References

Retention tanks in mountain areas



Uponor involvement

- 19 retention tanks and tank batteries PEHD Weho SN8 in the diameter range from DN1200 to DN2400 with a total capacity of Vc = 5477.44 m3 and Weholite PEHD pipes, WehoTripla PP, fittings, eccentric manholes PE, PE manholes with flap valves
- Technical support during the implementation of the task, welding of tanks and leakage tests performed by the Uponor Infra Service Group

Retention tanks for the S1 expressway

Construction of the S1 expressway on the Przybędza-Milówka section, known as the bypass of Węgierska Górka. Uponor Infra polyethylene tanks were selected for drainage of the road system.
In the picturesque Beskid Śląski Mountains in Southern Poland, a construction project is under way on a key section of the S1 expressway. The beauty of the local landscape and the sheer scale of the EUR 300 million investment certainly impressive - yet the difficult mountain terrain poses a challenge to both man and technology. Thanks to Uponor's retention tanks, the task just got a bit easier.

Project Facts:

Location	Completion
Węgierska Górka, Poland	2023
Vrsta objekta	Product systems
Transportation	Storm water

Partners

Investor:
Generalna Dyrekcja Dróg Krajowych i
Autostrad

General contactor:
MIRBUD S.A.

Contractor:
WGB Firma Usługowo-Handlowa
Wojciech Gaweł, Przedsiębiorstwo
Usługowe „B&WJ" Sp. z o.o

Uponor's tanks take their place in the heart of the mountains

The S1 expressway is an important next step in the expansion of the country's transit route network as well as the Trans-European Transport Network, which connects the Baltic region to Southen Europe. The expressway runs through the Silesian and Lesser Poland voivodeships and upon completion will connect the A1 motorway with the Slovakian border, continuing there as the D3 motorway.

One of the key sections of the new expressway is a bypass around the town of Węgierska Górka. Once finished it will eliminate an existing bottleneck en route to the border and reduce the impact of truck traffic, which for years has weighted heavily on the town's residents. The bypass has a planned length of 8.5 kilometers with two tunnels, a series of flyovers and bridges. The tunnels, measuring 830 m and 1100 m, will be excavated under the Barania massif and Białożyński Groń massif respectively. Junctions at both ends of the bypass, partially completed during work on neighboring routes, will be finished and connect the new expressway the local road network. The estimated cost of this multi-stage and technically complex project, carried out in the "design and build" system, is approx. EUR 300 million.

A steep climb

Difficult mountain terrain poses the biggest challenge to the project due to complex geological structure, soil makeup including lots of rocky soils, and high groundwater levels. Wet mountain terrain impedes construction, often halting it altogether. It can also adversely affect the newly completed road, damaging the surface and engineering structures along the route. That is why a cut-to-measure drainage system is absolutely crucial.

Retention system to last a lifetime

At Wegierska Gorka rain water will be collected and stored in PE-HD retention tanks provided by Uponor Infra. Originally, technical specification called for GRP tanks, but after consideration the contractor chose PE-HD technology as better suited to installation conditions, roadworks process and schedule. Thanks to their flexibility, PE-HD Weholite tanks are able to withstand dynamic ground movements. Their robust, homogenous structure as well as resistance to corrosion and adverse external factors guarantee fail-safe operation under varying hydrogeological conditions. They are light weight, which makes them easier to handle and install. Large tanks are transported to the building site in segments and then connected by means of extrusion welding which ensures monolithic structure, durability and longevity as well as 100% tightness of the tanks.

Uponor Infra Poland is under contract to deliver 19 tanks and tank batteries of DN1200 to DN2400 for the Wegierska Gorka bypass project by 2022. The total capacity of the tanks is 5 477.44 m3 with the longest one measuring 140 m. The biggest battery will consist of 6 tanks DN4200, measuring 23 m in length and having the total capacity of 604.80 m3. To save time on site Uponor will deliver tanks in segments of up to 17 m. Apart from tanks Uponor is also responsible for delivering a PE-HD stormwater collector with the outfall to the Soła river. The collector is connected to a compatible system of eccentric

manholes and a PEHD end-of-line valve.

Faster and cheaper

Joanna Szafron, the Manager of Uponor's Silesian Sales Office, points out that all and any work on the bypass is carried out to a complex and precise schedule, which includes tasks and operators from many different sectors. We must be flexible in terms of deliveries as well as managing the work of our service teams, who not only carry out the extrusion welding, but also conduct leak proof tests.

Once all the elements of the retention system are welded, each tank undergoes a separate leak proof test. Our testing method does not require filling the tanks with water, which significantly shortens commissioning times and eliminates the costs of pumping the water in and out of a high capacity installation explains Joanna Szafron. Both representatives of the contractor and investment supervisors are present for the tests. When the trials are successfully completed, the tanks are awarded tightness and leak proof certificates.

Uponor – a reliable partner

Apart from work on the ground, delivering, welding and testing the tanks Uponor Infra also provides technical support throughout the project. Thanks to extensive experience of working on big-scale infrastructural projects in many corners of the world, Uponor's experts are ready to consult and advise on technical issues arising from changes to the project's design or unforeseen developments on site. In the case of Węgierska Górka bypass Uponor's technical team worked quickly to conduct static and displacement calculations when the contractor was forced to change the location of some of the tanks. As many of Uponor's satisfied clients can attest, when it comes to any project, there's no better partner than a reliable one.

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