References

Renovation of the sewage collector



Uponor involvement

- Renovation: WehoPipe PE100 pipes DN600x23.0 PN6.3 SDR26 with a total length of 2530 m
  Construction of the bypass: WehoPipe PE100 DN400x19.1 PN8 SDR21 pipes with a total length of 2950 m
- Technical support during the implementation of the task

Optimal solution for different types of loads

In 2021, a renovation of a corroded sewage collector was carried out in Swarzewo using a tight-fitting method.
One of the most popular seaside towns is Władysławowo. Poland's northernmost town is home to 10,000 people, while around 300,000 holidaymakers visit every year. Waste from Władysławowo is transported via a DN600 cast-iron pumping pipeline to the Swarzewo wastewater treatment plant, which normally treats 5,000^{m3}/day, while in summer this amount increases almost threefold (14,000 m^3). This, of course, has to do with the thriving summer tourism in the area.

Project Facts:

Location	Completion
Swarzewo, Poland	2021
Vrsta objekta	Product systems
Municipal	Renovation

Partners

Investor:
Spółka Wodno-Ściekowa Swarzewo

General contactor:
Konsorcjum firm G.T. PROJEKT Sp. z
o.o. oraz G.T. PROJEKT Tadeusz
Galisz

Two failures in one year

The Swarzewo plant is located on the shores of the Bay of Puck and is crucial for the protection of the coastal waters of the Baltic Sea. The collector pipe leading to it from Władysławowo was built in 1986 and failed twice in 2019. The first occurred in June when a 4 m long crack appeared in a 6 m long section of pipe in Władysławowo. The section could not withstand the increase in sewage flow (summer visitors had already arrived in the town and storms had also passed over the area). The waste water was first collected in a holding tank, but then had to be discharged into the Bay of Puck. Another time sewage was diverted into the bay in December (the scale, however, was much smaller). This time, the accident – a leak – occurred at the Swarzewo sewage treatment plant (a new RK collector pipe leaked during a sewer repair).

At the tender stage, the contracting authority stressed that the rehabilitation should ensure the self-supporting nature of the canal structure. The contracting authority pointed out that the circumferential stiffness and the thickness of the rehabilitation walls should be adopted on the basis of theoretical calculations based on actual data (foundation depth, groundwater, dynamic loads), and the calculations in the design should take into account all types of loads acting on the pipeline.

In the tender (design and build formula), the offer of the consortium of G.T. companies was considered the most favourable. DESIGN by Sp. z o.o. and G.T. DESIGN by Tadeusz Galisz. The general contractor entrusted the supply of structural class A ducting to Uponor Infra sp. z o.o.

What is the tight-fitting method?

The installation technology consists of pulling long sections of PEHD pressure pipe into the old pipe, with the outer diameter of the pipe to be introduced originally being equal to or slightly larger than the inner diameter of the pipe to be repaired. Then, after welding, the pipe is pulled through the reducer so that the outside diameter is reduced and it can be inserted into the pipeline to be repaired. The pulling force is then released and the PEHD pipe, after a relaxation process, presses tightly against the inner wall of the old pipeline. The advantage of this technology is that a small reduction in the inside diameter of the repaired duct is achieved, which, with a significant reduction in surface roughness, significantly improves throughput. There is also no need to fill in the space between the old and new pipe, the renewed pipe does not require further repairs and maintenance. An additional benefit is the structural reinforcement of the repaired sewer - the new pipeline is self-supporting, carrying the load.

Renovation of a collector pipe by the sea

Deliveries of pipes for the described investment started in September 2021. For the renovation of the Władysławowo-Swarzewo collector pipe, it was decided to use WehoPipe PE100 DN600x23.0 PN6.3 SDR26 pressure pipes with a total length of 2,530 m. They were transported to the worksite in 12.5 m sections. The pipes were joined together by butt welding. A DN630 welding machine was used for this purpose. Deliveries were completed in February 2022.

The use of PEHD pipes has resulted in 100 per cent leak-tightness, durability and a collector pipe life of more than 100 years. Systems made of this plastic are resistant to abrasion, corrosion and chemicals. The fact that they are used, for example, as

process pipelines for chemical plants or cooling water pipelines in power plants, must work on the imagination. So, as you can see, residents and tourists can look forward to this year's holidays with peace of mind.

Renovation of the sewage collector in Swarzewo









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