100-YEAR OLD UPONOR BOASTS AN AMAZING HISTORY
Page 6

THE LARGEST PREFABRICATED STRUCTURE DELIVERED IN SWEDEN
Page 16

A SUCCESSFUL WASTE WATER RENOVATION IN ONLY NINE DAYS
Page 18
Dear reader,

In recent years, the financial markets, businesses, and consumers have benefited from low interest rates in Europe and North America, which have contributed to positive economic development. This, in turn, has encouraged many companies to invest in future growth. To grow and succeed, a company needs a vision and strategy on how to move towards its vision. A company also needs courage to invest in the future and change as the world around it changes. In addition, sheer hard work and perseverance are sometimes required to overcome challenges.

Uponor was established in 1918, when Aukusti Aksa-Aukas set out to reach for his dream by establishing a carpenter's shop in Lahti, Finland. During its first 100 years, the business, now named Uponor, has invested itself many times before eventually becoming one of the world's leading providers of building and infrastructure solutions. Plastic pipes have been at the core of Uponor's product portfolio since 1965, when the first plastic pipe factory was established in Nastola, Finland. Plastic as a durable pipe material provides a sustainable, long-term life-time choice for our customers and societies. At Uponor, we are highly committed to sustainability, carefully studying the life-cycle impact of our offerings on the environment. This includes all kinds of environmental impacts, ranging from water purity to micro plastics. According to our internal analysis, plastic pipes are not a significant contributor to micro plastics. We continuously invest time and resources in researching our offerings, together with independent external experts. That is just one element in our commitment to a more sustainable world.

In addition to sharing the interesting story of Uponor's history, having grown from a small carpenter's shop into one of the world's leading providers of building and infrastructure solutions, we also wish to share the interesting story of Uponor's commitment to sustainability. Uponor is helping companies to succeed. One example of this is our new Water Monitoring Services recently launched on www.uponor.com. Through these services, we will help to monitor a municipality's potable water distribution network 24/7/365 in real-time. This is an exciting development for Uponor and our customers.

I hope you enjoy all these stories in this issue of Pipe World.

I wish you all good reading!

Sebastian Bondestam
President
Uponor

www.uponor.com
New Weholite licences for Tanzania and Turkey

Uponor Infra manufactures Weholite pipe in Turkey and the United Republic of Tanzania. As a result of these two new licences, Weholite websites with manufacturing operations will be present in twelve countries in Europe, Asia, Africa and Latin America.

The new licence in Tanzania is Plasco Ltd, a Tanzanian manufacturer of PE-HD, U-PVC pipes and fittings. Plasco will engage in Weholite production in its existing facilities in Dar es Salaam. Weholite products are expected to become available from Plasco during the second quarter of 2018.

In Turkey, the manufacture and marketing of the Weholite pipe has been launched by Gazex Endüstri Insaat Sanayi ve Ticaret A.S., a Turkish manufacturer of solutions for tanks, manholes and pumping stations. Gazex will engage in Weholite production in its existing facilities in the Istanbul area.

Thousands of Weholite projects worldwide

Weholite technology was developed by Uponor Infra in the early 1980s, since when it has provided excellent value on the global pipe market. Weholite has been successfully used in thousands of projects in different parts of the world.

Uponor Infra manufactures Weholite pipes in six factories in Finland, Sweden, Poland and Canada, and Weholite licenses have manufacturing operations in the UK, Iceland, Oman, South Africa, Malaysia, Thailand, Japan, Brazil, France, and now also in Turkey and Tanzania.

The Weholite polyethylene (PE) or polypropylene (PP) pipe is a spirally wound structured-wall pipe, which makes it highly durable, lightweight and flexible. The pipe is used extensively worldwide in gravityflow pressure service applications for potable water, stormwater, process and cooling water, sewage and various other liquids.

Weholite pipe is available in various sizes, with inside diameters of up to 3,500mm.

“Weholite pipe does not corrode, tuberculate or support biological growth, which makes it an excellent choice in wastewater and harsh chemical environments. It is inert in saltwater and chemicals likely to be present in outflows of sanitary sewage,” says Magnus Lundin, Director of Uponor Infra’s Water Monitoring Services. “The systems keep track of water flow, its direction and quality. Any deviations which indicate leakages or deteriorations in water quality are reported as an alarm event to the network owner,” says Magnus Lundin, Director of Uponor Infra’s Water Monitoring Services.

“This enables network owners to take immediate action if an abnormality is detected. In addition, laboratory testing can be optimised to match the existing asset, rather than being used as a precaution. “The systems keep track of water flow, its direction and water quality. Any deviations which indicate leakages or deteriorations in water quality are reported as an alarm event to the network owner,” says Magnus Lundin, Director of Uponor Infra’s Water Monitoring Services. “These new services will instantly be available to network owners in Finland and Sweden, and will be extended to other Uponor Infra markets over time. We have now launched new web pages for Water Monitoring Services on www.uponor.com, where you can find out more about how Uponor Infra can help you to monitor the potable water distribution network. More information: www.weholite.com

If you can detect it, you can control it!

