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THE ON-LINE NEWS AND INFORMATION SERVICE
FOR THE TRENCHLESS INDUSTRY.

MEDIA PARTNER OF THE UNITED KINGDOM
SOCIETY FOR TRENCHLESS TECHNOLOGY



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ISSUE 121

SEPTEMBER 2016

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INDUSTRY, COMPANY AND INSTITUTION NEWS AND RESEARCH



HAMMERHEAD® TRENCHLESS ACQUIRES RS LINING SYSTEMS

HammerHead Trenchless, a Charles Machine Works company, recently announced the acquisition of RS Lining Systems, LLC, the provider of RS Technik® pipe rehabilitation solutions in the Americas. This acquisition will allow HammerHead to better serve customers across the underground infrastructure rehabilitation market by providing an enhanced suite of CIPP trenchless solutions.

“HammerHead strives to offer its customers a unique, comprehensive set of solutions for any rehabilitation or replacement project. The combination of HammerHead and RS Lining will expand our existing product and services offering to provide our customers the most complete set of solutions for rehabilitating underground utility infrastructure.” said Kevin Smith, President of HammerHead Trenchless Equipment. “Our goal is to offer customers not just any solution but the right solution to fit their needs, and the synergy between HammerHead and RS Technik solutions expands our position as the trusted advisor in the trenchless industry.”

RS Lining is a leader in CIPP technology, providing a full suite of RS Technik pipe rehabilitation solutions for gravity sewer, pressure pipe and potable water including RS CityLiner®, RS CityMain®, and RS BlueLine® all of which feature mobile, state-of-the-art, CIPP impregnation and installation equipment RS MobiPreg™. RS Lining has engineered systems that provide unique solutions developed to meet the emergent needs of asset managers in performance, durability, and cost-effective sustainability of pipeline infrastructure.

“We are excited to add the talent and experience of the RS Lining team to our HammerHead family. The RS Lining team is made up of industry veterans with unique skills that will be valuable in the growth of HammerHead’s rehabilitation business segment and will give customers access to unparalleled expertise.” continued Smith. As part of the acquisition, the RS Lining team will be joining HammerHead at its facility in Lake Mills, Wisconsin.

“It is exciting for us to become part of the HammerHead team. HammerHead is an established leader in the industry and together we will usher in the next generation of trenchless solutions.” said RS Lining Senior Vice President Joanne Carroll. “RS Lining customers will continue to have access



Kevin Smith, President of HammerHead Trenchless Equipment.

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Steve Vick International designs and manufactures products for the trenchless renovation and decommission of pipes worldwide. Products include Pipe Coil Trailers, Pipe Handlers and Pipe Cutting Equipment.



Akkerman develops, manufactures and supports quality pipe jacking, tunnelling, microtunnelling and guided boring equipment for the accurate installation of underground infrastructure for an extensive range of diameters and geology.



In-house developer and manufacturer of lateral cutters, high-speed drain cleaning equipment, pipe coating systems, collapsed liner removal, root and scale removal tools.



Mammoth Equipment Ltd provides full sales, service, spares and support for the full range of Hammerhead Trenchless Equipment, including Moles, Bursters, Rammers, winches and ancillary equipment including portable Rotair compressors, pipe towing heads etc. in the UK and Ireland.

PIPE BURSTING PROS DEPEND ON HAMMERHEAD®

“We worked very closely with HammerHead Trenchless Equipment in the development of their new 100XT static pipe bursting system, and we couldn’t be happier with the final result. It’s fast, reliable, and backed by customer support that has always been quick to respond when we have a question. Municipalities are catching on to the advantages of pipe bursting, and our 100XT positions us to take advantage of pipe bursting’s growing popularity.”

MARK DIMICHELE,
Owner, D & D Water & Sewer, Canton MI

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to the same RS Technik products now backed by the strength and support of HammerHead and the Charles Machine Works Family of Companies.”

“This union is a natural fit for the vision of HammerHead and Charles Machine Works. Both HammerHead and RS Lining are driven by providing effective and reliable solutions. Our customers now have access to every advantage possible for restoring gravity and pressure sewer, water and industrial pipe infrastructures.” said CEO of Charles Machine Works, Rick Johnson. “Their combined ability to deliver an inclusive range of innovative products aligns perfectly with Charles Machine Works vision.” Website: www.hammerheadtrenchless.com

ADLER & ALLAN EXPANDS DRAINAGE INSPECTION

Adler & Allan has invested in a new CCTV drainage pipeline inspection vehicle, allowing the group's Environmental Services Division to offer technically advanced large-scale drainage surveys and pipe analysis, with fully detailed compliant reports.

Independently powered and fitted with an ATEX Zone 2 Nitrogen purged rated camera inspection system, the vehicle is equipped to deal with any drainage issues, large or small, and is particularly suited to petrol forecourts and other hazardous environments.

Used to quickly identify blockages, surface cracks, displacements and collapsed systems, the van utilises pushrods and unique Proteus 360° vision capture crawler cameras, which include a variety of multi-terrain wheels and a host of reporting software solutions. Supported by a JetVac combination tanker to assist in the clearance of blockages, using high pressure water jetting, the CCTV vehicle offers a complete drainage solution package. Comprehensive reports are provide using Wincan VX software, an industry recognised brand. Following reporting, Adler & Allan will recommend a remedial action plan to quickly resolve any issues.

Bob Currie, Divisional Manager, Adler & Allan, Manchester said: “We are delighted to add this new CCTV vehicle to our fleet. It further enables us to meet the needs of our customers and expand on our existing service provision. As a growing business, Adler & Allan is dedicated to investing in knowledge, resources and staff, in order to evolve with existing and new clients. Our new capabilities for inspection and reporting gives us the unique position of delivering a total diagnostic and repair service to any business reliant on drainage, sewerage and pipelines.”

The CCTV inspection vehicle is available to hire nationally, or on an emergency call out basis, manned by two fully trained engineers. Website: www.adlerandallan.co.uk



The new Adler & Allan CCTV inspection vehicle.

INDUSTRY, COMPANY AND INSTITUTION NEWS AND RESEARCH



OVERSEAS GROWTH BOOSTS MINI-CAM IN A LANDMARK YEAR

Soaring export sales are helping pipeline inspection equipment specialist Mini-Cam to build on record turnover as it celebrates a landmark year. Mini-Cam grew overall revenues by 40% from £7.6 million to £10.6 million in the 12 months to January 31, 2016.

The company, which is based in Warrington, UK is celebrating its 25th anniversary. It was founded in 1991 by managing director Nigel Wilson and last year received backing from private equity firm LDC. Mini-Cam designs, manufactures and distributes hi-tech pipeline inspection systems. Its crawler and push camera systems are used by water and wastewater companies and their contractors to record and transmit footage during inspections. Other clients include oil and gas, construction and engineering firms.

This year has seen exports increase to account for 48% of overall turnover, up from 41% the previous year. The US market has seen the strongest rise after Mini-Cam signed a new distributor.

Sales have also surged in the Middle East, Scandinavia, the Baltic States and Ireland, and a deal to become the main supplier to German company Ehle-HD has fuelled growth in continental Europe.

Meanwhile Mini-Cam has also begun exporting to China. The company now has distributors in 31 countries and expects to further expand its network over the coming months.

