References

Weholite siphon in the Biebrza National Park



Uponor involvement

- Weholite pipes SN10 DN1200 mm - 5 x 46,3 m
- Extrusion welding of Weholite pipes by the Service Group

HDPE technology will help protect nature in the Biebrza National Park

Uponor Infra delivered 5 polyethylene siphon threads for the largest task of Stage II of the investment – reconstruction of the Modzelówka water facilities node in the Grajewo commune.

The wetlands in the Biebrza Valley are one of the most valuable natural areas not only in Poland but also in Europe. A project to recreate former water conditions in this area has been carried out for several years in the Biebrza National Park. In December 2023, Uponor Infra delivered 5 polyethylene siphon threads for the largest task of Stage II of the investment – reconstruction of the Modzelówka water facilities node in the Grajewo commune.

Project Facts:

Location	Completion
Ruda, Poland	2024
Vrsta objekta	Product systems
Soil & Forestry	Tailor made constructions

Partners

Investor:
Biebrza National Park

Designer:
WAGA-BART Specjalistyczna
Pracownia Projektowa Zbigniew
Bartosik

Rebuilding the Modzelówka junction

It is estimated that only 1% to 3% of the extensive swamps and marshes that once covered Poland have survived to this day. Some of the best-preserved and largest are located in the Biebrza Valley within the Biebrza National Park (BNP). Unfortunately, many years of land improvement works started in the mid-19th century by the decision of the tsarist authorities, which were supposed to protect agricultural areas from flooding and free additional land for cultivation, led to the outflow of surface waters, lowering the groundwater level and the degradation of many marshy habitats. In order to stop these processes, restore adequate irrigation of peat bogs and improve natural conditions, the BPN has been implementing a project for several years titled: "Renaturalization of the hydrographic network in the Central Basin of the Biebrza Valley. Stage II. Its aim is to recreate the original river system in the project area. The investment is co-financed by LIFE funds from the European Commission, the National Fund for Environmental Protection and Water Management in Warsaw and the Biebrza National Park.

Currently, work is underway on the key task of Stage II - reconstruction of the Modzelówka facilities junction in Ruda in the Grajewo commune, where the Rudzki Canal, the Kuwaski Canal and the so-called Dead Ełk, i.e. a dry section of the Ełk River, converge. The aim of the work is to reconstruct the junction in such a way as to restore flows in Martwy Ełk. Starting the water flow in the oxbow lake will bring long-term benefits to the unique areas of the Biebrza National Park: the moisture level of valuable wetland habitats will increase, environmental conditions for the development of marsh vegetation and terrestrial fauna will improve, and rich communities of aquatic flora and fauna will be restored. The investment will have a positive impact on agriculture: stimulating periodic flooding of meadows in the Martwy Ełk valley will increase soil moisture, and maintaining the flow in the oxbow lake during the summer will provide meadows and pastures with an adequate water supply during dry periods. The fire risk will also decrease.

Siphon for the Kuwaski Canal

One of the tasks of rebuilding the Modzelówka junction is the construction of a siphon on the Kuwaski Canal, the route of which crosses the canal intended to supply water to the Martwy Ełk riverbed. The project, designed by WAGA-BART Specialist Design Studio Zbigniew Bartosik, assumed the construction of a siphon from GRP pipes, but ultimately it was decided to use Uponor Infra high-density polyethylene (HDPE) pipes. The key issues were high abrasion resistance, elimination of gasket joints to ensure maximum durability and longevity of the pipeline, and lack of corrosion and chemical neutrality. Thanks to joining HDPE pipes by extrusion welding (for gravity pipelines) or butt fusion welding (for pressure pipelines), we achieve homogeneous and 100% tight connections, guaranteeing the transmission of all axial forces, which in turn translates into exceptional system strength. Thus, the siphon made of PEHD Weholite pipes will operate in the Biebrza National Park for up to 100 years, without the need for replacement, interference with the park terrain, or generating additional emissions caused by the presence of humans or equipment.

In the period from November to December 2023, Uponor Infra delivered 5 siphon threads made of Weholite SN10 pipes with a diameter of DN1200 mm and a length of 46.3 m each for the reconstruction of the Modzelówka junction. Before the installation, a temporary circulation channel was made on the right bank to relocate the Kuwasy Canal bed, as well as temporary bulkheads separating the siphon excavation from the upper and lower sides. The canal bed was then concreted

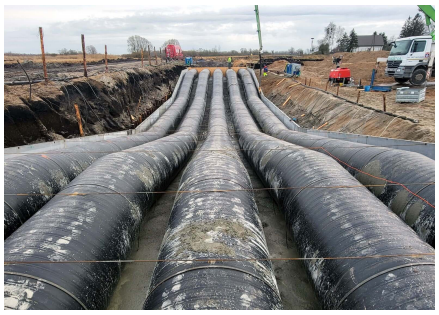
and the pipelines were laid on it, which were connected by the Uponor Infra service group using extrusion welding. It is worth noting that the siphon installation took place in December in difficult winter conditions. While the pipeline was being laid in a formwork-reinforced channel, the level of water outside the trench rose dangerously several times due to its alternating freezing and thawing, and it was necessary to pump water. In such situations, the low weight and ease of installation of HDPE pipes are a great advantage, as they significantly shorten the installation time, eliminating the risk of problems during installation and reducing costs.

PEHD – technology for years

Polyethylene pipes are a modern, highly durable and environmentally safe engineering solution. In addition to their homogeneous structure, failure-free operation and a service life of up to 100 years, they are also resistant to corrosion and do not react with the environment. Independent research confirms that they also have a lower environmental footprint than pipes made of traditional materials such as steel or concrete. For many years, Uponor Infra has been a leading supplier of PE solutions for safe water transmission and sewage disposal, retention and industrial solutions that help protect people and the environment. We also set ambitious goals for reducing the environmental footprint of our products and consistently strive to achieve them. Participation in projects that directly support the natural environment, such as improving water conditions in the Biebrza National Park, is a particular reason for us to be proud and a motivation to continue our activities.

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