A MUNICIPAL potable water network is an extensive system and water utilities have limited visibility within such networks. This can cause a number of problems. One example is leaking pipelines which result in water losses, while increasing the risk of contaminated water being distributed. Uponor has taken on this challenge by providing innovative technologies.

With Uponor’s Water Monitoring Services, the water network can be monitored in real-time 24/7/365. This enables network owners to take immediate action if an abnormality is detected. In addition, laboratory testing can be optimised to match the existing asset, rather than being used as a precaution.

“The systems keep track of water flow, its direction and water quality. Any deviations which indicate leakages or deteriorations in water quality are reported as an alarm event to the network owner,” says Magnus Lundin, Director of Uponor Infra’s Water Monitoring Services. “These new services will instantly be available to network owners in Finland and Sweden, and will be extended to other Uponor Infra markets over time. We have now launched new web pages for Water Monitoring Services on www.uponor.com, where you can find out more about how Uponor Infra can help you to monitor the potable water distribution network. More information: www.weholite.com

Expanding security of supply in Linköping

Excellent for densely populated areas. Infra tunnel is ideal for densely populated areas and places with challenging terrain. For example, a high water table can cause problems and rust the joints and valves of underground pipes and cables.

“In densely populated areas, digging up pipes and cables for repair and installation causes traffic jams and other inconveniences for the area’s residents. Linköping’s example has raised interest elsewhere in Sweden. A dozen Swedish cities are currently at the budgeting stage with their plans, and building work will begin on at least one site this year.

Infra tunnel has been patented in the Nordic countries and a patent is pending elsewhere in Europe.

Appointments

**UPONOR INFRA**

Mr Vesa Kiskinen has been appointed Marketing Director as of 11 September 2017.

Ms Elina Hietala has been appointed Digital Marketing Manager as of 1 March 2018.

Mr Sören Quist has been appointed Key Account Manager as of 1 August 2017.

Mr Thomas Hest-Madsen has been appointed Key Account Manager as of 1 September 2017.

Mr Corey Park has been appointed Weholite Sales Manager in Design Solutions Sales as of 30 April 2018.

**SWEDEN**

Mr Joakim Wågren has been appointed Sales and Marketing Director as of 1 September 2017.

Mr Björn Are Sænshød has been appointed Sales and Marketing Director as of May 2017.

Mr Geir-Arne Berg has been appointed Key Account Manager, Industry as of 2017.

**DENMARK**

Mr Thomas Hest-Madsen has been appointed Key Account Manager as of 1 September 2017.

Mr Birger Grindemo has been appointed Digital Sales Manager as of 1 March 2018.

**NORWAY**

Mr Søren Quist has been appointed Key Account Manager as of 1 August 2017.

Mr Brian Maguire has been appointed Weholite Sales Manager in Design Solutions Sales as of 2 April 2018.

Mr Bjørn Arne Sømhovd has been appointed Regional Sales Manager as of 2 April 2018.
One hundred-year-old Uponor boasts an amazing history, having grown from a small carpenter’s shop into a modern, global listed company and one of the world’s leading providers of building and infrastructure solutions. Uponor was born from a merger between Asko and Upo, and its story also reflects the remarkable history of Finnish developments in industry, trade and technology. It’s also an unbelievable tale of globalisation – today, Uponor is one of Finland’s most international companies. This true story is lacking neither drama nor dramatic turns nor moments of despair – and the joy and pride of overcoming them.

Uponor was born in 1918, when the Finnish self-made legend Aukusti Asko-Avonius set out to forge his American dream in a dirt-poor country by establishing a carpenter’s shop in Lahti. But what then?

1918 • Aukusti Asko-Avonius submits his business registration application to the Lahti magistrate on 13 August 1918. He had found premises for his carpenter’s shop, Lahden Puuseppätehdas, on Vesijärven-tie, as the previous tenant had died soon after being released from the Hennala prisoner of war camp. The company initially manufactures coffins, which is highly symbolic of the aftermath of Finland’s civil war, that occurred in the same year.

1920 • Aukusti Asko-Avonius opens his first furniture store in 1920, and establishes a new furniture factory soon afterwards.

1928 • In 1928, a new factory complex is opened next to the railway line in Hollola – it is the largest furniture factory in Finland.

1930 • An expansion of the new factory is completed just as the recession hits. The New York stock exchange had crashed in 1929 and the recession has now spread across the Atlantic to Europe.

1931–33 • Aukusti Asko-Avonius opens his second furniture store in 1931–33 to under half of what it had been at its peak in 1929. However, exports save the company from bankruptcy and Auko-Avonius manages to use the structural changes arising from the recession to his advantage. During the 1930s, the company builds up its own chain of stores called Asko.