It has also ramped up production after acquiring a second site, while staff numbers have increased from 30 to 50 in the past 18 months to meet the growth in demand.

Mini-Cam has taken a 6,500 sq.ft space at nearby Kirkstead Way in Golborne. The building, called Innovation House, provides a larger base for the company's custom van-fit department, which transforms vehicles into fully-equipped mobile pipeline inspection units.

Nigel said a series of product launches was also helping to drive growth, including Mini-Cam's smallest-ever crawler system, a new push camera inspection system and a new pan and rotate zoom camera. He added: "The past 25 years have flown by, but it has been an exciting journey. Advancing technologies always keep us focused as we look to find new technical solutions to industry problems while maintaining our commitment to provide innovative, high quality and affordable products to our customers around the world. Having LDC as a partner has been a key factor in helping us to accelerate our growth this year, particularly in our overseas markets." Website: www.minicam.co.uk



Mini-Cam managing director Nigel Wilson.

JOHNSTON TRENCHLESS SOLUTIONS MAKES DIRECTIONAL DRILLING INVESTMENT

As part of the continuing development and expansion of the Joseph Gallagher Group, Johnston Trenchless Solutions (JTS) recently carried out a review of its specialist directional drilling fleet and equipment. With an order book of projects ahead and further work being bid for, it was decided to invest in the latest technology of two horizontal directional drilling rigs and two mixing systems to enhance performance, reliability and provide the best solutions to customers, giving the company an edge over its competition.

Matt Waterson and Jody Dennett were charged with assessing the market and rigs available and the decision was made to purchase a Vermeer D36x50 SII – with 36,000 lb thrust and pull back and 5000 ftlb of torque and the larger D60x90 SII with 60,000 lb thrust and pull back and 9,000 ftlb of torque together with two supporting mixing units, Dupagro's M5 (5,000 l) unit for the D36 and an M10 (10,000 l) unit for the larger D60.

The decision to purchase Vermeer was based on the equipment's power and reliability together with a small, versatile footprint enabling them to work effectively in both rural and urban environments. As part of the JTS renewal policy the high residual value of the Vermeer equipment also played a part in the final decision as well as Vermeer UK's support available from nearby Wellingborough. Both rigs were immediately taken out to job sites for successful hand over training and bores and JTS is now well set for the future giving its customers the benefit of its experienced team and cutting edge drilling equipment. Website: www.vermeer-uk.co.uk



Top: The Vermeer D60x90 SII drilling rig purchased by JTS. Bottom: The Dupagro 10,000 l fluid mixing unit.

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VACUUM EXCAVATION HELPS IMPROVE TRAVEL CONGESTION

When a busy road junction in Lancashire, UK was causing high levels of congestion during rush hour, major road improvements were commissioned to improve traffic flow.

The local highways department agreed plans to add an additional lane, digging into the existing pavement to accommodate it.

However, various services were housed under the pavement including gas, water and electric lines to power street lighting.

Contractors supported the use of safer No-Dig technology to expose and relocate these underground utilities, with Pier (UK) working on site to provide vacuum excavation services.

Where mechanical and hand digging could have struck the buried services, vacuum excavation provided a non-invasive alternative to carefully expose lines.

Ground material was collected in the vacuum excavator's built-in skip to reuse once cables were disconnected and relocated under the newly created pavement, a safe distance from the new road layout.

Journeys through the busy junction have already proven much easier with the new road infrastructure now reducing congestion. Website: www.pier-uk.co.uk



Above left: Buried services are exposed prior to relocation using vacuum excavation to prevent damage to the services.

Above right: the type of vacuum excavation unit utilised on the road widening project in Lancashire, UK.

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EUROPE'S LARGEST SET FOR TUNNELLING

Assembled in Schwanau in just a few months, with a diameter of 15.87 m the tunnel boring machine for the Santa Lucia road tunnel is an impressive sight. Over the next three years the 4,800 tonne drilling giant will build a 7,528 m tunnel in the Apennines near Florence. It takes over from the existing record holder for size, which was also used in Italy (an EPB shield for the Galleria Sparvo project which had a diameter of 15.62 m).

On completion of the record breaker a comprehensive technical acceptance took place on August 29, 2016. The highlight was the turning of the massive 410 t cutting wheel, which, equipped accordingly, will burrow through the heterogeneous subsoil.

The TBM customer is the Pavimental S.p.A. construction company, representatives of client Autostrade per l'Italia S.p.A. as well engineers and the Board of Herrenknecht AG inspected the machine thoroughly and with some pride.

Together with the now completed TBM, in the near future 13 Herrenknecht tunnel borers will be operating in Italy, in particular the larger formats. Eight of them have a diameter of more than 8 m.

Major projects such as the construction of the Autostrada A1 create modern, new infrastructures. In mountain ranges such as the Apennines, tunnels are part and parcel of the realisation of safer and more efficient traffic arteries.

On the A1 new-build route alone a total of 44 new road tunnels are planned, including the Santa Lucia Tunnel. In future the journey time from Bologna to Florence will be reduced by 30% thanks to the new build. The route will be opened to traffic in 2019. Website: www.herrenknecht.com



The diameter of the TBM for the Santa Lucia Tunnel is an impressive 15.87 m, the largest ever assembled at Herrenknecht's plant in Schwanau.

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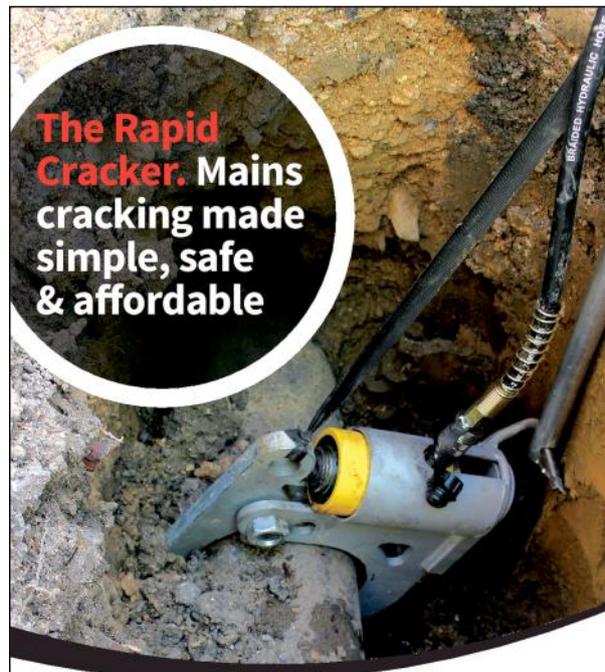
SVI SHOWCASES NEW TECHNOLOGIES AT NO-DIG LIVE 2016

The 13th biennial trenchless technology exhibition, No-DIG LIVE, took place recently at Peterborough arena. The event attracted over 100 companies from the UK and abroad all showcasing different products and services. Steve Vick International (SVI) has been exhibiting at the event for over 20 years and following the successes of previous shows, saw the 2016 event as an opportunity to launch its latest new developments - The Rapid Cracker and the Enhanced S.E.A.L. technique. Also showcased was the Digital Pressure Tester, a current NIA development project with Wales & West Utilities.

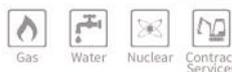
THE RAPID CRACKER

Breaking out redundant or inserted cast iron mains has always been a risky business as operators have had no choice but to use a variety of hand-held tools,

Live demo of The Rapid Cracker in action.



