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Efficiency and quality: Northwest Pipe Company Commissions New Concrete Production Plant with Schlüsselbauer Technology in Utah

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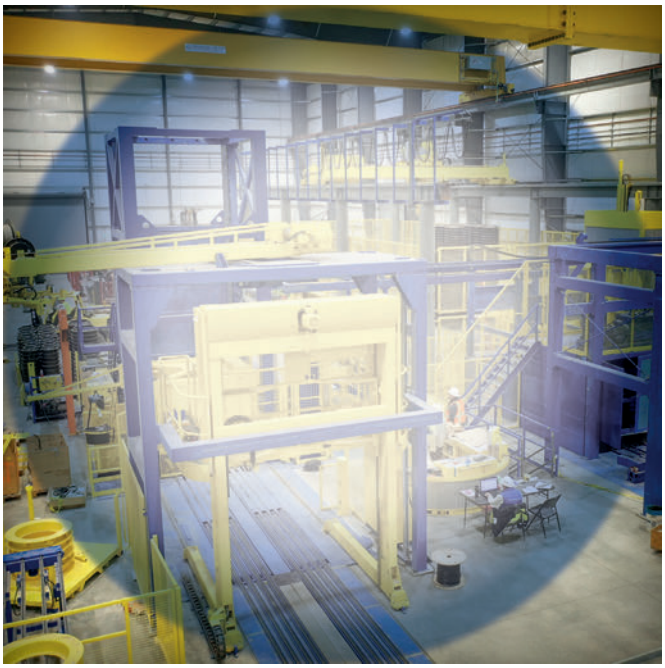
Just west of downtown Salt Lake City in Utah, Northwest Pipe Company, a leading manufacturer of water related infrastructure products, has successfully commissioned a new production plant from Schlüsselbauer Technology. While the first two projects between Northwest Pipe Company and Schlüsselbauer involved systems for producing mould-hardened products at their Geneva Pipe and Precast facilities in Utah, this latest project sees the installation of a vibratory compaction machine for concrete pipe production. With this new facility, Northwest Pipe Company can now manufacture reinforced concrete pipe ranging in size from 12 to 60 inches, meeting the growing demand for high-quality concrete pipes for surface drainage. Additionally, the plant achieves an unprecedented level of automation in concrete production in Utah, further enhancing efficiency and product quality.

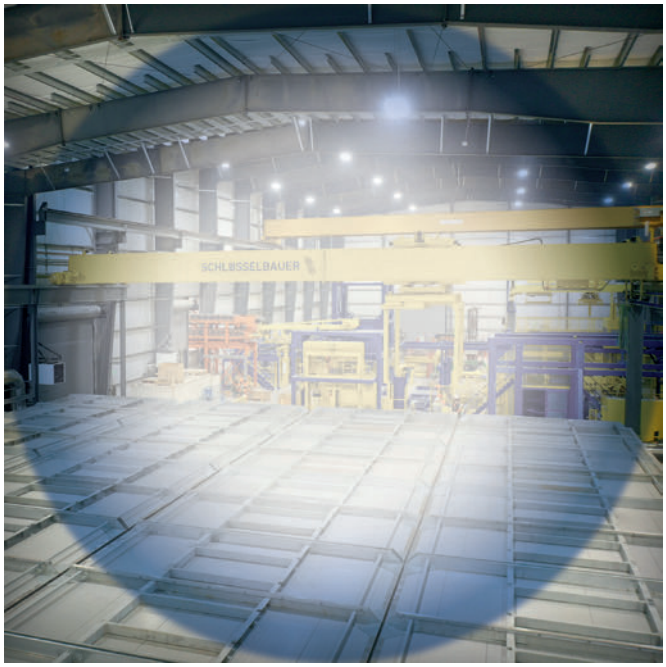
Automation leads the way in a changing world for manufacturers

For decades, the precast concrete part production industry was synonymous with a high degree of manual – and sometimes highly strenuous – work. This meant that workforce fluctuation and hiring bottlenecks were perennial problems for anyone running a factory. But in recent years, major changes to the working environment have arrived in virtually all areas of concrete part production, whether for engineering or construction. While individual workplaces have made efforts to boost their attractiveness to prospective employees, there has also been an increasing need for smart automation solutions so that investments can be made in daily output and consistently high product quality. With these developments changing the landscape for manufacturers, deepening the partnership with Schlüsselbauer Technology was the evident choice for Northwest Pipe Company. Schlüsselbauer is a leading innovator in the area of automated production plants for pipes and manhole elements based on both drycast and wetcast processes.

