



TRENCHLESSWORKS

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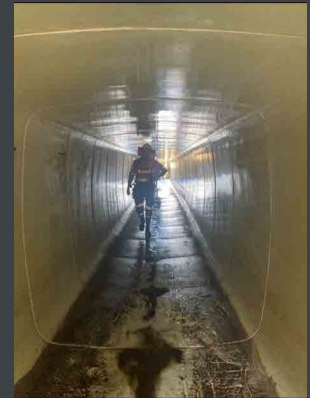
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Beyond the Ordinary

SPOTLIGHT



Ian Clarke, Editor-In-Chief,
Trenchless Works

TAKING A GLOBAL OVERVIEW

In Jules Verne's novel, Phileas Fogg took a trip around the world in 80 Days. We at Trenchless Works have decided that even for us that may be something of a task. So, we are looking at taking our trip around the world over the next 12 months or so.

In order of appearance, we will be looking at Australasia (this issue), North America (June issue), Latin America (October issue) and Africa (November issue). With the Trenchless Asia event having now been Covid-affected once again we are now also looking at Asia as the regional focus during the course of 2023. We will let you know exactly when as soon as possible as dates are firmed up.

This issue, for those that have not got the idea from the Front Cover or the foregoing paragraph, starts our journey with a look at the Australasian region (Australia and New Zealand). With the original Australian Society for Trenchless Technology having celebrated its 30th anniversary just last year it seemed like a good place to start, the Society having been inaugurated in 1991. With expansion of the Society just 3 years later to encompass New Zealand and a rename to the Australasian Society for Trenchless Technology, the Society has become one of the more active and comprehensive members of the International Society for Trenchless Technology, with its No-Dig Down Under events attracting significant numbers of visitors and exhibitors.

Our Australasian focus covers various aspects of trenchless technology from the region including some of the ways the industry there is looking at embracing the latest digital technological advances and some interesting applications of various equipment types.

This is one of the good things about being Editor-in-Chief, I get to read these articles first!

For those of you reading this in other parts of the world, as indicated in our listings above, please start thinking now what you may want to see published and consider letting see your project reports and articles for potential use in the issue relevant to your region. The earlier you get them in the more likely they will be used!

So, here's hoping you enjoy our little trip around the globe over the next few months and I look forward to seeing your contributions as they come in.

ADDTECH ACQUIRES IMPULSERADAR

ImpulseRadar recently announced its acquisition by Swedish technology solutions group Addtech. Effective 4 April 2022, Addtech Industrial Solutions, a business area in the Addtech Group, has acquired 88% of the shares outstanding in Impulseradar Sweden AB.

"ImpulseRadar complements Addtech's existing operations within the Industrial Solutions business area, specifically the infrastructure segment. We are delighted to conclude the signing and welcome them to the Addtech Group," explained Daniel Prelevic, Business Area Manager, for Addtech Industrial Solutions.


The ImpulseRadar management team will stay intact and commented on the deal saying: "By becoming part of the Addtech network, we can accelerate our impressive growth journey to take ImpulseRadar to the next level. With a strong owner to support our strategy, we aim to capitalise on our current market position and expand more effectively internationally. Importantly, there will be no changes to our current operations or sales distribution network."

<https://impulseradargpr.com>

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IPEK DEBUTS FULL-HD SEWER TV INSPECTION SYSTEMS AT IFAT



The ROVIONHD VC500 with Crawler will be on show at IFAT.

At the 2022 IFAT Show in Munich, between 30 May and 2 June on Stand 351/450 in Hall C3, iPEK will present a wide range of inspection systems, from modern full-HD sewer crawlers to 3D-equipped push-rod cameras. Central to the exhibit will be a large pipe course, where inspection equipment can be tried out under real-world conditions. Also, this year, VETTER will join iPEK to present their rehabilitation packers from DN150 up to DN1200.

ROVION HD Inspects at Resolutions up to Full HD

ROVION HD, the newest generation of sewer inspection system from iPEK, is based on the proven ROVION platform, with over 7,500 systems in service. ROVION HD offers full HD video resolution for standards-compliant inspection in pipes sized DN150 to DN2200. It also retains the full range of ROVION performance advantages, including tool-free set-up with QCD (quick-change design) attachment. >

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IPEK IFAT 2022
Stand.

The wide range of accessories, from laser and panoramic scanning to various wheels, can also be tested on the pipe course. ROVION HD systems will ship starting in June; existing ROVION customers have the option of upgrading their current systems to full HD video resolution.

WinCan Sewermatics

A special highlight of the pipe course is the ROVION Full-HD inspection system in combination with WinCan Sewermatics. WinCan Sewermatics applies powerful AI to the biggest challenges in sewer inspection and rehabilitation to support with: automated defect coding for sewer and manhole inspections, work scheduling, merging of different data sets, map-based visualisation of inspection data, and rehabilitation planning. WinCan Sewermatics works seamlessly with the industry leading WinCan software platform.

Pipe run visualization with VC500 and AGILIOS XR

iPEK's software innovation is available for hands-on testing: the ability to create a pipe run visualisation based on inspection observations made using a VC500-equipped AGILIOS push camera. During the inspection, the observations are recorded by the user and displayed alongside a schematic of the pipe.

The lightweight AGILIOS XR is an all-purpose push-rod system. Whether a pipe only needs to be checked quickly or a standards-compliant inspection is required, there is an AGILIOS XR configuration to meet your needs.

More manhole inspections per day

Together with EnviroSight, iPEK is introducing an AI-supported manhole inspection tool at IFAT. The new QuickView 360° allows up to 80 manhole inspections per day, capturing 360° HD footage that can be shared instantly on WinCan Web and used to generate a dimensionally accurate 3D point cloud. WinCan Sewermatics can assist with automatic coding of defects and observations, and automatically generating a report. The 3D point cloud model can be measured using various digital tools and exported to CAD. >

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The IPEK RX400.

Rehabilitation packer

Vetter Flexpackers offer unique advantages when it comes to sewer rehabilitation. An internal channel allows effluent to flow through during rehabilitation. A safety pin on the coupling prevents unintentional disconnection. The packer can easily navigate through manhole inverts and adjusts to varying pipe diameters. In addition, a flexible, skid-shaped undercarriage glides smoothly over offsets.

Vetter flexible rehabilitation packers are available in 3 sizes for pipe diameters from 150 mm to 1,200 mm and in lengths up to 3 m.

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PRIMUS LINE® RECEIVES BRONZE GSTT AWARD

Peter Lischewski, Managing Director of Rädlinger Primus Line GmbH (left) receives the GSTT Award from Chairman of the Board of the German Society for Trenchless Technology, Professor Jens Hölterhoff (right).

At No-Dig Berlin 2022, Peter Lischewski, Managing Director of Rädlinger Primus Line GmbH, accepted the GSTT Award for Primus Line® Overland Piping. It was presented by the Chairman of the Board of the German Society for Trenchless Technology, Professor Jens Hölterhoff.

"We are very pleased to receive this award," said Peter Lischewski, "because it once again shows the great interest we are meeting with our new technology on the international market."

Primus Line® Overland Piping is a further development of the proven Primus Line® technology, which is primarily used for trenchless rehabilitation of pressure pipelines in the water, gas and oil sectors. The new system offers a perfect solution when a safe and reliable temporary, above-ground fluid transfer in the form of a bypass is required. The superior liner matrix, consisting of high-performance polymers, and the leak-proof end connectors give the operator the necessary safety for use in sensitive environments.

Primus Line® Overland Piping is an environmentally friendly solution that is designed for numerous applications with a service life of 20 years and impresses with its quick installation.

The award ceremony took place during an evening event at No-Dig Berlin. The symposium was held for the first time together with the ptc – Pipeline Technology Conference.

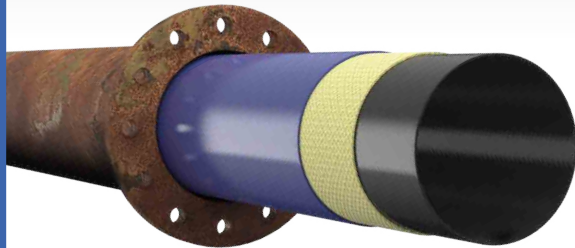
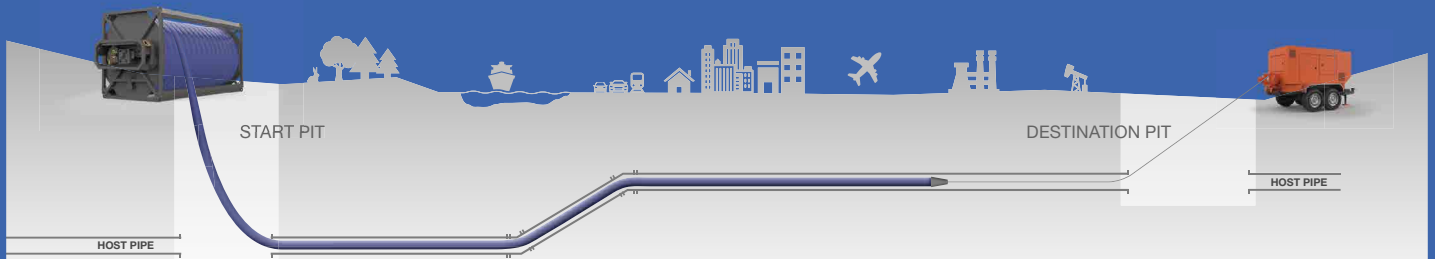
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MERGER MARKS NEW ERA IN WATER COLLABORATION

“By joining forces, we have created an even stronger organisation that can deliver ever greater value for all our members, key stakeholders, partners, and the sector as a whole.”

As the water sector, governments and wider society face unprecedented challenges, the need to embrace change, innovate and collaborate has never been more critical. The merger of two influential water sector organisations in the UK, aims to lead the way.

On 1 April 2022, British Water (BW) and the Water Industry Forum (WIF) announced that the merger of its two organisations was complete.

“By joining forces, we have created an even stronger organisation that can deliver ever greater value for all our members, key stakeholders, partners, and the sector as a whole.” said Chris Loughlin, chair of British Water. “There is tremendous synergy to be gained from bringing our respective strengths together.”

The merger will increase the range of services on offer, strengthen membership support, and enhance the opportunity for challenged thought leadership, which will provide greater authority and a stronger voice both nationally and internationally, elements that are only growing more essential in the current economic climate. >

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“British Water and WIF have proud histories of achievements, for and on behalf of their members and the sector. We know that by combining our respective strengths we can create a new and even stronger organisation which will deliver added value for all our members, key stakeholders and partners, enabling us to respond most effectively and efficiently to the unique challenges and opportunities ahead of us all.”

Dr Mark Fletcher, chair of Water Industry Forum said: “We are two strong, respected and financially stable organisations that, together, can provide a single point of focus in the water sector, with our four forums addressing both the UK and international water markets. The merger will provide efficiencies through eliminating duplication of effort, broadening our membership and opening access to our combined range of services.”

BW and WIF began exploring the possibility of a potential merger in 2020, and following detailed discussions and due diligence, it became clear to both boards that the timing and rationale for pooling resources was so compelling that in 2021 the organisations recommended to their respective members that they proceed with a merger.

“It has been made possible through the commitment of a key team of senior representatives from British Water and the Water Industry Forum, under the wise and dedicated leadership of Tony Conway, a highly respected non-executive director of both organisations.” added Fletcher.

A proposed operating model and governance framework have been developed to support the activities and priorities of the merged organisation, and importantly to preserve the Water Industry Forum’s integrity and independence - enabling it to maintain the trust and respect it enjoys throughout the sector.

The Water Industry Forum will remain as a not-for-profit limited company, operating as a subsidiary of British Water. Its management board will be bound by a code of conduct guaranteeing its independence and neutrality, and its directors will also be required to adhere to a code of ethics, with everyone’s integrity and impartiality assessed on an ongoing basis.

A harmonised subscription model will be introduced during a post-merger transition period. Subscriptions will increase for a small minority of members, with any increase phased in over an extended period.

The merger of these two organisations aligns with the direction of travel throughout the water sector. For example, Water UK’s discussion paper Developing a 2050 Vision for the Water Sector describes a need ‘for the sector, government and regulators to build on current areas of joint work and collaborate more effectively to accelerate the rate of positive change. The status quo and incremental approaches will not be enough.’

This sentiment is underpinned by a questionnaire across the UK water sector representative organisations co-ordinated by the Water Industry Forum, which demonstrated an overwhelming support for closer working and increased collaboration.

“British Water and WIF have proud histories of achievements, for and on behalf of their members and the sector.” added Loughlin. “We know that by combining our respective strengths we can create a new and even stronger organisation which will deliver added value for all our members, key stakeholders and partners, enabling us to respond most effectively and efficiently to the unique challenges and opportunities ahead of us all.”



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Caption

INLAND PIPE REHABILITATION TO ACQUIRE INLINER



Installing Inliner rehabilitation liners.

Inland Pipe Rehabilitation (IPR), a portfolio company of investment affiliates of J.F. Lehman & Company (JFLCO), recently announced the signing of a definitive agreement to acquire Inliner from Granite Construction Incorporated and certain affiliated companies (Granite). The acquisition enhances IPR's capabilities and service solutions while expanding its presence throughout North America.

Inliner is a leading, vertically integrated provider of trenchless pipe rehabilitation solutions addressing wastewater and stormwater infrastructure. Since 1927, the Company has established a sterling reputation as a leader in resin- and UV-based cured-in-place-pipe solutions, geopolymer liner, and construction management services, supporting government customers across the United States and Canada. The company's services are strengthened and supported by market-leading manufacturing capabilities. Inliner is the second add-on acquisition completed by IPR under JFLCO sponsorship.

Jim Baumgardner, Chief Executive Officer of IPR, commented: "We believe the combination of IPR and Inliner will further strengthen both organisations, and provide our customers with a breadth and depth of service unmatched across our industry. We are excited to welcome Inliner into the IPR family."

"This is a compelling opportunity to establish a unique service provider in this market, a national presence, delivering scaled capabilities across numerous technologies and delivery methods, addressing storm, waste, and potable water infrastructure," said Glenn Shor, Chairman of IPR and Partner at JFLCO. "The addition of Inliner builds upon the acquisition of Murphy Pipeline Contractors in our strategy to support the IPR platform through strategic M&A and organic growth initiatives," added Dave Thomas, Managing Director at JFLCO.

www.teamipr.com

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LSBUD ENHANCES SEARCH ACCURACY BY PARTNERING WITH GOOGLE MAPS

LSBUD has switched its mapping system to Google Maps.

LSBUD, the UK's leading online safe digging resource, has switched its mapping system to Google Maps in a move that will make searching for underground pipes and cables more accurate than ever before.

The new mapping system will give users a better search experience, benefitting from detailed geospatial data and industry-leading reliability. In addition, LSBUD users will have access to improved zoom capabilities, allowing them to determine their work sites much more precisely. >

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“We are taking the service we provide our users to the next level, improving accuracy by introducing the satellite-based Google Maps. This move helps operators from right across the safe digging industry, covering all sectors and the general public, to avoid the negative consequences that come from hitting an underground asset.”

By moving its search function over to Google Maps, LSBUD users also will be able to accurately plot their proposed work areas via satellite imagery. This helps ensure that people can see property boundaries and features, something particularly useful when operating in agricultural and rural settings, such as on the UK's moorland.

The change to LSBUD's mapping system coincides with the platform readying itself to be UK-based, meaning that people in Northern Ireland will soon be able to join their counterparts in England, Scotland and Wales, in benefiting from the switch to Google Maps, staying safe in the process.

Richard Broome, MD at LSBUD, commented: “We are taking the service we provide our users to the next level, improving accuracy by introducing the satellite-based Google Maps. This move helps operators from right across the safe digging industry, covering all sectors and the general public, to avoid the negative consequences that come from hitting an underground asset. This is chiefly the health and safety ramifications, but also the significant financial and reputational implications that come from asset strikes.”

Ensuring LSBUD's mapping technology is as accurate as possible is vital for the millions of searches that pass through the portal. It is also crucial to protect the UK's underground infrastructure, of which LSBUD hosts over one million kilometres spread across the length and breadth of the country.

SSE Renewables is one of the 100 LSBUD Members providing asset location data to the collaborative portal. LeeAnne Samuel, Drawings and GIS Manager, SSE Renewables, said: “LSBUD's recent investment in Google Maps will be a great help to our customers as many of our assets are situated in remote and rural areas. Having Google satellite imagery available will enable those people requesting SSE Renewables' asset location plans to define their site boundaries more accurately.”

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"As one of only 26 Distinguished Supplier Award recipients across the Intel global supply chain, GF Piping Systems has been crucial to Intel's success while offering agility and flexibility during the ongoing volatile supply chain environment," said Keyvan Esfarjani, EVP and Chief Global Operations Officer at Intel. "They have provided exceptional collaboration and commitment toward safety, quality, diversity and inclusion, and exceeded our expectations in support of Intel's supply chain operational excellence. Earning this award speaks to their dedication to Intel values and their partnership."

The Intel EPIC Distinguished Supplier Award recognises a consistent level of strong performance across all performance criteria. Of the thousands of Intel suppliers around the world, only a few hundred qualify to participate in the EPIC Supplier Program. The EPIC Distinguished Award is the second-highest honor a supplier can achieve. In 2022, only 26 suppliers in the Intel supply chain network earned this award.

To qualify for an Intel EPIC Distinguished Supplier Award, suppliers must exceed expectations, meet aggressive performance goals, and score 80% or higher in performance assessments throughout the year. Suppliers must also meet 80% or more of their improvement plan deliverables and demonstrate formidable quality and business systems.

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SVI TROPHY WIN

Nicole Fever, Development Technician at SVI (below) delivers an excellent presentation at the Lion's Lair event and receives the coveted Tommy McNicholas Shield (above).



The popular London Showcase and Lions' Lair took place on 10 February 2022. Steve Vick International (SVI) presented one of its latest innovations, FBOS (Foambag Operation on Stubs), and won the coveted Tommy McNicholas Shield.

FBOS is a method of replacing short lengths of T1 stubs, stranded mains, or those found on mains replacement schemes. For diameters of 4 in (100 mm) up to 6 in (150 mm) diameter, including one-way fed, in sensitive locations or where access onto the main is restricted.

The shortlisted finalists had four minutes to showcase their new innovation followed by four minutes of questions from the judges. Nicole Fever, Development Technician at SVI delivered an excellent presentation which, combined with this innovative technique, won the judges over on the day.

It was all the more fitting because, not only was Nicole heavily involved in developing FBOS, but she won this highly prestigious award during National Apprenticeship Week. Nicole started at SVI as an apprentice back in 2017 and completed her apprenticeship in 2019. It is therefore a huge success story and inspiration to other engineering apprentices.

Following the Lions' Lair there was an excellent presentation from keynote speaker, Hilary Buxton, Director of Engineering, Cadent Gas, who gave a talk on the challenges facing the industry with the potential transition to hydrogen.

The event was organised by David Goodall on behalf of IGEN's London, Southern and Eastern Section in conjunction with the Pipeline Industries Guild.

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WE NEED MORE GOOD EMPLOYERS!



Jörg Brunecker, General Manager of
Swietelsky-Faber Kanalsanierung

For the vast majority of construction companies today, finding and retaining loyal and capable employees with the necessary qualifications has become a considerable challenge. Yet, employee satisfaction is the key to a company's success, in subsurface infrastructure construction and beyond.

Construction sector protagonists are warning of the consequences of an ageing society and the associated shortage of skilled and managerial staff in growth markets. That is fuelling competition for employees, and is becoming particularly apparent in industrial centres. As a result, recruitment agencies are very much in demand in the current market situation. One thing is certain: good and authentic employees want to work for good and authentic companies.

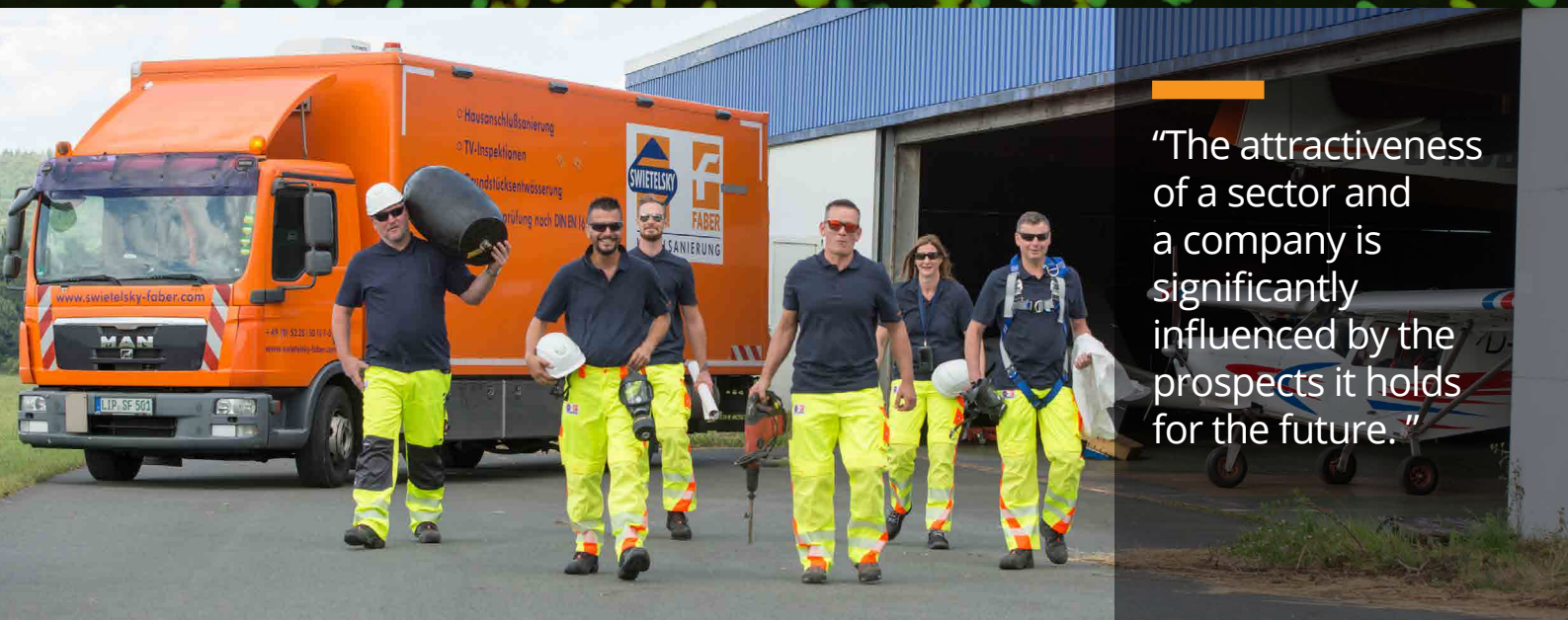
In recent years, we at Swietelsky-Faber GmbH Kanalsanierung have doubled our permanent workforce solely as a result of organic growth. Today, with well over 300 members of staff and annual turnover of €70 million, we are a major player in the field of trenchless infrastructure preservation and provide customers all over Germany with service that treats them as equals and partners. How did we do it and how much of it is attributable to the Swietelsky-Faber DNA?

