


TRENCHLESSWORKS

THE VOICE OF THE TRENCHLESS COMMUNITY

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By George Ragula, RagulaTech, Morris Plains, New Jersey, USA

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Beyond the Ordinary

SPOTLIGHT



Ian Clarke, Editor-In-Chief,
Trenchless Works

"I myself and the team at Trenchless Works would like to present you with an open invitation and opportunity to contribute to the magazine, now or at any time in the future, with case studies, project reports, equipment launches and upgrades and any other industry news that you feel would be of interest to our global readership."

Sitting here writing this November Spotlight, I am finding it hard to fathom just where 2022 has gone. It feels like only yesterday that the team was looking at where we might take this publication for the year ahead and now Christmas is fast approaching again (sorry if using the 'C' word is too early for some). However, here we are with just this issue and the December issue left for the year.

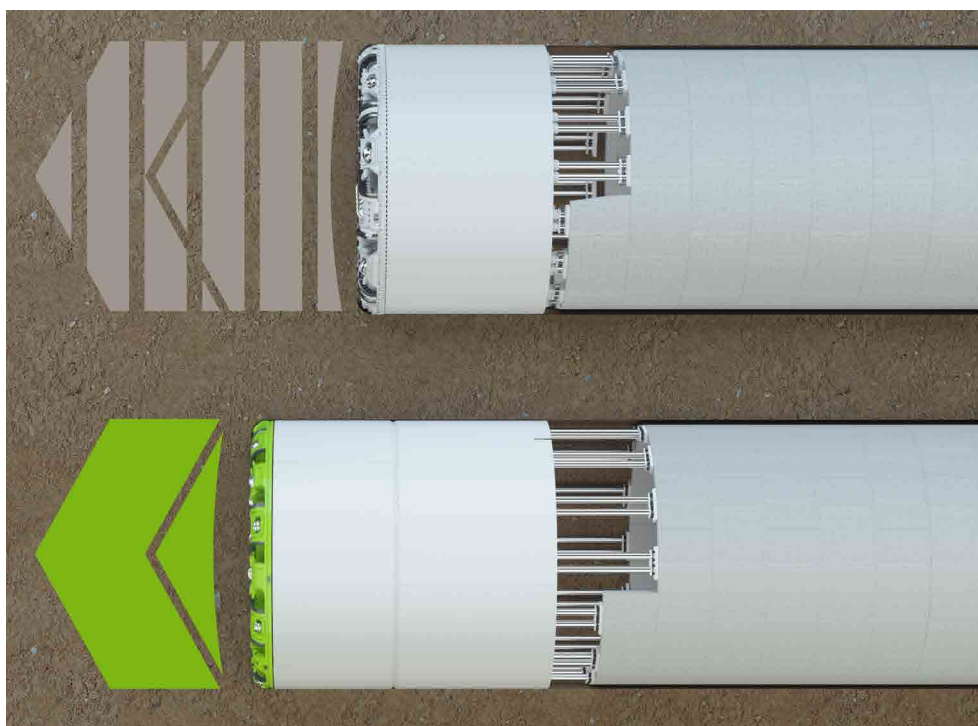
Looking forward to the December issue, I am pleased to be able to tell you that, subsequent to the recent International No-Dig event in Helsinki, Finland, we are now in possession of the submissions of the winning entries from the ISTT Awards which were presented at the event. It is our plan to bring these winning entries to you in the December issue as an ISTT Award focus. This will enable anyone that was unable to get to the Helsinki event to see, in full, what these winning entries have brought to the trenchless industry recently and why they were deemed to be of Award quality.

They may also inspire some of you to think about what you have achieved recently, with a view towards making your own submissions for the 2023 Awards, details of which will be available soon on the ISTT website.

In the meantime, I myself and the team at Trenchless Works would like to present you with an open invitation and opportunity to contribute to the magazine, now or at any time in the future, with case studies, project reports, equipment launches and upgrades and any other industry news that you feel would be of interest to our global readership. Simply send your contribution, preferably as a Word file, with separate hi-resolution pictures, to us at editorial@trenchless-works.com. Whilst contributions are preferred in English, we can accept them in your own native language (but it may take us a while to use them as we will have to make the translation). Do not be afraid to contribute articles about the work you are doing as it may well have significance to a far wider audience than you might imagine.

I and the team look forward to seeing what our global industry is doing throughout 2023.

HERRENKNECHT WINS BAUMA INNOVATION AWARD



With the functional principle of continuous tunnelling, an increase in the total tunnelling performance by a factor of up to 1.6 can be achieved compared to the previous discontinuous method.

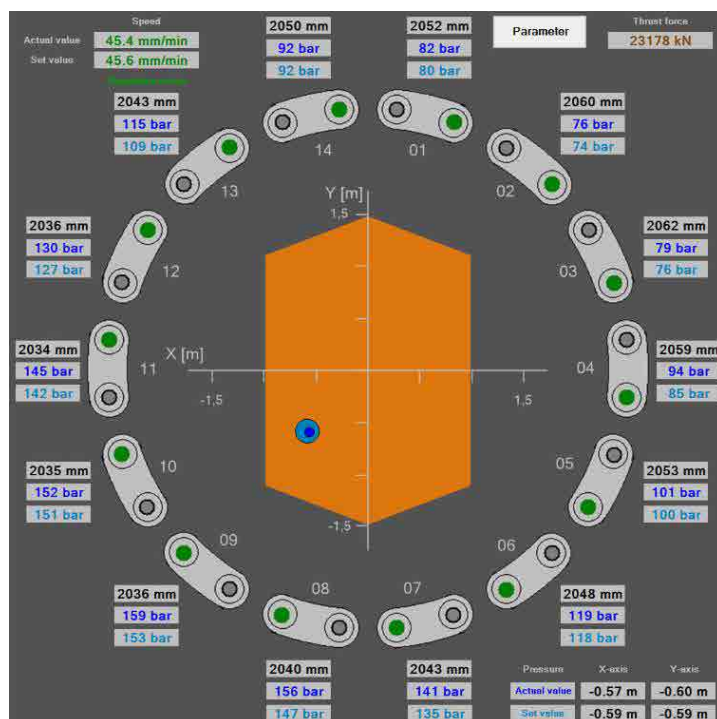
Herrenknecht AG recently received a highly coveted award the bauma Innovation Award 2022 in the category 'Machine Technology' for the new development of continuous tunnelling.

The award was given for the next innovation boost in the mechanised production of high-performance tunnel infrastructures in all common soft ground constellations (soft ground formations with and without water-bearing layers). Continuous tunnelling, equipped with the latest high-technology, leads to a significant reduction in construction times for longer tunnel sections. This new development is being used in a high-impact mobility project in Europe.

Dr.-Ing. E.h. Martin Herrenknecht, founder and CEO of Herrenknecht AG, said on the occasion of the award ceremony: "Continuous tunnelling is the next significant innovation step in mechanised tunnelling. New underground traffic routes have to be built ever faster. Continuous tunnelling gives clients and contractors a decisive time advantage that ultimately benefits the entire project and all partners involved. Railroad, metro and road tunnels can be built and put into operation significantly

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The shield operator controls the tunnel boring machine by setting the centre of pressure on the new type of control panel.

faster. I am particularly proud of the Innovation Award because the new tunnelling method was developed and put to use in Schwanau by our experienced engineers together with young colleagues." This is the third time that Herrenknecht AG has won the bauma Innovation Award. In 2019, the prize was awarded for the E-Power Pipe® method for the environmentally-friendly laying of underground cables, and in 2013 for Pipe Express®, a semi-open method for laying pipelines.

Up to now mechanised tunnelling with shield machines in soft ground has always been a stop-and-go sequential process. Each excavation stroke is followed by the ring building sequence, so that the excavation has to pause and the subsequent driving cycle be only started when the next segmental ring has been completely installed. The interruptions to tunnel advance in soft ground formations caused by these sequential operations costs time when viewed over longer distances. In contrast, a continuous tunnelling process in which the machine can continue excavation while the lining rings are being installed can contribute to considerable savings in construction time. For this purpose, Herrenknecht engineers designed a process based on the latest technologies and engineering.

It is a significant step forward. The new continuous tunnelling system, developed by the engineers at the Schwanau tunnelling machine manufacturer, achieves a notable increase in efficiency during tunnel construction. Particularly in the case of longer tunnel sections, continuously organised tunnelling leads to measurable savings in construction time.

Basic Principles

With regard to tunnelling, the innovation facilitates the following process sequence. In continuous tunnelling, those thrust cylinders that push the machine forward during advance take over the force share of those cylinders that are retracted for ring building. To ensure that the machine reliably maintains on course under these conditions the centre of thrust resulting from the combined driving forces of the applied thrust cylinders must remain unchanged in its position. At the heart of continuous tunnelling is therefore a powerful computer system and process-specific software programs that can precisely calculate the necessary pressures in the thrust cylinders. It ensures that the machine operator can reliably control the tunnel boring machine along the specified alignment as before.



A Herrenknecht 10,240 mm diameter tunnel boring machine for the HS2 (Chiltern Tunnels) rail project in the UK.

Safe Control

In continuous advance, the machine operator no longer controls the pressures in the thrust cylinders manually using rotary controls (potentiometers) on the control panel. For this purpose, Herrenknecht has newly developed the Centre of Thrust (CoT) system, which helps the shield operator to precisely control the machine. It consists of a display panel that shows the operator the current position of the centre of pressure and on which he selects the desired position of the centre of thrust. The corresponding control of the thrust cylinders is handled by the algorithms in the computer system. Compared to manual control by potentiometers, the CoT offers the prospect of maintaining the specified alignment more efficiently and effectively. The CoT system can therefore make a sustainable contribution to the economic efficiency of the construction project in addition to the quality of the underground structure.

Faster Thanks To Advanced Technology

With continuous tunnelling, an increase in total tunnelling performance of up to a factor of 1.6 can be achieved compared to the previous discontinuous method. This can lead to a significant reduction in construction time for long tunnels. The unique feature of Herrenknecht's solution is that continuous tunnelling can be used on all machine types in soft ground.

The continuous tunnelling method is being used in the major High Speed 2 (HS2) project, a new rail link between London and Birmingham in the UK.

www.herrenknecht.com



PICOTE OPENS PORVOO TRENCHLESS TRAINING CENTRE

Preparing
CIPP Lining for
training.

Picote Solutions Oy recently announced the opening of a hands-on trenchless training centre for international customers in the wastewater and water rehabilitation industries. Picote has finalised upgrading the training facilities and hiring full-time employees with extensive in-house lining experience.

The Porvoo training centre is conveniently located close to Picote CIPP contracting services and Picote manufacturing facilities in Porvoo, Finland (about 45 minutes from Helsinki).

The Picote Training Centre in Porvoo offers a wide variety of training, including drain cleaning for plumbers and trenchless contractors, cutting/reinstatement, failed liner and concrete removal, connection collar installation and specialty classes focusing on CIPP lining inside buildings.

"We are very excited to launch our training services to international contractors, in Finland, where we also have access to the Picote CIPP Services. We are in a very unique position to be able to combine the state-of-the-art facilities at our Training Centre, with access to live job sites and our years of expertise as a trenchless in-house contractor," said Katja Lindy-Wilkinson, CEO of Picote Solutions.

Picote now offers a global network of training centres located in England, Scotland, USA and Finland for international trenchless customers.

Picote Oy Ltd is trenchless contractor in Finland, renovating drains and sewers with the certified Picote CIPP lining method from DN50 to DN225 (2 in to 9 in diameter). Picote Solutions Oy Ltd is a global R&D, product sales and manufacturing company with more than 65 resellers around the world. Together, the Picote companies hold more than 250 patents, innovate, test and manufacture products launched to the international drain, sewer and water pipe cleaning and rehabilitation markets for pipelines from DN32 to DN300 (1¼ in to 12 in diameter).

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WATER SECTOR HAS APPETITE FOR 'RADICAL COLLABORATION'

SELEM and NordiTube extend their cooperation.

Speakers from across utilities, the supply chain communities, regulators and academia addressed the ways research and innovation can transform the water sector at UKWIR's third-annual conference. The event, in collaboration with Spring – the water sector's innovation centre of excellence, took place on 4 October 2022 in London, UK.

Chair Niki Roach, honorary vice president of the Chartered Institution of Water & Environmental Management, opened the conference by exploring how transformational research, innovation and radical collaboration can 'turbo charge' a sector facing unprecedented challenges.

