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ISSUE 8

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INDUSTRY, COMPANY AND INSTITUTION NEWS



MEETING NEW DELHI'S POWER DEMAND

With annual summer power shortages a regular occurrence in New Delhi, the New Delhi Municipal District Council (NDMC) electrical department to utilise new technology and equipment to avoid any crisis situation.

In 2006, NDMC listed some 155 minutes of power cuts for 'regular' consumers and 30 minutes for 'VIP' consumers.

According to R K Saini, NDMC Chief Engineer (Electrical): "We are planning to augment the entire distribution system. As part of the reforms, around 4,000 km of electric cables, from 400 volts to 66 kV will be laid. In order to save power and prevent theft, all of these cables will be better insulated and all of the cables would be laid underground using trenchless technology. The work on these projects has already begun and is scheduled to be completed by the year-end.

Using 100, closely situated power substations, NDMC ensures that any power failure at one substation can be made up by other stations in just a few minutes.

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IMPACT HAMMER TECHNOLOGIES (Moling, Ramming & Piling)



STEEL PIPE RAMMING BELOW A PRAGUE MOTORWAY

In December 2006, an 1,800 mm diameter steel pipe, with a 25 mm wall thickness, was installed beneath a motorway at a depth of 4 m, over a length of 46 m for TSK hl.m in Prague, in the Czech Republic. The installation was completed using a Grundoram Taurus pipe ramming hammer manufactured by Germany-based Tracto-Technik.

The propulsion achieved using this size of machine for such a project was not an 'everyday' task and required careful planning. The steel pipe was designed to be used as a protection for a drainage pipe.

The contract for this project was awarded to Tracto-Technik's Czech partner, Interglobal DUO S.r.o. which worked in association with Ekis spol. S.r.o, the main construction company.

The steel pipe, normally provided as 3 m lengths, were pre-prepared in the factory to form 6 m lengths for the ramming work. On site these individual 6 m lengths were welded together during the ramming process to provide the 24 m length required to complete the motorway crossing.

Due to the slope of the motorway embankment, the starting pit was excavated to a depth of about 2.5 m at a length of some 30 m. A power cable, crossing adjacent to the bore path, had to be re-located before the ramming work could begin. A concrete foundation and steel beams were constructed in the base of the start pit to support the steel pipe and to act as guide and slide rails for the pipe/rammer setup. The complete pipe length of 24 m was laid out without problems through ground conditions consisting of clay and pebbles and in ideal surroundings.

The Taurus ramming hammer was chosen for the task, because it can produce an impact energy of 18,600 Nm. The machine itself has a weight of around 4.8 t. The Taurus is the second largest pipe ramming hammer currently available in the world, the largest being the Apollo rammer, also manufactured by Tracto-Technik. The 1 t weight piston is propelled forward by compressed air inside the specially produced, forged, machine casing. The unit's maximum air consumption is 50 m³/min.

After alignment work and positioning of the ram cone onto the pipe at two weld points, work that was aided by a crane, the ram and the ram cone were lifted into position, tensioned and connected to four compressors. The ramming hammer was laid on a starting cradle with a lifting cushion, which allows for precise machine alignment with the pipe centreline. With the first stroke of the piston the ram cone and the rammer tighten together negating any need for re-tensioning once the machine has started. On completion of the bore, the soil remaining in the casing pipe was removed manually.

The installation was carried out at an average speed of 4 to 6 m/hour and ultimately the work was completed to everyone's satisfaction. Details from: www.tracto-technik.de



Preparation for the steel pipe ramming process on the Prague project. The steel pipe was positioned on a concrete foundation with steel beams acting as guide rails.

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PIPELINE REHABILITATION (Cleaning/Lining/Grouting)



BROADENING INSTALLATION OPTIONS FOR RENOVATION CONTRACTORS

For the past 30 years, inversion lining systems have regularly relied on the use of scaffold towers to provide the necessary water pressure to achieve inversion of CIPP linings into a host pipe. More recently, with contractor's workloads increasingly requiring access to sites with minimal available surface footprints, both renovation contractors and various manufacturers have looked at the development of an alternative means of liner installation.



Loading the liner into the epros System 5 drum on DVS Pipelines' first contract for @One Alliance in Southend on Sea, Essex, UK.

One such manufacturer is Germany-based epros, a Trelleborg company. epros has an international reputation for its wide variety of pipe lining and repair systems including: the DrainPacker (a patch liner), DrainLiner (for the repair of house connections), LCR-Packer (for main/lateral interface repairs), DrainStopper (which offers pipe plugs and test devices), and DrainME-Sleeve (for installing sealing sleeves for large pipes). Whilst the various lining systems have in the past utilised scaffold installation techniques, over the past few years epros has invested heavily in the development of a range of inversion drums to meet the growing demand from the renovation industry. The systems available to date include the Mini-type inversion drum and the System 5 inversion drum.