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which are labour intensive and potentially unsafe.

The alternatives, though effective and well designed, have been expensive; but SVI believes that it has the answer to this longstanding problem with the Rapid Cracker, a manually operated mains cracker that combines performance and easy handling with low cost.

The major difference between the Rapid Cracker and other mechanised crackers on the market is its power source. Instead of being battery operated, the Rapid Cracker is operated from a standard site compressor via an air over hydraulic pump which delivers 700 bar of hydraulic pressure, plenty of power to crack cast and spun iron mains up to 6 in (150 mm) diameter in a couple of minutes. The operator uses a foot pedal on the pump to open and close the jaw of the Rapid Cracker. By rotating and moving the Rapid Cracker along the main the pipe can be broken out in several places to facilitate the removal of the redundant section or to gain access to an inserted PE pipe, making it the ideal system for live mains insertion.



The Steve Vick International stand at No-Dig Live 2016.

THE DIGITAL PRESSURE TESTER

In collaboration with Wales & West utilities, SVI is developing a digital hand held unit for pressure testing gas services. The wireless device talks directly to a mobile phone using Bluetooth technology, whilst a custom built app records all the data straight back to the control centre. The Digital Pressure Tester is in the final stages of development and will be available in 2017.

THE ENHANCED S.E.A.L. TECHNIQUE

SVI and Northern Gas Networks have combined forces to develop an innovative new method of reducing disruption in the street. The technique allows 100% of Tier 1 gas mains, including the last joint, to be sealed and abandoned. Richie Read, NGN Programme Manager said that 'By adopting the technique NGN anticipate a saving of £4 million in the current RIIO period'. Similar savings could be experienced by all the GDN's. Enhanced S.E.A.L. will contribute to providing a safe and efficient gas network for the future; with fewer gas leaks and less disruptions for customers. Website: www.stevevick.com

The SVI Digital Pressure Tester.



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VERSATILE MICROTUNNELLING AT MINIMAL RISK

When it comes to microtunnelling installations, there are various methods and systems available, so it is important to choose the right technique to suit individual site and project specifications. It is particularly crucial for contractors to work with a machine that can work through a wide range of ground conditions, with a variety of pipes and configurations. However, most systems available to contractors lack this versatility.

The lack of versatility in many microtunnelling systems can cause problems on the jobsite when conditions are different than expected, as can often be the case. With a rigid system, adaptations are hard to make, and this can cost clients time and money.

Frustrated with the lack of versatility offered by microtunnelling equipment available on the market, in 2002 Australian microtunnelling expert Stuart Harrison set about creating his own guided boring system. The result was what is now known as the Vermeer AXIS guided boring system. It is a pit-launched microtunnelling method, uniquely designed to provide contractors with a versatile system that combines high efficiency, productivity and pinpoint precision. This allows contractors to complete microtunnelling jobs with minimal risk, while saving time and money.



Pilot boring with the Vermeer AXIS boring system.

ADAPTABLE PILOT LINES

According to Harrison, unlike traditional pilot microtunnelling systems which displace the ground, the Vermeer AXIS installs pilot lines using a vacuum extraction method.

When utilising the displacement method, contractors need to be weary of the effect of the displacement of the ground on any surrounding assets. The extraction method does not have this drawback.

The Vermeer AXIS machine is designed to cut and extract the ground as it moves, and in doing so, has little to no influence on the ground directly surrounding the installation. By extracting the earth, rather than displacing it, microtunnellers can visually inspect the condition of the soil that is being excavated at the face.

Harrison said knowing the existing ground conditions, and being able to adapt to them, is the key to getting a microtunnelling job completed with minimal risk. "Traditional slurry microtunnelling techniques rely on the jacking of a product pipe to propel the microtunnel head." Harrison said.

"But when the ground substantially changes mid-installation, to the point where the contractor can no longer proceed with the line, inevitability there will be a need to dig up the head, which is a far from ideal outcome."

However, new technology such as the Vermeer AXIS guided boring system provides a solution. It allows contractors to complete a 345 mm diameter pilot bore before upsizing and jacking.

"The Vermeer AXIS guided boring system gives contractors the ability to retract, access and change the machine head part way through drilling the pilot bore. Contractors are able to configure the cutting tool to test for changing conditions before committing to jacking the final pipeline." Harrison said.

CHANGING GROUND CONDITIONS

When it comes to planning for a microtunnelling installation, it is important to remember that the information provided by geotech surveys does not always give the complete picture of the ground conditions, or they may be incorrect.

This is why the information a pilot bore provides to contractors is so crucial. Beginning a microtunnelling project where the exact/changing ground conditions are unknown can create numerous problems for contractors, that cost time and money. The reality is, most cannot be easily adjusted to deal with changing conditions.

According to Harrison, most microtunnelling machines can only move in a forward direction. This means once drilling has commenced, if the chosen cutter is not suitable to the ground conditions encountered, the best option is to dig a shaft down towards the drill before changing the head. "The big advantage of the Vermeer AXIS guided boring system is its ability to come back, retract and change bits. There is no impact to the ground, and you are still able to create a successful outcome for all parties." Harrison said.

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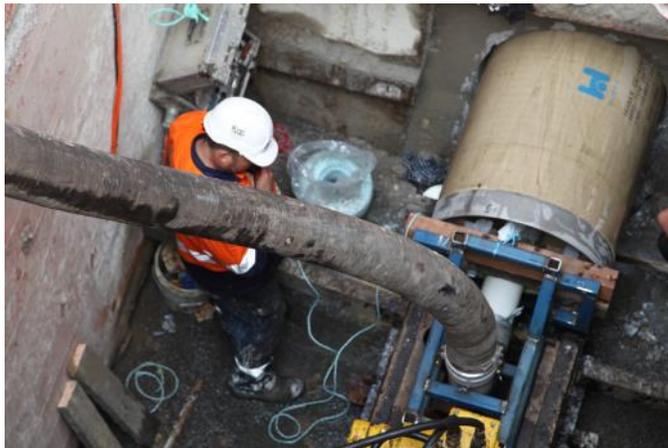
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The machine has a variety of parts and cutter face options that can be swapped to boost drilling performance in most ground conditions including rock, shale, clay and sand, mud and silt.

“Traditional methods pipejack from the outset, therefore any variations in ground conditions, if not allowed for, can cause deviation or the termination of a microtunnel bore.” Harrison said. “Vermeer AXIS is a good performer across all ground and it can be setup to suit whatever the ground condition is. This gives contractors the ability to determine a better setup for the machine to ensure that the installation’s done effectively and efficiently.”



Jacking product pipe into position.

A VARIETY OF DIAMETERS

Different projects will require pipes of a certain diameter to be installed. Traditional microtunnelling systems need customised drill heads to allow for the installation of different sized pipes. This can become expensive, especially when it is a size the contractor may not use again.

Harrison said the Vermeer AXIS guided boring system only requires one drill head to complete a pilot bore. Once the pilot bore is completed, it is just a matter of changing the size of the reaming tool to achieve a range of diameters, depending on the installation in question. Importantly, the cost of these reaming tools is relatively inexpensive, enabling cost-efficient installations.