1939 • Aukusti Asko-Avonius gets to his advantage. During the 1930s, the company builds up its own chain of stores called Asko.

1940 • During the truce, Upo brings a successful product to market: Pikko, a wood gas generator that is installed in vehicles due to the petrol shortage. Almost 30,000 of these wood gas engines are manufactured during the war years.

1944 • Upo's foundry begins to make products to pay off war reparations: ships, machine parts, and gears.

1947 • In 1947, Auko establishes its first subsidiary in the USA.

1949 • In 1949, Upo's foundry begins to manufacture cast iron pipes.

1950 • In 1952, the war of the Helsinki Olympics, Upo begins manufacturing refrigerators. Washing machines are added the following year.

1954 • The company also manufactures sewage and service water pipes, radiators, and metal bed frames. Spirit stoves are another of its best-selling products.

1956 • The first large kitchen furnishing store is opened in the Soviet Union in 1956 and the first store in Germany in 1958.

1960 • Aukusti Asko-Avonius dies on 13 September 1965 aged 78.

1965 • The company’s founder, Auko-Avonius, dies on 13 September 1965 aged 78.

1967 • The Ball Chair designed by Eero Aarnio for Asko becomes an international success in the late 1960s. It is seen everywhere, from a James Bond movie to the homes of superstars such as Princess Grace of Monaco and Frank Sinatra.

1970 • Upo faces its greatest financial difficulties in 1971. Auko, on the other hand, experiences a golden year for foreign deliveries in 1972, when a store opens in Germany and an Auko department opens at a department store in Liverpool.

1971 • In 1972–74, Upo engages in restructuring that puts an end to domestic overcapacity and increases the company’s ability to meet growing foreign competition arising from the EEC Agreement.

1976 • In 1976, Auko and Upo merge to form Auko-Upo Oy. The company’s earnings take a dramatic downturn.

1981 • The company makes a loss of one hundred million marks in 1978, which leads its financier, SYP, to take up the reins. Actual decision-making authority is transferred to SYP in 1979.

1984 • An amazing handcrafted products in Finland as well.\n
1990 • During the truce, Upo brings a successful product to market: Pikko, a wood gas generator that is installed in vehicles due to the petrol shortage. Almost 30,000 of these wood gas engines are manufactured during the war years.

1994 • Upo’s foundry begins to make products to pay off war reparations: ships, machine parts, and gears.

2000 • In 1994, Upo's foundry begins to manufacture cast iron pipes.
Uponor Infra (Uponor and KWH Pipe’s joint venture) starts up on 1 July 2013. This partner-ship brings together two strong experts with a combined total of 120 years’ of experience in domestic and international infrastructure markets. Infrastructure operations are once again launched outside the Nordic countries. In addition to standard products and systems, Uponor Infra invests strongly in customised products and services, end-to-end services, and turnkey projects. Weholite technology, in particular, provides opportunities for the manufacture of highly customised and even extremely large-scale applications, as pipes of up to 3.5 metres in diameter can be produced. Uponor begins developing its industrially prefabricated building elements, which accelerate contract completion times in both new construction and renovations. In 2015, Uponor bolsters its expertise in the service and drinking water markets with two acquisitions: the German company Delta Systemtechnik GmbH, which manufactures hot water distribution stations, and Kalto Group, which develops systems for domestic heating and hot water production, and manifolds. In 2016, a joint venture is launched with the US company Belkin International. This joint venture is called Pyn and it begins to develop technology for both measuring and reducing building’s water consumption. New products are being developed for both consumers and professional clients.

In 1961, it was made of wood. It had begun to break in some places and was springing leaks. The bands around the pipe had rusted and begun to crack after many years of friction against the seabed, and the related maintenance costs were increasing. As a result, Stora Enso decided to replace the old pipeline.

**Sustainable solution for a pulp & paper mill**

Weholite’s ability to withstand external wear, such as friction against the seabed, was an important criterion when the old outfall pipe of Stora Enso’s pulp and paper mill in Nymöl, southern Sweden, had to be replaced.

**Nymöl Bruk in Skåne, Sweden, is a modern pulp and paper mill which is part of the Stora Enso Group’s division called Stora Enso Paper. Nymöl Bruk manufactures uncoated fine paper, document paper and paper for envelopes and printing.**

The old outfall pipe, which was installed in 1961, was made of wood. It had begun to break in some places and was springing leaks. The bands around the pipe had rusted and begun to crack after many years of friction against the seabed, and the related maintenance costs were increasing. As a result, Stora Enso decided to replace the old outfall pipe.

Stefan Johansson, Construction Project Manager at Nymöl Bruk, contacted Uponor Infra during the marine installation of a stormwater pipe for the Glasbruket housing area in Limhamn. In the Limhamn project, no external concrete weights were used for sinking the pipes. A patented profile filling method was used instead.