The Mini-type drum can operate on pipes of 150 mm diameter for installations of up to 11 m long, at a liner wall thickness of 3 mm. The System 5 drum is designed to be able to handle some of the more 'heavy duty' installations on pipes of up to DN500 over distances of up to 100 m, with liners of up to 10.5 mm wall thickness.

EXPANDING CAPABILITIES

UK Contractor DVS Pipelines Ltd, of Leighton Buzzard, Bedfordshire, part of the Holleran Group of companies, recently took possession of one of the epros System 5 drums as part of an expansion of its broad trenchless installation and renovation capabilities. In this instance, the new equipment was destined for pipeline renovation work awarded to the company by the @One Alliance (comprising the Anglian Water/Barhale partnership).

As well as CIPP lining, DVS also offers Sewer Joint and Manhole Sealing, Spray lining and Pipe Bursting options across its water and wastewater operations. The company also offers Directional Drilling and Project Management services.

THE ADVANTAGES OF INVERSION DRUMS

For many lining operations, there are several advantages to using inversion drums as compared to the use of scaffold towers, not least of which is the health and safety aspect. The larger diameter the pipe being lined and/or the longer the installation required, in general, the higher a scaffold tower has to be to achieve the inversion water pressure required, so operatives do not tend to work at ground level. Also, the higher the tower, the broader the base has to be to ensure stability to maintain a safe working platform. This in turn increases the site footprint requirement.

Drums also offer easier site access. With their limited size they can be used in situations where scaffold towers simply could not be erected. The smaller size also means that any particular project can normally be completed with a smaller workforce, bringing with it the potential for significant cost savings. When empty the weight of the System 5 drum is 1,450 kg, and is easily manoeuvred by just two people. When loaded the weight of the drum is 4,500 kg in standard operation.

Inversion drums also offer the option to choose between the variety of inversion/cure system types currently available, which scaffold based systems do not. As with several currently available inversion drums, the System 5 can operate by using compressed air to invert the liner through the host pipe. This option allows for both ambient cure and steam cure resins to be utilised where project circumstances either permit or require it. In addition to this, unlike some other units, the System 5 can also be used to invert liners with water, if hot water curing is the desired option.

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PIPELINE REHABILITATION (Cleaning/Lining/Grouting)



Whichever option is ultimately used, the use of a drum offers much finer and precise control of the liner inversion operation, both on compressed air and water inversion techniques, a level of control that is just not possible using a scaffold tower. This, in turn, means that there is a much reduced risk of liner failure during the inversion stage of the renovation work.

The System 5 unit can also be mounted on either a truck chassis or on a more basic trailer unit for further ease of transport and/or positioning at site.



Inverting the liner from the new epros System 5 inversion drum.

ANGLIAN WATER LINING WORK

The inversion drum recently purchased by DVS Pipelines Ltd was acquired specifically for projects involving steam cure lining, which the company recently won in the Anglian Water region in the east of England.

As previously mentioned the main contractor for the work was the Anglian Water/Barhale '@ One Alliance'. The project in question was located in the Essex seaside town of Southend on Sea. It comprised the lining of some 5.8 km of vitrified clay sewer pipes ranging in diameter from 225 mm to 600 mm, over individual lining lengths ranging from as little as 30 m up to 130 m.

It was decided to utilise the new epros System 5 inversion drum to install the required liners using with compressed air insertion with the steam cure option. Including a swift mobilisation from receipt of the order, the work was undertaken over a 12 week period between January 22 and April 15, 2007. This time frame was achieved, at least in part, because of the significant savings that can be made on projects such as this when using the steam curing process in conjunction with the epros inversion drum.

Whilst the epros drum purchased by DVS was not originally set up for utilisation with the steam curing process, DVS developed its own technique to allow the steam curing option to be used. This enabled DVS to provide its client with a turnkey solution for the work in hand.

According to David Henderson, Wastewater Contracts Manager for DVS Pipelines Ltd: "The System 5 inversion drum has a number of advantages over more conventional inversion lining techniques. The system is a quick, easy to use and mobile installation option with a small site footprint. It offers a system with no health and safety issues with working at height and, in conjunction with steam cure process, it provides for both a reduced carbon footprint and less environmental impact, with the reduction of styrene output in the curing water."

EFFECTIVE CUSTOMER SUPPORT

As well as manufacturing and supplying its range of lining systems and equipment, epros also provides detailed training for operators and installers across the globe. In the UK, the company is also working closely with The United Kingdom Society for Trenchless Technology (UKSTT) and other utility and pipeline organisations to provide independent operator training which offer City and Guilds qualification courses for hot water, steam and ambient cure lining operations, as well as patch repairs and other related technologies.

Commenting on the recent acquisition of its new System 5 inversion drum, David Henderson, said, "We were very pleased to take delivery of the first Type 5 inversion drum in Europe. DVS Pipelines is establishing itself in the rehabilitation market as a leader in terms of new technology and, given the restrictions on water usage in the southeast of England through a significant part of 2006 and into early 2007, we are increasingly able to provide a cost effective, environmentally-friendly product, mitigating the problems associated with the conventional scaffold tower/water inversion technique."