“Vermeer AXIS is regularly used to install pipe in the 300 to 500 mm diameter range.” Harrison said. This versatility is due to the fact that the Vermeer AXIS system can install pipe via either the pilot and pull back method, or the jack and ream method.

With the jack and ream method, when the drill head reaches the exit pit, it is replaced with a reaming tool which can be attached to the product pipe when pulling back, or in the jack back method, the pipe would effectively push the pilot bore back out during the reaming process.

Harrison said the ability to use the jack and ream method allows the contractor to be flexible when choosing the installation method best suited to the site. It is also a lower risk installation method, as it uses the pilot bore created by the drill head between the launch and exit pits to pull or jack back the pipes, rather than jacking it into unconfirmed ground conditions at an elevated risk.

WIDE RANGE OF PIPES

Traditional microtunnelling methods typically rely on the use of jacking pipe, as it transmits the thrust from the jacking station to the drill head to progress the bore. However, with the Vermeer AXIS guided boring system, the use of its unique pilot bore method and vacuum extraction, can create the unique situation where in self-supporting ground, the force on a pipe would only be the weight of the pipe itself. In this case, the pipe selection only truly relates to the ground conditions, as the method does not require the use of a highly structural pipe.

“Vermeer AXIS is able to install a wide range of pipe types, including both rigidly constructed, as well as fusible and restrained joint product pipe.” said Harrison. “The system is compatible with both high and low strength products including PVC, PVE, concrete, clay, steel encased, ductile iron and HDPE.”

This versatility gives clients more product pipe options based on factors such as existing ground conditions, costs, traditional preference, and matching with existing infrastructure.

LOW COST PRODUCTION

Microtunnelling installations can be expensive for clients, especially when compared to open-cut installation methods. However, another benefit of the Vermeer AXIS guided boring system is the fact that it was also designed to keep the cost of microtunnelling down and includes benefits to make it more competitive with open-cut and other trenchless installations.

One of the benefits of the system is that it does not require structural pits where the ground conditions are relatively stable. It is the combination of a carefully designed drill head with a vacuum extraction method that allows the Vermeer AXIS to effectively core it’s pilot bore through the ground, leaving a dry and stable pilot hole. By leaving the pilot hole dry, operators do not see the typical situation of ground swell in certain clay style conditions. Compared to other microtunnelling systems, the Vermeer AXIS guided boring system requires a low amount of thrust and pullback force to create a bore in these relatively stable conditions.



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“This means it does not need a structural backstop or shaft constructed in the launch pit, reducing the costs and saving time as machine preparation is minimal.” Harrison said. It also offers precise on-grade drilling to within +/- 5 mm. The system utilises a CCTV camera that is built into the drill head to allow the contractor to constantly monitor the process of drilling. Using a laser as a guide, the operator can make adjustments to the steering of the drill head to ensure line and grade is maintained.

“The Vermeer AXIS guided boring system has been shown to be able to complete 300 meters on-line, on-grade within a week.” Harrison said.

Furthermore, compared to open-cut methods the Vermeer AXIS guided boring systems has minimal restoration costs. All that is required is the surface excavation of two pits that can serve as the manhole locations. This saves additional excavation time and resources, and reduces surface reconstruction costs. It also reduces the jobsite footprint, creating a truly keyhole pipeline installation.

This is helped by the flexible nature of the system design. The Vermeer AXIS guided boring system can be configured in a number of ways depending on jobsite footprint and transport considerations. It has a number of truck and trailer setup options to accommodate client preference and limit its impact on the surrounding area such as utilising only one lane of a street to minimise traffic disturbance.

RISK MINIMISATION

According to Harrison, microtunnelling with a versatile machine essentially comes down to one simple concept: risk minimisation. “When it is all said and done, we are all looking to reduce the risk on our trenchless projects.” Harrison said. “That is what we have been able to achieve with the Vermeer AXIS guided boring system.” Website: www.vermeer.com or www.edgeunderground.co

AUGER BORING THROUGH LECCE LIMESTONE

In the South-Italian city of Lecce, a new 3,800 m long HOBAS GRP Interceptor Sewer has been installed. An 800 m of the pipeline was successfully completed by means of auger boring.

The holding company Acquedotto Pugliese S.p.A. (AQP) offers water supply and wastewater services in the Italian regions of Puglia and Basilicata and counts among the most important sewer network operators worldwide. For the disposal of wastewater in the historical city centre of Lecce, AQP planned a new interceptor sewer in order to improve the efficiency of the existing network. The old sewer already showed problems in handling even small amounts of rainfall, with frequent overflows upstream of the local wastewater treatment plant. It was decided to build a 3.8 km long GRP sewer pipeline of DN 800 as well as a new pumping system. Due to the busy traffic and the in parts very narrow lanes in the city centre of Lecce, it was decided to install some 800 m of the new pipeline with trenchless methods.

The soil in the Lecce area posed a particular challenge to the construction works. The marble-like and water-sensitive ‘Lecce stone’ required a trenchless approach other than the conventional microtunnelling with hydraulic conveyance. It was therefore decided to complete the No-Dig



A typical surface set-up for the Vermeer AXIS boring system.



Set up of an auger boring shaft on the trenchless section of the Lecce project in Italy. Note the hard ground through which the boring had to be completed.



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section by means of auger boring, using the special 'Front Steer' system from Bohrtec which has been developed especially for difficult soils. This solution allowed for the Lecce limestone to be conveyed dry and also turned out to be the easiest and most efficient way to implement this part of the project.

The construction company in charge, F.lli Andresini di Polignano a Mare, decided to use HOBAS GRP Jacking Pipes De860 SN32000 for the auger boring section and HOBAS GRP Sewer Pipes DN800 SN15000 for the remaining installation in open trench.

Thanks to their easy jointing system, optimal hydraulic characteristics, and abrasion resistance, HOBAS CC-GRP Pipes proved ideal for the projects requirements.

"The centrifugally cast HOBAS GRP Pipes left me impressed." said Vito Francesco Andresini, managing director of F.lli Andresini. "The easy cutting on site, the convenient coupling system, the high stiffness, allowing for the pipe to be installed even in difficult ground conditions, and the optimal standard length of 6 m make the pipes an ideal solution for sewer lines." Installation works were successfully finished in June 2016. Website: www.hobas.com

HOBAS pipes were selected not only for the trenchless auger bored section of the new pipeline but also for the open cut sections.



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NOTHING RUN OF THE MILL IN FLORIDA

In February 2016 construction company Bessac completed work on a protection tunnel in extremely difficult geology in South Florida, USA. In just ten months, and using a customised machine designed especially for the mission, a 3.13 m diameter 'Herrenknecht Combined Shield' (HCS), some 1,613 meters were tunnelled adhering to the highest safety standards. A new sewer line was installed in the finished tunnel. After half a century in use the old pipe was simply worn out.



The launch shaft on Virginia Key.

The ground conditions and project circumstances of the mission at Norris Cut

were anything but standard. Not only did the karstified, permeable geology pose the risk of flooding the machine, the complex Fort Thompson Formation to be tunnelled through was also full of sand-filled cavities. The tunnel face was therefore prone to instability.

For this reason the construction of the protection tunnel for a new sewer line between Virginia Key and Fisher Island required a special and highly flexible machine with exceptional safety features. A Herrenknecht Combined Shield offered the necessary adaptability including availability in slurry mode as well as in EPB mode depending on the requirements, the HCS machine is optimally prepared for changeable ground conditions.