A patented method for sinking the pipes

“Nymöl was very interested in avoiding the use of external concrete weights, because fishing activities occur in the area. Weholite was chosen because it could be profile-filled with grout. This was a crucial factor when choosing Uponor,” says Stefan Johansson.

Nymöl chose Weholite for the new pipe due to its ability to withstand external wear such as friction against the seabed, which was so advantageous that alternatives were ruled out.

In all, 3,500 metres of Weholite dimension DN/ID1,500mm were installed, consisting of 24-metre sections of pipe.

A dedicated team

“The project has involved several challenges, the greatest of which was the weather and ensuring that the old pipe would continue to function as the new one was being installed. In addition, connecting the new pipe could take no longer than 5 hours.”

“In collaboration with us, Uponor Infra Project Services managed to handle all these challenges. Uponor Infra’s project team is very dedicated, competent, perceptive, reliable and it’s fun to work with. They clearly like their job and enjoy working together,” Stefan Johansson concludes.

Uponor Infra Project Services’ work involved drawings, calculations of stability, corrosion and hydraulics, as well as project management and job descriptions. The field work service consisted of detailed engineering, project management, welding pipes into 265-metre sections, profile-filling by using the Uponor patented method, and the monitoring of sinkings.
A 100-year, leak free service for THE OREGON IRRIGATION DISTRICT

A U.S. irrigation district with a rich agricultural history has chosen Weholite to ensure that the district’s valuable water supply will conserve every ounce of water intended for use and remain safe and leak-free.

The Tumalo Irrigation District (TID) in Oregon, U.S.A., boasts a rich farming history originating in the late 19th century. To support the crops and livestock of the surrounding areas, the first documented canal was dug in 1883 to divert water from the Tumalo Creek.

The Tumalo Irrigation District now manages two primary water diversions in nearby reservation parks and lake storage. The District encompasses 667 customers, manages over 80 miles (130 kilometres) of piped and open canals and irrigates more than 8,000 acres (3,200 hectares) of growing farmland consisting of cash crops such as hay, garlic, lavender and others.

For the last 15 years, the District has been very active in enclosing long stretches of its irrigation canals, which can significantly reduce evaporation and exfiltration losses. The benefits of regular enclosure include increased safety for the surrounding public and livestock, as well as the opportunity to reclaim and utilise land, once occupied by the canal, for healthy crop production.

Minimal chance of leakage

The key aspect of a commercial irrigation system that sells water is ensuring that there are no leaks in the system, which could result in financial losses. Weholite ensures leak-free systems by way of its robust material characteristics and fabrication method. The fabrication of Weholite pipe, consists of extruding a linear closed profile structural beam of PE-HD and then winding the profile around a circular drum while fusing the adjacent profile surfaces together. The fusing process results in the development of a single homogenous pipe of high structural strength. When fusing PE-HD pipes together, the connection points or joints are typically stronger than the pipe itself. These very strong, fused PE-HD joints allow for a leak-free system over the design life of Weholite, which is 100 years.

Uponor Infra North America worked extensively with the Tumalo Irrigation District to provide the Weholite pipe for this impressive project. Phase one of the project called for 4,000 feet (1,220 metres) of 84” RSC250 Weholite large diameter PE-HD pipe, 19 elbows, 2 access chambers and several turn-outs. Installation of the Weholite pipe began in December of 2017 and concluded successfully in March 2018. Phase two of the same project is even more extensive, as it calls for another 8,000 feet (2,440 metres) of 84” RSC250 Weholite large diameter PE-HD pipe, with an additional 3,000 feet (915 metres) of 60” RSC250 to be installed in the autumn of 2018 and continuing into the winter of 2019. This winter installation is causing little concern, since the fusing zone only needs to be heated to a temperature of 5°C or higher for the installation to progress, even in the harshest of climates. The operating pressure of the complete irrigation system will be 15 PSI (1 bar).

The optimal material for irrigating farms

There are numerous benefits to using Weholite PE-HD pipe for various water management infrastructure projects. For successful farming and crop growth, reliability is a high priority throughout the system from the design to installation and deployment of irrigation spanning large surface areas. While some piping materials may suffer from corrosion, erosion or in some instances cracking, the combination of Weholite’s unique closed profile, double wall design with the added benefits of its PE-HD material, provides for a 100-year design life and the lowest life cycle costs on the market today.

The preferred material of North American engineers

Engineers choose Weholite structural PE-HD pipe over conventional pipe materials (concrete and steel) for several key reasons. For example, engineers now realise the importance of selecting solutions based on Life Cycle Cost (LCC) so that the true cost of ownership, which includes annual operational and maintenance costs, are captured. Steel pipe can corrode and in turn produce corrosion products capable of reducing the internal diameter of a pipe. Pipe restrictions result in increased annual pumping costs. Concrete pipe, which is good in terms of compression but not tension, requires the addition of steel wire or reinforcement to make it stronger. As concrete is porous, the steel wire can also corrode resulting in spalling and/or loss of pipe integrity, if the steel wire snaps. The consequence of wire corrosion is higher maintenance costs or immediate replacement.

