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Highly Efficient System for Manufacturing Customized Monolithic Manhole Bases Put into Operation in Ashland, Virginia

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On the East Coast of the United States, the manufacturer Concrete Pipe & Precast LLC (CP&P), is almost synonymous for high-quality pre-cast concrete products. Behind this positive image you'd find a clearly defined strategy and a highly effective team charged with its implementation, which was once again demonstrated in 2017 with the start-up of a largely automated production facility for individually moulded, monolithic concrete manhole bases. During an extensive evaluation process the team examined the changing market requirements and used their findings to devise an ideal innovation strategy for CP&P. It was ultimately decided that the Perfect production system, widely used across Europe, was best suited to ensuring ongoing market success. This efficient system for the manufacture of customized manhole bases was commissioned in Ashland, VA in the summer of 2017. Mould and product handling, by means of an automatic crane, were tailored to CP&P's specific requirements, enabling this production facility to achieve an exceptional capacity and input-output efficiency for this product segment in the USA.

Established in 2012 as a result of a merger between the former companies Americast and Hanson Pipe, CP&P has 13 production sites across numerous states and is justifiably regarded as one of the leading manufacturers in terms of product quality and efficiency of its production processes. The family company Americast first worked with the Austrian supplier Schlüsselbauer in 2008 to commission a fully automated system for the production of manhole risers of various designs. At that time, companies could gain competitive advantages by making use of state-of-the-art production technology to compensate for severe staff shortages as well as boost productivity. As it so happened, this investment decision was to have an even greater significance in the years to come, which were notoriously difficult for the entire industry and during which efficiency was essential for manufacturing companies to survive. The introduction of the Perfect production system has now succeeded in expanding capacity while simultaneously improving and safeguarding the attainable level of product quality, representing a logical step in a corporate strategy which consistently focuses on quality and output in equal measure.



The Perfect Forming Technology production system in CP&P's plant in Ashland provides the most efficient way of producing manhole bases nationwide



Easy-to-operate moulds provide the capacity and flexibility required to manufacture manhole bases

Perfect Forming Technology has since established itself globally as an economical system for manufacturing mould-hardened components for the wastewater infrastructure. Comprising of easy-to-operate and virtually maintenance-free casting moulds, the intelligent concept enables manufacturers to respond rapidly to changing market requirements without having to permanently tie up capital with large inventory levels. This applies in particular to manhole bases with custom-fit channels, requests for which are a sign of the growing quality requirements placed on manhole components. Around the world, the practice of constructing manholes on site is becoming less popular, with standardized components manufactured under controlled conditions often being used instead. In markets where civil engineering is technically advanced, it is increasingly rare for these components to be permitted to be fitted as simple containers, in other words, without a standing surface between the inlets and outlet. Correspondingly, the proportion of blanks used in the USA is also dwindling and, in turn, demand for manhole bases with channels and berms is on the rise. During the technical planning and implementation stages, progressive civil engineers and construction firms also consider the fluid-dynamic optimization of components, the practical viability and durability of which can be significantly improved if the inclination and connection brackets of the inlets into the manhole wall are adapted. All of this is, of course, subject to the condition that the pre-cast concrete parts factory processes high-quality materials, as is, of course, the case at CP&P thanks to its use of self-compacting concrete. This also closes a loop as far as CP&P's decision-makers are concerned, with requirements being met in terms of high-quality concrete production and the use of the ideal production technology.

Perfect Forming Technology Takes US East Coast by Storm

Perfect has the capability of producing a significant number of custom-made concrete manhole bases of various sizes each shift. The majority of manholes at CP&P, however, are produced with a diameter of 48" (DN1200) and about half are fitted with a protection to prevent uplift in the form of a base extension. This safety feature is a common practice in many regions. The manufacturing system has been tailored to this optional product characteristic, enabling key processes, such as the automatic demoulding of hardened products from the moulds, to take place independently. To ensure that product versions of varying complexity do not cause any delays to the timings of the manufacturing process, cleaning and preparatory work can be performed simultaneously at multiple workstations. The EPS channels can either be manufactured at the same time as the other production steps are performed or they can be produced before or afterwards. With the current production volumes, the hot wire saw is working at around 60% capacity, meaning that production can be stepped up without the need for multi-shift operation in this area.

The Perfect system, which converts moulded and rigid polystyrene parts into negative channels, consumes comparatively less materials and, therefore, has a low overall impact on the environment. Following the demoulding of the hardened



The prefabricated EPS parts are cut with hot wire saws and can be easily combined into channels of the required shape



Filled moulds are handled using robotic cranes, which means there are no cycle time losses caused by manual handling, and forklifts are not constantly moving around the factory floor



An automated turning station was installed to handle products with base extensions to prevent uplift



As usual for the Perfect Forming Technology system, parts suitable for use on construction sites were able to be produced immediately after the plant was installed

components, the residual polystyrene negative channel can easily be recycled using established third-party services. By using Schlüsselbauer's Perfect production system, CP&P is joining the list of companies who place its trust in a globally leading method for the industrial production of concrete manhole bases in "lot size of one", meaning each part goes through the process separately.

When his company invested in the Exact1500 manhole riser production machine in 2008, Bill Tichacek, now the President and CEO of CP&P, said, "For the benefit of our clients, we wanted to find out how we could stand out from the competition." This same mindset inspired CP&P to invest in Schlüsselbauer's Perfect Forming Technology, knowing that doing so would have an even more positive impact on the company's future success. Additionally, becoming the first manufacturer of Perfect manholes in the USA gives CP&P the confidence to call itself a technological leader in this growing market segment. ■



Mr. Bill Tichacek, President and CEO of CP&P has every reason to smile - his factory has one of the most efficient systems for manufacturing high-quality manhole bases in the USA



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