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CANADIAN FIRM TAKES A LEADING ROLE IN THE BATTLE AGAINST I&I AND THE REPAIR AND REHABILITATION OF MUNICIPAL WASTEWATER SYSTEMS PAGE 22

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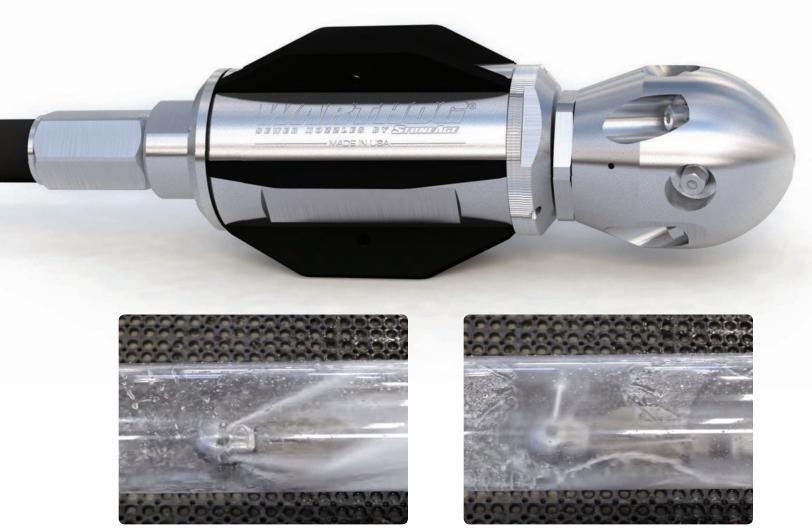




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ON THE COVER

Jelena and Stephen Mercer, owners of Empipe Solutions in Hannon, Ontario, on the back of one of their trucks in the company yard. In less than 10 years, the Mercers have grown their company to 29 employees serving all of Canada from locations in Ontario and Alberta. (Photo by Bruce Bell)

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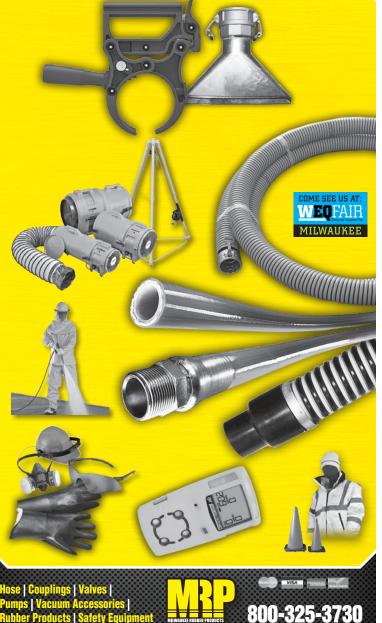




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CIRCULATION: Circulation averages 26,460 copies per month. This figure includes both U.S. and international distribution.

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Timing is Everything

Success depends on taking advantage of the opportunities you're given

By Luke Laggis

iming is everything. You've heard those words plenty of times. They might come to mind when you score a deal on a new flat screen or get the last donut off the break room table. They apply to almost everything, but they carry a lot more weight when it comes to your business.

Sometimes great success is just a matter of being in the right place at the right time. There is plenty of skill and knowledge involved in the success Murphy Pipeline Contractors (page 40) has had over the past 17 years, but it would be hard to argue that timing didn't play a big role, too. Company owner Andy Mayer found himself in the right place at the right time to take advantage of the opportunity he saw before him.



Mayer spent about 10 years working for British Gas and then started his own company. A little more than a decade after that, an American manufacturer recruited him to come to the U.S. to help a contractor break into the pipe bursting market. He had been exposed to pipe bursting and Swagelining back home at age 16, but those technologies were nowhere near as advanced in the United States.

When Mayer got to Florida, he realized people had no idea what prechlorinated pipe bursting was. There was huge market potential in the U.S. and he just happened to be in the right place at the right time. Back in England he was just another contractor providing trenchless services, but in the U.S. his specialization was unique. Awareness of these technologies has since grown in the U.S., and Murphy Pipeline has grown right alongside it.

Empipe Solutions (page 22) has also grown, from the east end of Canada to the west. The company, owned by Stephen and Jelena Mercer, provides a full menu of services, from pipe cleaning and inspection to rehabilitation and hydroexcavation.