Weholite is a non-metallic structural pipe made from PE-HD and as such does not corrode, does not suffer from hydrogen sulphide ex-posure, does not spall and is not subject to high surge or transient pressures. This is why Weholite has one of the lowest Life Cycle Costs on the market today.

Working together as a team, Core & Main provided local support and communication for the client, while Uponor provided overall support in product selection, installation drawings and field installation services. Uponor’s ability to act locally in support of the client allowed for increased speed of response in answering their questions and requests, while the installation of Weholite provided the irrigation district with the means of conserving water through a leak-free system.
Due to the light weight of PE pressure pipes, they can be transported through difficultly accessed areas directly to fish farms in e.g. Faroe Islands, Iceland or Shetland Islands.

Challenging weather, demanding underwater conditions and logistical challenges in remote areas of the North Atlantic create the harsh working conditions confronting the Danish salmon industry.

That is also why a Faroese producer of breeding rings, KJ, sets high standards for its supplier’s solutions. Easily handled pipes are essential when producing breeding rings at the site where they will be used. Whether the rings are to be used in the Faroe Islands, Shetland Islands, Iceland or the United Kingdom, the related large pipes need to be moved easily due to difficult access roads and limited welding space. That is why it is so crucial that they are light.

Easy to transport

Logistics in remote areas of the North Atlantic represent just one of KJ’s biggest challenges, which is why the company views Uponor’s products – as well as their logistical handling from its factory in Middelfart, Denmark – as ideal for its operations.

Due to the light weight of PE pressure pipes, KJ can handle and transport them directly to the production site, e.g. in Iceland and the Shetland Islands, through areas that are difficult to access.

KJ uses around 40,000m of Uponor PE pressure pipes each year, because they are easy to float on the sea and are lightweight, even when used in large dimensions. In terms of price and durability, the competitive advantages of plastic pipes speak for themselves. Additionally, they meet the breeding industry’s requirements for certification and approvals in relation to the on-site weather conditions.

Safe and sustainable solutions

Due to environmental considerations – as well as demanding climate challenges at northern latitudes – the salmon breeding industry demands that a certification body, Noomas, approve breeding rings to ensure safer and more sustainable solutions in the food industry. Noomas Certification (Noomas Sertifisering) is an inspection and certification body focusing on fish farming and equipment.

Uponor’s PE pressure pipes meet the stringent requirements in question, contributing to a thriving and growing salmon industry in the Faroe Islands and the surrounding markets.

Delivery of fish farming pipes under harsh conditions in the North Atlantic
formed on the worksite, which included many sites under construction at the same time. The old pulp plant, which is now closed and ready for demolition, was fully operational during the entire construction period.

"Towards the end of the project, the pipes almost laid themselves compared to the early phases, because we managed to leave the busiest plant construction area. At the same time, daily negotiation with other contractors was markedly reduced. We also began performing installations in shallow trenches, which did not require separate support structures," says Project Foreman Arto Korhonen of Graniittirakennus Kallio Oy.

Graniittirakennus Kallio, which was responsible for the bio-product factory's underground pipe work, was also involved in other projects. This company was the one managing most project contracts with construction companies during the project.

Korhonen comments that, with around 20 years of experience, he is an old hand in the business but is still amazed that such a sizeable project was kept on schedule.

For the project to remain on time, the pipes had to be laid flexibly in line with other construction, despite the occasional surprise created by difficult ground conditions.

He affirms that change is the only permanent aspect of industrial construction. Flexibility on site ensured completion on time.

"I have only praise for Uponor. Despite the changes in the plans, we were provided with excellent support from both sales and production staff," Korhonen adds.

Varying installation conditions were challenging

The first pipes had to be installed and built in a sheet piled cofferdam, and the 22-metre long pipes needed to be shortened to 7–8 metre lengths. Korhonen admits that, by then, he doubted their ability to stay on schedule.

"We were able to catch up once we'd moved to the embankment section. After that, installation of the pipe elements progressed quickly, compensating for the slow start."

Uponor delivered the materials as the work progressed. Since no storage was available, the lorries brought the pipes directly from the factory to the edge of the worksite.

Planning and support at an early stage

What do projects of this magnitude teach their creators?

"In a factory or in any other kind of project, a functioning infrastructure including piping, roads, etc. should be planned at an early stage.

Unfortunately, infrastructure plans are often made in the final stage of the design process, leading to challenging timetables. People only tend to notice infrastructure when it is lacking," comments Korhonen.