"The discussion feels like it is maturing all the time. Not only was there lots of

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authenticity and openness in the room, it's clear there is an appetite for even more radical collaboration." said Roach. "We need to really focus on bringing new voices into the sector if we want to solve problems quickly and efficiently. Avoiding duplication of effort across the sector is a challenge, but mechanisms such as Spring and UKWIR are leading the effort to close that gap. The sector understandably talks a lot about innovation, it is important not to forget the role that research and development plays as part of the pipeline for innovation."

Speakers at the event included Harry Armstrong, director of regulatory policy at Ofwat, Bob Taylor, chief executive of Portsmouth Water, Ezechi Britton, co-founder and chief executive of Code Untapped and Dr Tom Arnot, Co-director of the Water Innovation and Research Centre at the University of Bath. Discussions were focused on the most pressing issues facing the industry, including affordability for customers, encouraging new voices into the sector, funding, regulation, ensuring the health of rivers and tackling leakage.

Value of research

Paul Horton, chief executive at Future Water Association said: "The UK is a leader on research but ideas are often developed in other countries. By supporting research and innovation across the supply chain, we can become world leaders."

"There has never been a greater need for inclusive and evidence-based research on water, stressed Horton. Population growth and urbanisation, and the climate emergency are putting unprecedented pressure on water resources. This makes it important to address these challenges in a systemic way, understand their scale, strengthen partnerships between public and private organisations, and foster international collaboration. Research and innovation play a crucial role in this," he said.

"Water companies, research institutes, and technology developers are realising the importance of co-producing research with the aim of developing more integrated and circular resource management and governance approaches," Horton concluded.

Tackling leakage

The economic regulator for the water industry in England and Wales, Ofwat, has strongly pushed water companies to cut leakage over recent years, including challenging the sector to reduce leakage by at least 16% in the five-year period to 2025.

"This reduction will be enabled by new technologies and techniques such as artificial intelligence, remote sensors, satellite imaging, drones, and acoustic equipment to find and fix more leaks," said Jeremy Heath, innovation manager at SES Water – who led a session on the route map to zero leakage. "We have seen unprecedented focus on our ability to manage water resources. Leakage is a huge issue and one that is not easily understood by the public. It has been challenging to explain to customers how many leaks are on their side, or get across the swathes of research and technologies already being used to tackle this issue."

"Perhaps the most innovative thing the water sector can do is find a way to connect with users so they understand we all have a part in protecting our shared water resources," he added.

Ensuring affordability

“Access to safe, clean and affordable water is a human right.” said Jess Cook, project development manager leading the water poverty work programme at National Energy Action, opening a panel discussion on the challenges and opportunities of providing affordable water services and protecting vulnerable customers during the cost-of-living crisis.

The panellists from spoke about the emerging technologies helping identify those customers most in need of extra support, and the increasingly diverse ways water companies can connect and communicate with customers during a crisis. They included Andy White, senior leader for social policy at Consumer Council for Water, Tanya Sephton, customer services director at South East Water and Zoe McLeod, associate at Sustainability First.

Protecting waterways

A discussion focused on another big issue for the water sector, protecting the health of rivers, and the role research and innovation plays in protecting these critical waterways. Once again, collaboration and communication were also seen as vital elements in tackling these complex issues.

“River quality is not just about storm overflows. There needs to be a huge step change in not only how we monitor the health of our rivers, but also how we communicate these complex issues back to campaigners and communities.” said the session chair, Lila Thompson, chief executive of trade association British Water.

The panel included Matt Wheeldon, director of assets and compliance at Wessex Water and UKWIR board representative for sewerage, Mark Worsfold, president South West Institute of Water at Institute of Water and Alastair Chisholm, director of policy at CIWEM.

The future of water

UKWIR chief executive Steve Kaye said: “As well as an excellent line-up of speakers and panellists we were also joined by a number of PhD students to share their exciting work. The extraordinary range of perspectives provided some fantastic insights and fascinating topical debates and showed this is a sector not only willing to transform but one that is hungry for change and ready for action.”

UKWIR is the collaborative research platform for the UK and Ireland water sector. The organisation facilitates, manages and delivers strategic research projects for its members, to address the key challenges they face. Website: <https://ukwir.org/leading-the-water-industry-research-agenda>

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MCELROY WELCOMES ALEX PALAIOLOGOS



“My goal is to support customers and help them make good business decisions. I am excited to step into this role, and happy that it allows me to stay active in the technical side of things. That is something I am very passionate about.”

McElroy, one of the world's leading designers and manufacturers of thermoplastic fusion equipment, recently announced the arrival of Alex Palaialogos as the company's new UK International Business Manager.

“As McElroy's presence in the United Kingdom continues to grow, we recognised the need to add additional personnel to support our customers,” said McElroy President and CEO Chip McElroy. “With his background in both the technical and commercial aspects of our industry, along with his existing knowledge of McElroy products and the level of service we provide, Alex will be uniquely poised to assist customers in all aspects of their McElroy needs. We are excited to have him join the McElroy team.”

Born in Athens, Greece, Palaialogos attended Monterrey Institute of Technology in Mexico City and received a bachelor's degree in Automotive Engineering. During his studies, he worked with G&G, a McElroy distributor in Mexico. There, he became well-versed in McElroy's fusion line-up. He received his fusion instructor certification, while also working with the commercial and technical aspects at G&G.

Palaialogos was one of seven engineers accepted into Infiniti Engineer Academy, a prestigious programme that allows budding engineers to spend a year working for the company's Formula 1 team. After completing the one-year programme, Palaialogos was offered a full-time job with Infiniti's Formula 1 team. He went on to work with McLaren Racing's Formula 1 team as a mechanical design engineer, specialising in transmission and rear suspension work.

As McElroy's UK International Business Manager, Palaialogos will work alongside customers with their machinery. In addition to overseeing McElroy's network of distributors and customers in the UK, he will serve as support for UK Technical Service Specialist Malcolm Profit, visiting jobsites to provide machine support.

“I hope to help McElroy grow within the UK market,” Palaialogos said. “My goal is to support customers and help them make good business decisions. I am excited to step into this role, and happy that it allows me to stay active in the technical side of things. That is something I am very passionate about.”



NAYLOR POST-PANDEMIC BOUNCE BACK

Naylor Industries plc, the construction materials manufacturer, has reported an 'encouraging' set of results for the year to 28 February 2022, with acquisitions and organic growth both contributing to a year of strong growth.

Edward Naylor

Naylor's turnover increased 35% to £69.8 million (2021: £51.7 million), bouncing back from a pandemic-related 7% fall in the previous year.

During the year, the company made two acquisitions: Gainsborough-based Schauenburg Technical Solutions in August 2021 and Slaithwaite-based D&B Injection Moulding in February 2022. As a result of these acquisitions, Naylor has added a permanent formwork system, Novoform, and a range of electrical glands to its product portfolio. Since the year-end, the company made the further acquisition of Burnley-based Tuffpipes.

Naylor again invested heavily in plant and premises, with £5.7 million of capital additions (2021: £3.8 million) including an automated concrete lintel plant at Barugh Green and a site at Garforth for concrete fencing manufacture. Despite the disruption associated with integrating acquisitions and commissioning new equipment, profitability progressed steadily as the business emerged from the pandemic, with underlying profit before tax of £4.1 million (2021: £2.9 million).

Naylor Chief Executive Edward Naylor said: "The year has been encouraging, with buoyancy returning to our core construction, utilities and infrastructure markets. Supply chains have been challenging, with cost increases and material shortages, but I think we have dealt with these reasonably well. We have been pleased to see the impact of recent capital investment in terms of increased productivity."

Despite economic uncertainty, Naylor remains optimistic about the future, with business development plans for the coming years including further significant capital investment. An ongoing apprentice programme is introducing the next generation of skilled employees into the business.

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APSL Ltd is the latest company to adopt BlueLight® as its preferred lining system which was purchased from BlueLight Lining Ltd which has the parent company PBF Drainage Services Ltd, which has both the practical expertise and technical knowledge.

APSL Ltd based in Hanwell London operates as pest control, drainage and Japanese Knotweed specialists throughout London and the home counties. The company has a wealth of knowledge in CIPP but wanted to up its game and offer higher quality products with reduced risks.

Purchasing a new generation BlueLight system which includes interchangeable curing baskets, new curing control panel and software, and the latest ergonomic transport trolley, the company purchased both 40 m reels with medium light head and mini light head giving it an installation range of DN70 to DN225 in lengths of up to 40 m from a single end.

Along with the BlueLight® system, APSL Ltd has purchased a new Kaeser M13 compressor, Kaeser aftercooler with built-in filter system, 5 kVA Stephill Honda generator, Krasotech 500 inversion drum with nozzles all from a single supplier.

This new system will enable the company to carry out all its repairs utilising the dedicated BlueLight liners that have full WRc certification, 50 year minimum life expectancy and the ability to negotiate multiple 90° bends and diameter changes.

BlueLight® is believed to be the first pure LED technology available to cure CIPP, utilising patented photo initiators and patented curing technology to cure its own, synthetic fibre inversion liners and glass pull in place liners, utilising a Styrene free and odour free Vinylester resin, with a proven track record and all testing data, along with the ability to record all curing data.

BlueLight has the ability to cure products from DN70 to DN500 with speeds of up to 90 m/hr depending on light source used, diameter and material thickness. Full remote access enables technical support, and updates to be provided giving clients the results required every time.

With 15 years of practical experience and 700,000 m of material installed throughout Europe, BlueLight is a leader in LED light curing technology.

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EGEPLAST RECEIVES 'FACTORY OF THE YEAR' AWARD



egeplast international GmbH, headquartered in Greven, Germany has been declared the winner of the 'Factory of the Year' benchmarking competition 2022 in the category of 'Outstanding Serial Production'.

In the previous years, it was primarily groups such as ABB AG (2021), BSH Hausgeräte GmbH (2020) or Continental Automotive GmbH (2019) that ended up winning in this category. However, this year, egeplast, a medium-sized family company from North-Rhine Westphalia came out on top.

The 'Company of the Year' counts among the most prestigious and ambitious industrial competitions in Germany and Europe. The awards in the various categories are granted annually by Kearney Management Consulting in cooperation with the 'Produktion' trade journal as a benchmarking for the processing industry. Their goal is to identify and honour top achievements reached by manufacturing companies.

"We are delighted to have won this award. It confirms our commitment to being quality leaders for plastic pipe systems. Any successes achieved by egeplast have always been successes of the entire team. Therefore, our special thanks go to our team in Greven, the great diligence in performing its work has provided the basis for our success. The award confirms that we are moving in the right direction by focusing on state-of-the-art production systems to create solid future prospects for the company and also to safeguard the site." commented Dr Ansgar Strumann, Managing Director of the plastic pipes manufacturer from Greven.

Torsten Ratzmann, the Manager of Operations and Innovation at egeplast, added: "At this point, the 'Factory of the Year award' has been unheard-of in the plastics industry and acknowledges the efforts and progress of our internal ImPROVe value-creation programme. Our work as well as our disciplined compliance with quality processes and our commitment to professional development have been worth it. We operate an outstanding factory producing plastic pipes here at the Greven production facility which provides peak performance. More than anybody else, our customers benefit from this, but so does our region and does the local community."

As a matter of principle, egeplast attaches great significance to customer-oriented production processes featuring short processing times, high delivery performance and premium quality. To permanently secure all of this, the team comprehensively uses lean culture to optimise production factors and product quality on an ongoing basis as well as to make the production apparatus more flexible.

As a family company, egeplast International manufactures innovative plastic pipes for underground pipeline infrastructure to ensure a safe supply of clean drinking water as well as supply of heat and electricity and fast internet access. The egeplast group also includes two more pipe production sites in Sweden and England. Early in September 2022, the foundation for the egeGigaFab, a new production hall for Microduct pipes required for pan-European broadband expansion (FttH/FttB) was laid at the company headquarters in Greven. The new building represents the biggest investment over the course of the 114 years of egeplast company history.

The award honours the company's high-quality standards and the special level of performance in the production of plastics pipes for the energy and water supply industry as well as for the fibre-optics infrastructure. There are also solid future prospects with the family business from the German Münsterland region making ongoing investments into modern production systems as a central element of safeguarding the production facility.