Stephen Mercer had a substantial background in sewer and wastewater, ascending over the course of 18 years to become a general superintendent for a major firm. When he saw the larger contractors struggling to find qualified subcontractors, he decided he could start his own company. He got the money together, bought a couple trucks, hired his first two employees and set out to make a name for himself.

The opportunity presented itself at a point in Mercer's career when he could take advantage. He didn't wait. He took the chance and today the company has nine crews working out of two locations, serving most of Canada.

You never know when the next big opportunity is going to present itself. It could come tomorrow or next year, or it might be staring you in the face right now. The important thing is responding when the call comes. Timing is everything, after all.

Enjoy this month's issue. **c**



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Empipe Solutions technician Ryan Pippy lowers inspection tools to Zach Marchand inside a manhole.

profile

Taming a Harsh ENVIRONNENT

CANADIAN FIRM TAKES A LEADING ROLE IN THE BATTLE AGAINST I&I AND THE REPAIR AND REHABILITATION OF MUNICIPAL WASTEWATER SYSTEMS

RUNNING a cleaning, inspection and rehabilitation

a cleaning, inspection and rehabilitation company that serves all of Canada's frequently frozen landscape presents some significant challenges, from harsh weather to hiring the right people.

Stephen Mercer has taken an aggressive approach with Empipe Solutions. In less than 10 years, the employee base has grown to 29 and the service area has stretched across the entire country.

The Hannon, Ontario-based company started out with CCTV and flushing, and now offers a full menu of services. As their capabilities and customer base grew, Mercer and his wife, Jelena, began pursuing business 3,000 miles away in Calgary, which they saw as a productive move because of the region's oil industry. By 2012, they relocated two of their Ontario employees to open their second office in Alberta. The game was officially on.

Stephen Mercer had a substantial background in sewer and wastewater, having worked in Eastern Canada first as a laborer, and moving up through the ranks over 18 years to become a general superintendent for a major firm. When he saw the larger contractors struggling to find qualified subcontractors, he decided he could start his own company. He got the money together and purchased a 1994 Vactor 2100, an Aries Industries camera system, and with two employees on board, positioned Empipe to become an important player.

The company currently has two crews working in the Calgary office, and six to seven out of their Hannon facility, where they have 15,000 square feet of office and shop space.

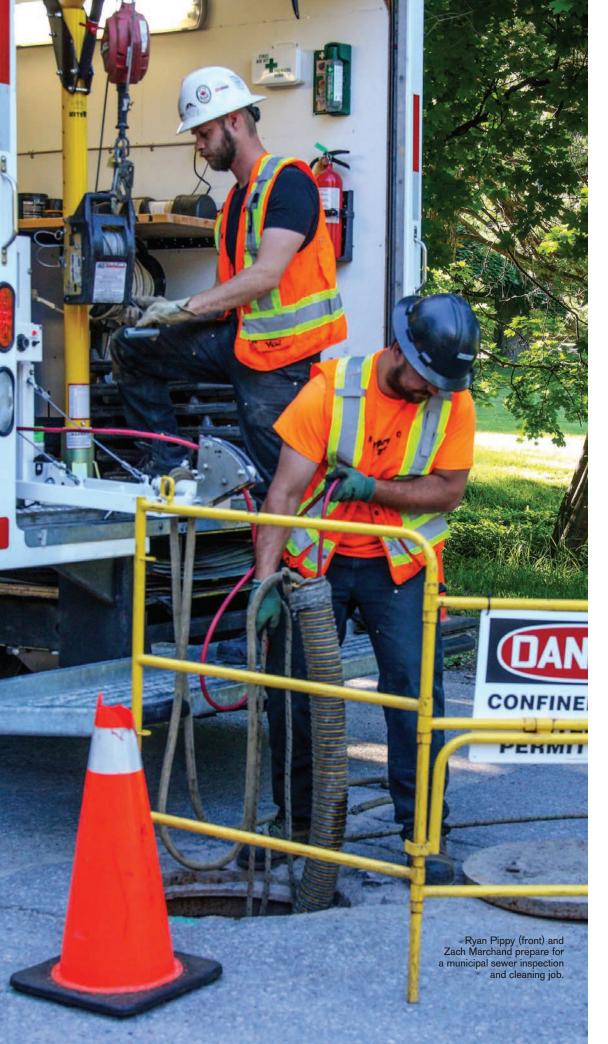
LINE UP

Mercer says manhole rehabilitation is one of the company's primary focuses, as I&I is a major concern across the country. Eastern Canada is currently dealing with I&I issues more aggressively, and manholeto-manhole rehabilitation programs are well established.

