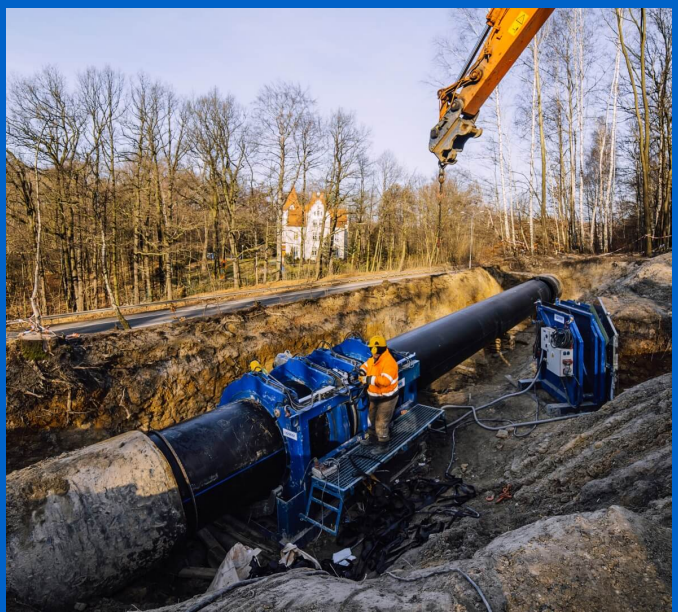
References

Renovation of a water supply system in an area with mining damage



Uponor involvement

- WehoPipe PE100 pipe DN1400 x 53,5 PN6,3 SDR26 – 719 m and WehoPipe PE100 pipe DN1300 x 77 PN10 SDR17 - 1172 m
- Uponor Infra technical and hardware support during the implementation of the task (rental of welders)

Renovation of a water supply system for one million people in an area with mining damage

In 2020, the water main between the reservoirs and the Paprocany pumping station in Tychy was upgraded with PE-HD pressure pipes by Uponor Infra.
The Upper Silesian agglomeration is home to 3.5 million people. Water for nearly a million of them is distributed from reservoirs located near Wanda Hill in Katowice. Every day, between 90 and 110 million litres of water flow through the six reservoirs, reaching consumers in Katowice, Sosnowiec and Siemianowice Śląskie, as well as partially in Chorzów, Czeladź, Będzin and Dąbrowa Górnicza. In 2020, the water main between the reservoirs and the Paprocany pumping station in Tychy was upgraded with PE-HD pressure pipes by Uponor Infra.

Project Facts:

Location	Completion
Katowice, Poland	2020
Building Type	Product systems
Municipal	Potable water
Project Type	
Renovation	

Partners

Investor:
Górnośląskie Przedsiębiorstwo
Wodociągów S.A.

General contractor:
Przedsiębiorstwo Budowlano-
Melioracyjne TOLOS

PE-HD pipelines are an ideal solution for mining damage areas

Górnośląskie Przedsiębiorstwo Wodociągów S.A. (GPW) supplies water to an area of approximately 4,300 km2. The water is produced in nine stations and two treatment plants. From these facilities, water is channelled via the mains to nine balancing tank complexes with a total capacity of 374,000 m3, from where, via a ring network of pipelines with a total length of over 900 km, it reaches district water and sewage companies, which distribute it to the territory of the given cities.

Katowice – area with mining damage

One of the most important elements of the water supply system in Upper Silesia is the water main between the Paprocany pumping station and the reservoirs on Wanda Hill. The water pipeline with a diameter of 1,600 mm feeds water from the water treatment plant in Goczałkowice to network balancing tanks in Katowice Murcki. Due to significant degradation of the steel pipeline, it was necessary to renovate over 2 km of the pipeline. Originally it was planned that it would be done in the traditional way (excavation), but it turned out that the process of excluding the land from forest production (the area of works belongs mostly to the State Forests) would extend the design stage to three–four years. For this reason, the decision was made to use the trenchless long relining method. An additional difficulty in carrying out this task was the fact that the renovation was planned in an area which is under the influence of mining exploitation of the Murcki-Staszic mine, i.e. with category III mining damage.

Renovation of the water main between the Paprocany pumping station and Wanda Hill

This task consisted in installing new pipe elements with diameters of 1,400 and 1,300 mm in an old steel pipeline with a diameter of 1,600 mm. On the one hand, because of the complexity of the terrain, and on the other hand – because of the speed of work, it was decided to use pressure pipes made of PE-HD polyethylene, manufactured by Uponor Infra sp. z o.o. 719 m of WehoPipe PE100 DN1400 x 53.5 PN6.3 SDR26 pipes, and 1,172 m of WehoPipe PE100 DN1300 x 77 PN10 SDR17 pipes were also used. Pipes were joined using butt welding, which guarantees one hundred percent tightness and uniform strength of the structure along its entire length. Such a solution made it possible to pull in such long sections of the pipeline and also to meet the requirements related to the execution of projects in the area of mining damage.

Launch trenches were used to insert the relining pipe. The pulling was done with a hydraulic machine with a pulling force of 190 tonnes. The use of PE-HD pipes enables time- and cost-efficient construction, replacement or renovation of pipelines and collectors. The technology used made it possible to accelerate and shorten the design by several years and to reduce project costs by at least 20-25% – said Henryk Gaweł, designer of the renovation works at HMG sp. z o.o.

PE-HD Technology for years

New pipes have completely taken over the tasks of the existing water supply system, which fits in with the model of a closed-loop economy, where the target elements are used immediately rather than in a temporary role. GPW representatives also show satisfaction. Thanks to the technology used for the renovation, it is guaranteed that the pipeline will withstand any mining movements and any mining exploitation. This technology will ensure its durability for a very long time – said the president of the company, Henryk Drob.

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