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GLANVILLE GROUP EXPANSION



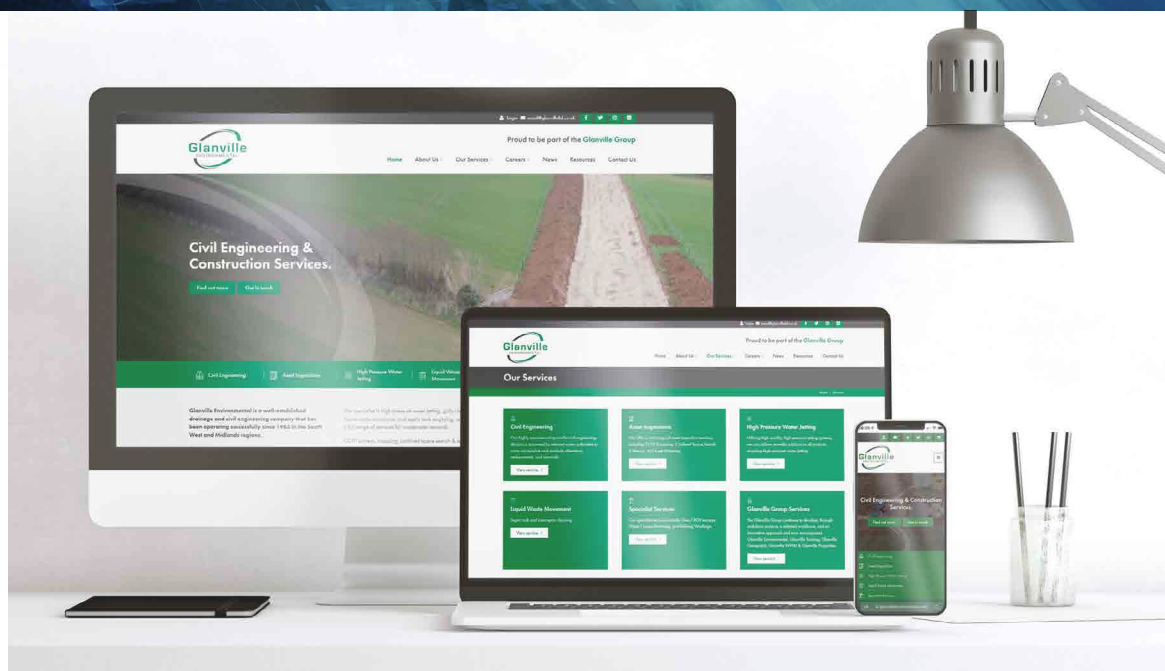
Innovation, collaboration with partners, and outstanding delivery of works are some of Glanville's key principles. Despite changes seen over recent months within the company, including the relocation of depots, a new management structure, investment in innovative technology and a heavy focus on major infrastructure schemes, the company remains focused on exceptional output of works to maintain the utility network in the South West.

Its large and highly skilled team of gangers and operatives work around the clock to ensure the utility network remains maintained and the company has recently seen through a wealth of reactive works and planned civils works including large projects such as Crantock, Coverack, and Crowndale Road in Tavistock, with a new civils project in Calstock now heavily under way.

With change comes improvements and across the board, Glanville is heavily concentrated on minimising disruption to the company as change occurs, starting with a seamless transition to its new depot in Plympton, Devon, UK with offices now in place and a brand new workshop complete to maintain its large fleet of vehicles. This will be the next step up for the future growth of Glanville. A new focus on staff retention, improved resources, and marketing will see the business diversify into new areas with forward thinking and an out-of-the-box approach allowing it to expand to the next level and ensure the longevity of the work we do.

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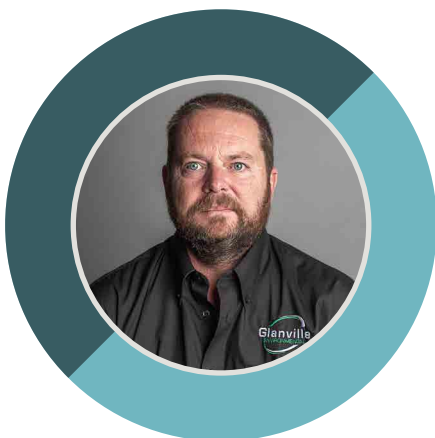
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Website Mockup



Jamie Treliving



Richard Bridge

Investing in people is a high priority at Glanville, with a focal point moving forward being onboarding apprentices, recruiting for our expanding team, and staff retention, through training development opportunities, company benefits, social events, and community engagement activities. Wellbeing and safety of each member of staff is crucial and that is why the company works closely with the Lighthouse Construction Charity to support staff wellbeing and to comply with its All-Safe campaign the company ensures every employee receives basic first aid training, and all site staff are put through Health and Safety CSCS Construction training.

Glanville is proud to have built its fully accredited training centre, Glanville Training Academy, in Plympton. Using a hands-on and practical focused approach, it delivers high-quality and enhanced training courses bespoke to the construction industry with accreditations from SQA, CITB, Water Jetting Association, and NPORS. The centre offers courses for internal staff and external companies, please contact training@glanvilletraining.co.uk to enquire about courses we offer.

Further to this, Glanville recently announced that Jamie Treliving has taken over as Managing Director of Glanville Environmental. After 11 years as Financial Director and working closely with Richard Bridge, Jamie Treliving began his new role as Managing Director of Glanville. They have worked alongside one another for over a decade, and as Richard moves to his role as Associate Director, Jamie has stepped into the role of MD.

Jamie's role so far has focused on supporting the staff that keep the company going, and it is one of the reasons why he has dedicated over a decade of his career to Glanville. Having joined in 2011, the family-orientated ethos remains today and is here to stay as Jamie is committed to maintaining this as MD, working hard to be loyal and supportive to the company's growth and the employees.

Jamie personally thanked Richard, as well as David and Helen Glanville for their support over the last 10 years, throughout his role as Financial Director and everyone at Glanville is excited for this new change for the company as Jamie puts his stamp on future growth.



SPECIALIST SUPPLIERS IN TRENCHLESS TECHNOLOGY



Lining Equipment



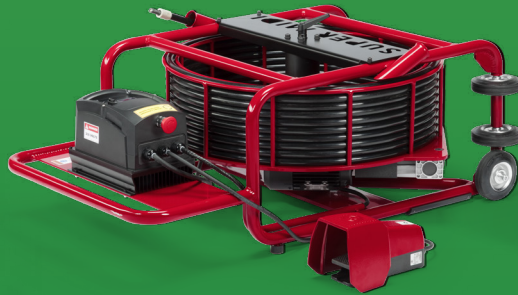
Inspection Systems



Mainline Cutters



Mechanical Point Repair



Drain Cleaning




Watertight Patch Repair

QUALITY BRANDS FROM S1E

S1E Limited is a specialist supplier of trenchless technologies to the drainage repair industry. All products can be used for sewer rehabilitation without the need for costly, time-consuming and disruptive excavation. The company focuses on sourcing quality products for professional use. They are all tried and tested in the field to produce impressive results.

Please call 01226 397 015 or email contact@s1e.co.uk to arrange a demonstration.

PWSA AWARDS CONTRACT FOR LARGE DIAMETER WATER MAIN IMPROVEMENTS

A close-up photograph of a technician wearing a white protective suit, yellow gloves, and a headlamp. The technician is working inside a large, dark, circular pipe, likely a rising main, and is installing a white liner. The scene is dimly lit, with the primary light source being the technician's headlamp.

A technician installing liner in a Rising Main.

At a recent Board of Directors meeting, the Pittsburgh Water and Sewer Authority (PWSA) awarded its US\$8.4 million Rising Main 4 Improvements Project to Structural Preservation Systems LLC. This project, part of a suite of large-scale water system improvements called the Water Reliability Plan, will renew a key distribution pipe in our water system.

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Exposed Rising Main 4. These pipes are among the largest in the system.

Rising Main 4, located in the Highland Park neighbourhood, is a large diameter water main that moves water from Bruecken Pump Station to water storage systems in Highland Park. This project is phase two of PWSA efforts, with rehabilitation of nearby Rising Main 3 wrapping up in winter of this year. The work on Rising Main 3 involved replacing approximately 1,900 ft (579 m) of pipe and using trenchless technology to line over 3,800 ft (1,158 m) of pipe. The same trenchless method will be used on Rising Main 4.

As part of the Rising Main 4 project, crews will line 50 in (1,270 mm) and 48 in (1,220 mm) diameter steel pipe, and 48 in (1,220 mm) diameter concrete pipe, with a carbon fibre reinforced polymer (CFRP). This trenchless method of restoring the pipe from the inside was selected after the design process. Trenchless lining is a cost-effective and less disruptive method of rehabilitation. Some sections of the pipe that cannot be lined will be replaced by digging. Structural Preservation Systems LLC is one of a handful of firms nationwide with expertise in rehabilitating this length and diameter of pipe.

Crews will also complete additional condition assessment using electromagnetic technology on a portion of pipe that was not previously surveyed during the design process. Conducting this survey involves lowering a team of skilled technicians into the pipe where they will visually inspect its interior condition and perform a robotic inspection using electromagnetic waves to detect deficiencies in the pipe.

"We are excited to kick off the second phase of work on these large and critical rising mains. Renewing this aging infrastructure will ensure reliable service as we implement the massive Water Reliability Plan," said PWSA CEO Will Pickering. "Financing this work with low-interest PENNVEST loans and low-interest federal loans anticipated from the Water Infrastructure Finance and Innovation Act (WIFIA) will, over time, reduce the burden on ratepayers." Construction is anticipated to begin in March 2023 and finish by end of year.

WHEN GOOD THINGS GET EVEN BETTER!



How can trenchless pipe rehabilitation become even easier and more effective? These are the questions that the experts at BRAWO® SYSTEMS ask on a daily basis whilst working on new solutions to constantly improve the product portfolio. This is how the tried-and-tested BRAWOLINER® DN 100 has been optimised.

The latest BRAWOLINER® DN 100 now bends more flexibly due to its optimised, narrower shape. It is even easier to invert without almost any creases. This means that even difficult pipe runs with many bends and changes in dimension can be rehabilitated even better. Thanks to its special, seamless loop construction, the BRAWOLINER® DN 100 continues to impress due to its extraordinary flexibility and durability.

www.brawosystems.com

The new Brawoliner
DN100 lining material.
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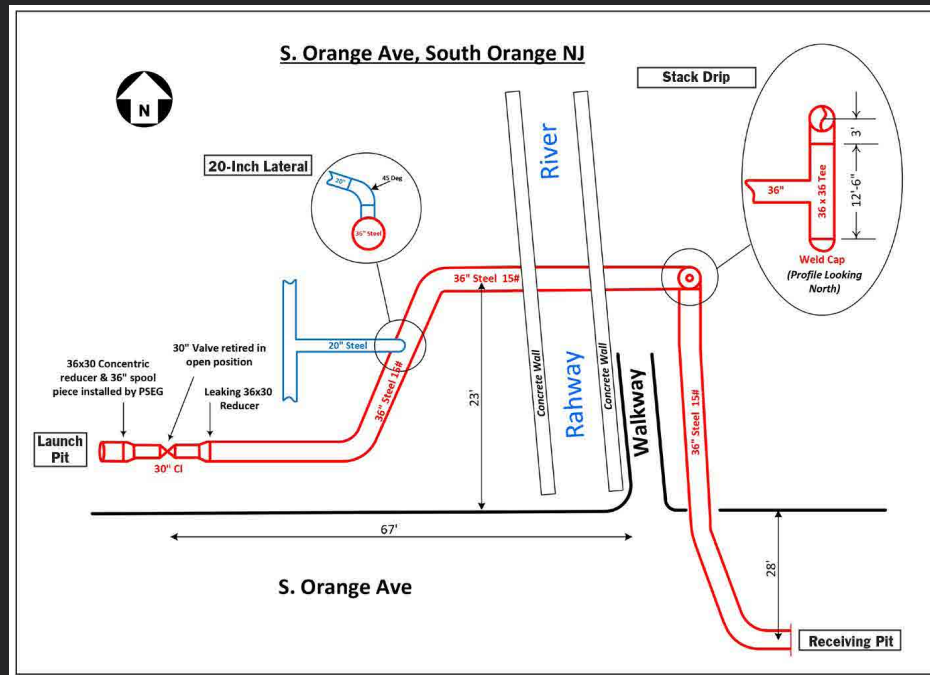
The new DN100 liner
offers more flexibility.

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LINING A GEOMETRICALLY COMPLEX MESS INVOLVING A LEAKING GAS MAIN

By George Ragula, RagulaTech, Morris Plains, New Jersey, USA



Piping schematic of lining segment referred to as "The Mess".