Uponor Infra’s Area Sales Manager, Tom Karnela, also points out that the Äänekoski project had a tight schedule.

"In large projects, plans are dynamic and become more precise as the project progresses, and this must be taken into account."

Uponor Infra 360° Project Services was closely involved in the Äänekoski project, providing support for planning and tailored solutions at different stages.

"In addition, we provided technical support during the entire project, and our welders were involved in the installations."

Karnela points out that the various services within the 360° Project Services concept can also be used in small projects.
Choosing Weholite for the intake pipes was more self-evident. Compared to other materials and piping systems, Weholite is the most cost-effective material with the highest durability and is the easiest to maintain. Öresundskraft required that neither the pipes nor the pump station would need chemical cleaning, but could be cleaned by pigging, a method that works well with PE pipes.

Creative support throughout the project

Uponor Infra’s overall contract consisted of detailed engineering, project management, marine dredging and backfilling work, the underwater installation of intake and outfall pipelines, land-based sheet piling, excavation, backfilling and asphalt works, the welding and installation of the intake pipes, the supply and installation of a prefabricated pumping station including a bore, filtration units, two pumps with a capacity of 3,600 m³/h, and the circulation of water to the heat exchanger and outfall pipeline and then back into the sea chambers and poly pig devices. The entire process – from the first drawing and calculations to the groundwork, complicated installation process and land restoration – was conducted by Uponor Infra and subcontractors.

In 2017, the project was awarded the CCAC international environmental prize at the UN’s climate conference COP23 in Bonn.
In place in a couple of days

Weholite pipes made of polypropylene met – and even surpassed – strict requirements in the renovation of a waste water channel at the Stora Enso Oulu mill in Northern Finland. Timed for a maintenance stop of nine days, the installation proceeded quickly and was finished well before the deadline.

Founded in 1937 in Oulu, the Stora Enso integrated pulp and paper mill produces 360,000 tonnes of long fibre pulp and 1,125,000 tonnes of coated fine paper each year. 60 percent of pulp production from the mill, which has around 600 employees, is exported and 40 percent is fed into the factory’s own paper machines.

The waste water channel for the pulp line of the mill, which was renovated in 2017, was commissioned in the 1980s. Over the years, the channel had deteriorated to the point that there were fears that it would collapse.

“The channel’s condition was examined during a maintenance stoppage two years ago. At the time, it was decided that the channel should be renovated as soon as possible,” says Project Manager Juha Parpala from Efora Oy, which is owned by Stora Enso.

Efora, which owns Stora Enso’s factory in Imatra in eastern Finland.

“Several side branches made of polypropylene in diameters of 110, 315, and 500 millimetres were added to the outside pipeline,” Hakala says.

Both Parpala and Kärnä were surprised by the speed of the installation. The original deadline for completing the work was Saturday evening, but the job went exceptionally well and was finished on Wednesday afternoon.

The installation went much faster than what we had expected,” Parpala and Kärnä state.

“We decided to remould the end section of the channel in concrete, because with so many branches and other structures, there would have been no other way to complete the work in practice,” Juha Parpala states.

A heavy, 30 centimetre thick concrete cover for the outside channel needed to be demolished before the renovation began.

The ground was dug up and the cover was opened for a distance of around 50 metres. Uponor Infra began the preparatory work on the Wednesday before the renovation.

The Weholite pipes, which had an interior diameter of 1,200 millimetres, were delivered ready well before the deadline for completing the work was Saturday evening, but the job went exceptionally well and was finished on Wednesday afternoon.

The installation went much faster than what we had expected,” Parpala and Kärnä state.

“We decided to remould the end section of the channel in concrete, because with so many branches and other structures, there would have been no other way to complete the work in practice,” Juha Parpala states.

A heavy, 30 centimetre thick concrete cover for the outside channel needed to be demolished before the renovation began.

The ground was dug up and the cover was opened for a distance of around 50 metres. Uponor Infra began the preparatory work on the Wednesday before the renovation.

The Weholite pipes, which had an interior diameter of 1,200 millimetres, were delivered ready well before the deadline for completing the work was Saturday evening, but the job went exceptionally well and was finished on Wednesday afternoon.

The installation went much faster than what we had expected,” Parpala and Kärnä state.

“We decided to remould the end section of the channel in concrete, because with so many branches and other structures, there would have been no other way to complete the work in practice,” Juha Parpala states.

A heavy, 30 centimetre thick concrete cover for the outside channel needed to be demolished before the renovation began.

The ground was dug up and the cover was opened for a distance of around 50 metres. Uponor Infra began the preparatory work on the Wednesday before the renovation.

The Weholite pipes, which had an interior diameter of 1,200 millimetres, were delivered ready well before the deadline for completing the work was Saturday evening, but the job went exceptionally well and was finished on Wednesday afternoon.

The installation went much faster than what we had expected,” Parpala and Kärnä state.

