References

Construction of the N-S road in the area of mining damage

Uponor involvement

- WehoPipe pipes PE100 PN12,5 SDR13,6 DN1370 - 1,35 km
- Weholite pipes SN8 DN300-DN600mm - ponad 2,6 km
- 5 bateries of retention tanks DN2000-2400
- Inspection manholes and sand trap chambers - 100 szt.

Extrusion welding of elements of Weholite tanks and pipes, butt welding of pressure pipes by the Uponor Infra Service Group

Problem-free operation in areas with mining damage

Uponor Infra pipe systems and stormwater retention tanks will ensure the reliable long-term operation of a key transport corridor in the Upper Silesian Industrial Region on the section between Kokota Street and Bielszowicka Street.

The new North–South Route (N–S) will connect the region's two most important transport arteries – the A4 motorway and the DTŚ (Cross-Silesia Highway), which run parallel to each other on opposite sides of the city of Ruda Śląska. The A4 is part of the European east–west transport corridor, while the DTŚ plays a crucial role in the region's urban transport network. With more than 20 interchanges, it provides direct access to numerous municipalities within the Upper Silesian Metropolis, home to approximately 2.3 million people.

The construction of the North–South Route has been divided into several stages. The section described here covers the construction of the route from Kokota Street (excluding the interchange) to Bielszowicka Street (including the interchange), as well as the reconstruction of Bielszowicka Street and 1 Maja Street. This is one of the key sections of the project, further integrating Ruda Śląska's road network with the region's main transport corridors. The project is comprehensive in scope and includes the construction of a new roadway together with access roads, sidewalks and bicycle paths. The existing viaducts, bridges, pedestrian underpasses and culverts will also be reconstructed. In addition, new engineering structures will be built, including a two-level viaduct and a roundabout.

Due to the location in an area affected by mining subsidence, particular attention has been paid to the durability and reliability of the stormwater management infrastructure. For this reason, the project incorporates the Weholite stormwater drainage system made of HDPE pipes, along with Uponor Infra retention tanks. These solutions will ensure dependable performance for decades while supporting sustainability objectives through their long service life and effective stormwater retention capabilities.

Project Facts:

Location	Completion
Ruda Śląska, Poland	2022
Building Type	**Product systems**
Transportation	Potable water, Storm water

Partners

Investor:
UM Ruda Śląska

General contractor:
Drogopol sp. z o.o.

How to ensure the durability of water and sewage systems in mining damage areas?

In order to ensure the new road and engineering structures are protected from water damage, the route is being equipped with a bespoke drainage system comprising five batteries of PE-HD retention tanks DN2,000mm and DN2,400mm with a total capacity of 1,000m^3, Weholite pipes SN8 DN300–600mm as well as no less than a hundred manholes and chambers supplied by Uponor Infra. Uponor has also delivered 1.35km of pressure pipe DN1,370mm for the construction of a brand-new water main, which will replace an old steel pipe DN1,200mm running in close proximity of the new route.

Uponor Infra has extensive experience in supplying gravity and pressure pipe systems for installations in difficult terrain, including areas affected by heavy industry, floodplains or seismic zones. The company's broad offering of individual products and systems, including turnkey solutions, is rooted in the high quality, versatility and reliability of Uponor's PE-HD technology. The benefits of PE-HD pipes, tanks and fittings include resistance to abrasion, corrosion, high resistance to chemicals as well as a low roughness coefficient (k=0.01), which prevents encrustation and enables self-cleaning of the pipeline. Due to their homogenous joins and monolithic surface, achieved in the process of butt welding (pressure systems) or extrusion welding (gravity systems), the PE-HD systems transmit axial forces. This makes them exceptionally robust and durable with a life expectancy of over 100 years. Add flexibility and low weight into the mix, and you get a product that is quick and easy to install while at the same time being long-lasting and able to withstand dynamic ground movements.

Ready, set, install

The contractor of the N-S investment was on a tight schedule – and challenging winter weather conditions ramped up the challenge. Uponor made the first deliveries of pipes, fittings and tank elements to the construction site at the beginning of 2021. Pressure pipes were delivered in 12.5-metre sections, while tank elements were prefabricated into 15-metre modules and fitted with manhole chimneys, ladders and inlets at Uponor's production facility in Kleszczów. The option of prefabricating

larger elements together with fittings is another benefit of using PE-HD solutions, as it saves both time and transport costs. Once on site, the elements are welded by Uponor's service team, who can carry out the job in virtually any weather conditions.

The highlight of the project was the installation of a single 400-metre section of the new pressure pipeline DN1,370mm in an open trench as a one-hour operation. This was possible due to the pipe's natural flexibility and bend radius, which allow for the safe handling of long pipe sections as well as adjusting them to the trench's profile. In total, Uponor has made 103 deliveries for the N-S route project, with the last shipments planned for mid-2022.

Sustainable means lasting

Commitment to progress and innovation with the aim of achieving a sustainable living environment for future generations has been at the heart of Uponor's philosophy for years. The long-appreciated benefits of PE-HD technology – such as high resistance to chemicals, easy and quick installation, a 100-year life span and maintenance-free operation – translate into strong sustainability credentials. Energy-effective and lasting PE-HD solutions implemented in infrastructure projects such as the N-S route near Ruda Śląska ensure we've taken good care of both people and the environment.

Construction of the N-S route in Ruda Śląska

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