The NASTT 2022 No-Dig Show in Minneapolis, Minnesota, USA this past April saw the presentation of the Trenchless Technology magazine Project of the Year Award. The following highlights the project concerned and the complexities it encountered.

Large diameter gas pipelines regularly use lining techniques as a 'go to' option for extremely complex and challenging projects.

The renewal of a 30 to 36 in (760 mm to 910 mm) diameter leaking high pressure (HP) gas main, operating at 15 psig, which crosses a river in central New Jersey, USA had significant challenges and required engineering design solutions to be developed for a successful lining operation. Not only did the pipeline run very deep to cross beneath a concrete sluiceway, it also carried six bends including a stack drip, a 36x30 in (910 mmx 760 mm) diameter reducer and a 30 in (760 mm) diameter valve that could not be removed. There was also a deep buried 20 in (500 mm) diameter lateral coming off the larger diameter main. The complexities of the project were further enhanced by the overall depth of the pipeline, high water table, monitoring wells constructed in an old leaking gas station, and the stack drip that could not be removed.

Ultimately, the project involved inversion of a 36 in (910 mm) diameter liner through the 30 in (760 mm) diameter pipe, the 30 in (760 mm) diameter valve, a leaking reducer that opened to the 36 in (910 mm) diameter pipe.

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Shop testing prior to commencement of the project.

“Ultimately, the project involved inversion of a 36 in (910 mm) diameter liner through the 30 in (760 mm) diameter pipe, the 30 in (760 mm) diameter valve, a leaking reducer that opened to the 36 in (910 mm) diameter pipe.”



To achieve this however a number of first-time engineering solutions needed to be developed, tested, and employed to successfully complete the project. These techniques included curtain grouting, high-strength epoxies, and a lateral restraint plug. The planning, testing and implementation of the solutions employed, building on previous innovations, successes and advancements associated with the challenges of big-inch pipe renewal formed the basis for the project being named Project of the Year.

HISTORY

During the winter of 2020, a major leak was discovered on a critical segment of a high-pressure HP gas main at a steel reducer that transitioned the main from 30 in (760 mm) diameter to 36 in (910 mm) diameter. A vent had to be excavated to safely handle the gas emission in a heavily congested subsurface area containing multiple utilities. That deep excavation revealed a maze of utilities around the gas main that did not allow any access to the pipe for conventional open cut repair. The main continued to get deeper as it continued east to cross the Rahway River in South Orange, New Jersey. On the east side of the river the piping contained a stack drip used for pumping fluids out of the pipe. The stack drip was in an area containing several monitoring wells from an abandoned gas station. The whole arrangement quickly became referred to as ‘The Mess’.

This major trunk pipeline was a critical feed to moving gas out to the western end of the territory, so it made complete sense to maximise the length of the shutdown area to take full advantage of renewing a maximum length of pipe. This enabled two additional lining installations one of 825 ft (251 m) to the west of main Launch Pit and 875 ft (267 m) to the east of Receiving Pit to be completed. Because the main was a critical supply source, the permitted downtime for the site was limited to just 1 June to 1 October.

Given these circumstances lining was the obvious solution for renewing this pipeline because of the inaccessibility issues, flow capacity requirements and multiple fittings. However, the unique and challenging layout presented problems never before encountered that required careful thought and consideration from an engineering perspective, requiring creative thinking and breakthrough technical achievements. This also meant that some level of shop-testing with the liner installation contractor, Progressive Pipeline Management, would be needed to prove some of the design concepts and ensure the project’s success.

Minimal liner wrinkling confirmed.



Field installation of guide pipe with reducer.

TECHNOLOGY ADVANCES

Many innovations and advancements have been implemented over the years for lining positive pressure gas pipe through successively challenging projects involving large diameter pipe, many of which were used as a steppingstone towards preparing the successful design and plan for this project.

In addition to the extremely challenging layout, there were also five major challenging aspects of the project requiring solutions that had never been attempted before in any positive pressure liner application. The solutions required careful innovative thought and planning, as well as pre-project testing where appropriate to validate the design. The specific challenges included:

1. **Liner Installation in a Varying Diameter System** – The liner had to be inverted from west to east because of the more complicated layout on the east side of the river. Removing the short section of 30 in (760 mm) diameter pipe approximately 10 ft (3 m) long that contained an inoperable 30 in valve on the west side of the river was impossible due to the extremely heavy subsurface congestion combined with depths ranging from 10 to 16 ft (3 to 5 m). Inverting a 36 in (910 mm) diameter liner directly into a 30 in (760 mm) diameter pipe had the potential to cause several issues including liner entry bubble stability problems, misalignment, and excessive wrinkling/bubbling – all potential liner failure causes.

The solution was to add a short section of 36 in (910 mm) diameter pipe with a second 30x36 in reducer to the end of the 30 in (760 mm) diameter CI pipe to ensure proper alignment of the liner and stability before entering the 30 in (760 mm) diameter pipe. Since this had never been performed before, testing was performed to confirm the anticipated results. The results verified proper liner alignment could be achieved and steady state conditions reached to minimise wrinkling in the installation without negatively impacting the integrity of the liner.

2. **Active 20 in (500 mm) Diameter Lateral** – The 36x20 in (910x500 mm) tee was deep, and it was not known if it could be cut-off as is normally done because of overall heavy subsurface congestion, an operation that would be time consuming and expensive. Even then, the take-off would have to be temporarily bridged to provide adequate bearing surface for the liner inversion and subsequent pressure test to avoid a blow-out of the liner.

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Plug with 2 components assembled.

Plug with final cover plate.



The solution was a specially designed and fabricated restraint plug consisting of three major components for ease of assembly into the 36 in (910 mm) diameter pipe using confined space entry protocols. This plug was designed to act as a bearing surface for the liner inversion and planned 25 psig pressure test. Prior to project start, it was tested to ensure ease of installation and reliability of operation.

3. Stack Drip Transformation – The stack drip consisted of a 36x36 in (910x910 mm) tee at a depth of over 15 ft (4.5 m) with a capped vertical leg looking down. Such fittings were always installed at the lowest point of a segment of pipe and used to periodically pump fluids out of the main that may have collected. The geometry was extremely complex and normally would have been replaced with two 90° bends, but it was in an area containing monitoring wells from an abandoned gas station making it extremely time consuming and costly to replace. From prior experience, the project team knew that a liner could never be successfully inverted through such a complicated geometry.

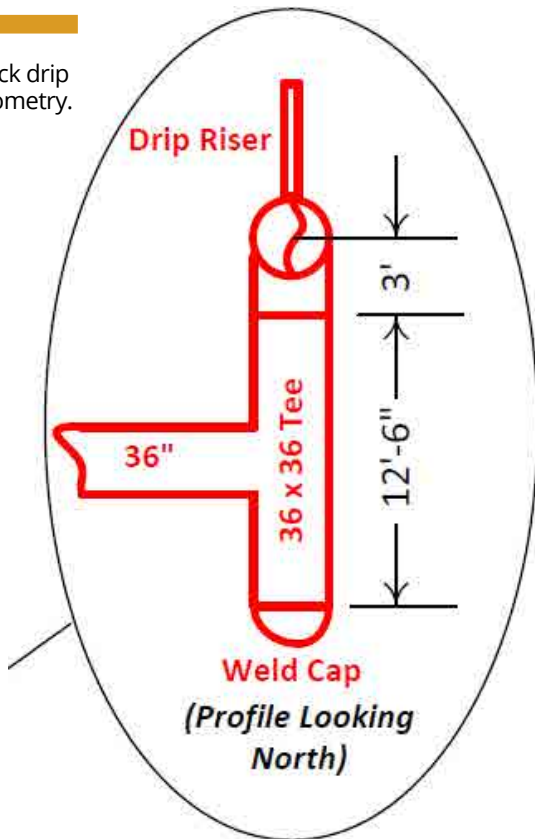
Familiarity with epoxies used in various applications led to a solution whereby the concept of fabricating a 90° bend out of the tee was devised, since the leg looking down was no longer needed. The process envisioned was to leave sandblast grit material after the main cleaning process which is an integral process of lining to properly prepare the pipe for maximum liner adhesion to a 6 in (150 mm) level below the invert of the tee, backfill it with aggregate, and then hand apply high temperature high strength epoxy to smooth out the epoxy to form a 90° bend out of the tee.

4. Leaking 30x36 in (760x910 mm) Reducer – The steel reducer was corroded and there was concern the air pressure from either the liner inversion, pressure test or 15 psig operating pressure over time could lead to failure of the fitting, and potentially leading ultimately to liner failure.

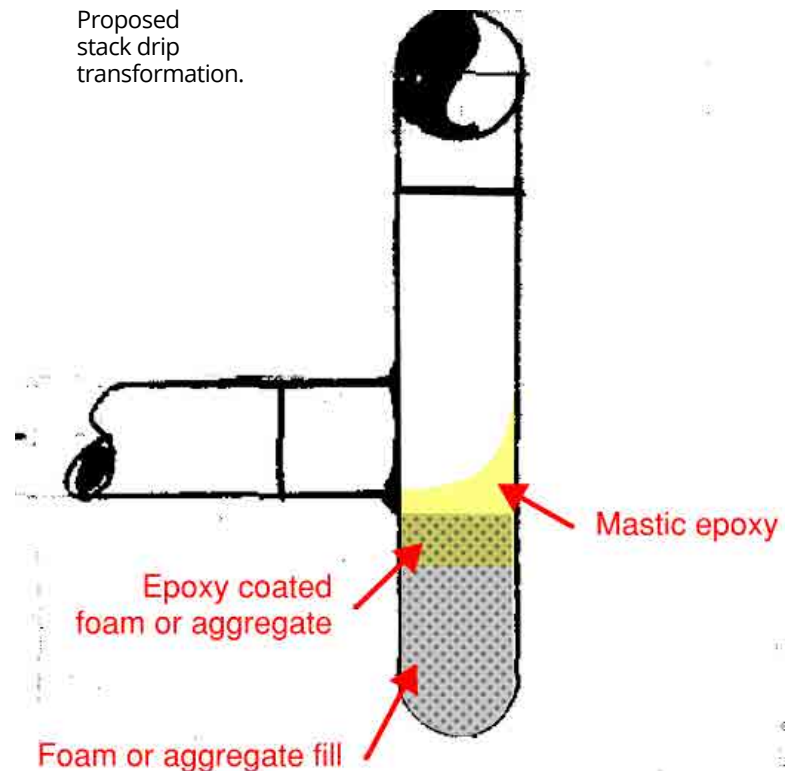
The solution involved spraying an approximate ¼ in (6 mm) layer of high strength epoxy using spin casting techniques to reinforce the leaking fitting, while adding rigidity and strength to the fitting.

5. Inoperable 30 in (760 mm) Valve – Ideally, this gate valve would have been cut-out to accommodate lining operations, but the maze of utilities surrounding it prevented that. Instead, it had to be abandoned in-place. The fitting contained a 6 in (150 mm) wide well for the gate operator to close through, leaving a weak point for liner installation.

Stack drip geometry.



Proposed stack drip transformation.



The solution would normally be to use a carbon fibre structural reinforcement sleeve (SRS) to bridge the well gap to provide adequate bearing surface for the liner, but since the design was employing the use of epoxies for other aspects of the work and their manpower/equipment was in the pipe anyway, bridging the gate well with epoxy was less time consuming and more efficient.

PLANNING AND CONSTRUCTION

Having completed project planning and development testing focus moved to the site itself. The short segment described as 'The Mess' was approximately 175 ft (53 m) long and was the most complex, so the decision was made to schedule that section for construction first. In this way, if there were any delays caused by unforeseen circumstances or difficulties, there was flexibility in moving crews around to the remaining inversions associated with the project to keep the project moving forward within the permitted timeframe. The other inversions were straightforward and expected to be completed without incident.

Subcontractors were employed for some aspects of the preliminary works on 'The Mess', with the full schedule including CCTV survey, curtain grouting, sandblasting, work on the stack drip and leaking reducer, installing the restraint plug at the lateral. Wetting out the liner followed with inversion and ambient curing. Finally post installation CCTV was carried out along with a final pressure test to 25 psig. The lateral was then reconnected to the main line.

In mid-August the lining contractor, Progressive Pipeline Management (PPM), mobilised to site. Fortunately, all the lining work proceeded flawlessly and according to plan. Within a 3 week period, although filled apprehension and anxiety, works on 'The Mess' was successfully completed. This was followed by the remaining two additional straightforward inversions that completed the project ahead of schedule and in time for a 29 September recommissioning date.



