References

Retention tanks for the railway station



Uponor involvement

- 5 batteries of PE-HD retention tanks in the diameter range from dn1800 to dn2600mm with a total capacity of 1400m3 with flow regulators
- Technical support, connection of tanks by extrusion welding by the Uponor Infra Service Group

A new lease of life for an iconic railway station

The modernisation of the Warsaw West railway station is the largest construction project currently underway in the Polish capital.
The modernisation of the Warsaw West railway station is the largest construction project currently underway in the Polish capital. Once completed, it will become Poland's largest station, with 120,000 passengers expected to pass through daily by 2030. To ensure uninterrupted rail traffic at all times, it is necessary to ensure adequate drainage of the railway line and other track assets. Five batteries of PE-HD retention tanks meet the strictest criteria of durability under heavy loads from rail traffic.

Project Facts:

Location	Completion
Warsaw, Poland	2022
Building Type	Product systems
Transportation	Storm water

Partners

Investor:
PKP Polskie Linie Kolejowe S.A. (PKP
Polish Railways)

General contractor:
BUDIMEX S.A.

Contractor:
Meliorant Tadeusz Zając i Spółka Sp.
komandytowa

Warsaw West Railway Station - the largest transfer junction in Poland

The Warsaw West railway station is an entry point into the city for arrivals from the west and south. It marks the beginning of a cross-city line cutting through Warsaw city centre and exiting east. Built in the 1930s as a temporary junction, it has become a permanent feature in the city's landscape and transit system. Despite growing into one of the busiest railway stations in Poland – with 60,000 passengers and 1,000 urban, suburban and long-distance trains passing through every day – it has remained an underwhelming sight, with disparate open-air platforms connected by dark underground walking tunnels.

Changes are coming

Now it is all about to change. Once the redevelopment is completed, Warsaw will gain a 21st century transport hub. It is part of a larger renovation project that calls for the modernisation of the entire Warsaw cross-city line. The contract for the redevelopment of the Warsaw West station was signed in July 2020 by the representatives of PKP Polish Railways and the Ministry of Infrastructure. Preparatory works began in December. The cost of the investment is around EUR 440 million, with Budimex S.A. at the helm as the general contractor.

The design of the new station includes the construction of eight new platforms as well as a footbridge running the width of the station and linking two city districts lying on opposite sides of the tracks. The footbridge will offer access to the platforms as well as the nearby suburban line. The platforms and the footbridge will be covered by a huge roof fitted with solar panels, which will certainly raise the green credentials of the station as they are set to provide 30% of its power supply. The roof will also feature skylights to let the natural light in. There will be double escalators and large glazed lifts leading to the platforms, the latter providing access to people with disabilities. The existing underground walkway will be raised and widened from 6m to 80m, making new space for ticket offices and waiting areas, as well as retail and food and beverage outlets. There are also plans for the construction of a tram station below the walkway level, the first stop on a new tram route running south to one of Warsaw's large residential districts.

Once work is completed, Warsaw West will become the largest traffic hub in Poland, comprising the train station and both bus and tram stations. The new tram line will improve passenger access to the station while underground transfers between long-distance platforms, suburban platforms and bus stops will make for quicker and more comfortable transit.

Uponor – reliable partner

Uponor has over 60 years' experience in the manufacturing of gravity and pressure pipe systems. The company's PE-HD piping is used all over the world to build sewage and stormwater systems, water mains, industrial pipelines, marine outfalls and high-capacity batteries of retention tanks. PE-HD pipes have high chemical resistance to both external factors and transported media, which is a huge benefit in stormwater systems. They are also resistant to corrosion and have a low roughness coefficient of k=0.01, which prevents encrustation and provides for easier self-cleaning of the pipeline. Weho retention tanks are a popular choice for infrastructural projects as they are able to withstand traffic loads and stray currents,

which factored in the decision to choose them for the redevelopment of the Warsaw West station. Thanks to extrusion welding, the finished tanks have a monolithic structure and homogenous joints, guaranteeing 100% tightness and a life expectancy of over 100 years.

Installation under active train traffic

In total, Uponor has supplied five batteries of Weho tanks of DN1,800–2,600mm with integrated flow regulators. The total capacity of the batteries is almost 1,400m^3. The first battery was delivered to the construction site in February 2021. The last shipment – a SN8 DN2,600mm battery of 380m^3 capacity – was delivered in December 2021.

