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# DN 1500 concrete pipe with seamless corrosion protection without welding at the construction site – also suitable for pipes with accessible nominal widths

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“Going off the beaten track” – this statement, more or less, sums up the systems developer Schlüsselbauer Technology’s trade fair exhibition. At bauma 2019, Schlüsselbauer focused on displaying precast end products that concrete part manufacturers can use to strengthen their position in the market and increase the added-value associated with production. The demand for high quality components in both product segments – concrete pipes and concrete manholes – was apparent from Schlüsselbauer’s exhibits. The precast parts on display were of the same quality that can be consistently achieved in everyday operation at a concrete plant. Once again, the debate about visible concrete surfaces for infrastructure components such as pipes and manholes was sparked by the precast parts displayed by Schlüsselbauer, which were delivered to the trade fair from four different factories in Germany and Austria. Most booth visitors shared the view that the structural and visual component quality will be decisive for the survival and continued growth of the precast concrete parts industry. This belief rings even more true when considering concrete has been facing stiff competition from other materials in the pipe and manhole market for a number of years, and quality, not cost, will be a decisive factor in this fight in the future.

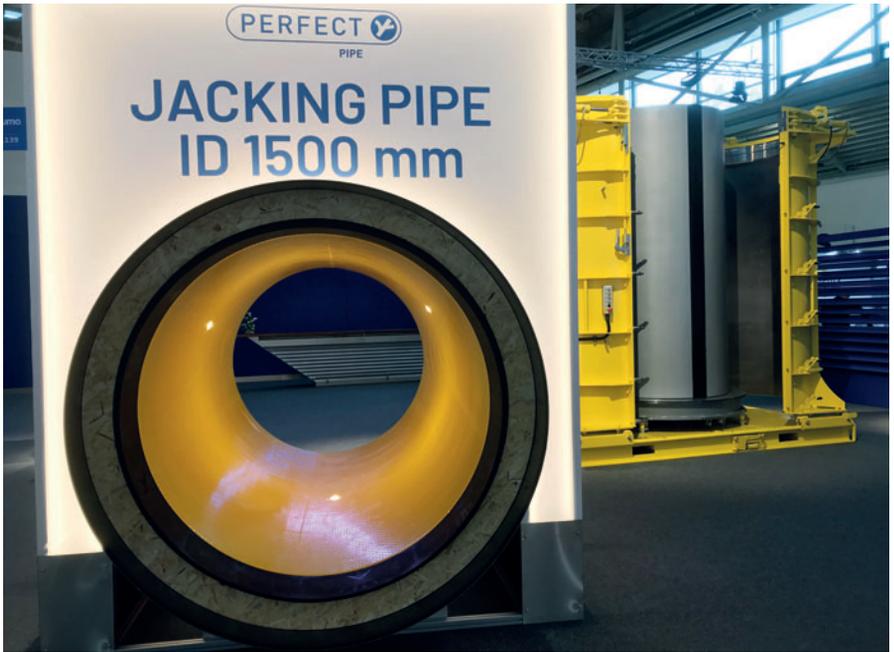
## Added-Value with Engineering Works

Using the DN 1500 Perfect Pipe jacking pipe as an example, Schlüsselbauer Technology’s exhibition proved that with extraordinary products, you can break into very interesting niche markets. While the Perfect Pipe concrete-plastic composite pipe covered the nominal width range 1 of DN 250–600 at its bauma premiere in 2010 (cf. BWI 3/2010) – placing it firmly in the field of non-accessible wastewater collection systems – the range of products is expanding further beyond this nominal width range. The idea of creating a wastewater pipe with



Schlüsselbauer Technology’s collection of pipes and manholes at bauma impressively showcased the variety of options for increasing the added-value in precast part factories with the manufacture of high-quality components.

a high static load capacity and which avoided the need for manual welding of the corrosion protection lining in the pipeline was supplemented by the idea of a plug connection being used instead of welding to ensure more efficient installation, even in pipes with larger nominal widths. With the Perfect Pipe system, manufacturers of concrete jacking pipes also have the option of offering suitable concrete-based products for wastewater collectors that are subjected to critical chemical attack. While the margins that can be achieved for surface



*The robust DN 1500 concrete jacking pipe with HDPE corrosion protection and connector - for quick installation without welding in the pipeline - was the star of the show in bauma Hall B1.*



*The custom-fit design of the pipe with a sealing chamber at the tip end demonstrates the possibilities offered by the sophisticated Perfect Forming Technology manufacturing system.*



*As a way to showcase the Perfect Forming Technology manufacturing system, Schlüsselbauer displayed the same mould with maintenance-free shrink core and careful tip end demoulding that was used to produce the pipe exhibit just a few days before.*

drainage with mass-produced products are generally shrinking under competitive pressure, products such as the DN 1500 corrosion-resistant concrete jacking pipe offer unique selling points both for the manufacturer and, from an overall market point of view, for sewer construction and trenchless installation.