For the system manufacturer epros, Ian Ramsay the company's International Sales and Marketing Director, said: "We were happy to develop this larger size drum system as we were well aware of the health and safety issues surrounding scaffold towers. We have been able to provide something that is not only safer and reduces risk and environmental impact whilst also increasing production rates, productivity and liner control." More details: www.epros.co.uk

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HORIZONTAL DIRECTIONAL DRILLING



HDD AIDS CLEAN COASTLINE WORKS IN NORTHERN IRELAND

As part of ongoing operations to improve the environment around the coastline of Northern Ireland, the region's Department for Regional Development Water Services is constructing major new installations for the collection, transfer and treatment of wastewater. One such project is the 'North Coast Waste Water Treatment Scheme' centred on the town of Coleraine. The main contractor for this £42 million project is the Biwater Graham Joint Venture, of Dromore, Co. Down, with RPS Consulting Engineers as the consultants. The new scheme is designed to rationalise the existing wastewater networks which have historically developed separately. The scheme involves the laying of some 24 km of pumping mains and gravity sewers, varying in diameter from 125 mm up to 1,200 mm, along with the construction of eight major new sewage pumping stations and refurbishment of five existing pumping stations. The new Waste Water Treatment Plant will provide a 59,079 m³/day treatment capacity.



The drilling set up on the Ballycairn site.

Part of the construction work on the scheme required pumping mains to be installed beneath the River Bann at two strategic locations. One crossing point was located near to the village of Riversdale and another was close to the village of Ballycairn. Careful examination of the required pipeline route and the crossings showed that Horizontal Directional Drilling (HDD) offered the best solution for the required installations.

After issuing open tender documents for the required crossings, specialist trenchless HDD and boring contractor Allen Watson Limited, of Horsham, West Sussex, submitted a technical proposal, winning the main contractors confidence, and was awarded the contract to complete the HDD work.

The River Bann crossings requirement was very precise. At each location, twin pipelines (two parallel bores each containing single PE pipe) were to be installed at specific depths below the river bed. At the first location, Riversdale, the two pipes required were 400 mm diameter, butt welded, each to be installed over lengths of some 200 metres.

The second crossing, near Ballycairn, was of similar design but in this instance the pipes were 560 mm diameter, butt welded, PE pipes each to be installed over a distance of 220 metres. In the event, each work site brought its own individual and somewhat unexpected challenges.

RIVERSDALE

Initial investigation showed the Riversdale bores would pass through boulder clay with some expected stone inclusions. The information obtained covering ground conditions did not lead Allen Watson's engineers to expect any particular concerns.

The two separate bores were designed to be installed with starting and end positions just 2 metres apart, at the launch and target sides of the river. The design allowed for these bores to be steered forming a separation of around 5 metres under the middle of the river, simply as an added safety factor for the pipes once installed.

Allen Watson decided to utilise its Prime Drilling PD50/33, 64 tonne pullback capacity drilling rig for this operation. Designed to produce 33,000 Nm of torque, the track mounted rig utilises 5 metre drill pipe. In this instance, a drill string comprising 3½ inch (90 mm) diameter drill pipe, with 3½ inch IF connections were used for the pilot, reaming and pullback operations.

Once the pilot bore commenced, using a 9¾ inch (250 mm) diameter jet head, from what was a standard launch site, it was found that the expected boulder clay contained a much higher proportion



An example of the large stone inclusions encountered on the Riversdale crossings.

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of stone than had been expected. This made the ground react more like a broken rock formation than a clay formation. Despite this unexpected change in ground conditions, the crew managed to complete the pilot bore with a jetting head, although this took 3 days to complete as opposed to the scheduled 1 day. Guidance through the pilot bore was provided by a wireline system.

Having completed the first pilot bore, the machine was moved to the second position and the adjacent pilot started and completed in a similar manner. The reason for this manoeuvre was to allow the first pilot bore to serve as the drilling mud return line for its neighbouring bore during the reaming and pullback stages of the installations.

Reaming at the Riversdale site was completed in two stages. The first ream was to a diameter of 18 inch (460 mm). Initial reaming was done with as standard fly-cutter reamer unit. The aggressive ground however wore the teeth on this reamer very quickly. The reamer was then backed out of the bore, removed and replaced with an 18 inch (460 mm) diameter hole-opener unit which successfully completed the reaming operation. Using a similar designed rock reamer a further reaming step, to 24 inch (610 mm) diameter, was then completed. The 24 inch (610 mm) diameter reamer was then again pulled through the bore as a cleaning run, which was followed by the pipe pullback again using the same reamer as the lead. On completion of the pipe installation on the second pilot bore, a string of drill pipe was passed back through the installed PE pipe and utilised as the drilling fluid return line on the adjacent.

The second ream and pipe pullback operation was completed using the same down hole tooling and completed without problems as that ultimately used on the first bore. The reaming operation for both bores took just 4½ days to complete, throughout the boring 9 tonne bentonite was utilised with minimal requirement for additional additives. Pullback forces required for the pipe pullback did not exceed 7 tonne due to good management and cleaning of the bore prior to pullback.