Additionally, the front area of the machine had to be accessible at all times during the challenge off Miami to allow for tool changes, for instance. For maximum safety a bulkhead with a dive pit was developed especially for the project. Thanks to the bulkhead between the front two machine parts and the overpressure thus enabled, muck and water cannot penetrate into the machine at the tunnel face. Should high water pressures nevertheless lead to flooding, the dive pit allows safe locking into the flooded area.

In the end the safety reserves were not needed. Neither the sophisticated lock system nor the EPB mode of the HCS machine were used. The ground was highly permeable as expected, however the proper design of the cutterhead and the appropriate disc cutters enabled the customer to perform only one maintenance stop, performed under compressed air after ground treatment from the TBM.

'Dorsey', as the shield was named, began the drive near the treatment plant on Virginia Key in April 2015. Right from the very first meter the project was characterised by its special requirements. To save space, with a diameter of twelve meters the launch shaft was rather small. At the beginning there was no room for the HSC machine's back-ups and they were only able to be used one by one after 70 m of tunnelling. For the first section the TBM was therefore pushed forward in pipe jacking mode using a jacking frame adapter developed by the customer, the rest of the tunnel was then lined with concrete segments.

At a depth of up to 21 m below sea level, the 3.13 m diameter 'Dorsey' dug its way forward in the months that followed. After 227 working days came the breakthrough on Fisher Island on February 16, 2016. Best performances of up to 24 m/day and about 300 m/month confirmed the optimum configuration of the TBM. By the end of the year the new 60 in (1,500 mm) diameter discharge pipeline is due to be installed in the finished protection tunnel and put into operation.

The successful drive on the Norris Cut project has pushed the boundaries of what is possible in Florida's tunnelling industry and contributed to its further development.



"The project has set standards for work in Florida's underground and showed solutions for deep sewer lines in the porous Fort Thompson Formation." confirmed Bernard Theron, President of Bessac.

With the construction of the Port Miami Tunnel already, machine technology from Herrenknecht had demonstrated that even the most complex ground conditions such as the Fort Thompson Formation can be safely mastered with optimally adapted technology.

Despite its huge diameter of nearly 13 m, in 2013 the EPB Shield S-600 reached its target reliably thanks to an additionally installed slurry circuit. According to internationally renowned accounting and consulting firm KPMG, in 2012 the Miami Port Tunnel was one of the ten most innovative transport projects in the world. Website:

www.herrenknecht.com

In February 2016 'Dorsey' reached the target shaft on Fisher Island.

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HORIZONTAL DIRECTIONAL DRILLING

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SLOPE DRAINAGE AT LANGENEI TECHNOLOGY CENTRE

Slope slip is common in both flat and steep sloping terrains. In the mountain regions of Europe they also have a partial influence on the daily lives of the local population. Flat slope slip is very common in various soil types requiring tried and tested targeted measures for drainage.

Such slope drainage measures has been undertaken at the technology centre in Langenei, in the Sauerland region of Germany using TRACTO-TECHNIK horizontal drilling technology.

Cutting deeper into a slope disrupts the natural balance of a hilltop slope. The hill, as is primarily the case in the Sauerland region, consists of Devonian argillaceous rock. In the lower slopes, there is powerful talus material consisting of argillaceous rock that has decomposed and weathered into clay granules. The talus material is permanently saturated due to high precipitation and covered spring outcrops.

The foundation pit for the technology centre, dug fifteen years ago, went approximately 40 m into this talus material resulting in an excessively steep slope behind a newly built factory building which quickly exhibited signs of minor slope slip and movement.

The first stabilisation measure was to ram perforated steel pipes into the lower slope section. Holes were drilled through these steel pipes and into the hill using a horizontal directional drilling system with a loose rock bore head directed slightly upward until the drilling resistance made it clear that the bore head had hit slate. These drilled holes, arranged in a slight incline, immediately provided water inlets, but the flow from one inlet to the next varied greatly.

The movements in the slope ceased, but it began to exhibit slight movements again after 2 further years. This resulted in a detailed investigation of the slope slip and the decision to carry out additional drainage measures if necessary.

In recent years, it has become necessary to implement these measures. Due to climate changes involving an increasing heavy rainfall, the drainage system, which until recently had been functioning flawlessly, reached its technological limit. As a result, in early August 2016, ten additional horizontal filter wells up to 18 m in length were added again using the HDD method.

A Grundodrill 15X (HDD rig) was used, which was located on ramps at an appropriate safety distance and on solid ground below the slope slip area. This system was used to safely drill blind holes in the sliding slope to act as gravity drainage pipes without causing any damage.

PLANNING

The parameters necessary for measuring a horizontal filter well were determined with formulas used in mining. The surface, groundwater and climate represent parts of a system the behaviour of which is nearly impossible to determine. Establishing precise dimensions for slope drainage systems quickly exceed existing economic and technical feasibility.

In the case of the Langenei technology centre drilling project, this is why the plan was deliberately based on the tried-and-tested assessment of two-sided channel flow. But slide masses are constantly in motion – and the plan must constantly be adapted to the actual state.

Research has identified rules of thumb for measuring a horizontal filter well, which are incredibly easy to follow. With some experience, paper and a pencil, pre-planned slope draining can be adapted



quickly if unforeseen obstacles arise in the drilling process.

It is helpful if, as in the present case, the slideway and slide zone are investigated and mapped out. This gives the drilling team the ability to direct the HDD bore right into the slide zone and, to the best of their ability, guide the drill a short distance through the slide zone before it penetrates further into the slide mass located above.

View overlooking a drilling location showing just how steep the slope near the technology centre actually is.



HDD is utilised to install drainage pipe to assist in slope stabilisation at the technology centre in Langenei.

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The further an HDD bore can penetrate into the investigated slide zone, the more effective the expected impact of draining will be.

IMPLEMENTATION

When drilling this type of horizontal well, it is essential to maintain the water permeability of the soils near the drill channel, i.e. the filter openings have to be adapted to the surrounding grain structure. Clear water was used as drilling fluid to ensure that the pore space in the slide mass is not permanently clogged.

'Scaffold' pipes into which the filter bodies were manually inserted were pushed into the blind drilled holes. Then, as the well ages or becomes clogged by fines, the filter pipes can be easily removed, cleaned or replace, and reinstalled. During this process the scaffold pipe keeps the bore channel free of large material, the fines are cleaned and transported away. At the same time, the hot-plate welded filter pipe is flexible enough to follow for any further ground movements without becoming damaged.

During the drilling process itself, it must be ensured that drilling is always carried out using the rotating/cutting method with the lowest possible water volume at minimum pressure so as not to force more water into the slope. Only then can it be certain that the fluid will flow back de-pressurised. Upsizing should be carried out carefully at a narrow diameter to prevent the loamy sediment from settling. Drilling into the hill always takes place from bottom to top. In terms of drilling technology, the drain pipeline can be installed such that the filter pipe penetrates into the slide mass, but the filter's main inlet is created near the slideway.

By draining the water, the slideway under the slide mass becomes rougher and the slope stabilises. Selecting a filter and positioning it accordingly ensures that up to 70% to 80% of the water volume can be retrieved from the entire landslide mass. As a result, additional measures are often not required. Well-positioned drainage pipes can stabilise slope slip completely.