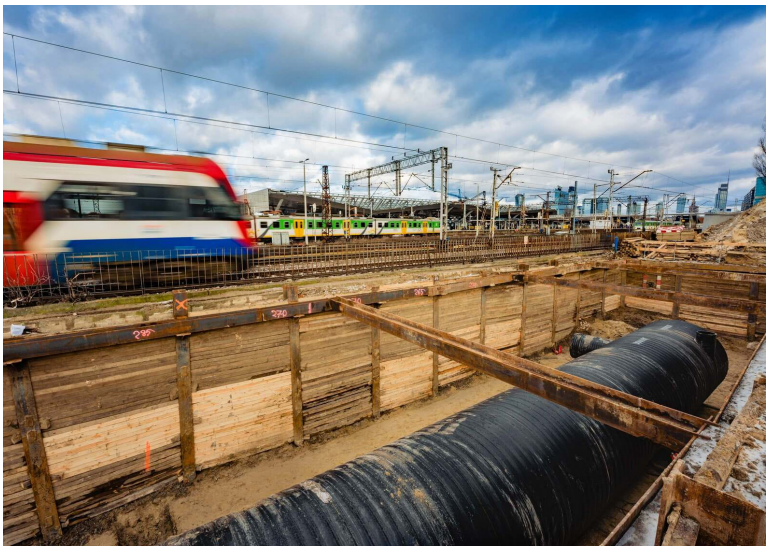
Paulina Siwiec, the Work Manager for Meliorant, says that collaboration with Uponor Infra went smoothly in terms of both deliveries and installation. The work schedule was revised and updated on an ongoing basis depending on progress on site. The demand for consecutive batteries was communicated to Uponor ahead of time. Once the technical drawings were approved, elements of the tanks were prepared for shipment at Uponor's manufacturing plant in Kleszczów and transported to the construction site in 12m to 14m sections. Once on site, the tank elements were lowered into a trench secured with a Berliner wall and onto prepared substrate. Uponor's service team assembled the tanks by means of extrusion welding. The tanks were then adjusted to their final position and connected to the rest of the system. After they had passed leak-proof tests, the trench was backfilled with native soil.

Sebastian Dembkiewicz, the Regional Sales Coordinator overseeing the project on behalf of Uponor, emphasises the benefits of using lightweight and flexible PE-HD tanks in the challenging conditions of a busy city centre, between railway tracks and, most importantly, under active rail traffic. Paulina Siwiec confirms that their modular structure and low weight are big advantages of Uponor's tanks. They provide for easier handling and facilitate last-minute adjustments depending on developments on site. If needed, the tanks can be customised in the factory to meet the precise requirements of a project. No significant modifications were necessary during installation in Warsaw, only small adjustments due to uninventoried elements of underground infrastructure and collisions with existing pipelines.

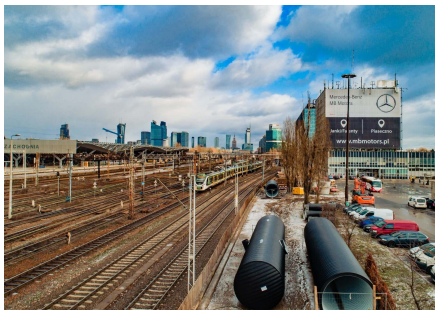
Building for future generations

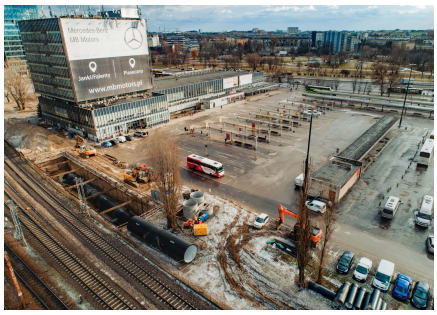
Multiple studies and expert reports confirm that Uponor Infra's PE-HD pipelines boast a service life of over 100 years. "Uponor is proud to provide solutions that will serve not only our contemporaries but also future generations," Sebastian Dembkiewicz says. Ireneusz Merchel, Chairman of the Board at PKP Polish Railways, recently expressed a similar sentiment. Speaking in an interview, he affirmed PKP's commitment to overhauling Warsaw's entire cross-city line to make it last not mere decades but 50 to 100 years. It's an important voice in the discussion of the future of engineering construction, especially in the context of the depletion of resources and climate change.

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