Water gets into the systems because of leaking joints and manholes in need of repair. Mercer says analysis shows 40 percent of infiltration comes through the manhole, 40 percent from the mainline and 20 percent through the laterals.

"If we can stop the need to treat groundwater and eliminate it from the systems, we will no longer have these costs





at the treatment plants. In our metropolitan areas this is the thing that is holding us back as far as development is concerned."

Their six CCTV vans are GMC 3500 cube vans with cameras from Aries Industries. They use both Pathfinder or Badger transporter systems from Aries for inspecting pipe from 5 to 70 inches in

"IF WE CAN STOP THE NEED TO TREAT GROUNDWATER AND ELIMINATE IT FROM THE SYSTEMS, WE WILL NO LONGER HAVE THESE COSTS AT THE TREATMENT PLANTS. IN OUR METROPOLITAN AREAS THIS IS THE THING THAT IS HOLDING US BACK AS FAR AS DEVELOPMENT IS CONCERNED."

Stephen Mercer

diameter, and the Aries LETS lateral launch system capable of launches in 6- to 36-inch lines. They use Hathorn mini cameras for pipes from 2 to 8 inches in diameter.

The Empipe team trusts Industrial Technology Group's Helix MH and Chamber inspection systems with 3-D imaging for inspections of manholes, vaults and other underground chambers. And for quick pipe surveys, they opt for an Envirosight quickview zoom camera.

They have five Vactors and two Vacall combination trucks, and where truck access is not feasible, they use a remote easement machine from Sewer Equipment.

Formadrain is the system of choice for rehabilitating 2- to 48-inch mainlines and lateral connections. "When we do lateral or mainline spot repairs, they are steam cured," Mercer says. "Once we inflate and install a repair we then utilize the units to create steam to have a controlled and predictable cure time.

"In our area there are always different ground conditions — cold groundwater or cold ground in our harsh winter weather. Steam gives a predictable cure. We know that within an hour, the line has gone hard. Steam is about consistency."

For other projects, Empipe technicians turn to the Sprayroq system.

PROVIDING FOR THE TEAM

Stephen Mercer describes himself as a boss who expects big results from his employees, and hopes he is easy to approach.

"However, when an employee comes to me with a problem, my motto is 'Don't come to me with an issue unless you have at least one solution.' I want to know what my employee thinks should be done.

"There is no shortage of problems to bring to the owner, and I don't want to open the door for people to bring concerns at every instance. I want to know what they think should be done. Don't just drop it on my doorstep."

Mercer says he and his family are very dedicated to their employees, and recalls a recent Christmas dinner for employees and their guests – about 60 people in all. He says he and his wife, Jelena, take great pride in providing a livelihood for so many people.

"I really like knowing that we are creating jobs. It is so rewarding. It is not about dollars; it is about people. It is astounding to us when we think about it."

"Sprayroq is a polymer liner that is used in clarifiers, wet wells, manholes, culverts or larger pipe. It is sprayed onto the surface with a hand-held gun that mixes the components prior to application. Basically this creates a cured-in-place pipe."

In 2015, Empipe was awarded Project of the Year by Sprayroq for a project they completed on the Hunter Street Bridge in Peterborough, Ontario. The project included sealing 14 catch basins on the bridge structure.

"We received the recognition because of our remote spray gun actuator we built in-house," Mercer says. "The catch basins were 8 to 10 feet deep and only 2 feet square. We could not get a man into the chambers. Our lead Sprayroq technician Dan Henderson didn't see this as a problem and quickly

<image>



"THIS WAS A 1,000-FOOT-LONG, 80-INCH PIPE THAT TERMINATED IN THE HARBOR. THE PIPE WAS SUFFERING FROM CORROSION DUE TO SALT WATER AND HAD SEVERAL AREAS WHERE IT HAD ROTTED AWAY." Stephen Mercer

fabricated a mount for the gun that would allow him to remotely actuate the trigger from above ground. It took some time to adapt to the remote actuator but it did the job."