Drilling one of the blind drainage pipe bores.



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If the slope slip exhibits additional slideways or unstable zones, horizontal drilling technology can

Installing one of the drainage pipes into completed bore.

be used to create additional drainage holes. In other cases, including extremely clayey and fluid soils, more extensive stabilisation measures (transverse pit lining, cement stabilisation, etc.) are only possible after the installing of drainage.

ADVANTAGES OF HDD

One feature of horizontal slope slip drainage is that a vibrating load does not have to be applied to the slide mass.

Personnel and machines work on stable ground. This is a noteworthy advantage because construction equipment or vertical drills on slide masses often slide or topple over.

Another advantage is that all HDD bores can be constructed as gravity drainage systems, eliminating pumping and mining works used to remove water from the landslide mass.

The third advantage is the time-saving and cost-effective installation of an effective drainage system. HDD can be used to drain the slope slip much more quickly than with conventional construction processes, ensuring that hazards are eliminated.

Impressive examples of this can be found in slope slip drainages in Neckartal, the Black Forest, Upper Swabia, on the outskirts of the Swabian Alp region (Albtrauf), the Rhenish Massif, in Southeast Europe and in many mining areas. Website: www.tracto-technik.com



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MONTANA MUNICIPALITY EMBRACES PIPE BURSTING

For the first 20 years in the U.S. pipe bursting seemed to be regarded solely as a sewer replacement technique. A little more than a decade ago, municipalities tending to aging water delivery infrastructure began seeing its value for water pipelines, as well. A pioneer in this pipe bursting application in the U. S. shares his pipe bursting insights and passion for this application.

As Distribution and Collection Superintendent for the Public Works Department of Billings, Montana, US, Scott Emerick said he is always interested in techniques and equipment providing more cost-efficient water and wastewater



The HammerHead® HydroGuide® HG12 winch.

infrastructure management. Yet his knowledge of newer trenchless techniques more than a decade ago was limited to what he could read. It just was not being done anywhere nearby. Then a failed 24 in (610 mm) diameter storm sewer offered him a first-hand demonstration of a HammerHead® HydroGuide® HG12 Auto Boom Winch.

Conveniently designed to accommodate use in both manhole and pit accesses, the winch's patented self-deploying downrigger is positioned in close alignment with the pipe's orientation for the most efficient use of its pulling force (up to 12 tons). Its ease of use can save hours on project setup labour and minimises time in the hole. Cable paid out from the downrigger at one end of the pipe draws tools, lining or product pipe of a particular application back toward itself. Applications include pipe bursting, slip lining, swage lining, and cable and pipe pulling projects.

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In this case Emerick used the HG12 to slipline the sewer with 20 in (500 mm) diameter HDPE pipe, but the demonstration convinced him that he and his city crews could master this. It led him to take the next step to pipe bursting.

Emerick and his crews had continuing success with pipe bursting techniques, first with another storm sewer and then a sanitary sewer. "That got us thinking, why not try it for our water pipelines?"

A local contractor loaned the city of Billings a HammerHead HydroBurst® HB80, an 80 ton hydraulic pulling machine for static pipe bursting applications. The HB80 has more than six times the pulling force of the winch-style HG12, which is delivered through the HB80's connectible pulling rods rather than a cable. The rods are joined up one by one as they are paid out and then removed one at a time as the machine pulls the bursting tool, or 'expander', and attached product pipe back to itself.

After successfully upsizing 300 ft (91 m) of 4 in (100 mm) diameter cast iron water main to 8 in (200 mm) diameter HDPE pipe, the city purchased its own machine, a 100 ton HammerHead bursting system.

In addition to storm sewers, sanitary sewers and water mains, Billings also replaced irrigation lines for the park department. "Ten years later now, and we've become experts at pipe bursting, though we're still learning something every job," Emerick said. A professional engineer, Emerick presented a paper thoroughly detailing the city's use of pipe bursting at the Denver, Colorado, National Association of Trenchless Technologies (NASTT) conference in 2015

Today Billings allots about \$4 million annually for its water and sewer main replacement program. Pipe bursting has allowed Emerick's department to stretch that budget by completing some of the projects at one-quarter to one-third the cost contracting them out as open cut.

The city replaces 7,000 to 8,000 feet of pipe a year in a system comprising 436 miles of water main and 433 miles of sanitary sewer main, including 3,800 fire hydrants and six sewer lift stations. The more the city can burst on its own, the better, Emerick said, "But of course we can't do it all. That's impossible."

Some of the work is intentionally left to contractors who have the equipment and experience necessary to dig the deeper access pits that are required for some of the runs. "This is Montana," Emerick explained. "Our northern climate requires water lines and sewers to be at least 6 to 6 ½ feet and can be deeper to navigate other utilities. To dig pits much deeper than 15 feet is typically beyond our capability."

And not all of the footage scheduled for replacement qualifies for the pipe bursting technique. Since the pipe bursting technique follows the path of the existing pipe, adjusting an existing utility's grade or depth means bidding the project out as open cut. "And there are lines where you have services connecting every 25 feet. You're going to be tearing up the road and replacing it anyway, so there's really no point to pipe bursting a line like that."

When city officials from other municipalities ask him for advice about starting up their own in-house pipe bursting programs, he said he can only speak for Billings and the unique situation that works for his department.

"It depends so much on what their tax base is," Emerick said, "and the availability of contractors, their resources, their project design, who is dealing with the administration end of it and the construction end of it."

An in-house pipe bursting crew has made sense in Billings, which has prioritized its water distribution and collection system. The technique helps Billings maintain a remarkable water loss record of less than 5 percent. Emerick said, "We've been replacing pipe since 1980. The city makes sure funding is in place, we're invested in the technology, we've become very good at what we do and we keep on it." Website: www.hammerheadtrenchless.com



Using the HammerHead HydroBurst® unit product pipe trailing from the bursting head, or 'expander' is simultaneously drawn into place as the expander bursts the existing pipe.



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Mammoth Equipment Ltd provides full sales, service, spares and support back up for the full range of Hammerhead Trenchless Equipment, including Moles, Bursters, Rammers and winches in the UK and Ireland and ancillary equipment including portable Rotair compressors, pipe towing heads etc.

ASSET MANAGEMENT, MAPPING & SURVEY

For General Information on Asset Management, Mapping & Survey [click here](#)



SEWER INSPECTION IDENTIFIES SEVERE CORROSION

A severely corroded rising sewer main, which had lost two-thirds of its wall thickness in places, was detected for Yorkshire Water by JD7 using its Pipescan+ technology.

JD7, part of the Aquam group, was able to survey the 254 mm diameter pipe without disrupting the sewage flow, finding many places where the pipe wall had only 2 mm remaining of its original 7 mm thickness. This meant the water company could intervene in a timely way, saving the pipe from probable failure.



The site set up for the rising main survey.

RISING SEWER PROBLEM

The project in Kenmore Road, Wakefield, UK exemplifies use of

JD7 advanced inspection technology on a rising sewer main, a pipeline used to pump sewage under pressure to a higher location. A growing issue within sewer rising mains is corrosion and erosion on the invert eventually leading to bursts.