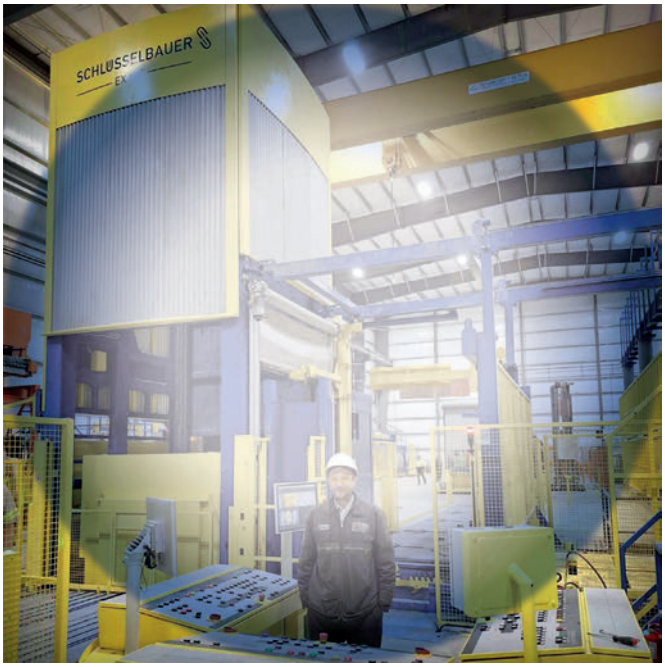
The new Exact 2500 system can produce ten different pipe diameters in either double or single production. For this reason, it is essential that the producer also optimizes the changeover processes in their plant. All mould units are equipped with a quick-change system to help with this. This system rapidly decouples the mould and core from the machine and positions it in a manipulation frame for transporting away. The next mould, which is already prepared for production, is brought into the machine in a manipulation frame, where it is coupled and cleared for production of the new nominal pipe width. Depending on the two pipe sizes at play, the filling system can be adjusted with just a few manual actions. When switching from single to double production, the vibrator unit – which is also equipped with an automatic fixing mechanism – can be exchanged quickly and easily. The process of adapting the pallet cleaning station to the new pipe diameter is fully automated as well.



The Exact 2500 production plant at a glance



Curing chambers with automatic filling



Flexibility with single or twin production

Regular adaptation of the system to different pipe dimensions is not the only place where the numerous automatic functions make work easier for the operator. Some activities need to be performed in a defined cycle time. Here, the automatic devices integrated in the system carry out these activities more quickly and reliably compared to manual labor. For instance, the cage master device automatically feeds the reinforcement cages into the production cycle, for both single and double production. Flexible transfer to the cage master helps the operator at the cage welding machine to produce reinforcement cages independent of any cycle times and eliminate waiting times in the production plant. In the palletizing system, the pipes are detached from the pallets – automatically, of course. The pallets then travel along the cleaning and oiling line before either being returned directly to the production machine or sent to the pallet storage area. Pallets are stored and retrieved automatically too – all the operator needs to do is press a button. Before the pipes are taken to the storage area, they are automatically deburred at the spigot in the palletizing system. They then undergo vacuum testing, after which the inside and outside of the pipe are labeled with the specified product parameters by means of inkjet printing. All production and product data are recorded automatically. This encompasses everything from vibration times to complete cycle data and capacity information, as well as test values. This means that all values relating to the product and operating data are stored on the computer with full traceability and can be made available via simple interfaces for further use.

One main challenge for every drycast production plant is transferring immediately demoulded products to the curing area without damage. Automated product handling offers the best protection for materials and personnel. At Northwest Pipe Company's new concrete pipe production plant in Salt Lake City, a fully automatic Transexact crane is used for this purpose. In addition to lifting and driving functions for placing and removing the concrete pipes in the drying chambers, the automatic crane also moves the chamber covers. As soon as one of the drying chambers is filled, the Transexact picks up a cover in the next work step and closes the chamber. The positions of the products in the curing area are managed automatically, and there is no need for the system operator to intervene.

Options for expanding the range in future

The Exact 2500 production plant chosen by Northwest Pipe is one of the most efficient vibratory compaction systems in the world. Not only can it be used for mass production, which often relies on two-shift or three-shift operation, the Exact 2500 is also perfectly suited to the production of manhole risers and conical manhole sections. This sets this system concept apart from most other concrete pipe machines. As well as pipes of up to 60 inches (DN 1500), it is also possible to produce manhole risers from DN 800 to DN 1500. The Exact 2500 is designed for double production up to DN 600; Northwest Pipe Company also uses this production type for the nominal widths 12, 15, 18, and 24 inches.

Success follows success

The partnership between Northwest Pipe Company began in 2020 when Northwest Pipe decided to take install the Perfect Base production system at their Geneva Pipe and Precast Plant in Orem, Utah. The production of individual, monolithic manhole bases in an industrial process was a major milestone for the Company in its journey to continually improve product

All mould units are equipped with a quick-change system

Automatization of pallet and cage handling

quality. And the industrial production of custom-fit concrete parts with mould hardening also laid the foundation for the next joint project: the Perfect Pipe concrete-plastic composite pipe machine in Orem. This concrete pipe with its rigidly anchored corrosion protection proved to be instrumental in enabling Northwest Pipe to further expand its market presence in the area of wastewater sewage systems. While these two projects expand Northwest Pipe's product range, one aspect remains unchanged: the Company continues to strengthen its market position in the surface drainage sector. The latest project featuring the Exact 2500 serves as a strong testament to this commitment.

Step by step: delivery, assembly, start-up

Establishing a fully automated concrete pipe production system is the culmination of a long- pursued strategy for any company. From the concrete production to all aspects of processing, all the way through to quality assurance and warehouse logistics: The right decisions must be made at every step of the way in order to develop the project successfully. As an engineering partner, Schlüsselbauer collaborated closely with Northwest Pipe Company's decision-makers from the earliest planning stages. This partnership allowed Northwest Pipe to fully leverage Schlüsselbauer's technical expertise across all aspects of the project including design, programming, electrical engineering, system construction, assembly, and start-up. This support also played a key role in keeping the project on schedule. With pipe production successfully underway, the investment is already delivering results. ■

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"Demand for high-quality infrastructure products continues to rise and we are dedicated to expanding our precast manufacturing capabilities," states Scott Montross, President and CEO of Northwest Pipe Company. "Partnering with Schlüsselbauer on this new production plant allows us to scale production and better serve our customers while improving efficiency and reliability."

Scott Montross

FURTHER INFORMATION

Northwest Pipe Company
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