Mercer pointed to another project in the city of Hamilton, where Empipe served as a subcontractor for a firm that was hired to rehabilitate an arch-shaped pipe. The 100-year-old brick sewer was about 300 feet long with a flat bottom. In order for the liner to be structural, the bottom would have to be round.

"We had metal curves fabricated and lagged into place on each corner of the flat bottom," Mercer says. "Once the metalwork was complete, we pumped cement grout into the void area between our metal plates and the existing brick pipe. Once everything was cured, the liner was installed. The finished product was structurally sound for a CIPP liner."

GAME ON

Operating with offices 3,000 miles apart presents obvious challenges.

"The major complication we have with our two

offices so far apart is the logistics of repairing equipment," Mercer says. "We had to buy redundant equipment that basically sits on the shelf until we need it.

The main company shop and warehouse is in Hannon. "We are able to rebuild our tractors and also do some basic camera repair in Hannon."

Maintenance supervisor Ian Eckersley keeps the vac trucks running back at the Hannon shop. In early winter the trucks are winterized and parked, since the company doesn't hydroexcavate in winter. They can do basic flushing and sewer cleaning in winter, and when spring returns the trucks will be back in full action.

"Ian is the guy who gets things moving and on to the big jobs. He gets all the equipment on pallets and loaded up in trucks and away they go," says Mercer. "With our kind of operation you need someone who can organize, and when things come back from a job, it all goes into a pile and Ian puts it all back. Hoses are where they belong. Same with pumps and other pieces of equipment."

Because large pieces of equipment typically stay on a job site for long periods of time, they don't









LEFT: Zach Marchand, fully harnessed in confinedspace gear, inspects the inside of a manhole.

ABOVE: Ryan Pippy runs the controls on a Vactor 2100 while cleaning a sewer line.

>> RIGHT: An Empipe crew inspects a manhole at the CN Tower in Toronto, Ontario. The crew was working late at night to avoid disruption.





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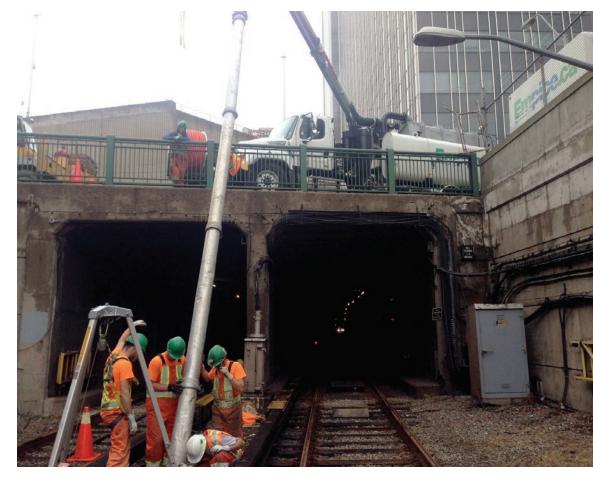
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VANDERLANS AND SONS, INC. California 1-800-452-4902 Atlanta 1-770-509-9309 Chicago 1-800-452-4902 Houston 1-832-831-4458 www.lansas.com >>RIGHT: An Empipe crew cleans a sewer line outside the CN Tower in Toronto, Ontario.

BELOW: Ryan Pippy cuts a new piece of chain for a sewer cleaning nozzle.





put a lot of miles on the combo trucks, but the hours mount up. Because of the vast areas they cover and the demand on

equipment, Mercer has a policy of returning a combo truck after two years and replacing it with a new vehicle. This is important, as they have to have equipment they can bank on to perform. He notes that these trucks are very complex machines and expensive to repair.

"We basically operate with new equipment all the time," he says. "With the CCTV trucks they last much longer and still provide good service."

TEAM TACTICS

Mercer says requiring his technicians to travel for work cuts into his pool of potential employees by at least 70 percent.

"We cover Canada," he says. "We might have a job that is a two-hour drive from base, but our technicians will work Monday through Friday, and be home on the weekend."

For away jobs, equipment is taken to the site and stays until the job is complete, while they use support vehicles to travel back and forth.

Technicians are generally cross-trained, but when it gets into lining, including Sprayroq, they need specific training and experience.