JD7's general manager Dale Hartley said: "Corrosion and erosion is caused by grit and debris falling to the invert when the pumps are shut off. When the pumps restart, this is then pushed along the bottom causing wear to the pipe wall or lining. JD7's role was to determine if the technology would work in the sewer environment and to what extent the pipe had been degraded. Problems encountered with this type of inspection include a high, fast moving solid content, which can and does obstruct survey distance, visibility and can impede performance creating blockages."

Traditional methods of inspecting a sewer rising main usually involve an external ultrasonic scan, in isolated exposed areas, often reacting to a burst or leak. This provides only a very localised result around the small area of pipeline exposed or scanned.

This information can also be comparatively unrefined, providing only an approximate snapshot of wall thickness and estimated remaining service life for a very small area of the pipe. This is highly unlikely to be representative of the entire pipeline and does little to predict a possible recurrence.

SURVEY WHILE IN SERVICE

PipeScan+ is an internal ultrasonic manipulator incorporating focused ultrasonic probes, a high-resolution camera system and 512 Hz sonde for tracing. PipeScan+ allows pipe infrastructure of all materials to be scanned whilst remaining in service, allowing a full dimensional survey to be achieved including multiple wall and lining thickness measurements and corrosion and flaw identification.

The system allows accurate calculation of remaining life expectancy of the pipework as thousands of measurements can be acquired in minutes. PipeScan+ is configured onto a 100 m semi-flexible umbilical line, offering assessment over 100 m lengths.



DATA QUALITY AND DETAIL

PipeScan+ is claimed to be unmatched with regards to the quality and detail of data captured from the technology and, unlike magnetic flux leakage tools, PipeScan+ not only gives average wall thickness readings, but also fully detailed structural assessments. Access into live pressurised pipework is possible and auto-controlled using a portable electronic drive system, which controls the feeding and

JD7's Pipescan+ system installed.

SPONSORS LINKS

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HAMMERHEAD®

TRENCHLESS EQUIPMENT

Hammerhead piercing, bursting & ramming products are used by contractors worldwide to install or replace fibre, communication, water, sewer and gas lines with minimal disruption to landscapes, structures and traffic flow.



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Ditch Witch UK & Ireland

All Terrain 'ROCK' Directional Drills, HDD Training, Mixing/ Recycling Systems, HDD Drilling Fluids, Drill Pipe, Backreamers, Tri-Hawk Tooling, HDD Guidance Systems, Utility Locators, Vac Systems, Trenchers, Vibratory Ploughs.

ASSET MANAGEMENT, MAPPING & SURVEY

For General Information on Asset Management, Mapping & Survey [click here](#)



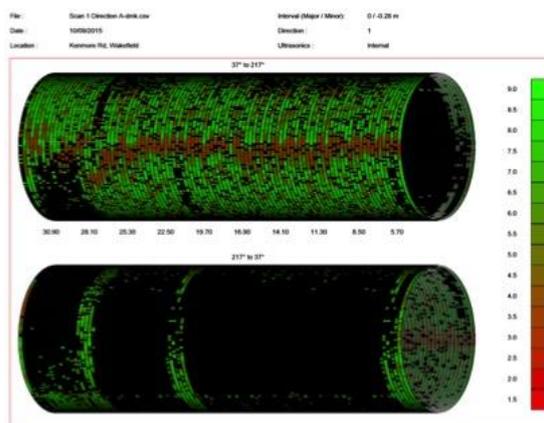
pullback of the scanner in a controlled manner.

By inserting PipeScan+ technology into and along the live main, JD7 can obtain and provide more accurate, higher resolution pipe-wall data over a greater distance of the pipeline. This comprehensive information enables the utility to take informed investment decisions about whether the pipe requires maintenance or replacement.

Rising sewer mains form only a small proportion of the pipelines JD7 has tackled. More normally, the company would be asked to assess a potable water main using a tri-sensor survey such as the Investigator (pipelines <300 mm diameter) or the LDS1000, offering a survey distance of up to 1 km in large diameter trunk mains.

This innovative, but proven technology provides a sophisticated way to inspect live mains through existing fittings and fixtures. Surveying live mains (water, sewer or other) without interruption to supply is a key driver for the UK water sector.

3D display view showing minimum wall thickness plotted in segments along the length of the pipe



The 3D display view of pipe-wall thickness produced using Pipescan+.

INFORMED DECISIONS

Hartley said: "The results provided the client with a greater level of confidence to make a decision on whether to replace the pipeline or not. Most sewer rising mains in the UK are now reaching 50 years old, and many of them are starting to leak. Under current environmental guidelines, a fine for a single sewer leak can reach more than £1 million. JD7's technology provides the best way for utilities to get the most information about pipeline condition. Even if the utility takes the decision not to replace the main, being able to demonstrate that they took best available steps to assess the condition can demonstrate responsibility and help mitigate the size of the fines." Website: www.aquamcorp.co.uk

SPONSORS LINKS

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HAMMERHEAD

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THE UKSTT NEEDS



Support the UKSTT - Join the Trenchless Army: www.ukstt.org.uk



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UKSTT NEWS

UKSTT 2016 GALA DINNER & AWARDS CEREMONY

The UK Society of Trenchless Technology (UKSTT) held its 22nd Annual Dinner and Awards Ceremony on 21 September, 2016 at the Atrium, East of England Showground in Peterborough. The event was organised by Westrade Group and hosted by Chairman Ian Vickridge and Environmentalist and television presenter Chris Packham.

For the first time, UKSTT decided to hold the Awards and Gala Dinner during the popular No-Dig Live show in association with leading event management company, Westrade Group.

The awards promote and celebrate outstanding performances in the field of Trenchless Technology and this year included two new categories 'Environmental' and 'Lifetime Achievement Award'. Due to an extraordinarily high demand for this year's event the venue was changed to The Atrium which had the capacity for 400 guests.

The show was opened with an impressive and energetic performance from the IT Girls who in true style accompanied the Society's Chairman, Ian Vickridge, onto the stage.

Ian's welcome speech preceded the evening's dinner and shortly after the starters had finished Chris Packham took to the stage to start the Awards Ceremony.

A record number of entries had been received this year and UKSTT would like to thank all of the companies who took the time to submit their entries and to the judges for the great job they made in marking them.



'Lanes installs its first chemically resistant UV liner – Solutia'.

Lanes Group was announced as winner.

Wessex Water sponsored the New Installation category and the shortlisted entries for this section were supplied by South West Water, H50 for 'Colebrook Flood Alleviation Scheme' and South West Water, H50 for 'Maltsters Rising Main Scheme'. South West Water won with its entry for 'Colebrook Flood Alleviation Scheme'. After a break for the main course, the next categories were announced.

Sponsored by RelineEurope, the shortlisted entrants for the Small Scheme category were PMP Utilities for 'Bespoke Engineering keeps Viaduct Pipelines Operational', Wessex Water & Draincare Ltd for 'The MSI Profiler' and Wessex Water and Prokasro for 'Roseberry Road'. Firmino Barbosa of RelineEurope announced Wessex Water and Draincare the winners.

Innovation Product award was sponsored by H50 announcing the shortlisted entries were submitted by PMP Utilities for 'Ecovas an Ultimate Trenchless Technology', Synthotech Ltd for 'Water Extraction Systems for Live Gas Mains & Services' and tRIIO & Flow Stop Services for '36 WEKO Seal Remover'. PMP Utilities was announced as the winner.