Attracting To Young Talent

In the competition for young people, an employer needs to be convincing and visible when it comes to communicating that they have attractive jobs to offer. In our case, a family-like company culture and good prospects for the future have proved effective arguments. >

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“The attractiveness of a sector and a company is significantly influenced by the prospects it holds for the future.”

A Swietelsky-Faber crew.

An environment that encourages learning and good pay are the minimum – but in order to keep apprentices in the long term and give them a sense of security, it is also crucial to have a sympathetic ear and an understanding of their concerns. Work is a shared learning experience and mistakes are dealt with in an honest and open way with the focus on responsibility, not blame.

Besides looking after the apprentices, it is also vital to cultivate the quality, loyalty and willingness of experienced employees. Many companies underestimate how important it is for senior level staff to embody these aspects in order to ensure the development, motivation and protection of junior employees. Older staff serve as an anchor for their younger colleagues.

Coaching these youngsters safeguards our future. That is why Swietelsky-Faber attaches special importance to ensuring the young generation receives first-rate training. Every year up to 14 apprentices, evenly spread between site-based and office-based roles, learn their trade in the company with experienced coaches at their side.

Communicating Attractiveness

Many young people simply do not realise how attractive an apprenticeship as a pipe, sewer and industrial service technician actually is. The varied work, the prospects for promotion, the handling and operating of sophisticated state-of-the-art technology, youngsters are often totally unaware of all these factors.

In our efforts to make all this visible to young people, we do not just participate in numerous regional career fairs; instead of waiting for youngsters to come to us, we go to them, with an active presence on social media, for instance.

Ensuring the impeccable technical features and equipment of the machinery is another basic requirement for employee motivation. In addition, digitalisation processes are constantly updated and our internal communications address staff as equals. Every year, Swietelsky-Faber invests up to 10% of its turnover in the modernisation of its technical hardware and new equipment. Besides being an investment in technical assets, this is also an investment in employee satisfaction and in a positive image for the company.

Company Culture Creates Good Prospects

The attractiveness of a sector and a company is significantly influenced by the prospects it holds for the future. We are in a growth market and this tendency is unlikely to change in the years ahead. That in itself makes this field of work a good choice for young people. >

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Apprentices at Swietelsky-Faber
(Photo: Swietelsky-Faber GmbH
Kanalsanierung)



Swietelsky-Faber ensures quality
through vocational training.

At Swietelsky-Faber it is not somebody's level in the hierarchy that plays the crucial role in decision-making processes, it is the better argument, regardless of who it comes from. Our open company culture enables young and committed employees to contribute to leadership processes in keeping with their potential and interests, thereby giving them the opportunity to develop.

Furthermore, we offer staff extensive opportunities for additional training, such as upgrading their driving licence or training to become a certified sewer rehabilitation consultant. These investments have a positive impact on both the company's performance and the retention of skilled employees. We also collaborate with universities and support students by assigning topics for their final projects.

The Safety Argument

An explicit focus on occupational safety is another way in which we can convince applicants of our attractiveness as an employer. It begins with the personal protective equipment, on which we do not economise, and continues with complex training programmes and safety management systems like the highly demanding Safety Certificate for Contractors (SCC). This system results in a significant and long-term reduction in the lost time injury rate (LTIR), an indispensable factor in determining a company's efficiency and employee-friendliness.

It would be desirable for our principals to require such occupational safety management systems from their bidders as proof of performance. Because every work-related accident is one too many.

Besides physical on-the-job safety, psychological safety plays an important role in our company culture as well. Individual employees and entire teams know that they can always turn to somebody with their concerns and problems and find a solution. That boosts employee satisfaction and prevents fluctuation.

Associations Have A Role To Play As Well

If we want to find solutions to the recruitment problem, we all need to pull together. That goes beyond the level of individual companies. What is needed is a coordinated effort on the part of the relevant associations. Germany's Pipeline Construction Association (Rohrleitungsbauverband) has for instance developed the necessary problem awareness and is doing good work with its vocational training centre. Furthermore, with the introduction of the Pipe, Sewer and Industrial Service Technician apprenticeship, the Association of Pipe and Sewer Technology Companies (VDRK/ Verband der Rohr- und Kanal-Technik-Unternehmen) has defined a job description and launched a recognised qualification for the industry.

However, there is not yet sufficient awareness of this issue among all the associations who represent the pipe rehabilitation and trenchless construction sector. That is why Swietelsky-Faber supports initiatives and campaigns launched by associations with the goal of interesting young people in our industry and sparking their enthusiasm.

<https://www.swietelsky-faber.de/>

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FOCUS

AUSTRALASIA

CROSS RIVER RAIL
IN BRISBANE

Cross River Rail (CRR) is Queensland's largest public transport infrastructure project and includes 10.2 km of new rail line from Dutton Park to Bowen Hills, and 5.9 km of twin tunnels under the Brisbane River and the CBD. The Queensland Government has invested A\$5.4 billion in the project which will deliver four new underground stations at Boggo Road, Woolloongabba, Albert Street and Roma Street and two new stations at the RNA Showgrounds and Dutton Park. >

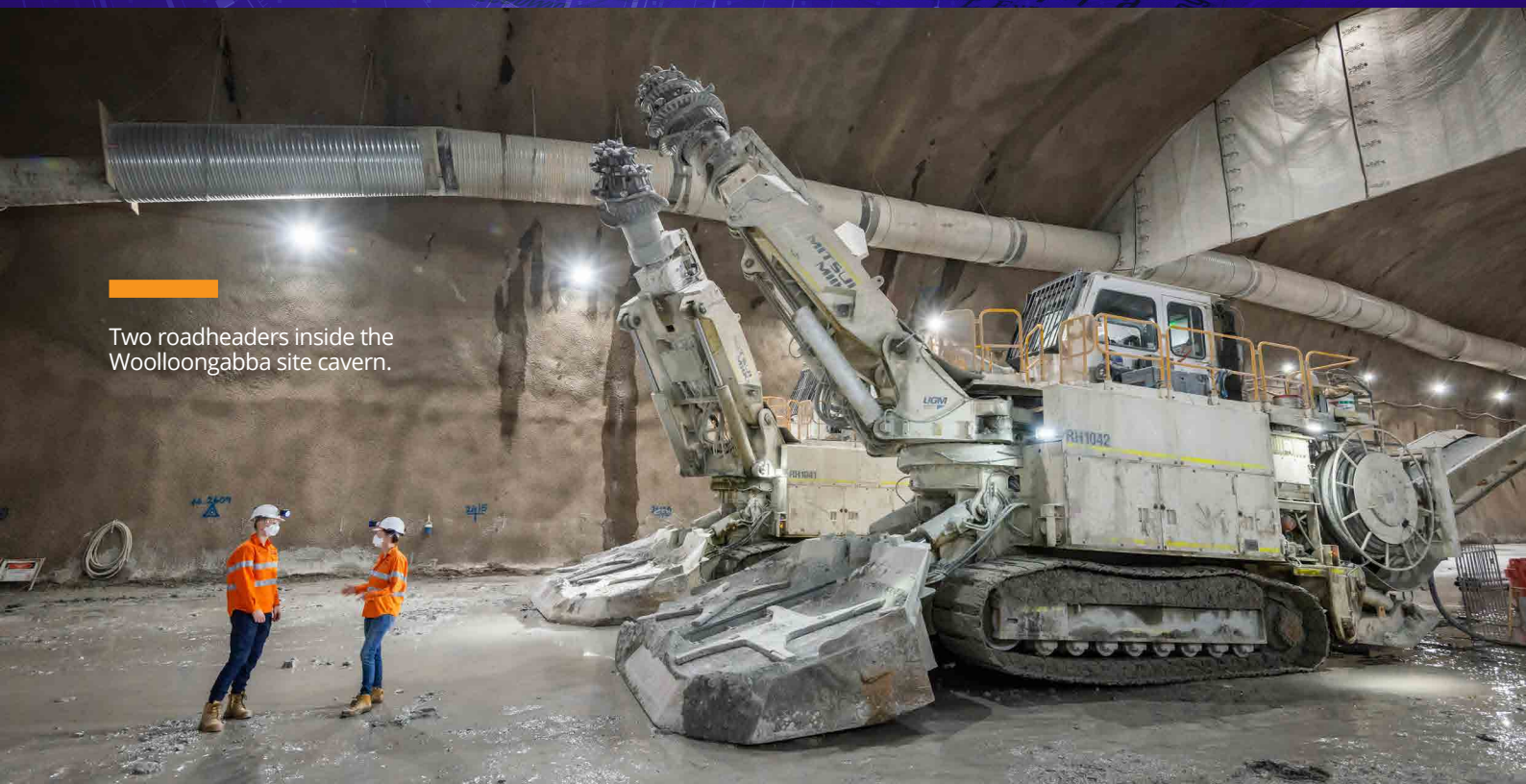


Double-shield machine 'Else' in the cavern at the Woolloongabba site.

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Two roadheaders inside the Woolloongabba site cavern.

The project is also responsible for the delivery of significant accessibility rebuilds to six above-ground stations from Salisbury to Fairfield on Brisbane's Southside, construction of three new stations on the Gold Coast, and the introduction to the wider South East Queensland (SEQ) rail network of the European Train Control System (ETCS).

The twin tunnels commenced at Woolloongabba and headed north breaking through into station caverns at Roma Street and the northern portal. Both tunnels were constructed using Tunnel Boring Machines (TBMs) manufactured by Herrenknecht AG. Both machines were Double Shield TBMs of 7.18 m diameter. The tunnel drive lengths were 4,098 m and 4,083 m respectively with curves of minimum radius 415 m. The tunnels commenced in February 2021 and were completed to breakthrough in December 2021.

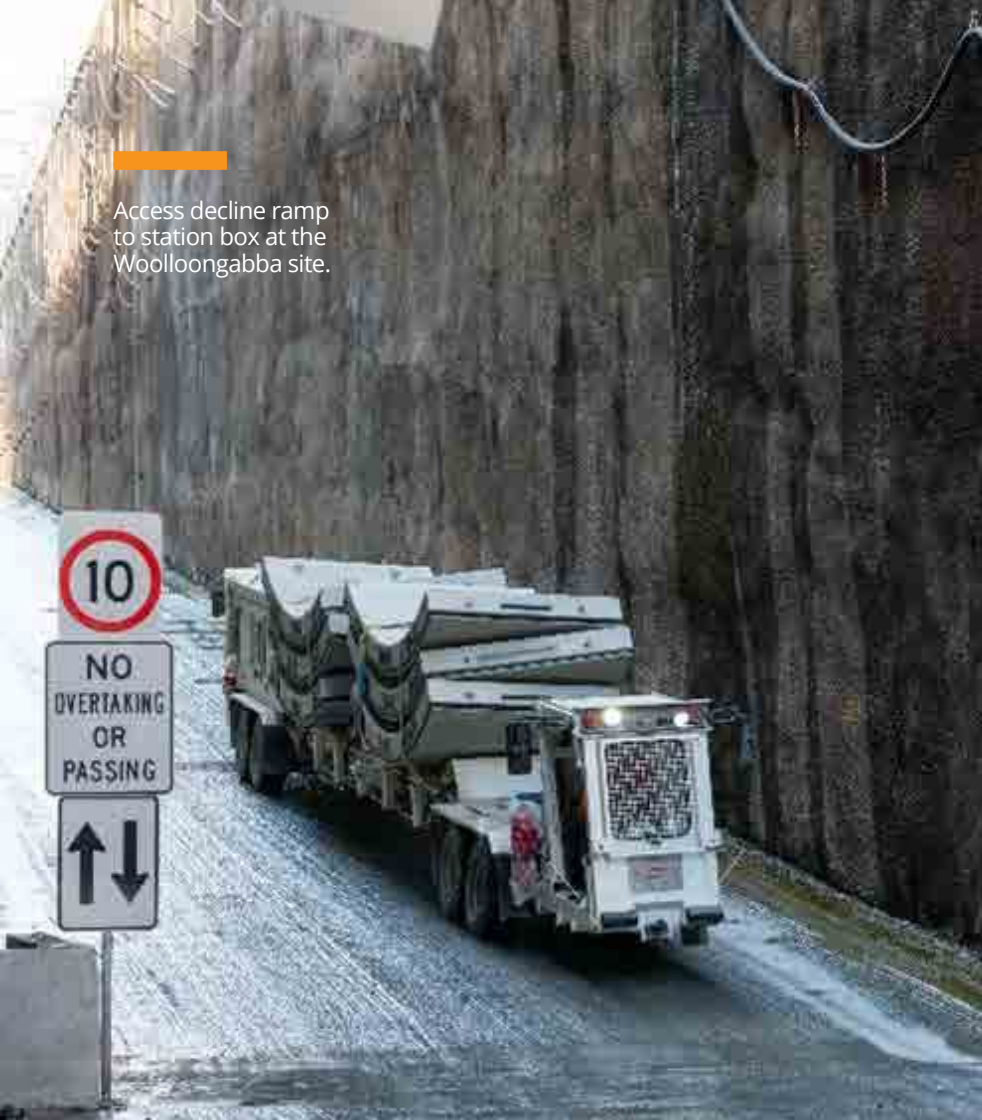
As well as the TBMs, the project used six electrically powered roadheaders for other excavation works including the finely controlled excavation required for shallow tunnel, cross passage, and station cavern excavations.

SUPPORTING TECHNOLOGY

Whilst the TBMs and roadheaders were doing the heavy work of excavating the ground, they required logistical back-up in the form of navigational tools, segment lining control, lining ring sequencing and data management hardware and software including Segment Documentation systems.

All of these systems were provided throughout the project by specialist navigation and site management systems manufacturer VMT GmbH of Bruchsal, Germany.

For the TBMs, VMT provided two TUnIS Double Shield navigation systems. To many tunnelling engineers, the navigation system for a Double Shield TBM is seen as one of the most demanding in tunnelling. Based on a total station, a target unit installed within the TBM shield along with other components determine the current advance position. In addition to calculating and displaying the current advance of all parts of the machine, in particular the front and gripper shields, information is available regarding the comparison of roll between the front and gripper shields and the deviations to the designed tunnel axis. >



Access decline ramp to station box at the Woolloongabba site.

"TUnIS Navigation Office provides real-time navigation and ring data from one or more TBMs, such that the navigation system may be directly monitored from the site office."

For optimisation of tunnel advance it is also important to utilise the correct support ring sequencing. For this purpose, VMT supplied two of its TUnIS Ring Sequencing systems. This system automatically calculates the optimum ring sequence for tunnel drives that include segmental lining. The optimum ring position is a critical part of tunnel construction. Depending on the selected ring rotation, the following ring will have a specific build direction that relates to the shield movement. This avoids damage to the exterior of the concrete segments. Based on the ring position of a previously installed ring, TUnIS Ring Sequencing allows for predictive ring sequencing, taking into account the current TBM position. This means that by calculating the optimum ring orientation in advance it can be ensured that the ring sits as centrally as possible in the tailskin of the TBM, preventing serious damage to tailskin and liner segments. The system also ensures that the thrust cylinders are evenly extended and that there is no excessive strain on and/or resulting damage to the segments.

By calculating several rings in advance expensive incorrect deliveries can be avoided, especially in case of complex ring designs with different ring types. As ring orientation is already calculated in advance, the ring can be constructed without loss of tunnelling time.

With so much information to handle it was also vital that data was available as required to maintain the safety and accuracy of the tunnels. This was achieved with the use of the VMT-supplied TUnIS Office system, one for each TBM. TUnIS Navigation Office provides real-time navigation and ring data from one or more TBMs, such that the navigation system may be directly monitored from the site office. This allows the user to immediately analyse and document current and historical data. >

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TBM 2 'Merle' breaking into the Roma Street cavern, and an already broken through TBM 1 'Else'.

For navigation of the roadheader VMT supplied six TUnIS Navigation Roadheader systems. This system was developed specifically for Roadheaders and provides exact measurement accuracy, top performance and high efficiency in conventional tunnelling for Roadheader excavation (for example NATM) and specific excavations as in Brisbane thereby maximising the advance performance. The system combines robust hardware and modern analysis software. TUnIS Navigation Roadheader is a high-performance navigation system for roadheaders that supplies reliable data to the operator for precise control of the cutterhead. A Total Station based navigation system determines the exact position of the machine as well as the cutterhead and provides all relevant information in visual and numeric form in the control cabin for the operator.

Working in association with the roadheaders, VMT also provided a TUnIS Office CT system. TUnIS Office CT is used to create all relevant data such as alignments, profile band and bolt patterns and secondly to manage all tunnel areas with this specific data. In addition, data is transferred from the machines (Roadheader and Rockbolter) to the TUnIS Navigation Office PC, for example to analyse excavation and production data. Furthermore, a number of reports can be generated and exported by the system. >

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“Having had excellent collaboration on previous projects we were in a good position for this one. We had several VMT products across the site and were able to establish ongoing cooperation with the same persons and companies throughout.”

VMT also provided a VDMS.process Data management system for the project, which offers location-independent, web-based, digital analysis tools for jobsite and project management, together with worldwide insight into the cockpit monitors of the machine operators. This includes a wide range of automated analysis functions as well as clear visualisations and reporting of data relevant to tunnelling operations.

SITE SEGMENT HANDLING

The handling and control of liner segments on site is always a vital part of the tunnel construction process. For the CRR project VMT provided two systems: SDS Onsite and SDS Production (SDS stands for Segment Documentation System).

The SDS.Production system was installed and utilised at the manufacturing site whilst the SDS.Onsite was used for management of the segments from arrival at the construction site through to installation. A Blackbox storage systems was also provided along with a quarantine area.

The SDS.Onsite systems went live in January 2021 and is expected to operate until the end of the first quarter of 2022. This system is designed to register segment data from the tunnel installation, cross referencing with an interface to the segment production site.

CHALLENGES

Despite Covid restrictions, VMT was able to run a smooth commissioning operation through VMT's Australia-based engineers and colleagues from VMT headquarters in Germany that provided online support if necessary. The SDS system was set-up largely using remote access. With excellent preparation on site, it was possible to set up all IT devices, so that VMT had a good base for several training sessions using Teams and other online platforms. In addition to the live training, VMT delivered excellent training documentation (including presentations and live videos) to the customer to ensure a smooth process for the entire project duration.

As well as these set-up challenges, there was also required a TBM survey on site after the TBMs have been assembled.

As for using the VDMS system, given the Double shield TBMs on site, a development was required for a feature in the shift module to meet the working needs of the jobsite.

Commenting on the project for VMT, Team Leader, Manuel Klisch and Senior Project Engineer, Gerlinde Grom said: “Having had excellent collaboration on previous projects we were in a good position for this one. We had several VMT products across the site and were able to establish ongoing cooperation with the same persons and companies throughout. This was also a big project for us to get right as it is a major project for Australia which was constantly being reported on national TV. So, we had to get this one right, and we did!”

QUICK-LOCK FOR SEAMLESS SEWER REPAIR



SECA's Quick-Lock system.

Sewer Equipment Company Australia, better known as SECA, is one of Australia's leading suppliers of sewer and drain cleaning, testing, inspection, and rehabilitation equipment. Since 1967, SECA has been meeting the needs of the industry with cost-effective quality products.

One of the company's most successful systems for point pipeline repair to date has been Quick-Lock which is a pneumatically expanding rehabilitation sleeve providing structural, trenchless repair to the inside of pipelines.

The Quick-Lock system was designed for point repair, pre-lining stabilisation works, and as a liner end seal. Applications might include cracked systems, root intrusions, leaks, pressure pipes and joint displacements.

The Quick-Lock rehabilitation sleeve has revolutionised sewer rehabilitation and is suitable for applications with all pipe materials and circumvents the need for chemicals.

This system is used in circular pipes starting from 100 mm up to 2,000 mm diameter. Featuring a stainless-steel sleeve and coated with an EPDM rubber gasket, the Quick-Lock system is transported to the repair spot pushed by a CCTV crawler.

Once in the correct position, the packer is inflated, and the machine's patented mechanical locking device holds the sleeve firmly against the pipe, sealing the damage. The patented locking system ensures the sleeve remains in position in perpetuity.

The annulus between the liner and the old pipe is permanently sealed and the liner end is protected against the mechanical influences of high-pressure cleaning. Quick-Lock sleeves restore a pipe's structural integrity and seal out groundwater and they are carefully designed to minimise diameter loss and outlast any other rehabilitation option. >

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Circular pipes starting from 100 mm up to 2,000 mm diameter.

After rehabilitation, the sleeve has its own static capability and absorbs the natural tectonic movements of the pipes. The product now has a swathe of satisfied users across the country.