“We decided to remould the end section of the channel in concrete, because with so many branches and other structures, there would have been no other way to complete the work in practice,” Juha Parpala states.
An optimal solution for a Polish power plant

WehoSlurry polyethylene pipes with an additional, internal slurry layer, provided an optimum solution for hydrotransporting ash to the Belchatów Power Plant’s disposal site.

The ash problem

One of the byproducts of lignite (brown coal) combustion is ash, which is deposited by the Belchatów Power Plant at the Bagno Lubień disposal site. Before 2010, the ash was dry stored. However, due to high dust emissions, the Power Plant had to switch to a wet storage system. In 2011, the Power Plant went ahead with preparations for the installation of an ash hydrotransport system and the disposal site’s customisation for this type of coal combustion waste. The hydrotransport system and wet storage technology helped to reduce dust emissions and increase the ash storage capacity.

Although the dusting problem was solved, another challenge lay in ensuring the mixture’s uniform distribution over an area of 416ha, because the dense material becomes a hard shell once the water is removed.

The best solution

Uponor Infra participated in the technical dialogues alongside the investor (the Belchatów Power Plant) and contractor (Ramb), and served as a specialist adviser. Ultimately, the decision was taken to use WehoSlurry polyethylene pipes with an additional, internal abrasion-resistant slurry layer for connection to steel pipes and the distribution of the ash mixture to the disposal site. Polyethylene pipes proved to be the best particular pipeline sections – its distribution towards the edges of the site, thereby achieving a uniform layer – explains Krzysztof Kobiałka, Industry Sales Manager, who represented Uponor Infra during the technical negotiations. “The pipelines are then reconnected and another layer is poured into the centre,” he adds.

The 15-metre sections were installed using AVK Victualic pipe-to-flange joints, which allow the quick and easy assembly and disassembly of the piping system. A total of 5km of WehoSlurry pipes, with a diameter of DE/ID 250/203mm and manufactured by Uponor Infra in Kleszczów near Belchatów, were used for the project.

Use of WehoSlurry for transporting the very awkward water and ash mixture, and the possibility of repositioning pipeline sections to ensure the uniform distribution of the abrasive mixture, proved to be an optimum solution. This is confirmed by the power plant’s maintenance department.

PE PIPES PROVED TO BE THE BEST SOLUTION, GIVEN THEIR FLEXIBILITY AND RESISTANCE TO CORROSION AND UV RADIATION.

A few years later, in 2016, the Belchatów Power Plant asked Uponor Infra to assist it in developing an ash hydrotransport system.

The ash is transported to the disposal site in a water-and-ash mixture in a 1:1 ratio.

A total of 5km of WehoSlurry pipes were installed for transporting the water and ash mixture to the disposal site.
stockholm Exergi AB is an energy utility company that operates in Stockholm. It is jointly owned by the City of Stockholm and the Finnish energy giant Fortum Oyj. The company produces district heating, district cooling and electricity. Today, it supplies heat to approximately 800,000 inhabitants in the Stockholm region. Previously known as Fortum Värme, the company adopted its current name a short while ago. "The company was renamed because the City of Stockholm bought half of it from Fortum about a year ago. In this respect, the city wants to be an active owner of its large stake in the energy company. It also meant much more cooperation with the city than before, both on practical and environmental matters," says Hans Jakobsson.

"The company invests some 300–350 Million Swedish kronor per year in the renewal of its network. "A future challenge lies in the need to largely replace old culverts. We have replaced several special square culverts, and that is what we still have to prioritize," Hans Jakobsson says.

Major ongoing renewal projects include the replacement of an old main pipeline between the Hässelby and Akalla districts in western Stockholm. "This will need to be replaced due to aging. "With Uponor Infra’s district heating system, we will obtain a new culvert with better insulation," says Hans Jakobsson.

Power boost for Stockholm’s district heating network

Close and efficient cooperation and flexible deliveries are ensuring the smooth renewal of a district heating network in a busy urban environment in Stockholm, the capital of Sweden.

Stockholm Exergi's goal is to use 100% renewable fuels by 2022. This is of major importance for Stockholm’s climate strategy, since the city aims to be fossil-fuel-free by 2040. Stockholm is already considered one of the world’s cleanest capitals, having been rated the third most sustainable city in a comparison of 100 cities in the world. A new culvert with better insulation

Stockholm Exergi manages 2,900 kilometres of district heating network in Stockholm area. The company invests some 300–350 Million Swedish kronor per year in the renewal of its network.

"We have worked on several projects with Uponor, which was clearly the best choice of supplier for this project. "Laying large pipes in the middle of a city always involves challenges. The route crosses Mälarbanan, one of the busiest railway lines in Stockholm, and the management shaft is next to a major road in the city. Traffic works are also ongoing in the same area," says Project Manager Rikard Söderström of Fjärrvärmeprojekt Sverige AB.

