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The sewerage pipe system that stands the test of time

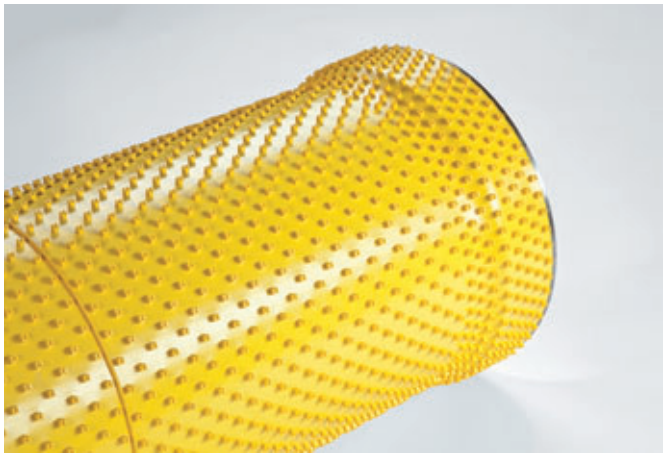
At bauma 2010 Schlüsselbauer was showcasing the new development in waste water pipes – Perfect Pipe. This novel system in pipe construction for waste water and sanitary sewer systems combines the product benefits of robust concrete pipes and durable synthetic liners. Following the presentation in 2004 of the innovation of individual manhole bases manufactured in the wetcast process, and now used successfully throughout Europe, Schlüsselbauer has celebrated another coup.

Perfect Pipe is connected to pipes using socket joints.

Perfect Pipe combines the requirements in terms of static strength and resistance in the event of increased chemical attack with the economic benefits of production, installation and operation. The manufacture of a durable connection of liners made of polyethylene and pipes made of high-strength concrete in an economical production process fulfils the essential demands on pipes for effluent disposal:

- Static load capacity even with traffic loads: Perfect Pipe has ideal load bearing with the Atlas pipe cross section. Compared to flexible pipe systems, there is no reduction in compression strength caused by age.
- Resistance to increased chemical attack: the uniform lining in pipe and sleeve is permanently resistant in the attack spectrum PH 1.0 to PH 14.0.
- Easy handling on the building site: the flat pipe profile makes problematic benching required in round pipe systems unnecessary, in particular with synthetic pipes. The pipe position does not change during backfilling. And on top of this, the use of excavated material is usually sufficient for backfilling. Due to the pipe geometry, no additional excavation is required for the laying of bell pipes.
- Safety in installation and operation: the flat pipe is easy to fit. The load-bearing capacity of the pipe can, if necessary, be enhanced through the use of high-performance concrete. Depending on different national and regional specifications, the pipe may be designed with or without reinforcement.
- Cost-effective use of resources: Perfect Pipe has an ideal material combination with the use of concrete and polyethylene and no need for adhesives, resins or similar material.

Perfect Pipe has an identical sleeve at each end. The pipe is connected by a easily inserting connection sleeve made from the same material as the liner and which includes the seals. Shear loads are absorbed via two pins in each pipe connection.



The polyethylene liner can withstand strong chemical attacks.

The Perfect Pipe product range is multifaceted; the image shows the standard design in the nominal widths DN200 – DN600.

The liners are widened in the socket area to take the socket joints.

The Perfect Pipe method also offers new possibilities in the jacking pipe industry.

Perfect Pipe for sewer pipes in the excavation method and pipe jacking

The Perfect Pipe product range in the nominal widths DN200 (8 ") to DN1000 (42 ") comprises standard construction lengths up to 3,000 mm (10 '). Product parameters are set on a project basis for the production of large-diameter pipes and jacking pipes.

The Perfect Liner is made of high-quality polyethylene. This material is resistant to chemical attacks up to a ph-value of 1.0, abrasion-resistant and weldable. Multiple anchoring points are used to connect the liner tightly to the surrounding concrete pipe. The high anchor density geared to the pipe sections and the optimum anchor geometry developed for Perfect Pipe facilitates a reliable connection right into the sleeve. The withdrawal resistance of each anchor is more than 250 N (56 lbs); the entire liner can safely withstand permanent groundwater pressure of at least 1.5 bar (22 psi). Even strong temperature fluctuations will not cause the liner to separate from the surrounding concrete. Liners can be produced in varying material thicknesses (1.65 – 3 mm) for different regional, standard- or project-specific requirements relating to the wall thickness of lining.

The manufacture of the Perfect Liner essentially involves trimming the liner track as per the internal pipe diameter, welding the liner track to the circumferential inner pipe lining, shaping of the ends of the liner to sleeves for the pipe connection required, placing the liner on a stable, multi-part steel core, as well as setting up the cast mould with fixed Perfect Liner, shear loads and anchors and the casting of the pipes. The position of the Perfect Liner in the pipe is determined on completion of the set-up process of the moulds. In the area of the pipe connections, an increased number of anchors on the liner provide a reliable, permanent connection to the concrete pipe.

The ultimate contour of Perfect Pipe is created by moulding the liner with flowing concrete or if necessary self-compacting concrete (SCC). Different grades of concrete can be used. The steel formwork is designed for the production of pipes in the Atlas profile. Perfect Pipe jacking pipes are produced with a round external profile. The dimensional stability of the liner in the production process is guaranteed by the inner steel core. Wet cast production permits an environmentally-sound production process for all components – liner, moulds, and cores –.

After the hardened products are removed from the moulds, the manufacturing process is complete. The moulds are cleaned and are ready for the next production cycle. The method is also suitable for multi-shift operation. The anchors connect the PE liner securely across the entire length of the pipe and the full breadth with the concrete envelope of the Perfect Pipe.

The Perfect Pipe system allows the cost-effective production of highly resistant pipes in application-specific production systems. The degree of automation of Perfect Pipe production ranges from manually supported handling of the moulds and products through to fully-automatic circulation systems, in which the operator remains exclusively responsible for steering and controlling all the processes.

Staged automation with increasing production capacity or product variety, such as the manufacture of large-diameter pipes or jacking pipes, is possible. The producer-specific planning for this new production system and in particular the associated automation is already underway at the system developer Schlüsselbauer.

FURTHER INFORMATION

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