James Pickup is the director of Australian Pipeline Management (APM). His company regularly employs SECA's Quick-Lock systems for quick and easy point repairs on pipelines.

"We have used it successfully over various different contracts with a number of different clients, from councils to tier one projects to Transport NSW projects," Pickup said. "Some of the clients I worked with wanted an alternative repair method from what we previously used and that is when we started looking into the Quick-Lock system."

Pickup said the efficiency and ease of installation of the Quick-Lock system is one of the main reasons the company has stuck with the solution. "A lot of the time, our projects are under traffic control – under ROLs – so repairs are very time sensitive," he said.

Quick-Lock is faster, and it does not generate any waste. Pickup and his team recently used the system to seal junctions on a major piece of pipework.

"Part of the DA condition is that it needs to be sealed. Rather than digging it up, we can come in and seal that junction, preventing a lot of earth works and mechanical excavation to the area, saving clients a lot of time and money," said Pickup. "With the Quick-Lock system, we can come in within a short window and do what they need doing, and no one will have ever known we were there."

Quick-Lock system fulfils the same requirements as a newly installed pipe system. It restores the stability of the pipe as a cost-effective, long-term solution for pipe repair.

SECA will also have a booth at the forthcoming No-Dig Down Under between 14 and 17 June, 2022 and will be presenting the Quick-Lock system there.

<http://seca.com.au/>

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QUICK LOCK

Stainless steel sleeves – local pipe repair and liner end connections based on compression



What is Quick-Lock?

- A purely mechanically installation system
- Pipe repair DN 100 – DN 2000
- V4A stainless steel and an EPDM compression seal
- For all common sewer, well and drinking water pipe systems

How it works

- Seals and stabilizes the damage purely mechanically, without any chemistry
- The patented locking mechanism ensures that the sleeve stays permanently in position
- After the installation the sleeve has its own static capability and absorbs the natural tectonic movements of the pipe

Types of installation

- Single installation
- Serial installation (from DN 200)

Product range

Quick-Lock

- Available:
DN 100 – DN 800 (one-part) and
DN 800 – DN 2000 (two- or three-part)

Quick-Lock Flex

- For radial offsets up to 2.5 cm
- Positional deviations up to 10° without pre-work
- Available: DN 200 – DN 600

Quick-Lock Mini

- DN 100, DN 125 and DN 150
- In length 145 mm and 90 mm
- For bends up to 45°

Quick-Lock Liner end connection

- System to connect CIPP liner system to pipes and buildings
- The space between the CIPP liner and the host pipe is permanently sealed
- The liner end is protected against mechanical influences of high-pressure cleaning
- Available:
DN 100 – DN 800 (one-part)
DN 800 – DN 1600 (two- or three-part)





DYNAMIC PIPE BURSTING FOR WASTEWATER RENEWAL

Karori is a western suburb of the urban area of Wellington New Zealand some 4 km from the city centre. In a project for the renewal of wastewater pipes, known as Karori Fast Track Waste Water Renewals, the client Wellington Water, in association with its design consultant GHD required the replacement of some 650 m of mainline and 336 m of lateral pipes due to the ageing infrastructure that had resulted in inflow and infiltration. The existing pipe network was constructed in the 1920s. >

The TRACTO Grundowinch on site.

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Positioning the TRACTO GRUNDOTUGGER.

Having completed a desk-top study of the area and ground conditions, it was decided that the most effective replacement option was primarily trenchless pipe bursting. A small amount of open cut works was also used where absolutely necessary due to site conditions. Whole catchment areas were analysed based on records and renewals were prioritised. The final selection of the pipes for replacement was left to construction team.

The contract for delivery of the project was awarded to G P Friel Ltd. as main contractor which was to undertake all works including the trenchless portion. The trenchless pipe bursting option selected for the main line pipes was dynamic pipe bursting using pneumatically-powered impact hammers as the bursting equipment. The laterals were burst using a hydraulically-powered static system.

WHY PIPE BURST

There were several reasons for the choice of pipe bursting including:

- Online renewals preserved the space in the corridor and reduced the risks associated with unknown clashes (in other words a proven corridor)
- There were no capacity issues so size for size replacement was sufficient, which well suits a pipe bursting solution.
- Reduced risks and issues associated with significant amounts of open trenching for example:
 - > Disruption to users of the corridor/route (such as vehicles and pedestrians)
 - > Reduced excavation safety risks
 - > Reduced material exports and imports are required to and from the site – which offers the additional advantage of a lower carbon footprint due to reduced vehicle movements
- A dynamic system was preferred for the mains because:
 - > The existing pipes were earthenware and could be shattered easily.
 - > The dynamic system keeps the loads in the winch low and eliminates the requirement for significant temporary works. >



Preparing to launch the Grundocrack.



- A static system was preferred for the laterals because:
 - > Pulling in short lengths meant that the load on the equipment was low
 - > The tooling for such a system has a smaller footprint which meant it was more efficient when dealing with short length bursts as there were no long launch pits.

GP Friel utilised its stock of Tracto-manufactured equipment to provide the bursting equipment. The mains pipes were burst and replaced using the Grundocrack Olympus 180G pneumatically-powered pipe bursting tool in combination with a 367 cfm compressor alongside a Grundowinch RW 5000 which, being hydraulically-powered provided a constant tension on the winch cable.

The laterals pipes were burst using a Grundotugger, also from Tracto, which was powered using a PTO from the hydraulics of a mini-excavator.

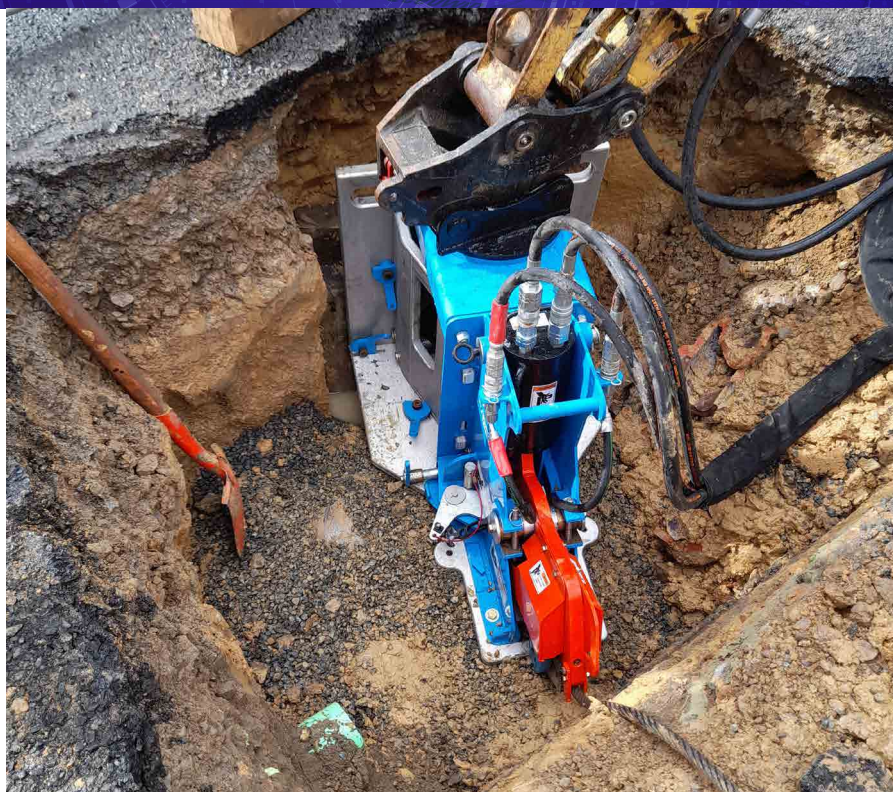
PROJECT SCOPE

In total the mains and laterals across three streets in the Karori area were to be replaced on this project.

The 650 m of main burst was completed in 10 sections with the existing 150 mm diameter pipe being replaced with 160 mm o.d. PE100 SDR17 pipe. There were also thirteen (13) associated chamber replacements.

The 336 m of laterals being replaced were associated with forty (40) individual properties. The existing 100 mm diameter pipe was replaced with 110 mm o.d. PE100 SDR17 pipe.

The PE100 SDR17 pipe was supplied to GP Friel by Hynds and manufactured by Waters and Farr. The new PE pipe was supplied in straight 12 m long sticks with jointing being completed on site. Jointing was primarily completed utilising butt fusion, using a Georg Fischer CNC400 Butt Welder. Connections and saddles comprised Georg Fischer EF fittings which were welded as necessary on site using a Georg Fischer MSA 2.1 welder. >



“With these renewal works delivered almost entirely by trenchless methods, GP Friel was able to minimise disruptions, provide a cost-effective solution and meet the fast track nature of this project.”

The GRUNDOtugger ready to burst.

The construction works ran between August and December 2021, with site investigation works being included in that timeframe.

Given the nature of the fast-track design phase, no investigation work during planning with the process being based on records only. There were some cases where the records did not reflect the existing network and GP Friel was required to be flexible and agile on site to manage these variations and maintain progress. This was made easier as the payment mechanism had been designed to be flexible enough to accommodate these types of changes and the relationship between the contractor, consultant and customer remained excellent throughout the works.

At times identifying live laterals so that they could be reconnected was problematic and can be often on this type of work. In some cases, the lateral connections were not in the locations that they were expected to be due to level differences between the properties and the main pipeline. However, with GP Friel's trained and experienced people on site the contractor was able to carry out investigations and solve problems in parallel with the main construction work.

All Traffic Management was delivered by GP Friel's dedicated in-house resource team. The final selection of mains for treatment had taken account of traffic flows and usage of the corridor so that it was possible identify 'quick win' sections of the works. However, the team still had to deal with work on bus routes, around schools and outside local businesses. Despite these challenges, feedback from the residents was excellent, even to the point where a local butcher commented positively on LinkedIn.

Where absolutely necessary, local road closures were used to simplify the traffic management system. This reduced interfaces between the contractor and the travelling public and delivered safety, disruption, and cost benefits. The payment mechanism was also designed so that the customer benefitted from efficient traffic management and the contractor was not penalised by working as safely as possible. >

A typical worksite on the project.



Project communications were managed at a strategic level by Wellington Water which communicated about several projects across the suburb of Karori. Local communications and ‘boots on the ground’ communications were managed by GP Friel.

With these works as only part of an ongoing budget arrangement, Wellington Water is committed to spending the whole budget. The current works was included as part of this budget (as expected) with provisional packages that were prepared in advance being instructions that will ultimately extend the project and utilise the remaining budget.

GHD Ltd, as consulting engineer representative for the project commented: “With these renewal works delivered almost entirely by trenchless methods, GP Friel was able to minimise disruptions, provide a cost-effective solution and meet the fast track nature of this project. The project was delivered to a high standard which fully met the required project outcomes”

Wellington Water, on behalf of Wellington City Council, said: “This project is part of a region wide programme utilising central government COVID-19 Stimulus Funding. The programme aimed to expand our contractors use of trenchless technology in renewals projects, increase the involvement of contractors in the design process and undertake renewals on a catchment wide level. GP Friel has proactively embraced the use of trenchless technology purchasing new equipment (the Grundotugger) and effectively leveraged the many benefits this technology brings. We have been impressed at the proactive involvement from the GP Friel team throughout the project and their efforts to maximise the impact of the budget we had available to deliver the catchment outcomes. We have had excellent feedback from the community and local businesses on GP Friel’s communication and professionalism while completing this work.”

For GP Friel, David Philipson, General Manager said: “This was a fantastic little job in a beautiful suburb with friendly and understanding residents. This job was centrally funded as part of New Zealand’s water reform programme. As a result, the desired outcomes were broader than we normally encounter, not just about replacing pipes. Some of the key outcomes that had an impact on the way that the job was delivered included:

- Fast track – the funding had an expiry date, so the work had to be taken from inception to completion in less than 18 months. >

“One of the things that we had to do to make the process work was to change the payment mechanism to a more mature model that allowed enough flexibility to deal with the risks associated with working from an incomplete design.”

- Catchment based – we were tasked with improving catchments rather than replacing specific pipes.
- Improve Capability and Capacity – the funding was contingent on using these projects to grow and train the workforce, streamline processes so that the customers (rate payers) can get more for their money and investigate new technologies that mean we can do things more efficiently – specifically with a focus on trenchless technology where disruption and carbon savings are apparent.

This meant that we were engaged on an ECI basis, alongside a consultant to investigate catchments and prioritise pipes for renewal. We were able to include constructability as a criterion for final pipe selection with a view to getting work onto the ground quickly and spending the money before the expiry date.”

David continued: “A bonus of this flexible approach was that we could liaise with other asset owners to coordinate our programmes so that they worked together. Specifically on this project we engaged with the roading authority and prioritised work in streets that were due for maintenance soon. In one case the roading authority deferred their maintenance so that our work could be completed first. This way we do not dig through a newly completed road surface to install the pipes giving value for the residents and road users. Furthermore, streamlining our processes on this project, taking a risk-based approach to design and overlapping some of the design and construction functions has given us (the Wellington Water Supply Chain) a whole new way of delivering work. By using this fast-track process, alongside a more traditional process for complex renewals and work on critical assets, we can smooth the programme of work to remove peaks and troughs in demand. This will help with certainty in the marketplace that will stimulate growth to meet the increasing demand.”

Concluding his thoughts on the works programme David said: “One of the things that we had to do to make the process work was to change the payment mechanism to a more mature model that allowed enough flexibility to deal with the risks associated with working from an incomplete design. By making the project measurable, focussing on forecasting and prioritising relationships we were able to overcome problems without ever facing any disputes. A bonus of this approach was that we were able to share risks and opportunities with the customer – rather than price risk money into the job that could be used to treat more of the network. The work is straightforward, not a complex environment or a complex part of the network. This has allowed us to use the project as a training ground for new and up and coming resource. When we complete our work in Karori we will have a large pool of skilled and experienced staff that we can split into smaller teams and deliver more work in the marketplace. This will help us to be part of a supply chain that meets the growth demands of the overall programme of work in the region. We have been able to invest in new technology on the project, such as the Grundotugger, that will help us to deliver more efficiently, with less disruption and a lower carbon footprint. This project was the perfect environment to un-box a new tool and learn how to use it effectively.”

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AUSTRALIA'S FIRST 3-IN-1 TRENCHLESS REHABILITATION SOLUTION

The manifold for
the triple liner
installation.

Which is the best remedy when the supply of potable water into the city centre of Newcastle needs repairing?

This was the question utility services supplier, Hunter Water, asked as it needed to maintain an optimum water supply to the second-largest city of New South Wales.

The mild steel cement-lined pipeline DN 900 PN12 runs underneath a busy street and a highway access and has two opposing bends of $22\frac{1}{2}^{\circ}$. Works had to be conducted with only two access points. Rehabilitating the pipeline using a traditional dig-and-replace method would have caused road closures for several weeks, affected the environment and disrupted nearby residents.

To overcome the myriad of challenges associated with this project, Primus Line® was selected. Its flexibility allows the Primus Line system to be installed through consecutive bends of up to 45° . The robust liner can also withstand bends of 90° , depending on the characteristics of the pipeline.

Upon investigation, Primus Line developed two options for rehabilitating the trunk main:

- Installing one Primus Liner DN 500 PN 16 with an inner diameter of 452 mm would grant Hunter Water a utilisation of under 25%. >

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Installing three liners of varying diameters into one host pipe.

- Installing three Primus Liners DN 450 PN 16 with an inner diameter of 396 mm would grant Hunter Water a utilisation of nearly 60%.

The section of the pipeline that required rehabilitation was only approximately 140 metres. Moreover, the friction coefficient of the Primus Liner is with a K-factor of 0.028 lower than the friction coefficient of the existing main. The results of Hunter Water's calculations finally showed that a reduction in diameter would be acceptable. In the end, the utility service supplier decided to rehabilitate the pipeline with the Primus Line 3-in-1 solution to obtain a higher utilisation.

Installing three Primus Liners DN 500 was not an option, as the liners could not fully inflate inside a DN 900 host pipe. A minimum inner diameter of 1,000 mm or greater would have been necessary.

Hunter Water assigned the installation of the project to Interflow, a business that is renowned for pioneering the trenchless technology space and is the most experienced Primus Line installer in Australia to date.

The existing pipeline was extended at both ends with a customised reduction piece DN 900 to DN 1600, which created space for the three Primus Line flanges. The reduction, as well as the manifold, were designed by Primus Line and produced locally by Hunter Water.

The Primus Liner was transported on three reels to the construction site. These were placed sequentially behind the start pit in line with the run of the pipeline. Each liner was marked with tape of a different colour to ensure that after insertion, the hoses were at the correct positions at both ends of the pipe. During insertion, the liners were combined and stacked, then fixed with tape to keep their shape.

After insertion by means of a pulling winch, Primus Line's installation partner, Interflow, threaded the liners through the manifold and brought them into shape one-by-one with compressed air.

Following the inflation process, the six Primus Line connectors could then be installed. The entire installation of the Primus Line® system was completed within one week. A separate pressure test with 15 bar was conducted for each liner. This trenchless method enabled the region's busy traffic flow to continue smoothly, and residents could go about their day-to-day activities with minimal disruption.

This 3-in-1 Primus Line solution was the first to be implemented outside Europe. Rädlinger Primus Line GmbH has already proven its excellence for multi-liner installations in several projects. Inter alia in Sicily, Italy, where a comparable solution has been in operation since 2017 and garnered worldwide attention at the time of putting it into service.

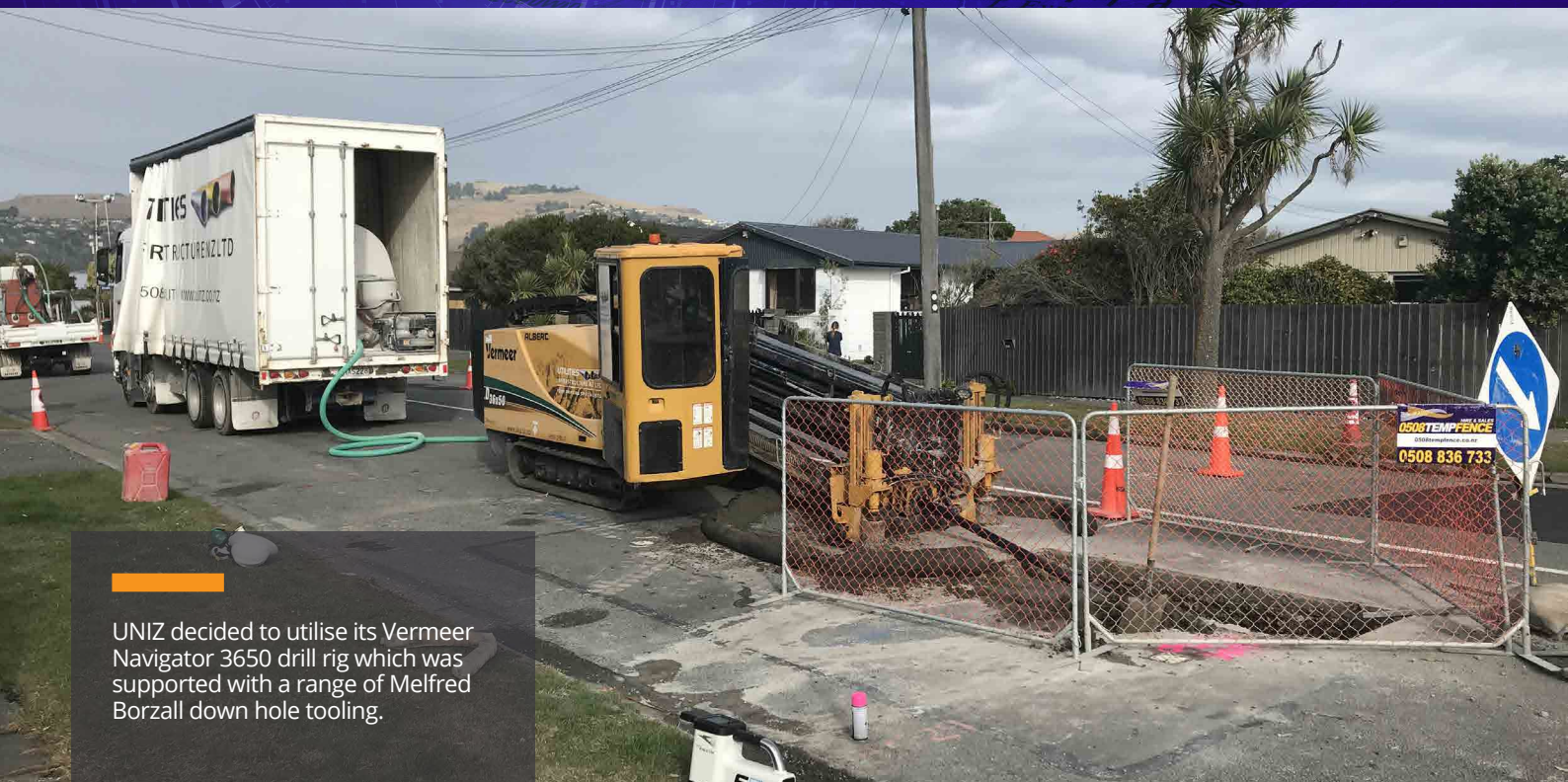
HDD FOR SOUTHSORE WATER MAIN RENEWAL

As part of ongoing works for the installation of new infrastructure, renewal of existing infrastructure in locations with high stakeholder requirements, demanding traffic management needs and situations where trenched installation is difficult, Christchurch City Council in New Zealand recently utilised the horizontal directional drilling services of Utilities Infrastructure New Zealand Ltd (UNIZ) for installations on its Southshore Water Main Renewal project. >

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Supporting the 180 mm diameter product pipe during the pull in on one site.



UNIZ decided to utilise its Vermeer Navigator 3650 drill rig which was supported with a range of Melfred Borzall down hole tooling.