The sixth award of the evening, Innovative Application of Technology was sponsored by RSM Lining Supplies. Shortlisted for this category were Environmental Techniques/Meridian Utilities & NI Water for 'Terminal Pumping Station Deep Clean, Belfast, One Alliance/Barhale for 'Innovative use of Technology HDD Gravity Sewer Installation and Steve Vick International for 'New Enhanced S.E.A.L technique for abandoning tier 1 gas mains. The award went to One Alliance/Barhale. Another short interlude followed with the arrival of dessert which was swiftly followed by Chris Packham announcing the concluding award categories.

UKSTT Young Professional of the Year Award, sponsored by Picote, is the UKSTT Chairman's award that is awarded to the young engineer (<30 years) who can best demonstrate a contribution to the field of Trenchless Technology. The Young Professionals shortlisted for this category were, Jamie Kwiatkowski from South West Water, Matthew Braid from MWH Global and Nathan Hand from Wessex Water. UKSTT is delighted to announce that Nathan Hand has received this year's award which was presented by Picote's Katja Lindy-Wilkinson.

One of the new awards for 2016, The Environmental Award was sponsored and presented by UIS. Shortlisted for this category were Mole Engineering for 'Norton Priory', One Alliance/Specialist Pipeline Services for 'Higham Ferrers HDD Project and



South West Water H50 for 'Colebrook Flood Alleviation Scheme'. The winners announced were South West Water H50.

Also new for 2016 is the 'Life Time Achievement' award. Ian Vickridge took to the stage and highlighted the contribution that has been made over the years that UKSTT would like to recognise by presenting the award to Dec Downey. Dec was accompanied onto the stage by the IT Girls and thanked everyone for the honour. The evening continued with dancing from the IT Girls who were joined on stage by some of the guests including UKSTT's own John Beech!



OTHER NEWS & EVENTS

FLOOD EXPO 2016 - 12 - 13 October 2016 Details from: www.thefloodexpo.co.uk

TRENCHLESS MIDDLE EAST 2017 - 13 and 14 March 2017 in Dubai. Website: www.trenchlessmiddleeast.com

ISTT AFFILIATED SOCIETY NEWS

ISTT'S 34th INTERNATIONAL CONFERENCE & EXHIBITION - INTERNATIONAL NO-DIG BEIJING - 10 - 12 October 2016 at the National Agriculture Exhibition Centre, Beijing, China. Website: www.westrade.co.uk



THE NASTT 2017 NO-DIG SHOW - April 9 to 12, 2017 - Washington D.C., USA Details from: www.nastt.org

Don't forget!

UKSTT members are entitled to access the services on the ISTT website including free downloads of technical papers and reports from the Technical Resource Centre TRC. Please contact admin@ukstt.org.uk for your password.



THE UKSTT NEEDS YOU!

Support the UKSTT - Join the Trenchless Army: www.ukstt.org.uk

EVENTS AND MEETINGS



NO-DIG LIVE 2016 SUCCESS

NO-DIG LIVE 2016 showcased the most innovative technology from world-leading exhibitors in trenchless technology. Experts in the field, with real buying power, were given a variety of exciting demonstrations of high quality products and machinery, aided by the September sunshine. The only UK trenchless event of its kind continues to enhance exhibitor's profiles and bring superior visitors through the doors at Peterborough Arena, UK. This year marked the 13th in the biennial series, featuring an exciting and characteristic mix of indoor and outdoor exhibitor displays, with more than 130 companies, both from home and overseas displaying their products and services. The exhibitor efforts and demonstrations exceeded expectation as exhibitors raised the bar with many 'live' throughout the three days. Visitors to the show could not help but be impressed. A number of exhibitors also took advantage of the No-Dig Live publicity and launched eagerly awaited new products and services. World Trenchless Day celebrations also took place at the media stand on 22 September adding to the visitor and exhibitor experience.



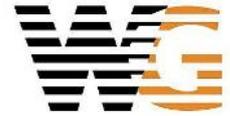
Live outdoor demonstrations at the recent No-Dig Live with (inset) the well-attended indoor arena.

The UKSTT continued to build on its Breakfast Briefings and Masterclass series launched in 2014, with some highly regarded speakers taking the lead during the sessions. This year, the sessions included the following topics: Utility Mapping, AMP 6 and Sustainability in Pipelines sponsored by the Pipeline Industry Guild, and Directional Drilling, Pressure Pipe Rehabilitation and Vacuum Excavation. In addition, Westrade organised a masterclass by Peter Henley of WRc and Mark Grabowski of Electro Scan Inc. entitled WRc Delivering the Next Generation in Sewer Leak Detection.

Managing Director of Westrade, Paul Harwood said: "A key objective is to attract a superior level of visitors to attend the exhibition, putting as many of the right people from a broad range of industries in front our exhibitors. This means productive commercial discussions and legitimate leads for exhibiting organisations, all of which always provide an indisputable level of knowledge and excellence in their field. This year was no exception." NO-DIG LIVE will return to Peterborough Arena, 18-20 September 2018. Website: www.westrade.co.uk

SPONSORS LINKS

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Westrade Group Ltd

Westrade Group Ltd is an independent company specialising in trade exhibition and conference organisation. Events include the 'TRENCHLESS' and 'NO-DIG' series across Europe, the Middle East, Asia and Africa.

WHY UKSTT?

Without members trenchless technology would be in a hole!

Supporting the UKSTT helps to promote trenchless technology to Local and National Government, enabling them to minimise utility disruption. The UKSTT also promotes advanced trenchless techniques to the Utility industry through education programmes, technical seminars and networking.

Join us now - call: **01926 513773** or email: admin@ukstt.org.uk



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EVENTS AND MEETINGS



2016

October 10-12

International No-Dig Beijing - Beijing, China.

Details from: www.westrade.co.uk

October 11-12

BTS 2016 Conference & Exhibition - London, U.K.

Details from: www.btsconference.com

October 30 - November 2

AWWA Water Infrastructure Conference & Exhibition - Phoenix, USA.

Details from: [AWWA](http://www.awwa.org)

December 8-9

No-Dig India 2016 - New Delhi, India.

Details from: <http://indstt.com/>

December 12-15

BAUMA CONEXPO INDIA 2016 - New Delhi, India.

Details from: www.bcindia.com/index.html

2017

March 7-11

CONEXPO-CON/AGG - Las Vegas, USA

Details from: www.conexpoconagg.com

13-14 March

TRENCHLESS MIDDLE EAST 2017 - Dubai.

Details from: www.trenchlessmiddleeast.com

March 28-31

Wasser Berlin International - Berlin, Germany

Details from: www.wasser-berlin.de/en/

April 9-13

International No-Dig Conference & Exhibition With the No-Dig Show (NASTT) - Washington, DC, USA

Details from: www.nodigshow.com

October 11-12

NSTT No-Dig Event – Nijkerk, The Netherlands

Details from: www.no-dig-event.nl

December 6-7

STUVA Expo 2017 - Stuttgart, Germany.

Details from: www.stuva-expo.com

2018

March 13-16

BAUMA CONEXPO AFRICA - Johannesburg, S. Africa

Details from: www.bcafrica.com

September 18-20

No-Dig Live 2018 - Peterborough, UK.

Details from: www.westrade.co.uk

If you have an event, course or meeting scheduled and would like to add it to this listing please forward details to: ian@nodigmedia.co.uk