The reamer used on the first bore reaming run at Riverside showing the worn teeth due to the aggressive ground conditions. Inset the tri-cone bit used at Ballycairn for the rock installation pilot bores.

BALLYCAIRN

The 220 metre long installation of twin 560 mm diameter, PE pipe at the Ballycairn site followed a very similar process to that used at Riversdale.

The difference at this site was that ground conditions comprised shallower boulder clay/glacial till horizon which overlaid strong basalt rock and the plan was to bore through the clay layer above the rock horizon. Topography at the Ballycairn site was, however, somewhat different with steep banks on one side of the river. This meant the drilling rig, being the same one used at Riversdale, had to be set up with a very steep entry angle given a height of some 12 to 15 metre above the river level.

Once drilling commenced, the strong, basalt rock head was found to be much shallower than indicated, with the pilot bore running along the shallow interface and unable to penetrate into the stronger material below, using this equipment it was decided a safe depth for the pipeline could not be achieved. For the safety of the pipeline from vessels at anchor, channel dredging and any shifting formations, a decision was made to bore much deeper into the rock horizon.

The jetting equipment was replaced with a 5 inch (130 mm) diameter mud motor with 6½ inch (165 mm) diameter TCI drill bit. With this arrangement, both pilot bores were then successfully completed without further difficulty in just 2½ days for each bore, again using wireline guidance.

Given the new rock bore circumstances and the smaller pilot drill, reaming of each bore had to be completed in 3 stages. This included 12¼ inch (310 mm) and 20 inch (508 mm) diameter ream



A pipe under pressure test prior to installation at Ballycairn.

HORIZONTAL DIRECTIONAL DRILLING



using hole-opener rock reamers followed by the final stage with a 30 inch (760 mm) diameter ream again using a hole-opener.

Mud return and management arrangements were the same as those used at Riversdale although the change to mud motor pilot bores meant that some 14 tonne of drilling mud was used over the course of the two bores using the same BoreGel mix. After cleaning the bores with the 30 inch (760 mm) diameter hole opener, the pipe pullback was achieved with the same reamer unit as the lead.

Pullback forces on the drill rig did not exceed 9 tonne and this was again due to good fluid mix and bore management. Prior to pullback, at each location, all PE pipes were pressure tested and proven prior to installing.

On completion of the works both the client and the project's main contractor were very pleased with the outcome and the final product delivery. Further details from: www.allenwatson.com

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EXPANDING HDD AND DRILLING FLUID RANGES AT AMERICAN AUGERS

The DD 210 is the latest track mounted, surface launched, fluid assisted, mechanical directional drilling system in the HDD rig range from American Augers, part of the Astec Underground Group. The new unit is designed to be utilised for utility construction and smaller pipeline installation projects because it provides excellent site mobility due to a self-propelled travel system that is based on excavator tracks.

The unit features a Caterpillar® C9 ACERT 224 kW diesel engine which develops up to 94 t thrust and pullback power and a maximum 33,750 Nm of rotary torque.

The design includes a Rack & Pinion (6) pinion drive with adjustable force limiter, an Open Top Wrench with 245 mm separation and the facility whereby the Clamp and Wrench can be repositioned within a 1.5 m range to allow for simple makeup and breakout. The rig also has the ability to accommodate Range II Drill Pipe. It operates with between 10° and 18° Drill Angle.

As well as the new HDD rig American Augers has also launched the MPR 6000, the latest innovation in its Mud Pumping and Cleaning System range for drilling fluid pumping, cleaning, and mixing.

The MPR 6000 has the ability to mix, pump, and provide large volumes of mud 'down hole' for use with mud motors or large reamers. Overall, the fluid production capacity is between 1,135 and 1,890 l/min, so the MPR 6000 is a compliment to any site utilising a large directional drill or auger boring equipment, regardless of soil type or condition.

Furthermore, improvements in overall recycling and cleaning make this unit well suited to all contractors working in areas where mud disposal is expensive or restrictive.

The MPR 6000 has a tri-axle mounting with rock over design and is equipped with Caterpillar® 336 kW diesel engine, and a Caterpillar® generator set which can provide power of 114 kW at 480V at a frequency of 60hz. The mud pumping system is designed with Quintiplex Supercharged 5 x 6 pumps, with a 5 x 6 centrifugal pump for the bentonite mixer. The cleaning system features two linear motion shakers, and electric pumps for mixing, agitation, and charging of the hydrocyclones.

Other standard features include: two fluid holding tanks (7,570 l and 15,150 l), a Wash Down System with a 416 l tank and a 30.5 m hose. General safety features include, anti-slip walkways with handrails, stairway/ladder with anti-slip treads, an Emergency Shutdown Switch on operators panel, and electrical ground stake with cable.



The DD 210 HDD rig from American Augers.