Given that there exists a large and diverse range of operating conditions across New Zealand, HDD was selected as the best option for these works, not least because locally the ground conditions comprised a shallow ground water table, at between just 1 to 300 mm depth and running sands. These conditions made the use of traditional excavation methods near impossible. HDD therefore also provided significant cost and time savings.

INSTALLATIONS

For the Southshore Water Main Renewal project, UNIZ decided to utilise its Vermeer Navigator 3650 drill rig which was supported with a range of Melfred Borzall down hole tooling from the sonde housings to the Turbo Reamer that was to be used in the sandy ground environment. All tooling and muds were supplied by Blick Industrial. Predominantly, an MI Swaco bentonite system was used for the drilling fluid, also due to the pure sand environment. The location system used was the DCI, Falcon F5 with IGPS module. This allowed the operator to achieve the greatest possible accuracy and a better as-built upload report for the client.

Due to the wet running sands on the project, UNIZ looked to minimise the amount of down-hole agitation. This was achieved by drilling out the pilot bores over lengths of 100 to 150 m, depending on the presence of any conflicting services and undertaking a single-pass pull back of the 180 mm diameter PE pipeline, that was being installed as the product pipe, using a 250 mm diameter Turbo reamer to create and maintain the required bore diameter.

Where elsewhere on the project a 250 mm diameter PE pipeline was required as the installed product, UNIZ undertook a single pre-ream to upsize the pilot bore using the 250 mm diameter reamer. The product pipe was then installed behind a 300 mm diameter Turbo reamer. For UNIZ, this worked best in the challenging running, highly-saline sand conditions.

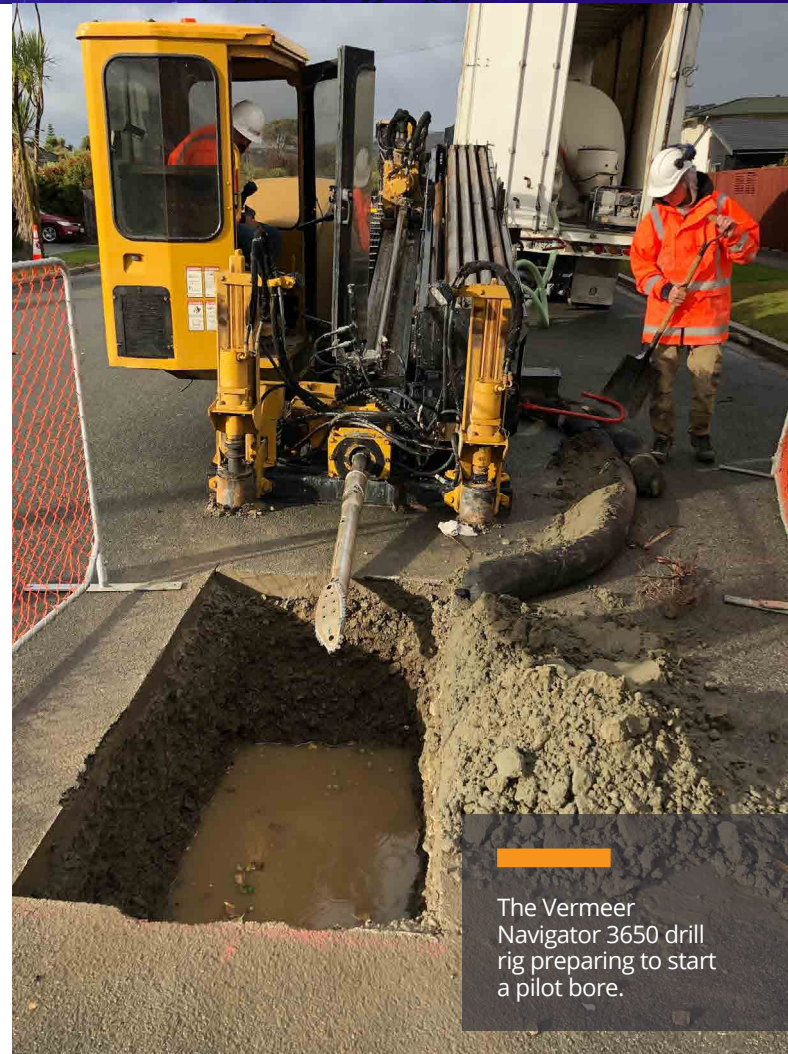
UNIZ was able to handle the challenging ground conditions well having worked in the area previously. The location is a slender peninsula between a beach and an estuary, so previous local knowledge gave the contractor an 'edge' over competitors when it came to tendering and winning the work and ultimate delivery on the project. >

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The 250 mm diameter pipe during installation.



The Vermeer Navigator 3650 drill rig preparing to start a pilot bore.

In total over the complete project some 4,000 m of 180 mm diameter PE pipe and 400 m of 250 mm diameter PE potable water mains and 63 mm sub-mains for connections were installed. The 180 mm and 250 mm diameter PE pipelines were supplied in 15 m lengths and all of the pipe welding was carried out by Polyweld NZ Ltd, which has a long-term association with UINZ. Polyweld utilised various welding systems to make up the project's PE pipes including:

- EF - MSA 2.1 Eletrofusion Welders, with Blue Tooth capability and a welding range from 25 mm up to 1,000 mm diameter
- Butt welders:
 - > George Fischer CNC 315 mm, with Blue Tooth capability, welding in the range from 90 mm up to 315 mm diameter. This system also had GPS capability.
 - > George Fischer CNC 400 mm, with Blue Tooth capability, welding in the range from 125 mm up to 400 mm diameter, again with GPS capability.

This project commenced in April 2021 and finished in October 2021 although a couple of COVID lockdowns did not help project timings in any way.

UINZ

UINZ not only has HDD in its contracting portfolio, which offers cost effective, faster, more sustainable installations and creates less disruption for stakeholders, but also Pipe Ramming which is often preferred for critical asset crossings such as State Highways, rail crossings and significant service crossings as no void is created as the required carrier pipe is installed; and Pipe Bursting for in-line renewal of laterals.

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AIDING PIPELINE INSTALLATIONS ACROSS AUSTRALASIA

Kwik-Zip spacers on a pipe length prior to installation.

Kwik-ZIP offers large range of spacers which caters for a wide range of carrier/casing pipe size combinations as well as providing flexibility to deal with project alterations.

“Kwik-ZIP spacers are simple and quick to install and assisted with the sliplining process.” said Mick Hemer, Operations Manager for Jelmac DD.

The HDX's unique load sharing design maximises the load bearing capacity of each runner and reduces point loading. The simple and efficient installation process does not require any special tools.

Kwik-ZIP spacers have no metal parts and are made from Kwik-ZIP's engineered thermoplastic blend that is flexible, extremely tough and has a low co-efficient of friction.

PROJECTS

Kwik-ZIP spacers have been used widely across the Australasian region and beyond. For example on a project for the Holden Reservoir Inlet Pipeline - Melton Hwy Crossing for Western Water Melbourne, the work involved inserting a DN800 MSCL Water Main into a DN1050 Steel Casing. The Kwik-ZIP spacer model used was the HDX-90 (90 mm high).

Kwik-ZIP HDX-90 spacers were installed to facilitate the sliplining of an 813 mm diameter cement lined steel water main into a steel encasing pipe by Pezzimenti Trenchless.

“Pezzimenti Trenchless has been using Kwik-Zip spacers for sliplining installations for many years. Whether the carrier pipe is plastic, GRP or heavy weight steel Kwik-Zip has a spacer to do the job. Their technical support and excellent customer service make using Kwik-Zip spacers an easy decision.” said Joe Pezzimenti, Managing Director of Pezzimenti Trenchless Pty Ltd. >

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“Pezzimenti Trenchless has been using Kwik-Zip spacers for sliplining installations for many years. Whether the carrier pipe is plastic, GRP or heavy weight steel Kwik-Zip has a spacer to do the job.”



Kwik-Zip spacers ensure pipe insertion runs smoothly.

Another site for where the spacers were used was with HEB Construction on the Te Maunga Landward Section Outfall project in the Bay of Plenty, New Zealand. Completed in October 2021, the project required the installation of a DN1200 PE water pipeline into a 1,500 mm diameter concrete duct over a length of 100 m. In this instance the Kwik-ZIP HDXT 103 spacer was utilised.

The Kwik-ZIP spacers were installed around the circumference of a 1,200 mm diameter PE pipeline to ensure the newly installed PE pipeline would sit central while pulling the pipeline through a 100 m, 1,500 mm existing concrete duct under the TEL. By using the Kwik-ZIP spacers, HEB Construction avoided any potential damage to the PE pipe on installation.

HEB Construction successfully used the Kwik-ZIP on the Waiari Pipeline Project and due to the easy and quick installation with the screw lock system it was the preferred option. This was key part of the project and the company needed the certainty during installation.

At either end of the jacking pipe, HEB Construction installed two sets of Kwik-ZIP pipe spacers. The spacers were then installed at 1 m intervals between each end.

On site personnel had previous experience of using the Kwik-ZIP's and followed the installation guide, which ensured the product was used correctly and efficiently. HEB also had technical support from the supplier and the product worked exactly as it should and no issues were encountered. They were very quick and easy to install and HEB Construction said they would not hesitate in using them again should the situation arise.

One other site where the spacers were used was on the Rail Infrastructure Alliance Water Main Project, Sunbury, Victoria, Australia. Here the carrier pipe was a 355 mm diameter HDPE Water Main which was to go inside a PN8 630 mm diameter casing (570 mm i.d.) over a length of some 66 m. Again in this instance the HDX-90 (90 mm high) spacer was utilised.

On the project, horizontal and directional drilling specialist contractor Jelmac Directional Drilling utilised Kwik-ZIP HDX-90 spacers to assist facilitating the sliplining of the 355 mm diameter HDPE carrier pipe. The Kwik-ZIP spacers were specified at 1.5 m intervals for this project as per Melbourne Water Retailer Agencies ('MRWA') standards. As the pipes were not being grouted after installation the spacers also needed to support the weight of the pipe and water for the life of the installation. The works were successfully completed at night due to stakeholder requirements.

AI IN THE WATER SECTOR: SAFER, FASTER, BETTER



CCTV Inspection
in progress.

Once considered a threat to people's jobs, automation is enabling many in the water sector to leave mundane tasks behind and focus on high value work.

Engineering graduates and other specialists are often employed to sit in front of video screens for weeks on end to watch footage from drone-mounted cameras being driven through pipes. The purpose? To assess where pipe maintenance needs to be carried out.

But no engineer wants to spend their days in front of a screen watching videos of the inside of a pipe. Fortunately, technology offers a smart solution for this.

What A Difference Data Makes

Technology fuelled by artificial intelligence (AI) is driving change in the water sector. Once considered a threat to people's jobs, such technology is now helping people do more of what they want to do, while meeting increasingly high expectations.

For example, councils and water authorities have extensive kilometres of underground pipelines for wastewater, stormwater and water.

"Many of these pipes are approaching the end of their life and they need to be renewed," said John Phillips, Business Development Manager at Interflow, a leader in pipeline infrastructure. "Digging them up to replace them all would be extremely expensive and would disrupt communities."

How, then, does a water manager assess where the work needs to be done? Previously it has been undertaken by sending a camera through the pipes and relying on an operator to conduct an accurate analysis. >

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Engineers at work both in the field and in the office.

“A recommended capital works programme, complete with anticipated costs, comes with the analysis. This means the council or water authority can work that programme into their budget over the next four or five years.”

“By the time they engage a contractor to do the upgrade work, often the footage is very old.” Phillips said. “Things could be completely different by the time we go to do the job.” That is where a neat, AI-based solution comes to the fore.

The Future Of Water Management Is Here

A faster, more accurate solution is now being utilised by leading councils and authorities. It is one that removes repetitive and low-value work and liberates engineers and others to do the higher-value tasks that keep communities' infrastructure running smoothly.

“The analysis of the condition of the pipes can all be done by machine.” said John Weaver, Contracts Manager at Interflow.

Instead of camera footage being analysed by humans, it is analysed by an AI engine that has been trained on tens of thousands of hours of similar footage. “It categorises every individual issue found and provides an immediate, real-time report of the entire pipe network.” Weaver said. “A recommended capital works programme, complete with anticipated costs, comes with the analysis. This means the council or water authority can work that programme into their budget over the next four or five years.”

The transformative effect of AI is making condition assessment reports and asset maps faster, more objective and more consistent. Wherever such technology is introduced it removes often mundane and repetitive work and frees engineers and other staff to perform higher-value tasks. Furthermore, in the current environment in which the war for talent has become very real, anything that can be done to make work more engaging and relevant is welcome.

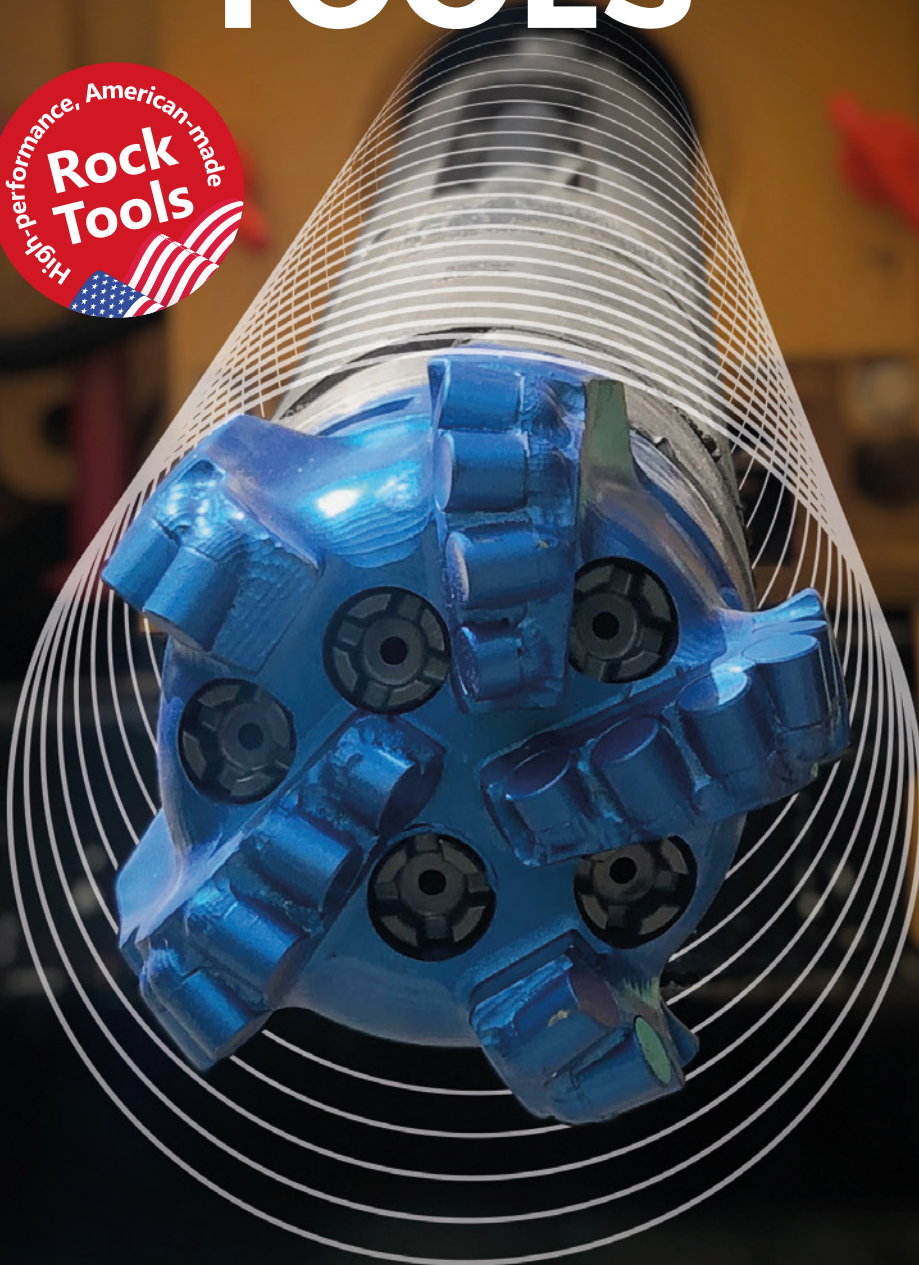
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MELBOURNE'S NORTHERN SUBURBS SEWER UPGRADE COMPLETED

Diamond Creek,
Melbourne.

Yarra Valley Water has a A\$34 million project to the network to support the Doreen to Diamond Creek Sewerage Project which involved building almost 10 km of new sewer pipe under parks and roads and supporting infrastructure including a new high flow pump station.

Yarra Valley Water's General Manager Growth Futures, Chris Brace, said the project, which runs around the busy Yan Yean and Ironbark roads, would service properties in the rapidly expanding Mernda and Doreen areas.

"It will ensure the reliability of the sewerage system and reduce the likelihood of sewage spilling into the environment during heavy rain." Brace said. "We have worked with our delivery partners, MFJ Constructions and Jaydo, to deliver the project, which is among the top 10 projects we have committed to complete for our customers."

Brace said special care had been taken throughout construction to save trees and avoid disrupting areas of cultural sensitivity, including a large stone tool artefact scatter near the Plenty River.

This included the use of trenchless horizontal directional drilling technology to reduce excavation, protect more vegetation and minimise disruption to the community.

"Design partner Jacobs also salvaged almost 400 artefacts at the start of construction and we worked in partnership with the Wurundjeri Woi Wurrung Cultural Heritage Corporation to sensitively repatriate them." Brace said. "Our approach to this project is a great example of our commitment to care for customers, the community and environment while providing vital sewerage infrastructure where it's needed."

The team adapted during coronavirus (COVID-19) restrictions to ensure the project was delivered on time and under budget. The project included the resurfacing of Murray Rd to reduce dust and construction of a 2 km shared use path to improve public access in the Plenty Gorge parklands.

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RSM EXPANSION TO AUSTRALIA

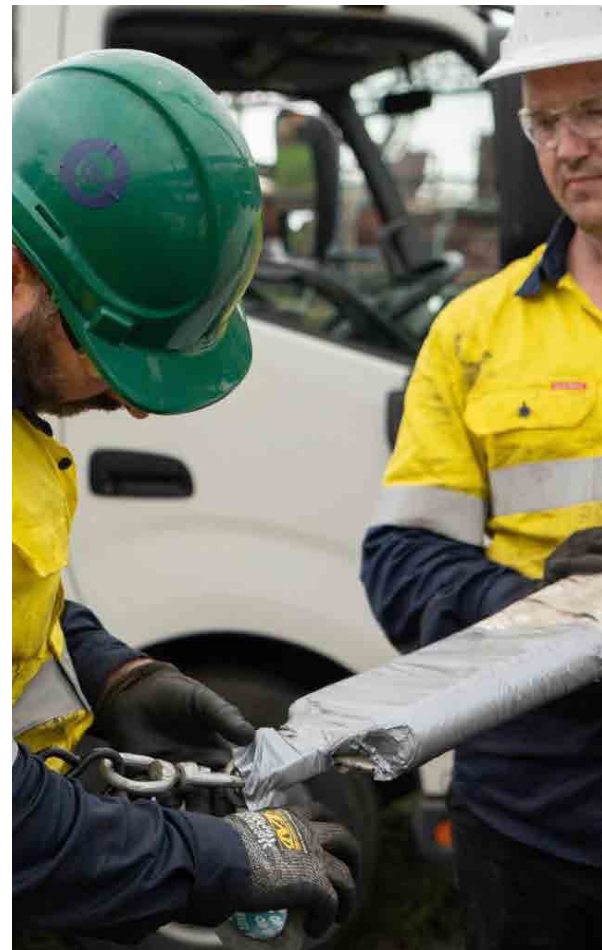
RSM Lining Supplies PTY was first established in Australia in 2011 following the strong success of its parent company RSM Lining Supplies Global Ltd in the UK, Ireland, and Europe. Founded in the UK in 2003, RSM Lining Supplies Global Ltd began as a small business before expanding to a 12,000 sq. ft factory in 2012! >



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A SpeedyLight UV LED liner curing system from RSM Lining Supplies.



Left:

Right: suggest
Preparing a liner
for installation.

The idea behind the expansion to Australia was to give the Australasian market access to the CIPP technologies and methods available in Europe from a base that could be accessed centrally within the continent (Sydney, Australia).

As a worldwide company, RSM is focused on offering high quality, industry proven products and equipment for use in the Sewer Rehabilitation Industry. These are delivered by its technically proven personnel who focus on their customers' needs and develop solutions for each individual project.

Over the years, RSM Lining Supplies PTY has adapted its business model to suit the Australian market - refining its product range and services to suit the needs of the developing CIPP market in Australasia.

Stephen Fanning became General Manager in 2013 and has brought a wealth of expertise to the business over the years, he has a strong desire for success, benefits from twenty years' experience in the Drainage Industry, and has also been nominated for the ASTT person of the year award!

RSM Lining Supplies PTY offers full customer support and on-site practical training in all aspects of lining, patching, and the use of associated equipment for all facets of the CIPP process. Previously IMS Robotic Global Dealer of the year, the company is a proud distributor of IMS's Robotic Cutter range and offers training and support across the full collection.

RSM continues to develop an exciting range of new products available across its worldwide supply chain, such as its specialist liners: Delta Liner, Magmaflex, and UV Cure Speedy Liner. >

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AN RSM Lining
Supplies event
display stand.

Delta Liner is an exclusive product to RSM Lining Supplies - it is an extremely flexible circular knit liner capable of negotiating bends of up to 90°, available in 100 mm and 150 mm diameters. It is seam-free to guarantee optimum flexibility and suitable for all installation and cure methods.

