products, and customization of wet cast automation taking into account all our needs."



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