"Our technicians receive extensive training and a yearly refresher, including fall protection, first aid/CPR, lockout/tagout, confined space rescue, flusher/vacuum equipment operation and safety for cleaner operators. And of course PACP, LACP, MACP for CCTV operators."

One of their more challenging cleaning jobs was located 950 miles from Hannon at the Saint John Port Authority in New Brunswick, Canada. The city is located on the Bay of Fundy, which has some of the highest tides in the world. In this case they were a subcontractor to a firm that would do relining. "This was a 1,000-foot-long, 80-inch pipe that terminated in the harbor," Mercer says. "The pipe was suffering from corrosion due to salt water and had several areas where it had rotted away. It originally had a tar coating designed to protect it. This coating was disbonding in many places, so we completed man entry to remove the affected areas."

The crew of five had to work according to the tides, which meant it would be approximately seven hours of cleaning time, and then eight hours off, and then seven hours of cleaning time again, and they had to keep this rotation pace up and successfully complete the cleaning in six days. The relining was done by another company. To add to the challenge, they were working in winter.

"At the conclusion of this my men and equipment were due for a well-deserved rest." $\ensuremath{\mathbf{c}}$

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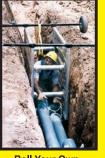
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The Spoils of Success

Nimble and versatile trailer-mounted SpoilVac hydroexcavating units work where bigger trucks dare not tread

By Ken Wysocky

ontractors that provide multiple services benefit greatly from equipment that can also multitask. A good case in point is Diversified Underground, which relies on five SpoilVac hydroexcavators from VACMASTERS to do everything from caisson excavations and slot trenching to culvert and catch basin cleaning, utility line locating and sludge removal.

In addition, the more maneuverable trailer-mounted SpoilVacs enable the Denver-based company to compete in a niche market: providing excavation and vacuum services in difficult-to-access locations where larger hydroexcavating vacuum trucks can't work, says Mark Allen, the company's general manager.

"The medium size of these units allow us to offer customers a good, competitive price and grab a piece of the market that bigger trucks can't enter," Allen says. "A lot of our competitors run big vacuum trucks and charge a lot more to be on a job site ... but we can outbid those bigger trucks. So in many cases, we can locate utilities faster and more economically with the SpoilVacs."

Each unit measures roughly 19 feet long, 8 feet high and features an 800-gallon, carbon-steel debris tank that tilts up to 45 degrees for gravitybased rear drainage; a powerful positive displacement blower (780 cfm); a 36 hp Kubota diesel engine; a high-pressure waterjetting system (2,250 psi at 3 gpm); an 800-gallon water tank; 50 feet of 1/2-inch-diameter jetting hose; a cyclonic filtration system; and 20 feet of 4-inch-diameter vacuum hose.

The diesel engine is enclosed for quieter operation, which allows crews to work at night in residential neighborhoods. The company — which also does pipeline inspections and directional drilling — spec'd a larger water tank than the standard 200-gallon unit in order to improve productivity. "When we're cleaning vertical inlets (catch basins) we need more water, and



the same is true for a lot of the soil around here, which is usually hard clay or pretty rocky," Allen explains. "We also spec'd 4-inch vacuum hose because it doesn't clog as much as 3-inch hose."

Reliability and service also rank high on the list of reasons why Diversified Underground — which has been providing hydroexcavating services in the Denver area for 16 years, says principal owner Richard Chuapoco — now owns five SpoilVacs. One of the units is more than 10 years old, but "still runs like a champ," Allen says.

On-the-job breakdowns are a profit killer, he says, noting that when machines go down, the company loses time while paying employees' wages even though they're not able to work. In addition, Diversified Underground is usually the second contractor on a job site after pipeline locators. Tasked with finding the depth at which pipelines are located, the company must finish its work before the next contractor — usually excavation firms — can get it in.

As such, no one wants to be the contractor that has to stop working, creating a negative domino effect that puts projects behind schedule.

"Getting in and out quickly is important," Allen says. "We always seem to be under the gun."