Magmaflex is a free flowing, contour hugging, fantastically flexible liner with the capability to complete several diameter changes with ease. It is suitable for use on 90° bends and is glass reinforced to provide an increased strength characteristic against traditional felt liners. Magmaflex boasts a reduced resin consumption and is suitable for use with ambient and warm cure Epoxy, PU Silicate and UV LED Styrene Free resins. It is available in diameters ranging from 50 mm to 450 mm in a variety of thicknesses.

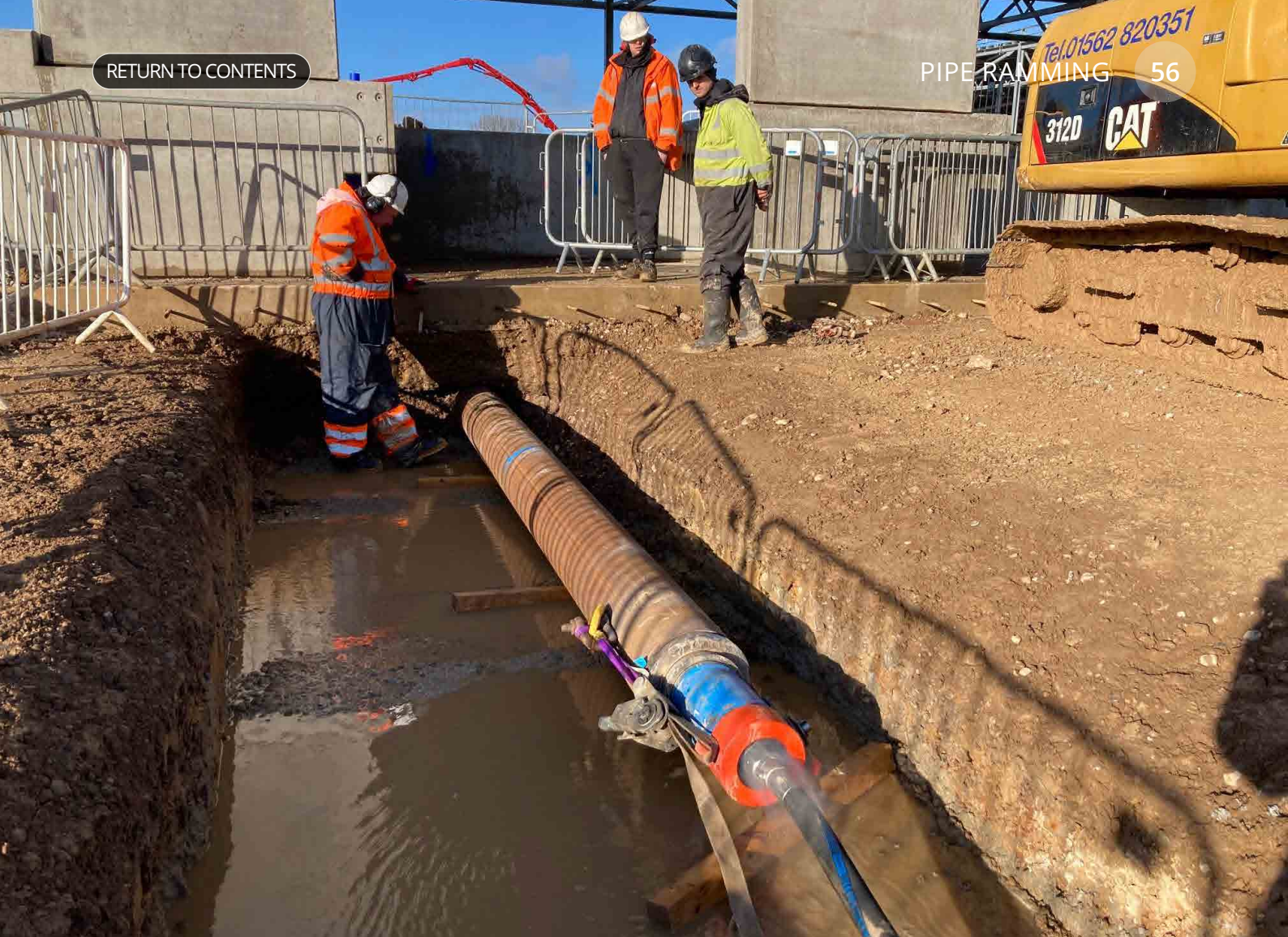
RSM's WRc approved UV Speedy Liner launched back in 2018. It is a glass reinforced GRP woven product with an increased strength characteristic as opposed to standard felt liner. Available in diameters ranging from 150 mm to 300 mm, Speedy Liner is suitable for UV and LED curing, making it an incredibly versatile UV liner.

From its beginning in 2003 RSM Lining Supplies' ethos has been to introduce choice and technology to the CIPP industry, positioning it as a forward thinking, market-leading supplier, committed to providing only the highest-class of materials and a top-level service. The company supplies the full package of technical knowledge, equipment, services, and materials to the wastewater industry worldwide.

<https://www.ims-robotics.de/en/about-us>

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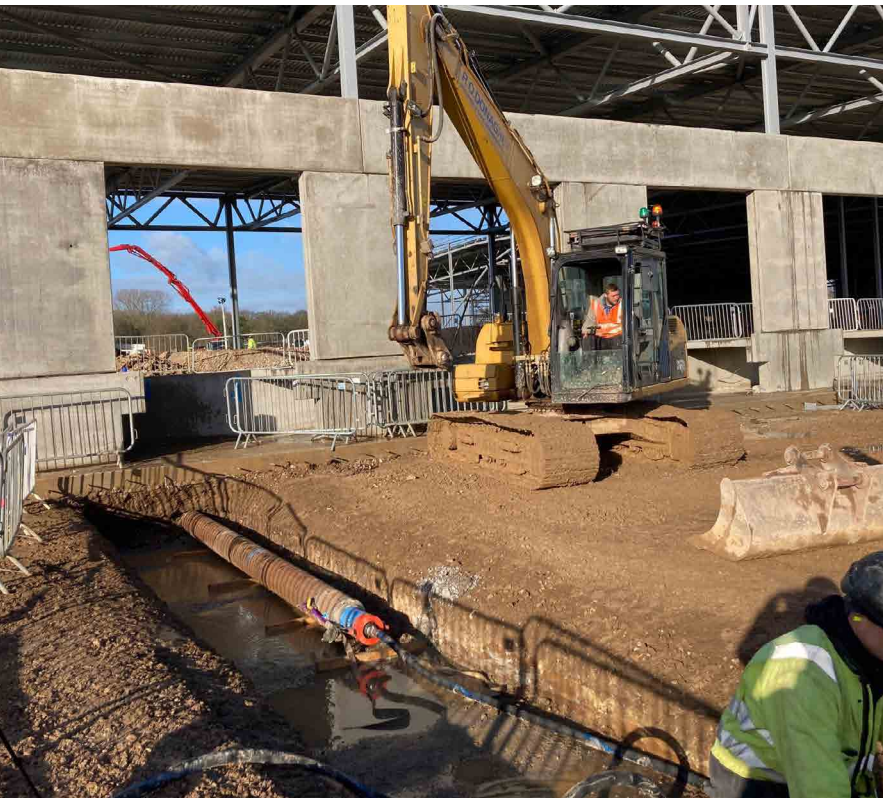
PIPE RAMMING FACILITATES RAINWATER DIVERSION PROJECT

Ramming in progress.

A TRACTO Mini Olympus GRUNDORAM pipe rammer was recently deployed to a site in Derbyshire, UK to ram a 325 mm diameter steel casing under the concrete foundations of a new production plant. The casing was required to host a 225 mm diameter HDPE conduit to carry away rainwater from the downpipes of roof guttering on the new building. >

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The ramming work site with the installation running beneath establish building works.

The project is the very first development in the UK for German soft-drinks producer, MEG GmbH, part of the Schwarz Group that owns the Lidl supermarket chain. Scheduled to open in 2022, the huge, 540,000 ft² (50,000 m²) plant is located on the Dove Valley Industrial Park in Foston and was previously farming land. Deep boring of the site prior to development verified high quality water sources to serve the factory and once construction is completed, the plant will process, bottle and distribute mineral water and soft drinks to the entire Lidl supermarket chain throughout the UK and Ireland.

GMI Construction Group, a well-established building and construction services company based in Leeds, was appointed as principal contractor on the site and is working in partnership with Civil Engineer, Rook Services and Plant Hire Firm, R O Donaghey, to complete all groundworks. The foundations were laid after dewatering, stabilising and compacting of the soil, this subsequently required a highly powerful solution to install the steel casing. With previous experience of trenchless techniques, the team at Rook Services recommended pipe ramming as the quickest, safest and most cost-effective solution to install drainage under the foundations. Furthermore, as an existing customer of TRACTO UK, the company contacted the technical team for advice.

The Mini Olympus, 1,080 mm long, 180 mm wide and with 720 Nm force, was proposed for the job and delivered to site for operation by the experienced team from Rook Services. The rammer was deployed at a depth of 400 mm from the crown of pipe to the base of the foundation and the total time ramming was just 55 minutes for the 6 m long installation. A foam pig was propelled through the casing using pressurised air which cleaned out the debris following installation enabling the HDPE to be pulled through efficiently.

Nick Richards at Rook Services was as pleased as ever with the support from the TRACTO team saying: "I knew I could rely on the support of the team from TRACTO and the company came up trumps as ever. A GRUNDORAM was delivered to site and the job was completed quickly and efficiently. TRACTO products are always highly reliable and powerful so this ram didn't add overall time to our works schedule."



An artist's impression of the completed building.

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The Tadcaster keggering plant.

Colus Ltd is an innovative provider of sewer rehabilitation services to a range of UK based organisations, water companies, and local authorities. Colus delivers sewer renovation, CCTV solutions, and drain repair services by using a variety of methods to rectify any structural sewer problems in a quick, efficient, and cost-effective manner. The company has been a loyal customer of RSM Lining Supplies Global Ltd for several years and recently completed a complex pipe rehabilitation of the trade effluent system within the keggering plant at Tadcaster brewery.

This was a particularly difficult repair as the pipeline takes various acids and 85°C water. All works were specified from historical surveys as due to the nature of the plant, which could not be shut down for inspection works. The 300 mm diameter pipe suffered from very acute thermal shock and was in an incredibly poor condition with multiple fractures and breaks. >

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Before and after views of two of the twin liner installation lengths.

After subsequent discussions between the technical team at RSM and Colus it was decided that the most appropriate method of repair was to line the pipe twice using a chemically resistant TLNV170 Epoxy Resin to give the asset an extended lifespan. The first layer was to give a structural repair and the second was to give a sacrificial layer to extend life of the repair against the aggressive chemicals discharged through the pipe. This methodology was chosen to minimise the loss of bore from inserting stainless-steel pipes and to drastically reduce the time that the factory would need to shut down for.

The two liners were installed in tandem (at 300 mm diameter and a 288 mm diameter) giving an overall thickness of 12 mm. The final length of the repair was 98 m across 3 lengths. Due to the working time of the Epoxy Resin, the two layers of liner needed to be impregnated 30 minutes apart. They were impregnated at RSM's impregnation facility and then refrigerated and delivered to Tadcaster on two different vehicles. Great care was taken to deliver the liners to avoid a premature cure.

All liners were inverted using a Sluice 300 system and cured using RSM's Twin Steam Boiler unit. They were then left to post cure for 24 hours. The project was a complete success installing 3 sections of liner over 3 days, allowing the recommended post cure of 24 hours. Due to excellent collaborative works the scheme finished 24 hours ahead of schedule. This was exceptionally good for the brewery which achieved an extra day's production, as the lining option supplied by Colus and RSM drastically reduced the plant shutdown compared to other methods.



CROSS-BORDER REHABILITATION PROJECT

The rehabilitation process was performed in a pressure pipeline that crosses under the Salzach River located on the border between Austria and Germany.

The RTi group claims to have outdone itself once again in Burghausen, Bavaria, Germany. It used some six tons of resin to install a 127 m long pipe liner with a final wall thickness of 11 mm, rehabilitating a DN1000 service water pipeline belonging to Wacker Chemie. A NORDIFLOW structural pressure liner system was used for the installation.

Also known as a culvert in technical jargon, it serves as an important water supply line for sensitive process water for Wacker Chemie passing under the Salzach River, which flows between Austria and Germany. The project was planned and prepared in cooperation with Wacker Chemie and with the support of the German and Austrian authorities. What made this project special were its cross-border execution and the respective requirements of the different authorities in the respective countries. In addition, special safety requirements at the plant and country-specific COVID regulations that had to be taken into account.

The short time windows available for the project execution were also rather unusual. A mere seven days were scheduled to complete the whole project - from decommissioning to recommissioning of the pipeline. >



The pressure pipe under the Salzach River was rehabilitated with a 127 m long NORDIFLOW liner.

The team had to drain, disconnect and clean the pressure pipeline with super-high-pressure cleaners, as well as install the liner and reconnect it, all within this tight time window.

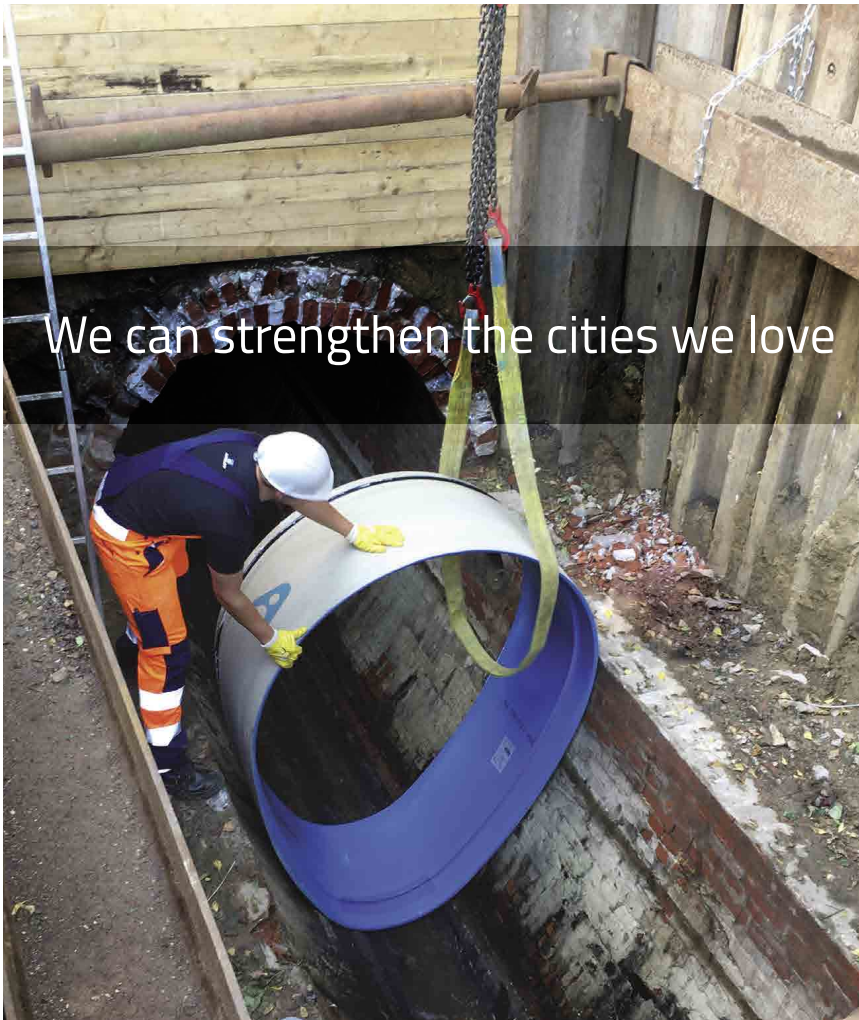
Another challenge was the high groundwater level. The excavation pits were set up using tight sheet pile walls to allow the groundwater to sink. In addition, the level of the Salzach River had to be permanently monitored.

PARTNERING FOR INDUSTRIAL PROJECTS

As a pipe rehabilitation specialist serving the industry, RTi knows that projects, especially in the industrial sector, have to be completed particularly quickly and on schedule. In the case of the Bavarian chemical group, it was the only way to keep production downtimes at a minimum. Thanks to the team's excellent project preparation and fantastic commitment, RTi once again succeeded in completing the rehabilitation project flawlessly and on time. As a result, the client's satisfaction was complete. Our thanks go out to the entire team.

The liner installation in progress.





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Cleaning the host pipelines before lining.

2-IN-1 SOLUTION FOR OIL REFINERY PRODUCTION WATER PIPELINE

The route of an ageing 36 in (915 mm) diameter steel pipeline under a busy road confronted a renowned Canadian oil producer with unanswered questions. Closing the road to replace the pipes in open cut was difficult or only possible in sections; as was a longer-term interruption of the pipeline.

During the project planning phase, the operator therefore decided to rehabilitate the existing pipeline with the trenchless Primus Line® technology, which ensures the continued use of the existing pipeline infrastructure with a service life of up to 50 years. This not only reduced the investment and operating costs, but also resulted in health and safety benefits due to the minimal excavation work required. >



Preparing to install the liners.

Left: Surveying the pipeline prior to lining.

Right: Setting up the liner drums prior to installation.

This meant that oil production operations could be maintained without interruption during the work. The excavation work was limited to minimal floor openings at the beginning and the end of the rehabilitated section. The liners were pre-folded and delivered by truck and ready-for-installation on transport reels. All that was needed for pulling in was a cable winch. The rehabilitation period was placed between two emptying cycles, so that an initially planned temporary bridging with a bypass was no longer necessary.

INSERTION WITHIN ONE DAY

In order to be able to transport the necessary volume of water that flows through the pipe during the regular emptying of a wastewater or production water basin, two 12 in (300 mm) diameter liners (maximum operating pressure 16 bar) were pulled into the existing pipe, which is operated at a pressure of approximately 10 bar. This provided a feasible and cost-efficient solution.

To connect the liners to the old pipe, Primus Line developed a certified solution in the form of a special flange adapter plate, which was approved with the PTP stamp of a local engineering office. These reducing flanges, from 36 in (915 mm) diameter to twice 12 in (300 mm) diameter allowed the patented Primus Line end connectors to be installed.

In this way, 420 m of pipeline were renewed within one day with the simultaneous pulling-in of both liners in one section. Several bends of up to 45° were also traversed in the process. The entire job, from mobilising personnel and equipment, to cleaning the old pipe, to the final pressure test, took two weeks.

Primus Line supported the measure not only with the production and delivery of the material and equipment, but also with supporting engineering services and the monitoring of the execution phase by a supervisor on site.

RELINEEUROPE'S INNOVATIVE QUALITY OFFENSIVE

Surely a record:
the heaviest
Alphaliner
manufactured
to date ready to
be transported
to northern
Germany.

RELINEEUROPE's tried-and-tested TQM system continued to be actively embraced and expanded further last year. Measures to optimise processes and products, such as the new exterior protection for the Alphaliner, new elements in production, and the topic of knowledge transfer are right at the top of the agenda for the company's new global quality offensive.

TQM = Total Quality Management: Since the foundation of the company from the Palatinate, this has stood for an extremely successful, process-related management system with a clear focus on customer orientation and quality. The dynamic development of the market, especially in the past two years, has shown the industry that quality must be thought and lived even more.

"For us, optimising our quality is one of the most important tasks that we work hard on day in, day out," said Frank Mersmann, CEO of RELINEEUROPE GmbH. "We are also thinking all the time about how we can develop our products further. Alphaliners up to DN 2000, high-strength, extra-stretchable glass fabrics, and a curing process that delivers optimised quality while also saving resources are just a few of the projects that we are working on alongside our continuous quality improvements. In particular the option with extra-stretchable glass fabrics will be used in various applications in the future, such as manhole liner and liners for changes in dimensions, but those are just two examples. Overall, the demands placed on products and services are highly individual, so the all-round package that we are constantly developing further has to be right for every single customer." >



Design of the new outer film concept is part of the innovative product design that forms part of the quality offensive.



Training through the RELINEACADEMY is carried out either on site, in the factory or in-house.

QUALITY OFFENSIVE LAUNCHED

Entitled 'Processes – Quality – Future', the new quality offensive was launched in 2020. The first step began with optimising production processes and increasing capacity. The go-ahead for renovating and expanding the production buildings at Rohrbach, was therefore given at the beginning of December 2020. The construction work was completed as early as the end of January 2021. Furthermore, a dedicated production line for high-quality glass fabrics was also being built in the same year. This technology enables RELINEEUROPE to bring the production of stretchable and particularly UV-transparent glass fiber fabrics in-house from high-strength, chemical-resistant glass fibres.

"This step has proven crucial for us, especially at a time of supply bottlenecks and shortages of resources." CEO Mersmann continued. "It means that, besides optimising our product quality, we can now, in particular, guarantee fast response times and our ability to deliver to our customers." Former limits have also been improved on. After introducing these innovations, RELINEEUROPE can now produce individual Alphaliners up to 600 m long and weighing up to 70 metric tons in total.

Nowhere have these been put to better effect than in the largest trenchless rehabilitation project in Hamburg, Germany which involved what is claimed to be the heaviest GRP hose liner manufactured up to that point anywhere in the world, an Alphaliner1800H weighing 45.5 metric tons and with a total length of 230 m. The project's success was crowned by the safe and reliable UV curing performed using the UV equipment technology that was developed in house at RELINEEUROPE and matched precisely to the resin being used. Combined with the Power Cube UV core and an average power output of 24,000 watts, the REE4000 UV curing system achieved a pull-through speed of up to 1,200 mm/minute with a wall thickness of 20.5 mm and a diameter of 1,600 mm. This success story demonstrates just how important it is to coordinate processes between individual parts of the company and with partners.

A key component of quality is the precise coordination between the GRP hose liners and UV curing technology and the RELINEACADEMY.

"For us, quality mainly means taking responsibility and having the right attitude," explained Philipp Martin, Director Sales Europe. "By using our UV curing technology, which is tailored precisely to the Alphaliner, we are giving our customers an extra guarantee of a cost-effective, high-quality installation process." He added: "But our quality offensive does not stop there, by any means. You need our constant product optimisation measures, the associated knowledge transfer, and our 360° service before the quality elements are all present and correct."