Corroded 30x36 in (760x910 mm) diameter steel reducer.



30 in (760 mm) diameter gate valve well.




Spin-blast epoxy over reducer.

Since all three segments were renewed with ample time to spare, the decision was made to first tie-in all three lined segments to perform one single pressure test at 25 psig instead of performing three separate pressure tests that required considerable thrust restraint work. By testing it in one segment, PSE&G crews saved additional time and money by avoiding thrust restraint of four of the six end caps.

Whilst the project threw no unforeseen curves at the contractor once the extensive planning was completed, project's ultimate success was due to the level of planning, pre-site testing, expert involvement where necessary and creative and innovative thinking throughout.

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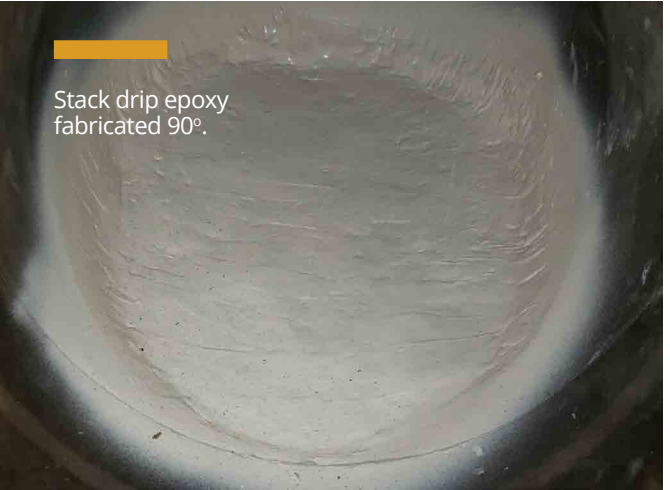
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A close-up view of a gate valve well interior, showing a smooth, light-colored epoxy coating applied to the walls and floor.

Epoxy-filled gate valve well.

A worker in blue protective gear and a hard hat is performing curtain grouting. A large, circular grout curtain is visible, and a worker's boot is in the foreground.


Curtain grouting process.

A close-up view of a stack drip epoxy fabrication, showing a smooth, light-colored epoxy coating applied to the interior of a pipe, fabricated at a 90-degree angle.

Stack drip epoxy fabricated 90°.

A close-up view of a liner installation through a stack drip, showing a green liner being pushed through a hole in the pipe wall.

Liner installation through stack drip.

A close-up view of a stack drip aggregate, showing a dark, granular material filling the bottom of a circular opening in a pipe.

Stack drip aggregate.

Commenting on the project as design lead George Ragula, managing director of RagulaTech said: "This was the most challenging positive pressure lining project ever completed by the project team, led by my design and proper planning, engineering design, shop testing and that teamwork was key to its success from conception to construction. The approach to each challenge presented was built on past successes, innovative design approaches, and consideration of intended success or failure. The break-through innovations and advancements successfully utilised can only contribute to the expanded use of liners on challenging projects in the future."

A full version the paper about this project presented at the NASTT 2022 No-Dig event is available for a fee at: <https://member.nastt.org/products/product/2022-MA-T3-01-03>



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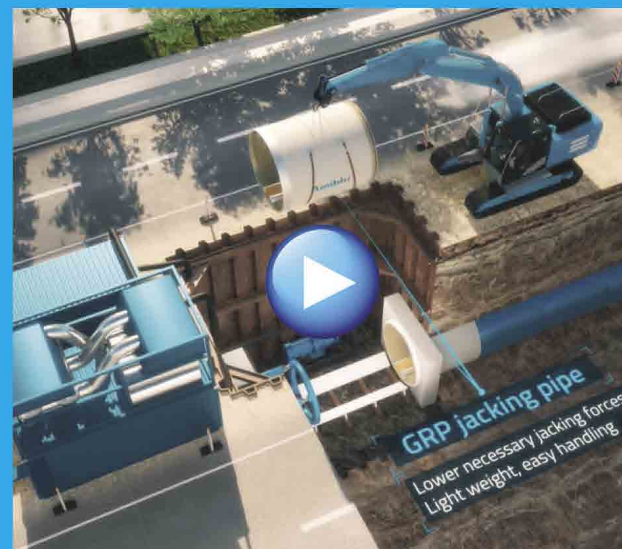
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LINING SUCCESS FOR SOUTHERN RELINING

Municipal wastewater pipes and pressure line networks are in constant need of repair and maintenance. Southern Relining of Mittagong, New South Wales (NSW), Australia understands firsthand that offering trenchless methods of rehabilitation in its cohesive collection of services is a sustainable choice that ultimately gives its commercial, government and domestic customers long-term and cost-effective results.

A view down a manhole

After more than 15 years in operation, Southern Relining has undertaken work on large commercial installations, countless domestic jobs, as well as successfully tendering to local governments for utility work.

Driven to offer long-term rehabilitation solutions, Southern Relining recently undertook a relining package in Bowral, NSW on behalf of Wingecarribee Shire council. Part of this package involved restoring flow to approximately 110 m of DN150 pipe located under Corbett Gardens and continuing under a busy retail strip which included coffee shops, retail businesses and public toilets. >

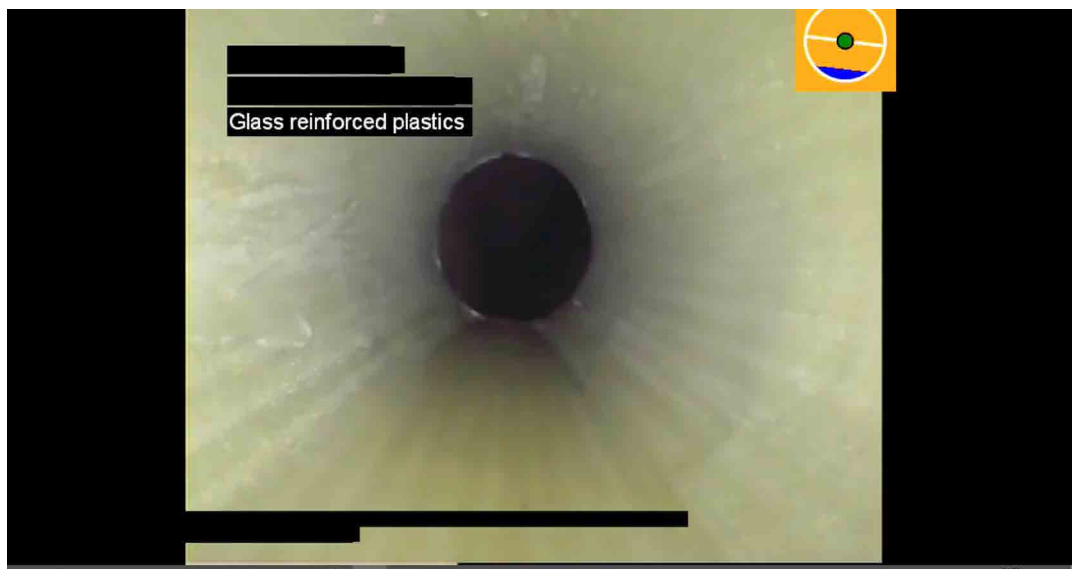
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Before relining.



After lining.



Keen to keep disruption to retail trade and the community to a minimum, the job was carried out over the course of one evening between 6pm and 6am.

Full length trenchless rehabilitation was the logical choice to avoid extensive excavation and to guarantee no weak points in the relined sections.

On site, it was discovered that the host pipe was extremely compromised, and CCTV inspection revealed several holes plagued the concrete mainline which was drastically reducing flow rate in the pipe from the surrounding businesses.

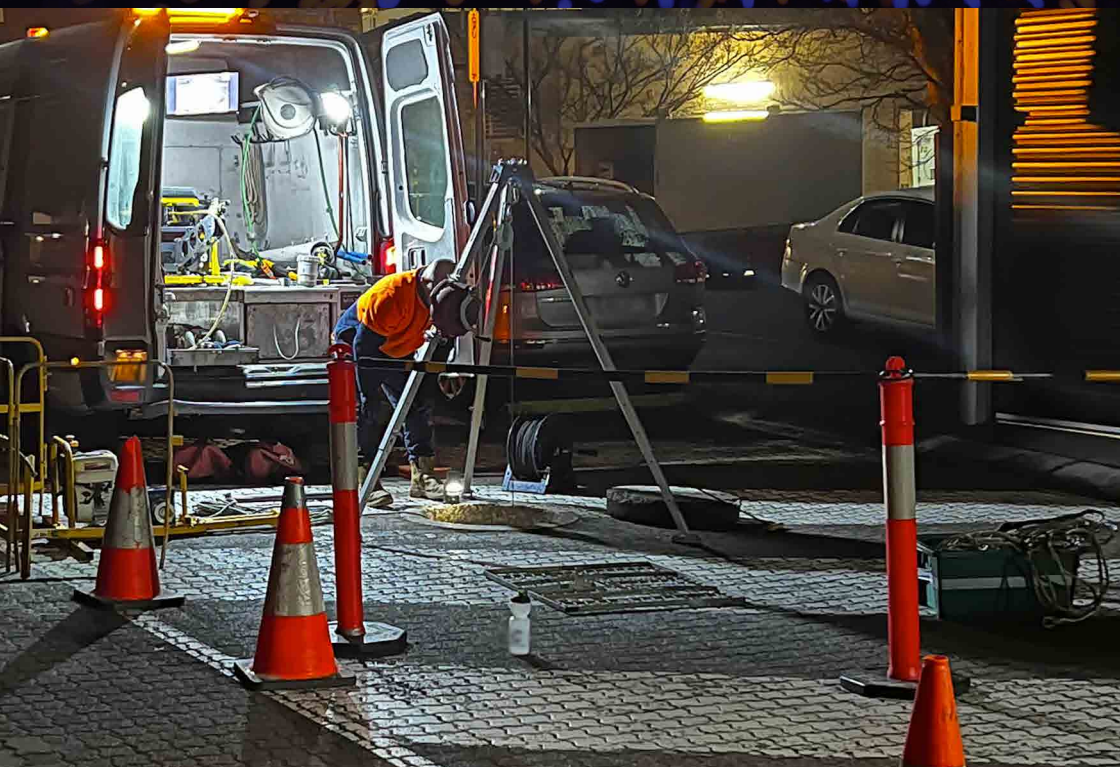
To overcome this hurdle, Southern Relining turned to SAERTEX-LINER® MULTI, a fiberglass-reinforced liner from SAERTEX multiCom® GmbH, an industry-leading manufacturer of UV-cured fibreglass-reinforced lining tubes for both wastewater and supply lines.

With a proven record of over 99,000 installations, SAERTEX-LINER® MULTI was a great solution on this job as it was easy to handle on site and promised a short inflation rate and cure time.

The team was also really impressed that the gliding and UV light protection foil came as standard which saved them money on additional consumables. >

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“Success stories like this, are why Pipe Core is the proud distributor for SAERTEX multiCom® in Australia and New Zealand.”

Surface arrangement for the lining operation.

When discussing the project, the team noted: “What we really liked about this product was that we did not need any glide foil which was one less thing to deal with on site. We were also really impressed with the inflation time.”

Furthermore, SAERTEX-LINER® MULTI has a technical service life of 100 years, which gave Southern Relining’s customer further confidence in the long-term reliability of their choice.

On site, the team was faced with important preparation measures, including having to use a rope to pull the CCTV camera through the voids because of the deteriorated state of the host pipe, and the approach to the pre-cleaning needed to be carefully considered to avoid collapse.

To add to the job complexities, the weather was not in favour of the team of four undertaking the 12-hour overnight shift, having had to battle rain during the installation.

Despite these tricky conditions, the UV-curing process got underway quickly, with incredible results.

This complex rehabilitation project was completed within the prescribed 12-hour timeframe and to the satisfaction of all parties. There was minimal disruption to the local businesses, no impact to retail trade and the result was a strong new pipe, far exceeding the strength of the original.

The team on site attested to the great training received from a SAERTEX multiCom® Application Engineer ahead of the project and the support received from Pipe Core, the exclusive supplier of the SAERTEX-LINER® range in Australia and New Zealand, saying: “We were very grateful to SAERTEX multiCom® and Pipe Core and appreciated all the extra tips shared with the team to ensure the job was a success.”

The Southern Relining team reinstated a junction in the mainline with a robotic cutter on completion of the lining process.