### Added-Value from Mass Production

The longstanding premise that manufacturing expertise alone is enough to ensure the profitability of concrete pipe production is now outdated. Of course, opting for more efficient production favours competitive companies more than ever, but this only really applies within the context of the concrete industry. Flexible pipes have long since replaced the traditional concrete pipe in many applications – not just in the sewage sector. This is a development that will not be reversed even with the weaknesses of flexible pipes increasingly coming to light. It remains in the interests of all those involved in the process today and in the future, to utilize the strengths of concrete products and further increase product quality and profitability using innovative technologies. This can be achieved by means of product characteristics that take into account the

life-cycle costs (manufacture, installation, maintenance, removal) and using manufacturing methods that make mass production efficient for the manufacturer. Both have in fact been realized by manufacturers of Perfect Pipe products in Asia, Europe and North America, and interest in corrosion-resistant pipes and the manufacturing technology required reached new heights at Schlüsselbauer's booth.

### State-of-the-art Perfect Pipe Concrete-plastic Composite Pipe

Die Produktpalette umfasst neben der Messe-Neuheit The product range not only includes the trade-fair premiere – the DN 1500 jacking pipe – but also the entire nominal width spectrum from DN 250 to DN 1500. The plastic connectors with double-acting tilting lip gaskets significantly speed up the construction process in all pipe dimensions compared with linings welded at the construction site and also reduce total installation costs – even more so in non-accessible lines. The outer contour of the pipes in the Perfect Pipe system can either be circular with an integrally-moulded or integrated bell, or it can be a foot pipe with a flat contact surface, thus reducing outlay during lateral trench filling. Perfect Pipe is



*For installations exposed to strong chemical attack (pressure pipe junctions, long dwell time on account of gradient, seasonally variable volumetric flow rate, industrial discharges, etc.), pipes and manhole elements are given full corrosion protection.*

available for trenchless installation in the nominal widths mentioned above and in installation lengths of 1 m, 2 m and 3 m. As with all concrete products, the static loading capacity can be adapted to the specific project requirements by adjusting the steel reinforcement and wall thickness. For example, a DN 600 steel-reinforced concrete foot pipe with simple reinforcement has a breaking strength of roughly 330 kN/m (manufactured and tested according to DIN EN 1916/DIN V 1201). The bonding of the HDPE liner to the concrete, which is far better than in traditional concrete pipes with a lining, was tested several times and is roughly 900 kN/m<sup>2</sup>, making the Perfect Liner, with its thickness of just 1.65 mm, the ideal corrosion protection for concrete wastewater pipes.

### State-of-the-art Perfect Base Manhole Systems

The mould-hardened manhole bases with an individual channel that have been gaining global prominence over the past 15 years were also showcased at Schlüsselbauer's bauma exhibition. Using conventional components, quality values such as the surface finish with minimal water penetration depth and the tightness of the pipe connections - with the option of integrated seals and variable channel shapes - were clear to see. While in previous trade fairs visitors were able to "grasp" the unbelievable quality of the exhibits, it has since become apparent that quality products raise people's expectations and that components not meeting these exacting standards are largely pushed out of the market. Schlüsselbauer's Perfect Forming Technology production technique makes it possible for a pipe with a HDPE liner and connector to have a maximum diameter of 1,500 mm, and Perfect manhole bases with an individual channel can already be manufactured up to DN 2100. Even with components of this size, engineers have the freedom to choose the junctions, diameter and gradient of the pipes that are to be connected. The EPS negative channels required for concreting with self-compacting concrete are manufactured in a resource-friendly manner in the Perfect manufacturing system. Manhole bases of DN 600 to DN 2100 with channel diameters of 100 to 1,000 mm can be produced and sold at Perfect's consistently high quality standard.

### Monolithic Concrete Manholes with or without Extra Corrosion Protection

Schlüsselbauer's bauma exhibition not only included Perfect Pipe and Perfect Base, but also a structure with full corrosion protection consisting of a manhole base, manhole ring and a conical manhole section. Whenever the requirements for sewer components go above and beyond those of communal wastewater draw-offs with a constant flow rate and sufficient ventilation, planners are faced with the task of considering maximum exposure capacities when choosing the material. Schlüsselbauer showcased how concrete elements can be reliably protected against biogenic sulfuric acid corrosion even in cases such as these using a combination of components in a complete manhole structure. In the manhole constructions on display, the internal corrosion protection is gas-tight and can be easily applied using uncomplicated components without having to weld the vertical joints. A conclusion from one of many discussions at Schlüsselbauer's bauma stand was



*Schlüsselbauer's bauma 2019 exhibition in Munich was jam-packed with high-quality precast concrete parts and technological innovations.*

this: "Monolithic concrete elements and corrosion protection are not at odds with one another, but can complement each other perfectly. This creates more value in the concrete plant." Another conclusion was this: "The future success of precast concrete part manufacturers will also require going off the beaten track from time to time."



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