Since 2021, for instance, all Alphaliners were manufactured and shipped complete with an innovative concept for the outer film. This product innovation is made up of an 'integrated sliding foil' (IGS) and an 'integrated preliner' (IPL). Among other things, the optimisation of the product maximises the robustness of the exterior protection for all Alphaliners. >

Alphaliner DN 1870 featuring the new outer film concept, for more safety and reliability during installation.



The new outer film concept makes the exterior protection more robust and thus maximises safety and reliability on the job site

In addition, two large-scale projects incorporating the new outer film concept were completed successfully in late 2021. Long-time partner Diringer & Scheidel installed an Alphaliner DN 1870 with a total length of over 130 m using the REE4000 professional UV curing system underneath the train station in Unna. The company Erles successfully rehabilitated an approximately 150 m long pipeline of DN 1000, which runs under a production hall in Ober-Ramstadt in the Odenwald region. An Alphaliner1800H with a wall thickness of 15.6 mm was installed in order to handle the high structural loads. In these two major projects, the feedback from users also showed of the outer protection of the Alphaliner has significantly increased safety and reliability during the draw-in process.

As Philipp Martin has already emphasised, an innovative product design and precise engineering are not the only guarantees of quality when RELINEEUROPE is involved. Two more elements are deemed just as important to meet customers' requirements across the board. The first of these is customer service, which is hugely significant not only in face-to-face contact but also with its digital equivalent, for which RELINEEUROPE provides the RE.DESK, the partner area on its website. Here, the company uploads installation-related information such as the current installation recommendation, which has just been optimised with various updates such as to working pressures and the related pressure levels, as well as technical documentation and safety data sheets, standards and guidelines, calculation tables, order forms, and many other documents. The second element is the wide-ranging topic of knowledge transfer, one of the most important standards to which RELINEEUROPE first dedicated itself successfully some years ago with its RELINEACADEMY.

FAST-PACED TIMES

"The requirements for a pipe rehabilitation project are changing rapidly on the global market," said Werner Reiner, Director Sales Overseas. "Demand for larger sizes, resistance to all manner of different media, and faster-acting UV curing technology is increasing all the time. We are the only provider in the world who can not only deliver customised GRP hose liners to any corner of the globe but can also offer perfectly matched UV equipment to go along with it." >



Always up to date at the RE.DESK, the online customer service that never sleeps.



Testing is part and parcel of the trade: Only a product that has been put through its paces will be allowed to leave for the building site.

He continued: "This means that the people who have to install these products are facing tougher requirements. So, training in how to handle them properly is key to a professional, top-quality and thus cost-effective installation that will deliver an outstanding result." Expertise and ongoing training will guarantee the safe, reliable, and high-quality installation of GRP hose liners over the long term and ensure that the UV curing technology is being used in the best possible way. And this is exactly where RELINEEUROPE's successful RELINEACADEMY comes in: From ongoing and further training for rehabilitation specialists or job site managers, basic training and exchanges of experience through to teaching theoretical and practical knowledge and organising individual seminars for installation partners, local authorities, and water management associations, its range is certainly diverse.

"Naturally, the RELINEACADEMY is about traditional knowledge transfer driven by experienced speakers, technicians, and engineers," said Stefan Reichel, Managing Director QS and Innovations at RELINEEUROPE. "But we go much further than that and, besides courses on handling rehabilitation projects cost-effectively, also put on further training and fact-finding events on other issues relating to pipeline rehabilitation and environmental protection work, for instance. Of course, we also do this in our in-house training centre in Rohrbach as well as online, but also on site at the premises of our global partners. We firmly believe that this strategy is a key component of our quality offensive, so we are delighted to have been able to strengthen our team with some expert additions in this area too under my leadership."

An expansion of hands-on training is also planned for later this year. New programmes are being developed and existing ones updated, more target groups are being added, and, needless to say, the issue of digitalisation is being taken to a new level. After all, as John Ruskin once said: "Quality is never an accident; it is always the result of intelligent efforts."

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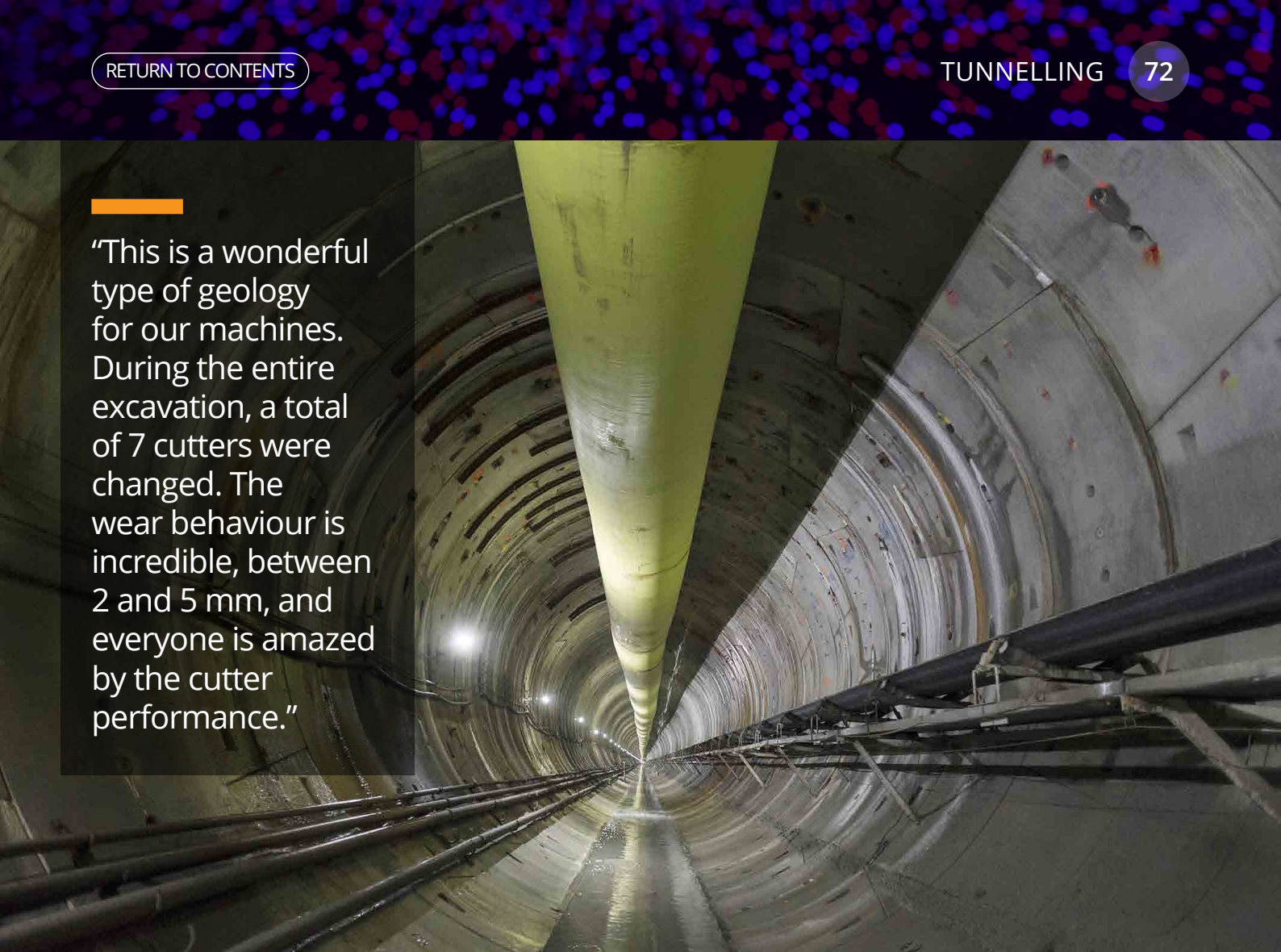


Robbins, Southland, and other personnel celebrate the completion of tunneling at the Ashbridges Bay Outfall Tunnel in early March 2022.

On March 3, 2022, a 7.95 m (26.1 ft) diameter Robbins Single Shield TBM completed a record-setting run below Lake Ontario. The machine, for the Southland/Astaldi JV, bored 3.5 km (2.2 miles) in sedimentary rock for the Ashbridges Bay Outfall in Toronto, Ontario, Canada. >

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"This is a wonderful type of geology for our machines. During the entire excavation, a total of 7 cutters were changed. The wear behaviour is incredible, between 2 and 5 mm, and everyone is amazed by the cutter performance."

The 3.5 km (2.2 mi) long Ashbridges Bay Outfall Tunnel is Canada's largest outfall and connects to 50 risers in Lake Ontario.

The machine launched in March 2021 from an 85 m (280 ft) deep, 16 m (53 ft) diameter shaft and began its bore in predominantly shale, with limestone, siltstone and sandstone. During its excavation, the TBM and its experienced crew bored a city-wide record of 30 rings in one day, or about 47 m (154 ft) of advance. The machine and crew surpassed a previous best day of 21 rings at a project with similar specifications. "We are proud to have completed another successful tunnel with Robbins and greatly appreciate their field service support," said Joe Savage, Project Manager for Southland.

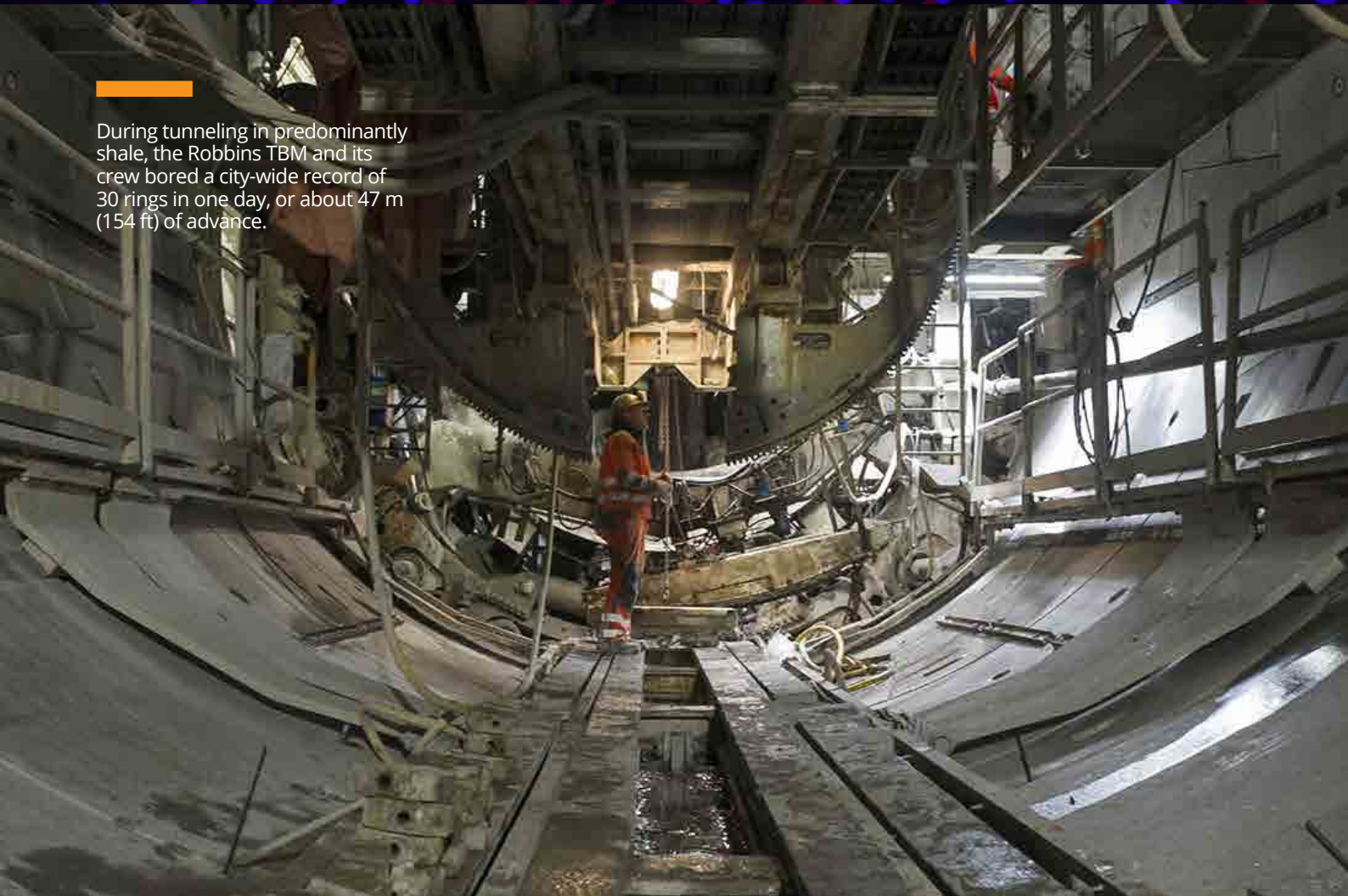
"This is a wonderful type of geology for our machines. During the entire excavation, a total of 7 cutters were changed. The wear behaviour is incredible, between 2 and 5 mm, and everyone is amazed by the cutter performance," said Alfredo Garrido of Robbins Field Service.

The crew operated the machine in two shifts of 12 hours from Monday to Friday. A Robbins continuous conveyor system including vertical conveyor transported muck behind the machine. "Every 25 machine cycles, it was necessary to stop the excavation to probe drill hole in front of the cutterhead to check for possible water. This drilling was done basically every day, stopping the machine for a few hours, but it was very necessary," said Garrido.

The last kilometre of tunnel, bored below a series of 50 risers under Lake Ontario, was challenging but ultimately successful. "The team really worked together to overcome some tough ground conditions and high water inflows in the tunnel," said Savage. >

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During tunneling in predominantly shale, the Robbins TBM and its crew bored a city-wide record of 30 rings in one day, or about 47 m (154 ft) of advance.

“Every day was full of challenges. We are most proud of our teamwork and unyielding spirit.”

The success of the TBM is just one cause for celebration. The project won accolades from the Tunnelling Association of Canada (TAC) in late 2021 for its all-remote machine acceptance enacted due to the Covid-19 pandemic. The machine acceptance, the first of its kind, enabled communication and confirmation between the machine’s assembly location in Mexico, suppliers in the U.S. and those involved in Canada. “It was a challenge for all the people involved due the pandemic travel restrictions; however, due to good planning and communication we were able to go through the Acceptance Test successfully. I think this might become quite common in the near future.” said Robbins Project Manager Javier Alcala.

The completed outfall will connect to the 50 in-lake risers to enable efficient dispersion of treated effluent over a wide area of the lake, making it the largest outfall in the country. The project for the City of Toronto will improve the city’s shoreline and Lake Ontario’s water quality by replacing a 70-year-old existing outfall.

CHINA

The breakthrough of an 8 m (26.2 ft) diameter Robbins Main Beam TBM at China’s Yin Han Ji Wei project is not only a cause for celebration, but also a triumph of technology and perseverance. The machine overcame 17.5 km (10.9 miles) of tunnel in some of the most difficult geology ever encountered, breaking through in the first quarter of 2022. The water diversion tunnel traverses the Qinling Mountains of Shaanxi Province, with up to 2,000 m (1.2 miles) of cover. >

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The Ashbridges Bay Outfall won accolades from the Tunnelling Association of Canada (TAC) in late 2021 for its all-remote machine acceptance, the first of its kind, enacted due to the Covid-19 pandemic.

Contractor CRTG praised the strength of the Robbins cutterhead after boring 17.5 km (10.9 mi) of tunnel in incredibly hard and abrasive rock up to 309 MPa (45,000 psi) UCS.



The breakthrough of an 8 m (26.2 ft) diameter Robbins Main Beam TBM at China's Yin Han Ji Wei project is not only a cause for celebration, but also a triumph of technology and perseverance.



"Every day was full of challenges. We are most proud of our teamwork and unyielding spirit," said a representative for tunnel contractor China Railway Tunnel Group (CRTG). The ground, consisting of mainly quartzite and granite, was estimated to have a rock hardness of between 107 and 309 MPa (15,500 to 45,000 psi) UCS, being highly abrasive and a maximum quartz content of 92.6%.

"This was in my opinion the most challenging project ever completed by TBMs, and it proves TBMs are up to overcoming even the most difficult conditions. I have great respect for the CRTG crews and management, and I thank them for moving TBM technology to a new level," said Robbins President Lok Home.

During tunnelling, crews encountered over 14,000 rock bursts, some with energy as high as 4,080 kJ. "Robbins' overall equipment performance was excellent from the beginning to the end of breakthrough, and during seven years of excavation. This is despite the super hard rock with high quartz content, strong rock bursts, and substantial water intrusions," said the CRTG representative.

Water ingress occurred a total of 69 times during the drive, with some inflows extremely high – exceeding 20,000 m³ (700,000 ft³) of water in one day from a single point. In-tunnel ambient temperatures peaked at 40°C and 90% humidity. >



Left: During tunneling, crews encountered over 14,000 rock bursts, some with energy as high as 4,080 kJ.

Right: The Robbins TBM and experienced crew were able to overcome difficult conditions including severe water inflows, abrasive rock with a maximum quartz content of 92.6%, high energy rock bursts, and more.



Throughout the challenges, the crew found ways to persevere. Rock bursting was controlled using steel slats in conjunction with the McNally crown support system, while zones of stress were predicted using a micro-seismic monitoring system. The micro-seismic system records rock stresses in a borehole 20 m (65 ft) ahead of the face and predicts the potential for rock bursting following comparative analysis with similar rockburst data from other projects, as well as from nearby sections of tunnel in the Qinling Mountains.

Water ingress was controlled by dramatically increasing pumping capacity in the tunnel to 41,000 m³ (1.4 million ft³) per day. Systematic probing ahead of the TBM was also used to detect water, as well as rock bursting. When ingress exceeded 70% of the in-tunnel pumping capacity, crews then carried out grout injections.

The abrasive, hard rock was another challenge, addressed by Robbins through the use of Extra Heavy Duty (XHD) 20 in (500 mm) diameter disc cutters that showed long cutter life and lower wear compared to standard 20 in (500 mm) diameter discs. The crew also optimised TBM operation with at times lower production rates where needed. "Especially with such a huge challenge, a strong cutterhead is required to ensure production. The quality of Robbins' cutterhead has been proven. The cutterhead can still work properly after the tunnel breakthrough," said the CRTG representative.

With TBM tunnelling complete, the route will become part of two other sections of an altogether 82 km (51 mile) long tunnel that will link up the Hanjiang and Weihe Rivers in Shaanxi province. The completed tunnel, for owner Hanjiang-to-Weihe River Valley Water Diversion Project Construction Company, will secure a water supply for towns and agricultural areas in Central China, while also generating hydroelectricity.

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Taking delivery of the MTS DINO in early 2022, the MTS Triple fan unit provides what is claimed to be market leading suction performance in standard and extreme environments. The increased performance from the 900 mm Triple Fan Unit allows for increased capability with distanced and depth works.

Mounted to a next generation Volvo FMX 8x4*4 with a Globetrotter Cab, provided by Volvo Truck & Bus in Aberdeen, Scotland this DINO12 32 tonne unit boasts a market leading turning circle for a 4-axle chassis as well as the latest truck safety features and impressive fuel economy figures.

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VAC UK ORDERS 20 VAC EX MACHINES



A front view
of the Rhino
vacuum
excavator.

Vac UK has signed a major contract to purchase 20 new Longo Rhino excavators, underlining its commitment to becoming the leader in the growing suction excavation market.

Worth almost £10 million, it follows the vacuum excavation specialist's announcement last year of a £15 million order and brings the company's investment over a 24-month period to £25 million. Vac UK, part of the Kilkern Group, will take delivery of the new machines in 2023.

First unveiled in the UK in September 2021, Longo Rhino vacuum excavator is claimed to be the most powerful twin fan suction excavator on the market producing a flow rate of 45,000 m³/h and a vacuum up to 500 mbar. Each excavator is equipped with the latest features including 360° cameras, mega power arms and vibrating skips and on request, rear high pressure washing bar, hydrostatic system, HP hose reels, water compartment, special remote control, air pressure system and many accessories. The Rhino can also be supplied to meet ATEX requirements for work in potentially explosive environments. >

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A rear view of the Rhino with the holding tank in tip position.

The Rhino can be mounted on any chassis and the Vac UK order will see machines based on Scania, Mercedes-Benz and Volvo drivetrains.

The order reinforces Vac UK's relationship with Longo Euroservice Srl after it secured the exclusive rights to distribute the Italian manufacturer's equipment in the UK, Ireland, USA and Canada last year. Based in Puglia, southern Italy, Longo produces specialised equipment for industrial, ecological and environmental purposes. Each machine is specifically produced to buyers' requirements.

Patrick Curran, director of Vac UK, explained that the new machines will provide a step-change in the business's fleet.

"From the outset, we have been absolutely clear that we wanted to build the best performing fleet of vacuum excavators in our markets," he said. "On that basis, we have been very specific in our acquisition strategy, to buy only the best and most powerful machines because they offer benefits in terms of versatility, efficiency and safety. Our customers have responded very positively to that approach and it has been one of three principal drivers of demand for our services, the others being our extremely well trained drivers and operators and, more generally, increasing awareness of the benefits of vacuum excavation across construction and civils. Managers are bringing in vac ex machines more often on jobs and they are specifying high performing machines. I believe this order sets out a very clear statement of intent that we will continue to increase the depth of our resource to meet their needs."

Patrick continued: "We have been delighted with the performance of the Rhino since we brought it into the UK. Customers are consistently impressed with its abilities on site. We are also seeing significant interest from third parties looking to buy the machines and we delivered our first sale in January."

Vito Longo, commercial director for Longo Group, said: "We are delighted to have received this major order from our key partner for UK, Ireland, USA and Canada. It is a testament to how positively the Rhino is being received in-market and a great demonstration of how the relationship between the two businesses is going from strength-to-strength. We look forward to continuing to work together and to developing further new opportunities."