Commenting on the project a Pipe Core representative stated: “Success stories like this, are why Pipe Core is the proud distributor for SAERTEX multiCom® in Australia and New Zealand.”

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EASY WHEN YOU KNOW HOW!



PS60 lowered into launch pit

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The PS60 GRUNDOPIT is a small HDD rig that packs exceptional performance into a compact package. The fluid-assisted mini drill rig is widely used for domestic property connections for gas, water and electricity pipes, along with glass fibre cables and sewer pressure pipes. Launched from a small pit, the HDD rig ensures a quick and economical trenchless connection, eliminating the need for full civils work. >



Existing water pipe straddles stream



An overview of the project site.

As with many of the TRACTO product range, it can also be used for crossings underneath roads, rivers and brooks and can work in difficult soil conditions thanks to its high torque of 1,500 Nm and push and pulling forces up to 6 tonnes. This power and efficiency was perfectly demonstrated on a site in Scotland earlier in 2022.

A job, awarded to FCH Construction by Scottish Water, involved the connection of water to a detached residential property in Inchtute, a village in Scotland between Dundee and Perth on the northern side of the Firth of Tay. Sounds simple, but a small, fast flowing stream was obstructing the run of the installation of 125 mm diameter PE pipe from one side of a road to the other. A temporary water pipe was straddling the stream, but a permanent solution was required. One suggestion was to dam the stream with sheet piles etc. to stop the flow of water, a huge undertaking and ultimately costly and time consuming for >



Left: Drilling starts.

Right: The drill head reaches the target pit.

a short run of pipe. However, with its knowledge and experience of trenchless technology, FCH Construction liaised with the team at TRACTO, who recommended the PS60 with its ample capacity for the short water crossing. The unit and a specialist machine operator from TRACTO arrived on site and in under 6 hours the new pipe was installed to the correct depth below the stream. During the process TRACTO used a DCI Falcon F1 locating system to guide the pilot bore safely to the target pit.

The client was delighted with the efficient solution and the minimal impact on the surroundings both during and after the drill.

GRUNDOPIT PS60 - MINI HDD-RIG

NEED A SMALL DRILLING RIG FOR GREAT JOBS?

The GRUNDOPIT PS60 from TRACTO is the perfect solution if you need a compact drilling rig with loads of power for house connections and short crossings even in rock.

With a thrust and pullback of up to 6 tons and a powerful stroke allowing for the use of rods with an effective length of 750 mm, there's hardly any job this small power pack can't handle.

ADVANCED TRENCHLESS TECHNOLOGY

TRACTO.COM/GRUNDOPIT

DRAINAGE MICROTUNNEL FOR LARRAKEYAH DEFENCE BASE

The microtunnelling crew celebrates a successful holing.

DJ Mac Cormick Contractors, with its head office in Perth Western Australia, has recently completed another large diameter microtunnel project on the Larrakeyah Defence Base – Darwin NT Stormwater Drainage Concrete Jacking Pipeline of 1,950 mm diameter with an internal diameter of 1,650 mm

The project was undertaken utilising its Herrenknecht AVN 1600 Control Container and closed face Tunnel Boring Machine with steerable laser guidance, utilising a slurry spoil removal system.

Ground conditions encountered at 6 to 8 m depth of drainage line included rock of up to 150 MPa so a rock cutting wheel was utilised to cope with the high strength required. Groundwater was also encountered on the first drive. >



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The Herrenknecht microtunneller being positioned on site.

“Pipe lift/lowering was undertaken, utilising a 48 t excavator with pre-start lift analyses being undertaken.”



Jacking commences on the microtunnel.



Holing out on the microtunnel drive.

The tunnelling involved two drives of 330 m and 354 m with an 850 t jacking system in the launch shaft and drives both ways from that location. Due to the length of drive, several intermediate jacking stations were necessary and a lubrication system was used to minimise friction on the outside of the pipe being installed.

Given the pipe diameter, man-entry was possible from inside the TBM should cutter changes be required along the drive. A ventilation system was necessary not only at the shaft locations, but inside the tunnel and was designed to suit the drive lengths and high humidity in Darwin.

The TBM weight was approximately 24 t and required a crane pad, hence a lift analysis was necessary to ensure safe lift loads. A 200 t crane was utilised to ensure all risk contingencies were covered. The system included the TBM and Trailing Pipe housing the Power Pack for running the machine.

In addition, there was an intermediate jacking unit which could power four sets of intermediate jacking stations.

This enabled capability of jacking in excess of 1 km drives given four intermediate jacking stations from the control container and four from the intermediate jacking unit which could be housed inside the tunnel line.

Pipe lift/lowering was undertaken, utilising a 48 t excavator with pre-start lift analyses being undertaken.

The detailed temporary design was undertaken by DJ Mac Cormick Contractors including the Thrust Block, Entrance wall, Base Pad, entrance and exit rings, plates etc., which were independently checked and signed off.

Structural checks and verification of the shaft designs for launch and reception shafts were signed off as works were undertaken. Shafts shoring requirements were supplied by Ground Support Systems (Aust) and all were certified to KPA requirements for the ground conditions at depth.

Several management plans were developed and implemented by DJ Mac Cormick Contractors during the works, including detailed ITP's for all works and QA packs.

Initially there were three drainage pits to be constructed in-situ to suit the pipe diameters and future open cut take offs that were required, however DJ Mac Cormick Contractors proposed a precast solution with pit components supplied by Humes Darwin. The structural S40 design and construction sign off was undertaken by Cardno Consultants Darwin.

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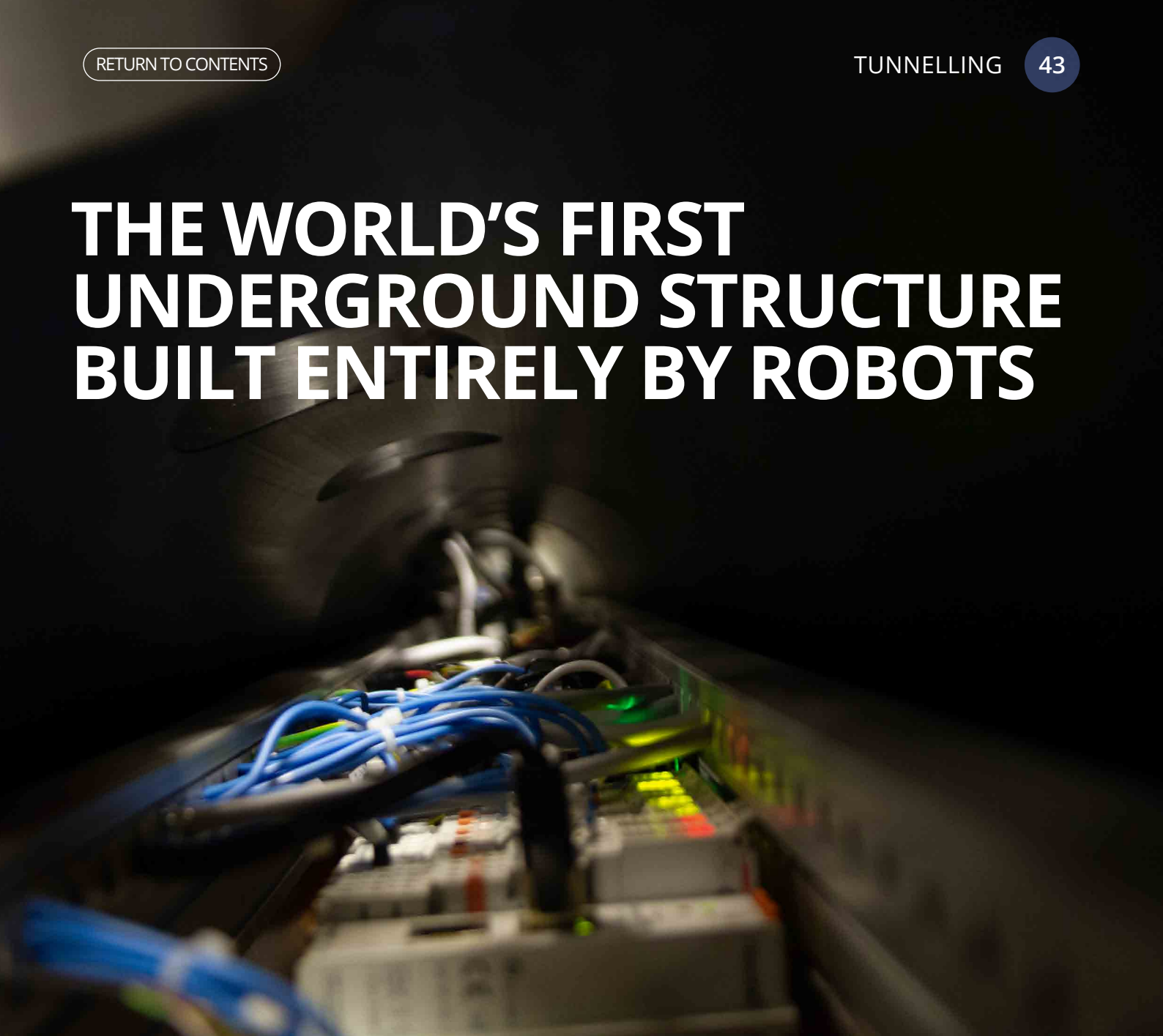


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THE WORLD'S FIRST UNDERGROUND STRUCTURE BUILT ENTIRELY BY ROBOTS



High-tech systems are used on the world's first entirely robot-constructed underground structure.

hyperTunnel's 'Peak XV' tunnel demonstrates the potential of a radical new construction method to transform urban planning, by building underground infrastructure faster, more affordably and more sustainably than current techniques.

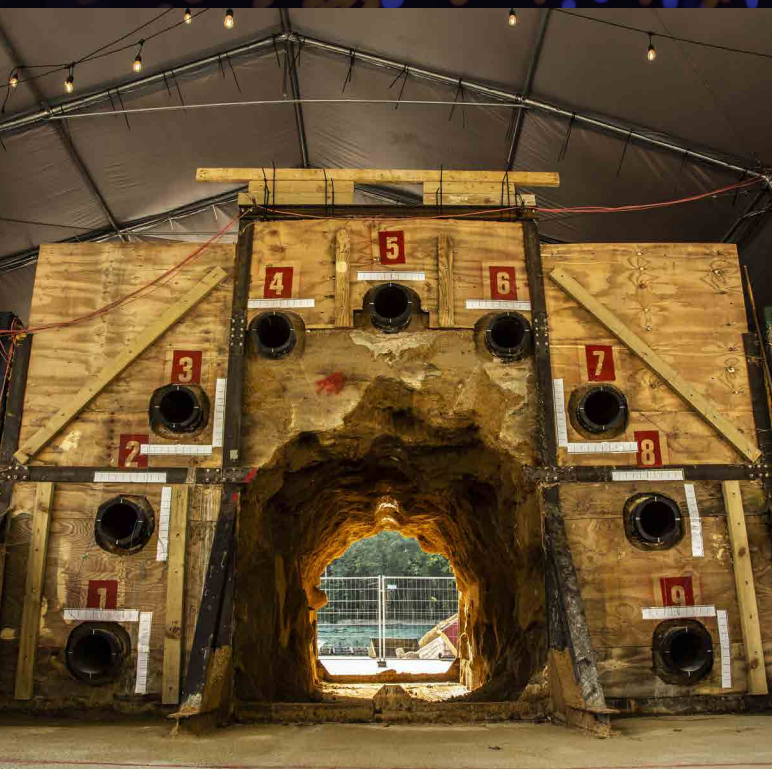
hyperTunnel recently revealed the world's first entirely robot-constructed underground structure, built at its R&D facility in the North Hampshire Downs, UK.

The completely new automated construction method is designed to build tunnels more than 10 times faster and at half the cost of conventional methods. The approach is significantly friendlier to the environment and will use sustainable materials such as low-carbon concrete. Without any human needing to enter the structure during construction, the hyperTunnel method could transform safety in the tunnelling industry.