"Challenging work in the middle of a city Construction of the new pipeline began in December 2017 and the work will be completed in September 2019. The installation work has been fairly challenging, due to the pipeline’s location in a busy city environment with heavy traffic. "We have worked on several projects with Uponor, which was clearly the best choice of supplier for this project. "Laying large pipes in the middle of a city always involves challenges. The route crosses Mälarbanan, one of the busiest railway lines in Stockholm, and the management shaft is next to a major road in the city. Traffic works are also ongoing in the same area," says Project Manager Rikard Söderström of Fjärrvärmeprojekt Sverige AB.

"The company was renamed because the City of Stockholm bought half of it from Fortum about a year ago. In this respect, the city wants to be an active owner of its large stake in the energy company. It also meant much more cooperation with the city than before, both on practical and environmental matters," says Hans Jakobsson.

"The company invests some 300–350 Million Swedish kronor per year in the renewal of its network. "A future challenge lies in the need to largely replace old culverts. We have replaced several special square culverts, and that is what we still have to prioritize," Hans Jakobsson says.

Major ongoing renewal projects include the replacement of an old main pipeline between the Hässelby and Akalla districts in western Stockholm. "This will need to be replaced due to aging. "With Uponor Infra’s district heating system, we will obtain a new culvert with better insulation," says Hans Jakobsson.

"Challenging work in the middle of a city Construction of the new pipeline began in December 2017 and the work will be completed in September 2019. The installation work has been fairly challenging, due to the pipeline’s location in a busy city environment with heavy traffic. "Laying large pipes in the middle of a city always involves challenges. The route crosses Mälarbanan, one of the busiest railway lines in Stockholm, and the management shaft is next to a major road in the city. Traffic works are also ongoing in the same area," says Project Manager Rikard Söderström of Fjärrvärmeprojekt Sverige AB.

"The company was renamed because the City of Stockholm bought half of it from Fortum about a year ago. In this respect, the city wants to be an active owner of its large stake in the energy company. It also meant much more cooperation with the city than before, both on practical and environmental matters," says Hans Jakobsson.

"The company invests some 300–350 Million Swedish kronor per year in the renewal of its network. "A future challenge lies in the need to largely replace old culverts. We have replaced several special square culverts, and that is what we still have to prioritize," Hans Jakobsson says.

Major ongoing renewal projects include the replacement of an old main pipeline between the Hässelby and Akalla districts in western Stockholm. "This will need to be replaced due to aging. "With Uponor Infra’s district heating system, we will obtain a new culvert with better insulation," says Hans Jakobsson.

"Challenging work in the middle of a city Construction of the new pipeline began in December 2017 and the work will be completed in September 2019. The installation work has been fairly challenging, due to the pipeline’s location in a busy city environment with heavy traffic. "Laying large pipes in the middle of a city always involves challenges. The route crosses Mälarbanan, one of the busiest railway lines in Stockholm, and the management shaft is next to a major road in the city. Traffic works are also ongoing in the same area," says Project Manager Rikard Söderström of Fjärrvärmeprojekt Sverige AB.

"The company was renamed because the City of Stockholm bought half of it from Fortum about a year ago. In this respect, the city wants to be an active owner of its large stake in the energy company. It also meant much more cooperation with the city than before, both on practical and environmental matters," says Hans Jakobsson.

"The company invests some 300–350 Million Swedish kronor per year in the renewal of its network. "A future challenge lies in the need to largely replace old culverts. We have replaced several special square culverts, and that is what we still have to prioritize," Hans Jakobsson says.

Major ongoing renewal projects include the replacement of an old main pipeline between the Hässelby and Akalla districts in western Stockholm. "This will need to be replaced due to aging. "With Uponor Infra’s district heating system, we will obtain a new culvert with better insulation," says Hans Jakobsson.

"Challenging work in the middle of a city Construction of the new pipeline began in December 2017 and the work will be completed in September 2019. The installation work has been fairly challenging, due to the pipeline’s location in a busy city environment with heavy traffic. "Laying large pipes in the middle of a city always involves challenges. The route crosses Mälarbanan, one of the busiest railway lines in Stockholm, and the management shaft is next to a major road in the city. Traffic works are also ongoing in the same area," says Project Manager Rikard Söderström of Fjärrvärmeprojekt Sverige AB.
Cities are growing. More and more large, hard surfaces are laid. Heavy rain is becoming increasingly common. As a result huge amounts of storm water need to be taken care of in urban areas. Choosing the right storm water solution matters.

Uponor offers efficient and sustainable solutions for storm water management. Solutions that help protect people, property, and environment. Solutions that deliver low lifetime costs and enable fast and safe execution on site. Solutions that are developed and manufactured with a unique combination of expertise and experience – The Uponor Way.

Read more about our complete storm water offering on www.uponor.com and in the next issue of Pipe World.