The American Augers MPR 6000 drilling fluid handling system..

ASSET MANAGEMENT, MAPPING AND SURVEY



CAN MODERN SURVEY TECHNIQUES REDUCE EASEMENT LIMITS NEAR BURIED SERVICES?

With demand for new housing and other building activity across the UK continually on the rise, development companies are ever more desperate to re-develop existing, under-utilised or derelict 'Brown Field' sites, particularly within the urban situation. Whilst at first glance this appears to be an excellent use of 'spare' land, it can bring with it a set of problems that may not, at first, be obvious to the untrained eye, that of existing buried services.

Where land has been in earlier use, there will normally be a range of buried services that will have to be dealt with, in one way or another, before new building work can begin. It should also be noted that it is not only 'Brown Field' sites that may have this 'problem'. In some cases, open land between developed areas, villages etc, which may appear to be 'virgin' land, may well have services buried beneath it.



The sort of circumstance where pre-development design work would have prevented a building project from stopping and costly design work being wasted. Here a building project was forced to stop due to unknown easement problems.

PLANNING REQUIREMENTS

Currently, it is the responsibility of the developer to ensure that a full and accurate buried services plan of a site is obtained prior to any development work commencing, not the service or utility owner. As has been well documented previously, utility plans are notoriously inaccurate. In many instances, plans show manholes and other surface features reasonably well but, often, these are simply connected with straight lines to indicate the buried service route, which can be significantly off the actual alignment. This can lead to major difficulties for developers.

Shallower services, such as pressure mains for gas and water or cable utilities, are not normally too much of a problem because they can be relatively easily re-routed. This is not the case for sewers, which generally rely on a gradient to ensure gravity does most of the work in transporting flows. Re-routing this sort of service can involve some major reconstruction work.

The Sewers For Adoption – 6th Edition document, for example, has within it a table of minimum required distances (commonly referred to as easements) that should be left when constructing new buildings or structures. This easement is the minimum clear gap that should be left between the proposed structures and any known 'Public or Prospectively Adoptable Sewers'. The table broadly relates service diameter and depth to the minimum distance that should be maintained between it and any new structure.

To a large extent, the distances indicated within the aforementioned document allow for a significant degree of inaccuracy in the existing service plans and the perceived accuracy of the mapping systems available, remote or otherwise, at the time the document was prepared. With existing plan accuracy being what it is and with many of the available mapping systems claiming at best $\pm 5\%$ to 10% accuracy based upon the depth of the service, it is easily understood why the large easements were chosen. Even then the limits vary between individual Utility owners, providing little by way of consistency.

For example the current limits, for the majority of sewer operators, say that for a sewer of between 150 and 299 mm, with an invert depth of between 3 to 4 m, the minimum distance to the new structure should not be less than 3 m. For larger, say 1,200 mm diameter sewers, with an invert at between 6 and 7.5 m deep, the minimum distance should not be less than 6.5 m.

Whilst this might not seem a lot, when considering the nature and size of many brown field sites, this means, in the case of the larger diameter, deeper sewer mentioned, that an easement in excess of 13 m across the sewer centreline must be left and this varies dependent upon the structure size. For many sites this sort of distance can completely wipe out the potential for economic development of an area.

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ASSET MANAGEMENT, MAPPING AND SURVEY



IMPROVING ACCURACY

This raises the question: 'If the accuracy of plans relating to buried services can be significantly improved to within less than 0.25% in both vertical and horizontal position – could there be a case for reviewing these minimum easement distances?'. Modern building and piling techniques mean that structures can be positioned and built so that subsurface loadings can be very accurately determined. Friction resistant piling systems will ensure that loadings, if so designed, can be totally applied below the invert of a structure. With highly accurate buried service plans this could ultimately mean that an existing service could be 'built around' or immediately adjacent to a structure without fear of damage or reduction in its effective service life. Other No-Dig technologies also ensure that on-going maintenance and repair can be achieved without having to resort to major invasive trenching works.

One subsurface and buried service mapping consultant has introduced a revolutionary system that ensures that this sort of accuracy is achievable now. Infotec, based in Leigh-on-Sea, Essex, UK, recently introduced revolutionary mapping technology that offers very accurate capabilities, 'PipeTrack'.

Infotec has spent many years in the buried service mapping and detection business the company has developed a range of experience and specialist surveying services, and has invested heavily in the various aspects and technologies that such a company needs to be successful in this arena.



Launching a PipeTrack unit from an existing manhole.

PIPETRACK TECHNOLOGY

Based on a system originally developed in Belgium for the accurate, 'as-built' mapping of HDD bores, 'PipeTrack' is the latest development in 'in-pipe' mapping technology. The system has the capability to survey pipeline routes and depths to an accuracy of <0.25% in the horizontal plane and <0.1% in the vertical plane from a single pass survey. This accuracy can be improved further by the use of multiple passes over the same survey route. With even greater accuracy achievable in vertical alignment, accurate longitudinal section information can be obtained without the use of costly man-entry survey teams.