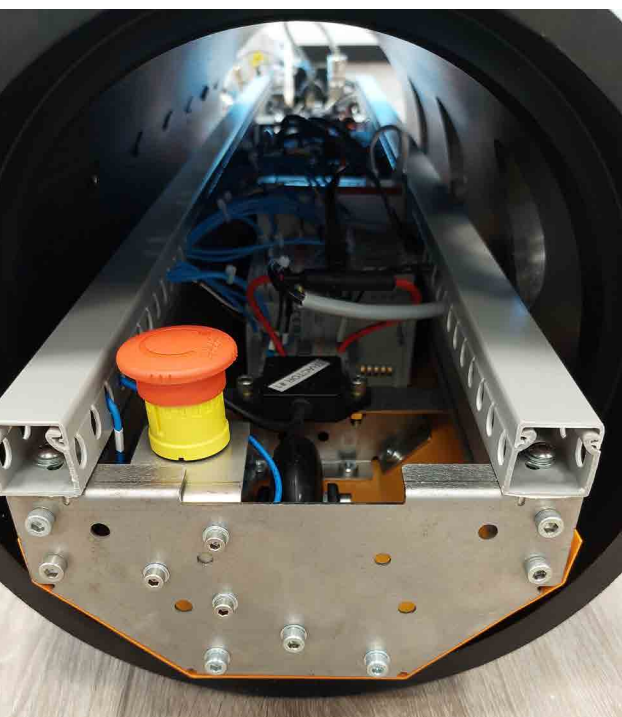
Using swarm construction methods according to a digital twin of the tunnel, a fleet of 'hyperBot' robots enters the ground via an arch of HDPE pipes. Once inside, the robots 3D-print the tunnel shell by deploying construction material directly into the ground. The 6 m long, 2 m high and 2 m wide Peak XV 'pedestrian-scale' tunnel has been delivered as part of a project for the UK's Network Rail and revealed at the British Tunnelling Society Conference & Exhibition in London, UK.

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Left: The arch structure created as part of the hyperTunnel process. Right: Checking the tunnel robot prior to entry.



A tunnel robot in place.

The Network Rail project has been demonstrating the hyperTunnel process, investigating the technologies that are key to low-disruption tunnel repairs for the UK's regional railway infrastructure, which includes approximately 650 Victorian age tunnels.

David Castlo, Network Technical Head (Mining and Tunnels) at Network Rail, said: "Our large portfolio of Victorian tunnels requires increasing levels of work to meet the needs of the railway network. However, we want to reduce the level of disruption to our passengers so we are constantly searching for new approaches to enlarging or repairing tunnels that reduce the length of time a tunnel will be closed to trains. Peak XV moves us a step closer to that goal and, crucially, with a method that reduces workforce safety risk."

Steve Jordan, co-CEO and co-Founder of hyperTunnel, said: "To unveil our first large scale demonstration tunnel is a big step, not only for hyperTunnel, but for the tunnelling and construction industries which are eagerly anticipating the readiness of our approach to use, as appropriate, in their global projects. While using robots exclusively to build underground structures is dramatically different, the contributing technologies, such as digital twins, robotics, 3D printing and digital underground surveying, supported by AI and VR, are all well-proven in other industries. In fact, the hyperTunnel in-situ method is all about de-risking construction projects."

Earlier this year, hyperTunnel received funding of €1.88 million from the European Innovation Council (EIC) Accelerator scheme, Europe's flagship innovation programme. The company also received a financial investment from VINCI, a global leader in concessions, energy and construction businesses.

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COMPLETING A DRONE SEWER SURVEY

Top: The survey drone on surface.

Bottom: The survey drone enters the manhole.

The Geospatial department of Glanville was recently involved in a complex sewer survey in partnership with Kier and Arcadis below The Barcode in Plymouth City Centre, Devon, UK.

The objective of this sewer survey was to identify defects that may have been caused as a result of construction in the area. The tunnel network below had remained largely uninspected since construction and was deemed too dangerous to access by humans. A drone inspection represented a significant opportunity to collect high-resolution survey data on otherwise inaccessible but critical assets, without the need to deploy a confined space team and therefore eliminating the human exposure to hazardous environments. >

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The sewer being surveyed.

“The intricate survey required the use of a drone to survey the tunnel due to access restrictions making it hazardous for human access and non-feasible for other forms of survey.”



The drone in survey mode.

The intricate survey required the use of a drone to survey the tunnel due to access restrictions making it hazardous for human access and non-feasible for other forms of survey. A significant concern revolved around working with the possible gases that can be experienced within some confined spaces. To assist in this robust ventilation and monitoring protocols were created and established before the survey commenced. This was built upon past historic knowledge of the tunnel and its functionality.

The survey required three crews at different shaft entry points linked to the tunnel to lift the manhole covers to provide ventilation within the tunnel and to monitor the gas levels prior to drone entry. Gas monitoring was necessary to mitigate the risk of explosive gases present in the tunnel and once the gas levels had been monitored for over 2 hours and all crews were satisfied the gas levels were steady, the drone was loaded into the tunnel to carry out the survey. Glanville Geospatial carefully carried out this assessment with the drone surveying in two sections, one of which was over 200 m in length (400 m in total), this complex survey proved the superior capabilities the drone has with the battery and Wi-Fi range reaching a distance of over 200 m.

This sewer survey demonstrated that with careful planning and resourcing, combined with a robust dynamic approach to safety, that drone surveys potentially offer a solution to difficult situations, providing 3D and measured deliverables that may not be possible with humans.

www.glanvillegeospatial.co.uk

SUCTION EXCAVATOR MOUNTED ONTO DAF CHASSIS



RSP UK, a worldwide leader in Suction Excavator Manufacturing has introduced its superstructure in the UK onto a DAF CF 530 6x4 working with DAF dealership Greenhous to deliver the perfect solution for G & AM Lawson.

Top: The RSP Suction Excavator mounted on a DAF CF 530 6x4 chassis.

Below: A front view of the vehicle.



Suction excavation is a safer more effective method compared to traditional excavation. This particular DAF chassis has 530 brake horsepower to support the high-powered RSP twin fan patented suction technology. Some of the other benefits of this chassis include: high axle capacity, direct drive PTO for efficient operation of the RSP twin fans, full integration with the RSP controls and a rugged design suited to off road capabilities, making it a versatile unit and suited to customer's needs.

David Lawson, owner of G & AM Lawson commented: "Adding an RSP DAF to our fleet will allow us to expand our offering and ensure consistency for our operators and our workshop who are accustomed to working with and on DAF chassis. RSP was my chosen partner as they were open to collaborating and finding a solution that best suits my business."

At the heart of RSP's values is collaboration with customers and partners; Stuart Stockwell Sales Engineer at RSP UK commented: "The team at Greenhous, Stuart and Lynsey, seamlessly delivered a great solution for RSP and Lawson. They were supportive and delivered a quick turnaround in a market that is challenging at the moment."

"It is a very exciting time for RSP UK and the R&G Group. Being part of a company that is open to expanding, acquiring and supporting our incredible team is invigorating." said Charlie Gardener, Director of RSP UK.

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SVI ASSISTS BALFOUR BEATTY WITH CABLE DUCT GROUTING

The cable duct grouting work site.

Working on behalf of Balfour Beatty, Steve Vick International (SVI) worked collaboratively in developing a cost-effective, more environmentally-friendly solution to manage heat transference within a ducted 400 kV cable system.

The project involved a 9 km section where the cables were required to be run underground and be installed into ducts. Where these ducts crossed under water courses, roads, rivers, streams, and drainage channels they were required to be filled with Cebo Gel because, under crossings such as these, the cables are laid much closer together. This can cause the cables to transfer heat to each other and overheat which could result in them failing. Cebo Gel helps to conduct this heat away and disperse it. There were 7 crossings in total for the 12 cables to pass under. They were split into two runs so that 6 cables ran either side of each crossing, resulting in a total of 144 sleeves of varying volumes and lengths that required filling.

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One of the access points using during the grouting works.

Balfour Beatty specified that it wanted to use Cebo Gel as it is the best form of filling ducts because it is composed of a specially selected Bentonite/graphite mixture and is a unique, all-in-one solution for promoting efficient heat transfer from power cables to the surrounding soil. Cebo Gel is a non-hardening suspension and therefore easy to remove after a certain period of time, if required. The product is cement-free and provides high flowability over long distances.

SVI, which has many years' experience in grouting, adapted its current grout pump to work with Cebo Gel. This has the distinct advantage that no large vats of premixed Cebo Gel were required on site and the use of lagoons was not necessary thus having a significant benefit to the environment. The SVI grout pump works continuously mixing the powder to water ratio, blending it seamlessly, allowing 4 cubic metres per hour to be mixed and injected into the ducts. Some 24 cubic metres can be achieved in 6 hours and the SVI pump guarantees a consistent mix and pump. Cebo Gel works by first filling the lowest point of the annular space and then pushing forward and working back up.

Stephen Smith, Site Manager, Balfour Beatty commented: "We were delighted with the work Steve Vick International carried out for us. Their grout pump system was so agile it could be moved around the site with ease and, because of the blending process their pump uses, the quality of their mix was also unfalteringly consistent. This method also produced minimal waste to dispose of, which was important because we were working in an Area of Outstanding Natural Beauty, and was more cost-efficient and environmentally-friendly than some of the alternatives we looked into."

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A MESSAGE FROM THE CHAIR



Keh-Jian (Albert) Shou,
Chairman, ISTT

Hi ISTT Members!

I am very happy to send you my second message as ISTT Chair. Over the past month, I have had many online meetings with board members and others, in order to modify the purposes of the ISTT committees, propose subcommittees with new functions, and clarify the ownership of No-Dig Mexico and the roles of related parties.

I would like to let you know that we will have approved our new chairs for our committees at our board meeting on 22 November. Furthermore, we are ready to gear up for our proposed plan of actions. As you know, we will have our next International No-Dig in Mexico City. We will soon establish a strong organising committee. With the support of NASTT and LAMSTT, we believe it will be a successful event. It not only can be an example of a pan America event, but also will strengthen the Mexico chapter of NASTT.

As you may know, we keep enriching the resources in our members only web page, including past webinars, papers, etc. We also plan to have more regional activities as grant programmes, with twice as much support funding in 2023. In addition, we plan to have a subcommittee to provide better service and have better communication with corporate members. Please kindly keep watching and take advantage of our new developments, and feel free to provide us with your comments or suggestions.

With your involvement and encouragement, I believe our management team and our staff will devote more to make ISTT better.

With my best wishes,
Keh-Jian (Albert) Shou
Chairman, ISTT



SOCIETY NEWS

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NO-DIG TURKEY 2022: A GREAT SUCCESS



The opening ceremony
of No-Dig Turkey 2022
Conference and Exhibition.

TSITT (Turkish Society for Infrastructure and Trenchless Technology) hosted No-Dig Turkey 2022 Conference and Exhibition between 2 and 3 November in Istanbul together with the 6th Water Loss Forum and Exhibition.

More than 800 people visited the show including some 40 exhibitors. TSITT Chairman Yasin Torun, GSTT Executive Director Dr Klaus Beyer, TIS Turkey General Manager Semih Vatansever, ACWUA Secretary General Eng. Khaldon Khashman and ISKI General Manager Dr Safak Basa made the opening addresses. Following the opening ceremony, 25 speakers made their presentations over five sessions in two days.

Several water and wastewater utilities and municipalities visited the show. They were interested in the trenchless and water loss control solutions.

As Turkish trenchless and water loss control markets grow every year, more utilities and municipalities visit the show in order to follow the innovations and new products available.

TSITT is scheduled to host the No-Dig Turkey 2023 Conference and Exhibition between 1 and 2 November in Istanbul together with 7th Water Loss Forum and Exhibition. GSTT will organise a German Pavillion at the event.

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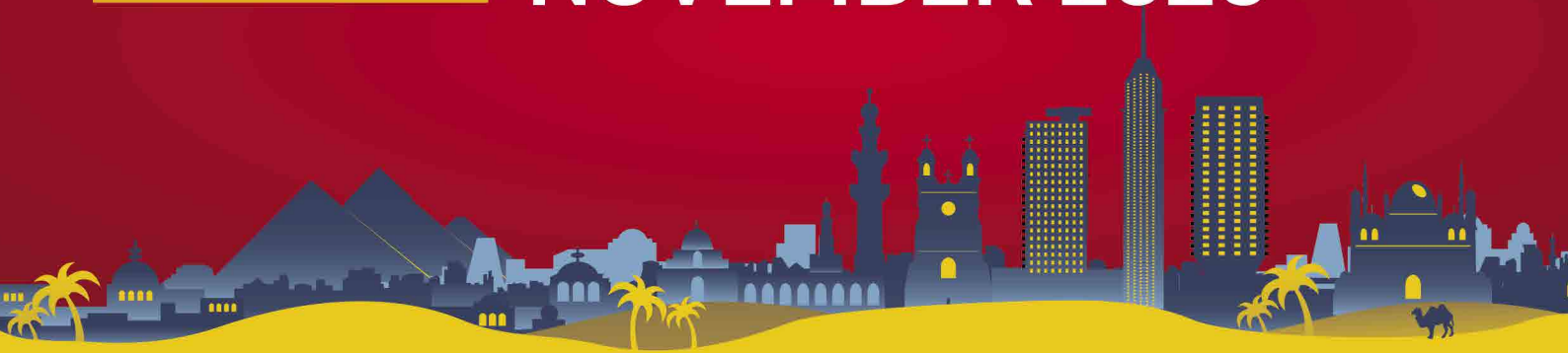


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NASTT SOCIETY NEWS

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Matthew Izzard, Executive Director,
North American Society for Trenchless
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It is certainly 'Conference Season'! NASTT was pleased to be well represented at the recent International No-Dig in Helsinki and to actively participate in contributing to the development and growth of our international community.