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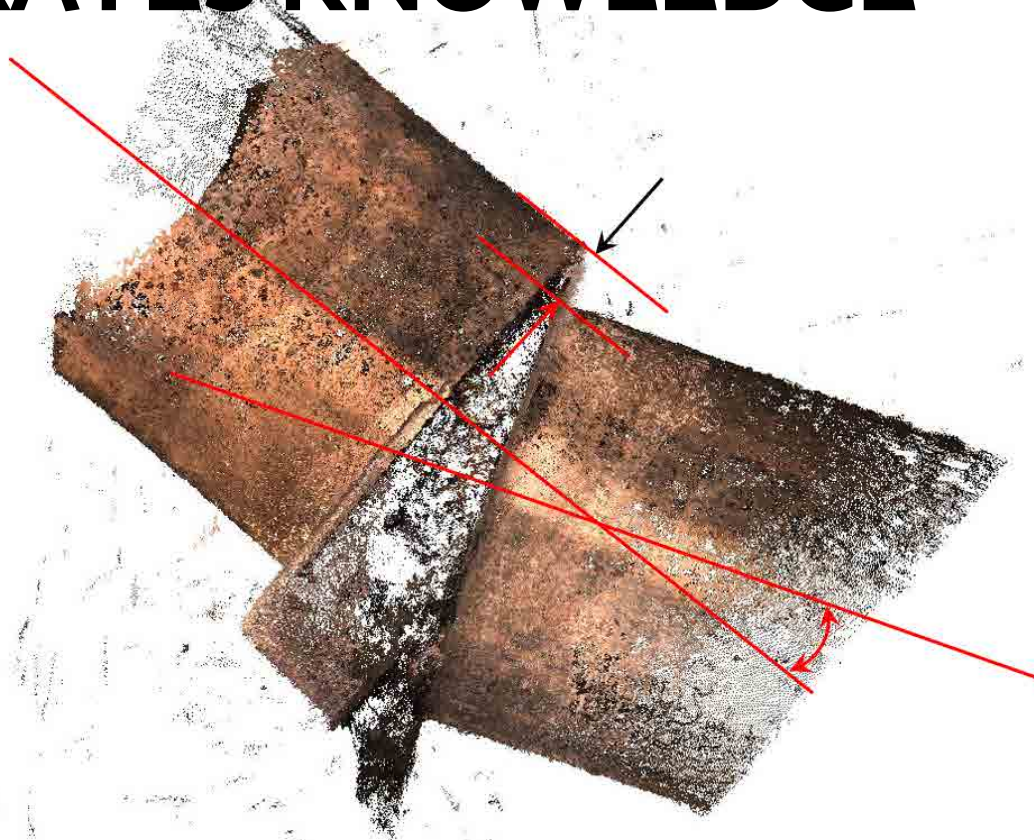


IBAK ARTIST EXPLAINED - THE WEB SERVICE THAT GENERATES KNOWLEDGE



ArtIST

3D Reconstruction from the web service: measured values in 3D space automatically calculated by ArtIST



Artificial intelligence (AI) is not only on everyone's lips as a key technology of digital transformation but is already part of our daily life. AI-supported software has also found its way into the sewer industry.

IBAK ArtIST (Artificial Intelligence Software Tool) is a cloud-based extension to the IBAK IKAS evolution sewer analysis software for automatic condition detection in inspection films. We spoke with Arno Jugel, Head of Software Sales at IBAK Helmut Hunger GmbH & Co. KG, about the status quo and the perspectives for the near future.

Mr Jugel, in your paper that is available online, you state that ArtIST learns what connections, cracks, intruding roots and other defects look like. What progress has been made since your paper? What is the status of the IBAK ArtIST project as of March 2022?

In the paper, the main point was to demonstrate basically that ArtIST can help to satisfy the continuously increasing requirement for accurate condition data. The presentation aimed to show that the industry can address the high demand for inspections considerably more efficiently with AI-supported software. This is of course still the case in March 2022.

Last year, several hundred kilometres of sewers were again analysed and processed by IBAK for this purpose. So, the AI model has been continuously further trained. As from this year, the trained conditions are being used in practice. The updates required for IKAS evolution are available, the ArtIST service is in operation and ArtIST is being used on real projects. It is important to continuously monitor how well the AI algorithms work in practice and whether they provide sufficient and accurate results. IBAK has made AI applications available to the sewer inspection industry, but transition is a long-term process. >

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Which users have you moved to practical operation with?

As you can achieve the greatest effect with a PANORAMO system, the system has been put into operation to begin with for inspection with this equipment. This means that defects cannot be 'overlooked', that is, escape the view of the camera, because the camera looks everywhere. So, a complete data basis is available for the AI application. Nevertheless, PANORAMO model training is designed such that it can also be used for pan and rotate cameras. With the insight that IBAK gains from operation by PANORAMO users, it will then be a question of making the AI application available for all types of IBAK inspections with the IKAS evolution software package.

Are you making progress as fast as you expected at the start of development?

At that time, we gained some recognition very quickly. In next to no time, it became clear that the principle does not only work for photos of cats. But, as is often the case, the devil was in the detail of achieving sustainably and objectively the self-set aim and the intended high quality of the results for the ArtIST web service. Looking back, it is not surprising that the project has required more time and effort than we initially expected. But perhaps it is a good thing not to know beforehand what problems are in store for you, otherwise you might not risk making the first step.

Now there are some competitors on the market with the same or similar aims as the development of ArtIST. Are you being outdistanced?

It might seem so in some cases. One of them might be a bit ahead in one respect, we are perhaps a step or two further at another point so at the moment no-one can definitely say. As said before, transition is a quiet, constant process. There is not just one big final, to use your metaphor. It is not a question of short-term success at one stage, you need a lot of staying power for the whole process of transition. Right from the start of AI development, IBAK has had in mind various applications that can be of benefit for sewer inspection in the future. But ultimately, it is not a question of changing operating procedures but of establishing new techniques and methods so that procedures are simplified and optimised and job performance can be enhanced without the need for additional personnel.

What challenges still need to be overcome before additional benefit is generated for users?

An additional benefit already exists. Even if the inspector only no longer has to enter the most frequent standard data himself but only has to check it for factual accuracy, this already generates additional benefit through the increased efficiency.

The measured values and the dimensioning of defects are a further aspect. The ArtIST service also takes over the job of determining the required measured values for the condition data by 3D reconstruction methodology. We still have some work to do before we can make the technical potential fully available to our customers.

An issue outside our sphere of influence concerns the data networks that require further optimisation. A task that with a solution that is crucial for the unlimited application of AI support.

Can you explain more clearly why the data networks are so important in this connection?

The procedure must also function online. The problem is not the technology in the TV system. The mobile and terrestrial internet connections are in existence and are available and integrated. The problem is far more that broadband connections must be available. The installation of fibre optic cables is the keyword as far as the office is concerned and LTE – with at least 4G, or better 5G – is vital for the mobile internet >

Arno Jugel, Head
of Software Sales
at IBAK Helmut
Hunger GmbH &
Co. KG.



“An issue outside
our sphere of
influence concerns
the data networks
that require further
optimisation.”

connection for the TV system. This is not comparable to mobile phone reception for a telephone call; here large volumes of data must be exchanged rapidly and reliably.

When as a result the days of hard drives and time-consuming data transfer are over, what will be the procedure for ArtIST users?

Not much different from up to now. The inspector does not have to adapt himself to a new workflow. He captures the optical inspection data during the camera inspection. The ArtIST web service is linked to the software. He sends the film with a click in IKAS evolution to the web service and this sends the condition data back to him. It goes without saying that the sewer data rulebooks and the specifications of the customer are observed and are supported by the software.

How long is the processing time, until the inspector gets the condition data back from the AI software?

That depends on how many defects there are in the sewer. So, you cannot give an overall indication how long it takes to process the data per metre. At the moment, we expect that the condition data for a day's output of films will be available the next morning.

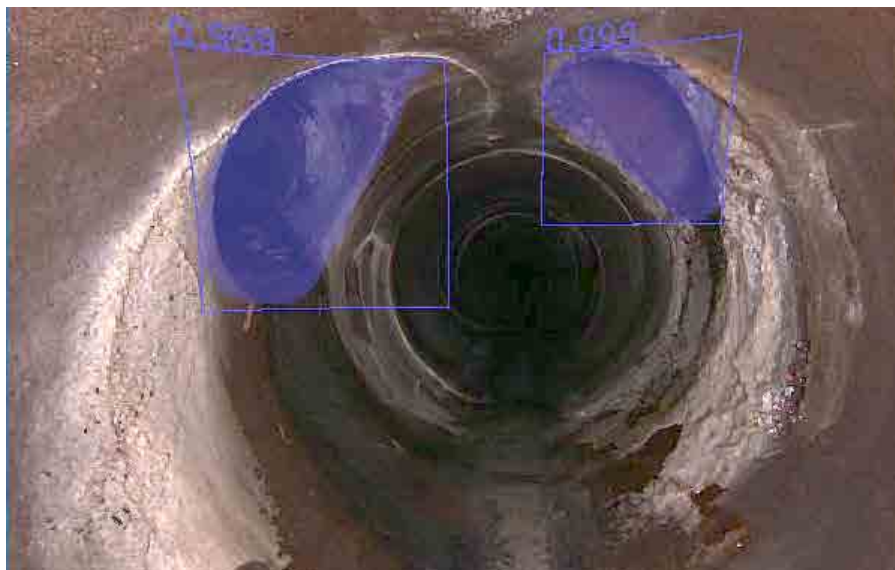
What happens to the data in the web service, who has access to it?

The rights of exploitation remain with the contractor that has captured the data and their customer. The information is protected and does not come into the hands of third parties. IBAK hosts the ArtIST service with a European web service provider so the data does not leave Europe and is processed in line with the regulations of the GDPR.

IBAK has also seen the film, of course. IBAK uses the film exclusively with the aim of operating and further improving the web service. Beyond that, the data is not evaluated by any third parties. We do not employ any additional inspection companies or service providers for the AI service to make any evaluations with or of the customer's data in addition to the conditions detected by the AI.

Where is the added value for the contractor if ArtIST evaluates a day's output of optical film material virtually overnight?

With the ArtIST service, the user books an additional tool to optimise his work with artificial intelligence methodology. He does not book a sub-contractor to do part of his work. Our customers' job remains, now as ever, to perform the optical scan and to capture the condition data. This billable service is not passed on to the AI application either, but is optimised. With the web service, the user saves a great deal of time by eliminating routine work, but he is still in control. It remains his work, it remains the added value that he provides for his customer. The human being and the web service complement each other. ArtIST makes suggestions, the specialist is in control. >



AI picks out points and highlights of interest/concern for the surveyor to check.

When does AI make sense for service contractors in the sewer industry?

If you work with IKAS evolution, you do not have to buy anything new for the AI application. The service will be available to everyone who uses our software. Thus, the AI application can also increase the efficiency of small projects and is not only profitable for big projects. ArtIST is the web service that generates knowledge. This it does at any time, independently of how the inspector feels on a particular day or when he is available. If the required manual routine work for standard occurrences is done by the web service, this gives users more valuable time for other work. But the AI application does not only make sense for contractors but also for sewer system operators and engineering offices.

Where do you see the biggest advantage for sewer system operators?

Arguments as to how the skills shortage can be counteracted and the need for greater efficiency in the face of a multitude of tasks certainly also apply here. A further aspect is the quality that remains consistently high. The ArtIST web service also contributes towards providing a more reliable answer to the question as to what a pipe will look like in 10 or 20 years. Predictions of deterioration depend among other things on being able to take into consideration conditions that from today's perspective may not yet constitute defects. The capture of such conditions is very time-consuming, requires meticulous care, but as yet does not directly affect present rehabilitation planning which perhaps covers the next 2 to 3 years. However, if even slight defects can be captured systematically and in detail by the web service, these can also be processed in a prediction model. Forecasts made by prediction models are becoming more reliable.

Finally, a question regarding the IFAT which is due to take place shortly: Will IBAK be in Munich and present the ArtIST web service at the exhibition?

That is what is planned and we all very much hope that the IFAT will be able to take place with on-site attendance. These are very exciting times. The deployment of ArtIST in practical operation is providing us with a lot of stimuli and impressions from the field and we use these to further improve the quality of our service. We are looking forward to lots of interesting conversations on this subject at the exhibition. My personal wish is that our stand will be buzzing with visitors again, just as it was before Covid19.



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International No-Dig events brought to you by the industry's world experts



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SOCIETY NEWS

ISTT News brought to members by Trenchless Works

A MESSAGE FROM THE CHAIR



Jari Kaukonen, Chair, International Society for Trenchless Technology

Past chairs of NaSTT and past executive director. Standing: George Ragula, Derek Potvin, Graig Vandaele, Mike Willmets. Sitting: Ray Sterling, Frank Firsching, Kim Staheli, Piero Salvo and Glenn Boyle.

Hi ISTT members!

What a great show I have seen in Minneapolis during the NaSTT annual conference! First on Sunday I met many of my friends when having the past chair's dinner. They elected the trenchless person of the year, Mr Derek Potvin from Canada. Congratulations to Derek!



There was a huge exhibition with many well-known trademarks in the field. Some of those have already taken a booth at the next International exhibition in Helsinki in October. The Kick-off breakfast was a nice start for the exhibition. The conference presentations were interesting with six parallel tracks. It was also nice to notice how the chairman of NaSTT Alan Goodman ran through the large programme. The Gala Dinner on Tuesday was a real American-style show with good food and entertainment. I did not know how many musicians the NaSTT have! Furthermore, on top of that the executive director Matthew Izzard also showed himself to be a solo singer! They also added three persons to the hall of fame, for example the past executive director Mike Willmets. After my period as a chair of ISTT I will miss these nice occasions with many good friends.

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SOCIETY NEWS

ISTT News brought to members by Trenchless Works

“We have received more than 60 proposals for the papers presented in Helsinki conference all of high quality.”

The programme for the International No-Dig show in Helsinki is almost ready. The one missing part is the post-conference tour on Thursday 6 October for which every affiliated society can vote selecting from five different possibilities. The most voted for programme will be the one which will made to happen. The selected tour will really be worth of taking part in. Those who have seen the possibilities already have said that all of them are worthy of visiting. The Gala Dinner on Tuesday I can promise is surely something you do not want to forget. It would be nice to receive our award there, so it is time to find out if you have some good proposals to that can be entered for the Awards.

We have received more than 60 proposals for the papers presented in Helsinki conference all of high quality. The technical programme committee will check those during April led by Samuel Ariaratnam. We will keep you updated about the programme as we get closer to the event.

Meanwhile visit the show website: www.nodighelsinki.com and book out the week (or two) on your calendar. I have heard that many of the visitors will arrive well before the event. There will be a nice pre-conference tour to Tallinn before the conference on Saturday 1 October. There are limited numbers of places for that trip, so it would be good to be an early bird. We will have an excellent student masterclass too on Wednesday with the leading professionals on the world! Thanks to them for their promise of presentation!

Before the Helsinki conference, I have planned a visit the VST in Paris at the beginning of June and Bucharest for Trenchless Romania as they will be a new affiliated society for ISTT.

I wish to all of you an enjoyable springtime and many nice no-dig projects!

With best regards,

Jari Kaukonen

Chair, ISTT

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SOCIETY FOCUS

Monthly news from a regional ISTT Society

ASTT – FROM THE BEGINNING AUSTRALIAN ASSOCIATION FOR TRENCHLESS TECHNOLOGIES



Exhibiting at the first ASTT
Conference and Exhibition, 1992.

It was back in October 1989, when a Technical Sub Committee of the Water Resources Council conducted a two-day seminar on Trenchless Technology in Perth, Western Australia. A panel discussion at the end of the seminar with some 170 delegates from around Australia and New Zealand agreed that an independent Australian Society for Trenchless Technology should be formed.

To this end, the Society became established independent of other Professional Bodies and related Societies such as the Institution of Engineers, Australia; the Australian Underground and Construction Tunnelling Association (AUCTA); the Australian Water and Wastewater Association (AWWA); the Australian Drilling Industry Association (ADIA); and the Federation of Australian Construction Contractors. Although these organisations had some members with an interest in Trenchless Technology the specialised nature of Trenchless Technology suggested the new Society should stand alone.

The Australian Society for Trenchless Technology (ASTT) was formed in 1991, and was Incorporated in Perth, Western Australia on 11 March that year. The Society was also affiliated with the International Society for Trenchless Technology (ISTT) in March 1991.



Bill Menzel accepts
Australia's first ISTT
No-Dig Award, 1997.

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Monthly news from a regional ISTT Society



Assembling the TBM in Malabar transfer station.
Courtesy of Sydney Water.



The TBM breaks through.

On the 28 June 1994, the name of the Society was changed to the Australasian Society for Trenchless Technology, enabling membership to include those living in New Zealand. Membership is available to others outside Australia and New Zealand if they are members of the Society where they live, for example London and a financial member of the UKSTT.

ASTT grew from a membership base of 35 when inaugurated, to some 200 members in 2022. There were originally two classifications of Memberships offered and these were Corporate and Individual. This has recently been modified to now allow for Gold Corporate, Silver Corporate, Asset Owner, Individual, Retired Individual, Young Professional, Tertiary Education Institutions and Life Membership.

Generally speaking, our members belong to a number of categories within the Trenchless Industry, including contracting, manufacturing, support services, education and a wide range of private and Government client organisations. The growth in ASTT membership has reflected the growth of Trenchless Technology in Australia and New Zealand. With ASTT having the highest membership of any of the affiliated societies on a per capita basis, the Society continues to provide a focal point for the continued development and application of Trenchless Technology in Australia and New Zealand.

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Monthly news from a regional ISTT Society



Menno Henneveld addresses delegates at ISTT No-Dig Perth 2000.



Part of the 2,300 m² exhibition space at the ISTT No-Dig Perth 2000 conference.

Structure of the ASTT

The Australasian Society for Trenchless Technology (ASTT) is managed by an elected Council, which consists of not more than one representative from each State or Country, plus the Federal President and Past President. Council also appoints a Federal Secretary and a Federal Treasurer as well as a representative to the Board of the International Society for Trenchless Technology (ISTT). The day-to-day conduct of ASTT is managed by the Secretariat, or administrative arm of the Society consisting of the Secretary/Treasurer on a part time basis, in liaison with the President.

Objectives of the ASTT

Since inauguration the objectives of ASTT as outlined in our Strategic Plan have been to:

- Advance the science and practice of trenchless technology for the public benefit;
- Provide a forum in Australia and New Zealand for interchange of multi-disciplinary knowledge and skills in the field of trenchless technology;
- Arrange or sponsor meetings, conferences and symposia on subjects consistent with the objectives of the Society;
- Encourage the interchange of specialists in Trenchless Technology within Australia and New Zealand;
- Liaise and establish affiliations with related organisations, both within Australia, New Zealand and overseas;
- Inform and advise the public and Government on matters concerned with trenchless technology;
- Encourage education, training and research.

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The bustling exhibition at ISTT No-Dig in Perth 2000.

Recently we completed a comprehensive review of our Strategic Plan in order to redefine and keep up to date with the times. Although some of the implementation work is still ongoing, I can advise that we now have a new vibrant Strategic Plan that will bring the ASTT to the forefront.

A few significant changes at the higher level are the changes to our Vision. This now is changed to "Leading trenchless technology throughout Australasia". Also, our Mission was updated is to "Influence and support industry in Australasia to realise the benefits of trenchless technology."

Our strategies to realise the mission are now Our Members, Promotion, Training and Education, A Sustainable Society and Industry Best Practice. The ASTT will continue to promote the advancement of Trenchless Technology in Australia and New Zealand by being; ethical, impartial, innovative, inclusive, and visionary.

The Society endeavours to achieve these objectives through a number of strategies including:

- National and International Conferences and Exhibitions;
- National Seminars/Webinars;
- Introduce new digital practices;
- Use the website as a promotional tool;
- Develop educational pathways for trenchless professionals;
- Develop best practice Guidelines, Standards and Specifications;
- Utilise Special Interest Groups dealing with specific key issues
- Society Publications – 'Trenchless Australasia and Trenchless Directory'.

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Monthly news from a regional ISTT Society



Pezzimenti equipment onsite.



Pipeline installation on the BassGas Project, 2003.

State of the Industry

There are approximately 130,000 km of water mains and 80,000 km of sewer mains in Australia alone. A large proportion of this infrastructure has exceeded or is rapidly approaching its design life. In addition, there are also many thousands of kilometres of fuel, chemical, electrical and telecommunications conduits that, although not necessarily at critical stages of their design lives, still require installation, replacement and expansion and will continue to do so into the future.

Infrastructure owners and operators have become increasingly aware of the favourable economics of renovation and rehabilitation techniques for pipeline infrastructure and in Australasia, a history of methods utilising trenchless technologies has developed over the last thirty years. Likewise conventional pipe-cracking, pipe-bursting and horizontal boring techniques for new infrastructure installations has a considerable history and success here in Australasia.

Pipeline infrastructure owners and operators have an immense economic investment in underground pipelines, with each having a vested responsibility and interest in constructing and installing new infrastructure at minimum cost.

Society places a constant demand on improved infrastructure systems whilst at the same time, an ever-increasing value is placed on the existing environment, both natural and developed and the systems that exist within them. As the infrastructure networks are expanded to meet the demand, there develops a competition for space and working which results in increasing difficulty, complexity and cost for infrastructure installation projects.

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"I think the future is extremely bright as we are now all realising the social and environmental benefits that trenchless techniques can provide."



Supporting a long pipeline during an installation project.

Concurrent with society's increasing demand for new and improved infrastructure, there exists a greater emphasis on environmental protection in the form of minimising the impacts and damage due to development and due to the operation of the infrastructure systems in place. With both the community and regulators exerting influence to improve and rationalise infrastructure systems to meet environmental and regulatory requirements, authorities, developers and constructors are faced with seemingly conflicting tasks.