'PipeTrack' works by using a data capture probe that is passed through an existing pipeline, of anything between 50 mm to over 2 m diameter, without the need for man-entry operations. This makes for an extremely safe method of operation.

Because the unit is fully self-contained, with an array of survey sensors and data storage facilities on-board the unit, it is also independent of any surface or manual control requirements, eliminating the need for traffic control or night-time working in all but a few cases. It can operate in sewer pipes with live flows (potentially the unit can operate underwater) and flow variations in such circumstances do not effect the 'PipeTrack' performance, a factor that would result in other survey methods being aborted.

The independent nature of 'PipeTrack' also means there are no limits to depth or length of survey, within the on-board data storage capacity of the unit. So, as well as reducing the manning costs for any one survey to a minimum, the system also offers very high productivity with survey speeds of more than 4.0 metres per second being achievable.

'PipeTrack' is also unaffected by the pipeline construction or material, and the technology used is not affected by magnetic fields or other sources of interference that often affect the accuracy of other existing survey techniques. Being able to perform in this way ensures that very accurate surveys can be performed at reduced cost, very efficiently.

'PipeTrack' also provides for the client, as part of its software, a built-in Quality Control reporting system that provides, for each survey, a guarantee of positional accuracy of the pipeline being investigated, yet another unique advantage.

The 'PipeTrack' system can identify hydraulic deficiencies along a pipeline such as humps, bellies, or backfall's. This, in turn, enables engineers to plan for maintenance and/or future capital expenditure with much greater precision.

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ASSET MANAGEMENT, MAPPING AND SURVEY



EASEMENT LIMIT REVIEW

So, with this level of accuracy now available to clients, combined with the potential to use modern building techniques, is it time that buried service owners, regulatory bodies and industry advisors revisited current proximity/build-over or easement requirements?. Such a review could significantly ease the pressures on re-development sites and those development contractors which are trying to face up to increasing housing and business land shortages, particular where urban brown field sites are concerned. By undertaking such a review, many sites currently considered unsuitable for redevelopment, due to the restrictive easements, could become commercially viable.

To put it another way, and one that may seem more attractive to the service suppliers, by reviewing the current limits, and with the right safeguards in place, the more

development land that could be made with the aid of buried service owners, the greater the potential to increase their own paying customer base within their area of operation. Further details from: www.infotec1.net



Downloading survey data from the PipeTrack unit after completion of a survey.

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NEW SATELLITE VANS AT IWEX

Radiodetection will be showing its comprehensive range of location products and Pearpoint pipeline inspection equipment on Stand R20 at IWEX, Birmingham, UK between May 1 and 3, 2007. Included on the stand will be details of the brand new inspection vehicles, now with integral satellite transmission systems for on-the-move communications. Custom-designed to suit a client's particular requirements, these new inspection vehicles carry the latest Pearpoint CCTV camera systems, power supplies and communications equipment to provide a total survey solution.

Radiodetection's leading range of underground pipe and cable locators will be demonstrated on the stand and includes the CAT3 cable avoidance tool that quickly and easily locates underground buried utilities. Available with the new AvoidanceScan feature it can substantially speed up pre-excitation survey times. The CAT3 range is used by companies and contractors throughout the water industry. The RD4000 high-end pipe and cable locator will also be on show and is a sophisticated, easy to use locator can be used for locating utilities, marking for construction, mapping or fault finding.

With Pearpoint's camera systems, including the mini mainline tractor system and the new flexiprobe modular push-rod units, drain inspection and cleaning task can undertaken in pipes from 100 mm up to 1,200 mm diameter. GatorCam3 is also available for residential, small commercial and municipal applications.



A Pearpoint Pipeline Inspection van fitted with satellite transmission capability.

LATEST CABLE DETECTORS

The manufacture and maintenance of buried service location equipment is Cable Detection's exclusive focus and the company's expertise is committed to pushing the boundaries of technology and developing methods to maximise the benefits that can be delivered.

With an ever expanding network of buried services, this means that even digging a hole in your back garden can involve a risk of damage or personal injury.

Cable Detection prides itself on making buried service locators easier to use, with reduced opportunities for human error. It is necessary for locator companies to come up with simple and fast solutions for people to use buried service location technology, whilst making it easier to keep operators safer on site.

The new Cable Detection EziSYSTEM, digital cable locator range is now available across the UK.



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The new EziSystem 200, one of the EziSystem range of cable locators from Cable Detection Ltd.

With automatic pinpointing and no manual tuning required, the EziSYSTEM is a step up from the older more traditional CATs in the marketplace.

Products making up the range include the EziCAT 100, The EziCAT 200, the EziTRACE and a variety

of accessories to enable operators to trace the more difficult services. These products have only been on the market a short time but are already generating a lot of interest across the utilities, construction and surveying sectors.