We congratulate our new ISTT Chair, Albert Shou and look forward to continuing to support the progressive programme the ISTT is developing.

The 2022 International No-Dig Show was another success and represented the passion and dedication of the volunteers, exhibitors, sponsors and delegates in delivering a world-class show. We thank them all for their hospitality and welcome to the country.

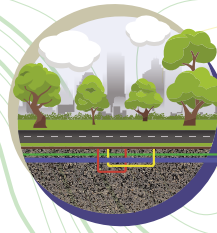
NASTT presented a proposal for hosting the 2025 International No-Dig Show in Vancouver, Canada and would like to thank the International Council in voting to approve our bid. We are excited to see the event return to Canada – the last time was in Toronto, 2009 and saw a then record 2,000 people attend. In conjunction with the growth of No-Dig North, the draw of major utility infrastructure programmes for new installation and rehabilitation investment in the area, we are hoping more people than ever will take the opportunity to experience this beautiful part of the world.

This year's edition of No-Dig North took place in Toronto recently with a packed exhibition floor and technical programme. We would like to recognise the contributions of our NASTT Canadian Chapters in providing this event and the strong representation of many international visitors – even some familiar faces from the week before!

In April next year, NASTT's premier event, the 2023 No-Dig Show, is to be held in Portland, Oregon. The three-day event, with pre- and post-courses and a full technical programme has drawn the highest number of applications to the Municipal & Public Works Scholarship yet received, engaging directly in providing trenchless technology knowledge, education and networking opportunities to the utility owners. This important programme is part of the continued popular attendance and highlight in the trenchless calendar. Further programme details can be found at www.nodigshow.com

Before that we travel South to join with ISTT in presenting the International Trenchless Technology Seminar in Mexico City on 30 November 2022. The popularity and growth of our Mexico Chapter sees a full programme of new installation and rehabilitation technical presentations and case studies being given by leading industry experts. We also welcome the NASTT's 20th Student Chapter, the prestigious UNAM School of Engineering, students from which will be participating on the day and formally welcomed. The launch of the next ISTT International No-Dig Show, itself in Mexico 2023 takes place later that day and we would like to thank Westrade Group for its work in arranging, fingers crossed, a fiesta! We look forward to seeing you there.

Matthew



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WELCOME FROM THE CHAIR



Ian Ramsay, Chair, UKSTT

November was another busy month for the UKSTT. Supporting Westrade Group, we held the No-Dig Roadshow in Warrington on the 22nd of the month where the focus was on supporting two of our patrons, United Utilities and Cadent Gas. The conference was split into two sections, with United Utilities focus in the morning being based on Rising Mains and the afternoon session was Cadent's presentation on building now for future energy networks. There were some really strong speakers and I would like to thank them all for being a part of this great event.

In addition, soon we will be launching our mental health awareness in the work place where Kelly Hansford will be submitting articles to support companies and their employees. I think the difficulties during COVID emphasised the need for mental health support within companies and the UKSTT takes this very seriously. I would appreciate feedback and any specific topics that you would like us to address.

During October we attended the International No-Dig event in Finland. The UKSTT was well represented and the technical papers and presentations were excellent. There are so many new innovations coming out and it was a real opportunity to network with like-minded people from around the world. It was great to see so many of the UK trenchless suppliers having positive discussions.

Training has always been an issue in our industry as a lot of systems and processes require certified operators with a good knowledge and the ability to perform. Training has varied over the years and the conference in Finland showed positive signs with a lot of open discussions about how to define, regulate and improve the quality of training in the industry. I am keen to see how this develops.

I recently attended the NASTT's NO-DIG North show in Toronto where again there was a buzz about the industry and some excellent papers.

Finally, the South Coast Infiltration Patron Masterclass that we held in Bristol last month was an excellent event. It was very well attended and supported. The discussions and long-term studies of trenchless techniques in the South Coast area were fascinating. Many thanks to Julian and his team from Wessex Water as well as Southern Water, Severn Trent, Phil Clisham and Ivan Jackson from the Government of Jersey for contributing so much to the day's programme. We are already planning on scheduling similar events with other Patrons in the near future.

We always appreciate your feedback or comments. If there are any trenchless topics that you would like us to address, please feel free to email me, Lynn or Linda and we will take a look.

Ian Ramsay

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A THANK YOU TO OUR OUTGOING CHAIR



Ian Ramsay the new Chair of UKSTT says a fond thank you to Dawn Greig

The year 2022 marks the end of Dawn Greig's extended three-year term as Chair of the UKSTT. Dawn was the Society's first female Chair and fourteenth overall, originally elected in 2019.

Dawn started her term as Chair with three main goals:

- 1) To encourage more engagement between the UKSTT Council, its members, Patrons and the wider trenchless audience
- 2) To work on transparency by making it clear what UKSTT does and finding out what members want
- 3) work on a brand refresh.

Dawn has drafted a review of the past three years which can be found at the following link: <https://www.flipsnack.com/lynnmac/ukstt-chair-report-sept-2019-october-2022/full-view.html>

Please take a look it is an interesting read.

Dawn was a perfect Chair for the UKSTT during this period, the organisation is hugely grateful for her commitment and support and that of Picote Solutions..... Thank you.

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SOUTH COAST PATRON MASTERCLASS



The UKSTT AGM
in progress.

In recognition of the United Nations campaign on the theme 'Groundwater. Making the invisible visible' and the Environment Agencies insistence that infiltration and exfiltrating pollution is addressed, the UKSTT and its Patrons held a South Coast Infiltration Masterclass on the 27 October 2022 at the De Vere Tortworth Court Hotel in Bristol.

During the day attendees took a look at infiltration sealing and ways to prevent pollution and exfiltration into the host geology. Wessex, Southern and Severn Trent Water openly discussed their experiences and solutions they have used while Phil Clisham, PClisham Consulting and Ivan Jackson, Government of Jersey discussed the problems of different forms of sewer pipe construction and their differing propensity for leakage under high ground water and the holistic scheme of infiltration/exfiltration sealing.

The event quickly sold out and was attended by representatives from Aegion, Anglian Water, Cappagh Browne Utilities, Clancy Docwra, Colus Ltd, Danaher & Walsh, Dwr Cymru, Glanville Environmental Ltd, Government of Jersey, McAllister Group, Picote UK Ltd, Severn Trent Water, Sika UK Ltd, South West Water, Southern Water, Steve Vick International, Thames Water, United Utilities, Vlewline, Wessex Water and WRC.

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The event was created after a meeting with Wessex Water's Julian Britton and UKSTT's Dawn Greig, Richard Swan and Lynn Maclachlan in August 2022. The initial idea was planted and grew from there. Immediate Past Chair, Dawn Greig said: "The first Patron Masterclass was hugely successful. It was fantastic to find out more about common issues and the different approaches to solving them. Information sharing is crucial, and it was wonderful to have open discussions between peers. Thank you so much to our Patrons who not only participated but largely organised the event, we are really looking forward to this becoming a firm favourite in our UKSTT calendar moving forward".

Julian Britton played a huge part in bringing together the day's presentations saying: "Wessex Water is grateful to the UKSTT for inviting us to present at the South Coast Patron Masterclass in support of UNESCO's 'Year of Groundwater'. Our engineers presented five papers analysing groundwater infiltration and the process of excluding it with various trenchless and no-dig techniques. During the presentations we explained the latest technology available to remove the risk of sewage causing pollution and infiltrating groundwater causing hydraulic overload of sewers in some vulnerable catchments. It was also good to hear from Southern Water, Severn Trent, Phil Clisham Consulting and The States of Jersey on their latest innovation sealing solution projects".

Commenting after the day's presentations, Iain Naismith, UKSTT's Chair of the Technical & Education subcommittee, said: "It was a great pleasure to introduce and moderate this well attended and topical event, that was so well supported by our Patrons and other UK water and sewerage companies. We are planning and looking forward to hosting similar Masterclasses and events with Patron support on key issues affecting the industry".

A huge thank you goes to all of the speakers, delegates and the UKSTT Council members who contributed to the smooth running of the event.

To learn more about future UKSTT events contact Lynn Maclachlan by calling 07745 781500 or email: lynn@ukstt.org.uk

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UKSTT AGM 13 OCTOBER 2022



Caption

The Council of the United Kingdom Society for Trenchless Technology (UKSTT) held its Annual General Meeting on 13 October 2022, at Camden House in Kenilworth.

Chair Dawn Greig presented her report and confirmed her extended three-year term on Council has now come to an end and Ian Ramsay will continue as incoming Chair. Dawn has published a report of her 3-year term that is available to view using the following link: <https://www.flipsnack.com/lynnmac/ukstt-chair-report-sept-2019-october-2022/full-view.html>.

The report is a detailed review of what the Society has achieved over the last few years and credits the accomplishments to the whole of the Council who selflessly commit so much of their spare time to ensuring the organisation is run so effectively. Please take a look.

Among the report highlights was the Society's intention to continue working on relationships with the UK Utility Companies and is pleased to welcome Scottish Water & SGN as new UKSTT Patrons.

Tom Sangster and Nick Spenceley both stood down from Council. Dawn thanked them both for their contribution over the years but with a special thanks to Tom who has worked tirelessly and made such a big difference to the organisation of the Technical & Education committee.

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The new appointments to Council this year were Iain Naismith, IKT and Peter Cheers, Buckhurst Plant Hire. As a co-opted member, Iain has been pro-active in the Society for the last year and agreed to take up the position of Chair of the Technical & Education subcommittee.

The UKSTT Council for 2022/23 is:

Ian Ramsay (Chair)

Graham Howard (Vice Chair)

Dawn Greig (Immediate Past Chair)

Colin Tickle (Treasurer)

Claire Gowdy (Honorary Secretary)

Leon Woods (Chair of MS Sub-committee)

Phil Steele (Vice Chair of MS sub-committee)

Iain Naismith (Chair of T&E sub-committee)

Scott Stone (Vice Chair of T&E sub-committee)

Jim Albarella

Shauna Herron

Tim Sargent

Paul Henderson

Richard Swan

Scott McMurray

Andy Gundry

Stephen Butterworth

Chris Brodie

Simon Marsh

Peter Cheers

Co-Opted members are – Jo Parker, Mark Lusher, Ian Vickridge, Norman Howell

Dawn welcomed Ian Ramsay as incoming Chair who subsequently closed the meeting with a special thanks to Dawn, for her dedication and direction over the last three years.

EVENTS AND MEETINGS

2022

November 30: Trenchless Technology International Seminar
Westin Hotel, Santa Fe, Mexico
Details from: www.trenchlessmexico.com

December 7: SESTT Baton Rouge Trenchless Technology Seminar
Details from: www.sestt.org

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

May 24-26 May: Italia No-Dig Live 2023
Novegro Exhibition Park
Details from: www.iatt.it/en/2022/09/italia-no-dig-live-2023/

October 17-19: International No-Dig Mexico 2023
ISTT's 39th International No-Dig Conference and Exhibition
Expo Santa Fe, Mexico

November 2023: Trenchless Egypt 2023
Cairo
Details from: www.trenchlessegypt.com

November 1-2: No-Dig Turkey 2023 Conference and Exhibition
Darulbedai Cad. No 4 Harbiye Sisli,
Istanbul 34367, Turkey

November 8-9: STUVA-Expo 2023 in Munich
Messe München, Messegelände, Hall C1
81823 München, Germany

2024

18-19 November: International No-Dig Dubai 2024
ISTT's 40th International No-Dig Conference and Exhibition
Dubai World Trade Centre, Dubai

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