Industry providers are required to provide technically appropriate solutions to meet a demand whilst minimising environmental impacts, social disruption and disturbance all within an economically feasible framework appropriate to the current economic climate.

In more general terms, effective solutions to difficult problems need to be provided, with minimal disturbance, impact and cost and with maximum public and political acceptance and 'value for money'.

In Australasia, a considerable amount of work is being undertaken on provision of new installations and pipe renovation work on our ageing assets. HDD, microtunnelling, pipe bursting, cured in place and spiral winding are the most common trenchless construction methods being adopted in these areas.

I think the future is extremely bright as we are now all realising the social and environmental benefits that trenchless techniques can provide. Minimising disruption to the everyday activities of the public is becoming more and more an issue that client organisations are conscious of. There are several trenchless techniques that can certainly provide solutions in these situations.

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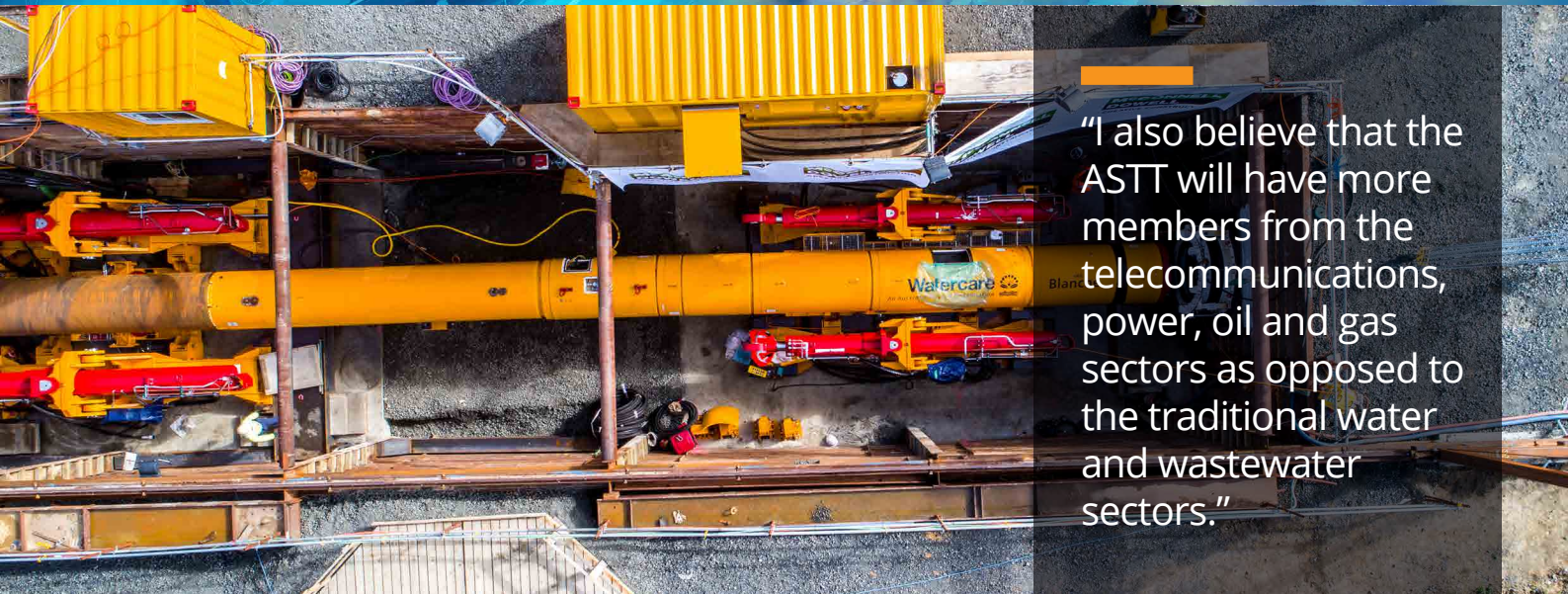
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Monthly news from a regional ISTT Society



"I also believe that the ASTT will have more members from the telecommunications, power, oil and gas sectors as opposed to the traditional water and wastewater sectors."

Trenchless operation are becoming increasingly popular in Australasia.



Positioning tunnel lining segments during construction.

As previously mentioned, the Environmental and Occupational Health and Safety regulations will be taking the forefront of most works associated with the construction industry of which trenchless techniques as you all know, ticks most of these boxes.

I also believe that the ASTT will have more members from the telecommunications, power, oil and gas sectors as opposed to the traditional water and wastewater sectors.

The gas industry throughout Australasia has embraced HDD technology on several major gas pipeline projects for waterway crossings and crossings of difficult terrain.

The Telecommunications industry has invested large sums of money in long-distance communications networks involving optical fibre and NBN (National Broadband Network) cable installations. Telstra Australia, Optus and other industry providers have seen, tested and proven mini-HDD and HDD as technologies with immense time and cost savings benefits as well as substantial social and environmental benefits.

A Sydney electrical authority, Energy Australia reported that traditionally they have undertaken large numbers of under-road conduit crossings for small diameter conduits by guided boring techniques each year. Energy Australia also reported that at the current time, they were encouraging contractors engaged in conduit installations to utilise other trenchless techniques such as mini-HDD.

Other industries such as the mining and oil industries have carried out new pipeline installation by HDD for mine slurry pipelines and fuel lines beneath major taxiways at airports for example.

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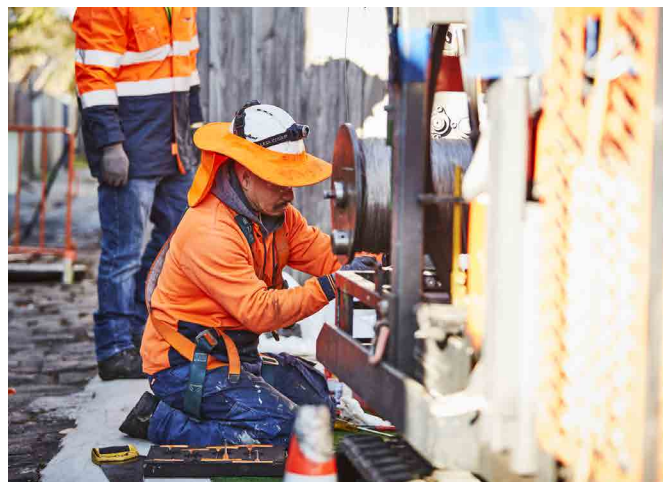
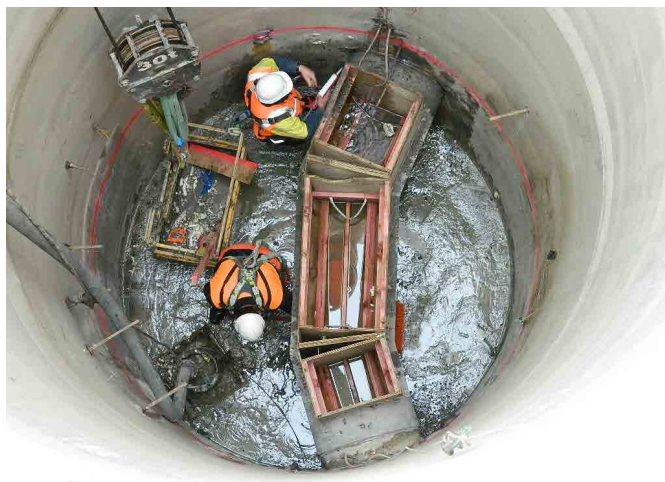
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Training and education are vital aspects that ASTT is looking at to ensure safe effective work in the field.

"With trenchless technologies providing effective and beneficial solutions to these demands and controls, an increasing trend in their development and usage should prevail."

If these actions are representative of the industry in general, then an increase in the use of trenchless technologies in this industry is expected.

As the community places an increasing demand on infrastructure systems and regulators exert more influence to improve and rationalise infrastructure systems to meet environmental and regulatory requirements, the need to provide new infrastructure and upgrade existing systems will continue to increase. With trenchless technologies providing effective and beneficial solutions to these demands and controls, an increasing trend in their development and usage should prevail.

The ASTT is considering undertaking a 'State of the Industry Review' across Australasia in order to have a good handle on this most important issue as this is the question we are always asked.

National Conference and Exhibition

Despite having to postpone a couple of times due to the Covid-19 issues, the 2021 National and Conference will now be held over 14 to 17 June 2022 at the Sydney Convention and Exhibition Centre. This event will be the biggest in the southern hemisphere and we are counting down the days to get it started.

The event will allow delegates to attend a choice of three trenchless training courses immediately prior to the start as well as attend the great selection of technical papers on offer. The large exhibition is completely sold out which is also an opportunity to see the latest and greatest innovations the trenchless industry has to offer.

If you want to find out more about this prestigious event, please go to the following web address of <https://www.nodigdownunder.com/>

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SOCIETY FOCUS

Monthly news from a regional ISTT Society

Tunnelling
operation in
Australasia.

"The biggest challenge facing the ASTT and no doubt all societies is to ensure that all our members are getting value for money."

Future for the ASTT

The biggest challenge facing the ASTT and no doubt all societies is to ensure that all our members are getting value for money. Even though our fees are modest, membership value is paramount to ensure we maintain the membership numbers. This focus is constantly being looked at. For example, we have just redeveloped our website so that there is now a members only area that provides exclusive access to member benefits including guidelines, standards and specifications.

We are now celebrating our 30 years of effective operation and I can foresee the ASTT becoming significantly larger with a dedicated full-time person being appointed to the role I am currently undertaking on a part time basis. I also envisage an office being established somewhere in Australasia, probably on the east coast of Australia as that is where the bulk of the membership is located.

I also envisage the establishment of State Chapters in each of the Australian States and in New Zealand, similar to those that currently operate in the United States of America.

Would it not also be great if we had our Contractors all working to the same set of Guidelines, Standards and Specifications.

So yes, the future looks extremely challenging and exciting for the ASTT.

Jeff Pace

ASTT Secretary

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SOCIETY NEWS

ukstt.org.uk

Society News brought to members by Trenchless Works

HELLO FROM THE CHAIR



Dawn Greig, Chair, UKSTT



Lynn Maclachlan – Associate Director
for UKSTT



Hello everyone!

The weather may be changeable but here at the UKSTT our outlook remains bright and positive, especially with so many new initiatives in the trenchless pipeline.

A responsible approach

The UKSTT has a new Social Corporate Responsibility Strategy (SCRS), for which we have to thank Past Chair and current Treasurer of UKSTT, Colin Tickle. As a Society, we have a responsibility to work ethically, considering human rights as well as the social, economic, and environmental impacts of what we do. Our Strategy report will be published on our website in the near future, along with regular updates on progress. This also ties in with our successful Green Alliance programme with the Pipeline Industries Guild, jointly bringing the challenges of the road to net zero within our industry to the forefront. Also, in line with our new SCRS we have ditched paper business cards, opting for the more environmentally friendly digital option. Please scan and connect!

What are you waiting for?

Enter the UKSTT Awards before 18 May to be in with a chance of winning one of the most stylish and coveted awards in the industry! Do you have an existing case study, editorial or even social media post about a challenging project or new trenchless technology? You can easily adapt that to take part. Check out the rules on our website www.ukstt.org.uk where you will find a full breakdown of the criteria and scoring for each category, so you can understand exactly what the panel of expert judges are looking for, and how to tailor your entry to have the best possible chance of winning - good luck!

Dawn x

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Part of the Trenchless Middle East Portfolio

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- No-Dig (NDRC) Technology
- Underground Infrastructure
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- Underground Utilities

Be part of the Egypt infrastructure development project, book your stand today

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- Ageing infrastructure
- Forecasted to be the 7th World's largest economy by 2030



Contact: Paul Harwood or Stuart Hillyard

Email: pharwood@westrade.co.uk or shillyard@westrade.co.uk Telephone: +44 (0)1923 723990

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UKSTT AWARDS CALL FOR ENTRIES DEADLINE DATE 18 MAY 2022



Each year the UKSTT makes annual awards to promote excellence in trenchless technology, and this year the awards will be made at the Society's Gala Dinner that is being held in Peterborough on 14 of September 2022. Held during the biennial No-Dig Live conference and exhibition, the Awards recognise the outstanding contributions made by organisations and individuals to the promotion, use and development of Trenchless Technology in the previous calendar year.

The awards themselves are open to all aspects of Trenchless activity. Entries for overseas projects will be accepted provided they are submitted by UK companies who either did the work or supplied the equipment as well as entries submitted by overseas companies for work carried out in the UK.

Each project-based category is marked against the following five categories:

- 1) Innovation
- 2) Environmental Management
- 3) Community Impact & Customer Care
- 4) Project Management
- 5) Legislative Compliance/Health & Safety

New Categories for 2022

- Innovative Technology
- Detection, Location & Inspection
- Pipe Rehabilitation – Cured in Place Pipe Lining (CIPP)
- Pipe Rehabilitation – Techniques other than CIPP
- New Installation – all techniques other than Horizontal Directional Drilling (HDD)
- New Installation – Horizontal Directional Drilling (HDD)
- Young Professional
- Environmental Award

For further category information and criteria or to access the online application form please visit the UKSTT website <https://www.ukstt.org.uk/2022-award-categories-entry-forms/>

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2022

NO-DIG LIVE

NO-DIG LIVE 2022

13-15 September

East of England Arena & Events Centre, Peterborough, PE2 6XE



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NOMINATIONS FOR THIS YEARS 'YOUNG PROFESSIONAL AWARD' IS NOW OPEN

Do you know anyone who fits the following criteria?

- 1) Understanding of Trenchless Technology
- 2) Contribution to the Industry/Project
- 3) Vision for the Future

Every year, the UKSTT presents the winner of the 'Young Professional' category with a £2,000 bursary to help fund their travel and accommodation to any part of the world, allowing them to undertake further research into their chosen area of Trenchless Technology.

The Society recognises the need to encourage the work that young professionals are bringing to the industry and are keen to recognise this at the awards ceremony.

Young Professionals (<30 years) are asked to submit a 1,500-word entry that best demonstrates their contribution to the field of Trenchless Technology. UKSTT will be looking for evidence of an understanding of Trenchless Technology, the individual's contribution made, the quality of the submission and the candidate's vision for the future of Trenchless Technology.

Deadline date for entries is 18 May 2022. The entry form and rules and guidelines can be found here <https://www.ukstt.org.uk/2022-award-categories-entry-forms/>



2021 UKSTT Young Professional Award Winners

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Deadline date
for entries is
18 May 2022

THINK TRENCHLESS FIRST



Using trenchless techniques, to install, replace or repair underground pipelines, is not only less disruptive but is also a cost effective and environmentally friendly way of doing so. Why dig when you can 'Go Trenchless'!



Image courtesy of TT

There are so many reasons why choosing trenchless techniques can be the best option for everyone, including;

- Less CO₂ Emissions
- Cost effective
- Less disruptive to the general public and the local eco system
- Time saving
- Safer

UKSTT can help you decide if Trenchless methods are suitable for your project. Our website has a dedicated link for visitors to raise any technical enquiries they may have concerning trenchless technology and whether it may be applicable to any specific project: <https://www.ukstt.org.uk/technical-enquiry/>.

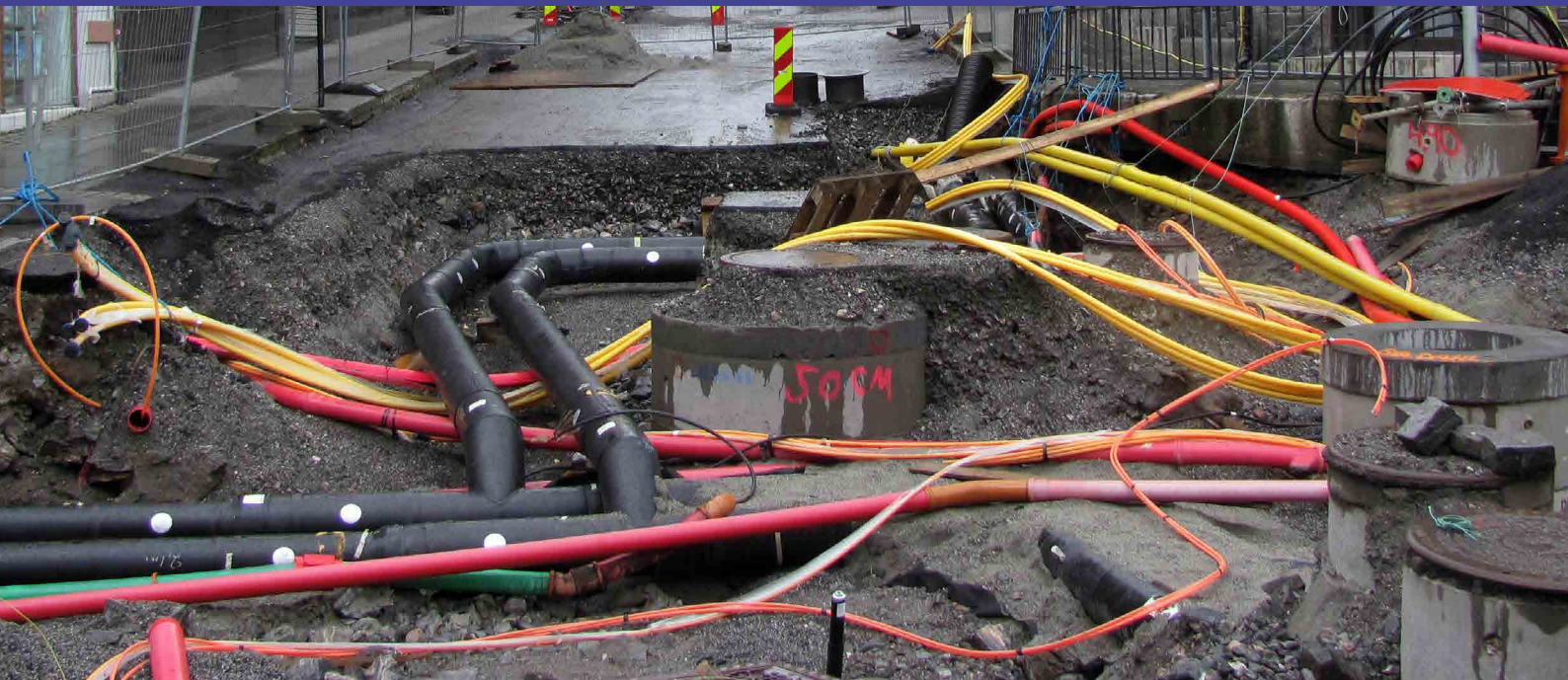
Any enquiries received are circulated to our Corporate Members and if more detailed advice is required UKSTT have a dedicated team who will advise separately. All technical enquiries are stored on the members only area of the UKSTT website. For all your trenchless solutions and latest news visit the UKSTT website <https://www.ukstt.org.uk/>

#ThinkTrenchlessFirst

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UKSTT TECHNICAL ENQUIRY SERVICE



The UKSTT website has a dedicated link for visitors to raise any technical enquiries they may have concerning trenchless technology and whether it may be applicable to any specific project: <https://www.ukstt.org.uk/technical-enquiry/>.

We have had some interesting enquiries recently ranging from invitations to tender in various locations of the UK & Europe while others received are looking for advice and proposed solutions for projects currently on-going. All of these enquiries are circulated to our Corporate Members and if more detailed advice is required UKSTT have a dedicated team who will advise separately. All technical enquiries are stored on the members only area of the UKSTT website. For all your trenchless solutions and latest news visit the UKSTT website. <https://www.ukstt.org.uk/>

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To find out more please scan the QR code to go directly to the membership page of our website. Alternatively, please visit www.ukstt.org.uk. You can call us on +44 (0)1926 513 773 or email us: admin@ukstt.org.uk



SCAN ME

EVENTS AND MEETINGS

2022

May 16-17: 4th Trenchless Balkans Conference and Exhibition in conjunction with 4th Water Loss Forum Balkans

Grand Hotel Italia in Cluj-Napoca, Romania
Details from: <https://www.trenchlessbalkans.com/>

May 30-June 1: VST 2022
French No-Dig Live Conference & Exhibition
Paris, France
Details from :
<https://www.salon-villesanstranchee.com/>

May 30-June 3: IFAT 2022
Munich, Germany.
Details from: <https://www.ifat.de/en>

June 15: No-Dig Roadshow Belfast 2022
Crowne Plaza, Belfast, Northern Ireland
Details from: www.nodigroadshows.co.uk
Register to attend:
<https://westrade.co.uk/files/NDRS22/>

June 17-24: North American Tunnelling Conference (NAT) 2022
Philadelphia, USA.
Details from: <http://natconference.com/>

September 13-15: No-Dig Live 2022
Peterborough, UK.
Details from: www.nodiglive.co.uk
Includes the UKSTT Gala Dinner and Awards Ceremony

September 20-22: ITTC China 2022 26th China International Trenchless Technology Conference (ITTC) & Exhibition
Suzhou International Expo Centre, Suzhou, China
Details from:
<http://www.cstt.org.cn/Yhome/Index/index.html>

October 3-5: ISTT's 38th International No-Dig Helsinki
Helsinki, Finland
Details from: www.nodighelsinki.com

October 24-30, 2022: bauma
Munich, Germany
Details from: www.bauma.de/

November 2-3: No-Dig Turkey 2022
Istanbul Lutfi Kirdar
International Convention and Exhibition Centre
Details from: <https://www.nodigturkey.com/>

2023

April 30-May 4: NASTT 2023 No-Dig Show
Portland, Oregon

May 17-18: Trenchless Asia 2023
Kuala Lumpur Convention Centre, Malaysia.
Details from: www.trenchlessasia.com

If you have an event, course or meeting scheduled and would like to add it to this listing please forward details to:
editorial@trenchless-works.com

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