Key product features include:

- Automatic Pinpointing - for faster location of services
- Four tracing modes for more flexibility on site (Power, Radio, 33kHz and 8kHz)
- Switch on at maximum sensitivity and in power mode – we have built them with a safety first philosophy in mind to ensure you do not accidentally forget to reset the sensitivity after pinpointing and we want to ensure you are protected from the more hazardous services first.
- Depth indication with the EziCAT 200 in conjunction with the EziTRACE in 33kHz
- Extended Self Test function to aid hire companies in providing safe equipment to their customers or to ensure product is working correctly before and after new job contracts.

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NEW LOCATOR RANGE FROM RIDGID

RIDGID's new line of locating equipment meets the most demanding needs of the locating professional. Built to make even difficult locates easy, SeekTech is the only line locator that uses omni-directional antennas, guidance arrows and an easy to read mapping display to lead you quickly and accurately to the target line. The antennas power the large mapping display which provides all the information you need to locate underground utilities with ease and confidence.

The Mapping Display confirms a good locate signal and identifies distortion in congested areas using:

- Target Line – which guides the operator down the line and shows changes in direction.
- Left-Right Guidance Arrows – Points the operator to the target utility.
- Proximity Signal and Signal Strength – Helps the operator centre the locator closer to the target for more confident locates.

Other features include Active Line Trace Frequencies of 128Hz, 1kHz, 8kHz and 33kHz as well as Sonde Frequency options of 16Hz, 512Hz and 33kHz. The Continual Depth facility increases productivity by showing depth changes in real time and with the Current Strength capability the unit identifies current on the target line for faster diagnosis of complex locates. The Proximity Signal feature minimises depth over the target and maximises relative signal strength to guide the operator closer to the target independent of the current flow. There is also a Mapping Display which virtually maps the utility to help guide operators down the line, which shows signal distortion and line turns in real time. The system can also operate with a Passive Power Trace at 50Hz and 60Hz as well as with a Passive Radio Trace at frequencies of <4kHz, 4kHz-15kHz and 15kHz-38kHz.



The new SeekTech SR 20 locator system from RIDGID.

MULTI-FREQUENCY RADAR FROM ITALY

Italy-based ground probing radar manufacturer, IDS Ingegneria dei Sistemi recently introduced a new dual frequency antenna to the ground investigation and utility location markets. Using dual search frequencies of 250 MHz and 700 MHz during survey the new unit offers simultaneous display of deep and shallow targets on the one display.

The IDS Detector Duo uses radar technology to locate buried utilities before starting trenching, drilling or commencement of no dig-operations. The product provides easy to interpret real time



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results, and locates the exact position of pipes, cables and bedrock. The system is designed to be compact, easy to transport and deploy, with the aim that the detector should be a daily tool for contractors, local authorities and utility service providers alike. The Detector Duo helps prevent damage to cables and pipes and avoids the risk of pipe rupture during trenching and drilling operations. The unit is easily manoeuvred and controlled by a single operator and it can be folded and stored in a car trunk or backseat.

The new Detector Duo provides easy to interpret real time results of deep and shallow targets and locates the exact position of pipes and cable.

There is no need to replace the antenna or cover the same site twice to achieve the required results as the multi-frequency system allows the detection of shallow and deep targets with a single scan saving both time and costs.

Simultaneous real-time display of deep and shallow targets combines superior resolution with extra soil penetration depth.



The new Detector Duo GPR system from IDS with (inset) a typical display of detected utilities at varying depths.



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SUPPORT EQUIPMENT, SYSTEMS AND ACCESSORIES



COST EFFECTIVE SUCTION EXCAVATION TECHNOLOGY

The Suction Excavation Technology offered by TT-UK/RSP has been specially designed for excavation and specialist construction activities in urban and suburban areas. It assures instant operability and fast excavation without the risk of affecting or damaging any unforeseen buried utilities. Use of this equipment also reduces environmental impacts by overcoming possible damage to tree roots, as the excavator clears past these without any damage.



TT-UK/RSP Suction Excavator.

The suction excavator works in a similar way to a cyclonic cleaner, but with immense suction power. The negative suction pressure and high volume air flow removes all materials through a suction nozzle via a flexible arm attachment fitted to the back of the vehicle. The spoil collected is deposited in a self-contained unit mounted on the vehicle chassis. When the container becomes full, the lid is hydraulically opened and the entire chamber is mechanically tipped over and the contents discharged into a low level skip. The spoil is then removed from site and taken to either a landfill or ideally, a recycling facility. Suction units vary in size with the most common ranging from 18 to 32 t GVM.

Operating excavation capacities of around 45 m³/day are commonly achieved in the UK (figure based on a 26 t Suction Excavator with a 7 m³ container).

The suction excavator is ideally suited for use in uncovering defective underground pipes and cables, which are too dangerous to expose using standard open cut procedures. It has received recognition for brand value innovation from BP & Shell, Balfour Beatty Rail/Utilities, Conroy and many other specialist plant hirers and contractors.

TT-UK/RSP Suction Excavators offer:

- Faster and more efficient excavation compared to traditional open cut methods when laying pipes and cables (All utilities).
- Approved for use on contaminated ground.
- Approved for use when laying pipes and cables through existing infrastructure.
- Soil removal around cables, pipelines and tree roots
- Removal of gravel and ballast for railway trackside maintenance
- Suction excavation for renovating old building foundations
- Increased operational safety
- Reduced excavation sizes and subsequent cost savings.
- No mains or cable shutoffs required whilst excavating.

A Suction Excavator unit will be working and on display at the forthcoming SED Exhibition held at Rockingham Raceway from 22 to 24 May, 2007. Alternatively contact: info@tt-uk.com to arrange a viewing at a job site location.

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UKSTT NEWSLETTER



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NEW MEMBERS

CORPORATE: M&D Drainage

M&D Drainage is the result of a partnership between Mark Lazaro, a drainage engineer of many years, and David Roberts, who has spent more years than he would care to remember in the construction industry.

They both had come to the conclusion that while a great many drainage surveyors provided a satisfactory service in telling the client what was wrong with their systems, very few offered a number of solutions to the problem, including average costings for each method of repair and time scales.

As a result of the overviews provided by M&D Drainage they have gained a number of blue chip clients who were able to use the reports produced to offer tenders for the repair work or ask M&D to oversee the required operations.

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EVENTS AND MEETINGS



AN OUTSTANDING SUCCESS IN DUBAI

TRENCHLESS MIDDLE EAST 2007 was clearly established as the region's largest and most prestigious meeting for trenchless technology professionals at its third International event, which was held at the Jumeirah Beach Conference & Exhibition Centre in Dubai, between 12 and 13 March, 2007.

Construction activity in the Middle East continues to run at the highest level for some 20 years and the show provided a timely focus for the industry to display an impressive range of equipment and services used in the installation, repair and refurbishment of urban utility pipelines.



Inside the main hall during, and on a site visit after, the successful Trenchless Middle East 2007 event.

Known colloquially as No-Dig technology in many parts of the world, and also as NDRC (Non Disruptive Road Crossing) in the Gulf Region, the Exhibition was a tribute to the increasing use of the technology in the Middle East, as some 70 companies from 17 countries gathered together to present a truly representative display. Visitors were recorded from 30 different countries.

The two day exhibition was complemented by a Conference organised by the International Society for Trenchless Technology (ISTT) which presented a number of training modules, offering delegates detailed, accurate and non commercial presentations on various techniques.

The Conference opened with an introductory session explaining the cost and environmental impact benefits of using NDRC. New installation, On-Line and Off-Line replacement and rehabilitation methods were discussed in sessions covering selection, design and implementation. The Conference closed with an overview of costs, contract issues as well as environmental considerations. The ISTT training modules were supported by an excellent range of commercial presentations from leading suppliers, contractors and consultants working in the region.

A post-event HDD site demonstration was organised for Conference delegates and hosted by Al Naboodah, one of the UAE's largest contractors. The demonstration showed the boring of a pilot hole using Vermeer® Navigator™ D100x120 HDD drilling rig and bore tracking with the Eclipse walk-over system. A representative of Baroid was also on hand to explain the use of Bentonite drilling fluids.

The 'TRENCHLESS' series of events is organised by UK-based Westrade Group Ltd. At the close of the event, event director, Caroline Prescott commented: "It is very satisfying to see the growth of this event following our first appearance in Dubai some four years ago. NDRC is essentially the preferred choice for underground construction and maintenance in many growing urban environments. Dubai was a perfect host as an example of a city where huge volumes of traffic cannot afford to be held up further by construction work."

The organisers have also announced that TRENCHLESS MIDDLE EAST will return to the UAE in March 2009. For more information, visit: www.westrade.co.uk

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2007

April 15-20

North American No-Dig 2007 - San Diego, US.

Details from: www.benjaminmedia.com

April 23-29

BAUMA 2007 - Munich, Germany.

Details from: www.bauma.de

May 1-3

IWEX - NEC, Birmingham, UK

Details from: www.iwex.co.uk

May 15-17

IWA Conference on Membranes for water & Wastewater Treatment - Harrogate, UK.

Details from: www.iwamembranes.info

June 12-14

Ville Sans Tranché - Rosny-Sous-Bois, Paris, France.

Details from: www.fstt.org

July 8 -11

American Society of Civil Engineers Pipelines 2007 - Boston, USA

Details from: www.asce.org/conferences/pipelines2007

September 10-12

Mediterranean No-Dig 2007 - Rome, Italy.

Details from: ISTT/IATT. Contact: www.istt.com or www.no-dig2007.com

October 16-18

ICUEE 2007 - Louisville, USA.

Details from: www.icuee.com

November 27-29

INTERtunnel 2007 - Moscow, Russia.

Details from: www.mackbrooks.co.uk

2008

April 9-11

No-Dig Poland - Kieice, Poland.

Details from: www.nodig.tu.kieice.pl

June 2-5

International No-Dig 2008 - Moscow, Russian Federation.

Details from: ISTT. Contact: www.istt.com

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