But when breakdowns do occur, Allen says the service crew at Barone Inc., the parent company of VACMASTERS, gets the SpoilVacs up and rolling in short order. another SpoilVac," Allen says. "They're very reliable workhorses. We know we can take them to a job site and get work done in a timely manner with minimal breakdowns. You just can't ask for much more than that." c

Another benefit: The SpoilVacs are easy to use and maintain. Key components are readily accessible and controls are user-friendly; Allen says a newbie can be trained to run the units in one day. "They're very well-engineered machines, designed with a minimum amount of electronics, so there are fewer things that can go wrong," he explains.

The SpoilVacs — which weigh about 6,000 pounds — are towed by four-wheel-drive Ford F-450s or International 5500s. That allows Underground Diversified to also carry "squeegee" (gravel backfill material) to job sites, which provides another cost advantage because competitors with large vacuum trucks would have to bring a second truck on site to accomplish the same task, Allen says.

Depending on soil conditions and the accuracy of the utility line locations, the SpoilVacs might be able to pothole about 35 locations in a good day. But if the work sites consist of rockier ground, productivity might dip to three a day. But either way, Allen says the 800-gallon debris tank is adequate for most jobs and a good compromise cost-wise, as opposed to buying larger vac trucks.

Because the SpoilVacs usually can be backed right up to potholing sites, the 20-foot-long vacuum hose is typically long enough. In the rare instances where it's not, the unit carries an extra 100 feet of hose for longer-range applications, Allen says.

That's not to say that Diversified Underground doesn't ever think about investing in a larger hydroexcavating machine. "But every time we look at the price tag of a big truck, we say, 'No, let's just get

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Branding Your Company – Without Big Money

Make a name for your business with a low-cost microbranding approach

By David Frey

f you've ever taken a marketing class or attended a marketing seminar, the speakers always talk about branding. They say: "You have to have a brand"; "You need to brand yourself"; "Branding is your key to success."

But what they don't tell you is how much it costs to actually create a recognizable brand. For small businesses, traditional branding is simply too expensive. Experts say that it takes repeated exposure to your brand over a long period of time for someone to actually remember it. What small business has the money to pay for that type of advertising? Very few. So traditional branding is out of the question for most small businesses.

But that doesn't mean that you can't brand your small company.

TRY MICROBRANDING

I'd like to introduce you to a concept that I call "microbranding." Microbranding is the art and science of branding your business to a specific group of people so you are always on the top of their mind. For instance, let's say you want to own the sewer and drain maintenance market in your service area. You've determined that real estate management companies and commercial property owners are your best target market. So you do some research and find the top 100 property owners where you live.

Now you have a targeted group of people to which you can microbrand your company and your product or service. So you devise a multistep marketing program to reach out and get in front of those 100 decision-makers. And you also devise a plan to stay in touch after you reach out to those people in case they want to do business with you.

That's microbranding, and any small business can do it.



THE MICROBRANDING PLAN

OK, so here's a sample of what I'm talking about. Using the commercial property example, here's what I would do:

Step 1: Create a "value proposition" by monetizing the savings that a preventive maintenance contract can achieve.

Step 2: Create a two-page special report about your proposition and call it, "Why Waiting for Plumbing Problems is Costing You Big Money (and How Preventive Maintenance Can Put That Cash Back in Your Pocket)."

Step 3: I would also create a few letters, cards and online videos, and collect any newspaper clippings, magazine articles and positive news stories I could find about my service.

Step 4: My next step would be to create an irresistible offer for a free inspection and assessment. Note: Now that I have my value proposition, marketing materials and my irresistible offer in place, it's time to start reaching out to those 100 decision-makers.

Step 5: I would start calling the decision-makers, one by one, introduce myself, and ask them if I could send them a special report.

Step 6: For those that I simply could not get ahold of, I would email them to ask if I could send them my special report.

Step 7: I would next send them cards and letters offering my special report. Basically, I would do everything I could to get the special report in their hands as a first step.

Step 8: Once they got the special report, I would start following up with them religiously by phone, email and direct mail asking for an appointment to do an inspection and assessment.

Step 9: After I have talked to them, sent them the report and followed up with them, I would put them on a monthly "testimonial card" campaign. A testimonial card is a greeting card or postcard with the photo of a loyal customer and a paragraph about how they have benefited from your product or service in their own words. The card also repeats your inspection and assessment offer.

Step 10: Continue to follow up with the decision-makers via email, phone and cards. You never know when they will have a change of heart or circumstances and need your service. As you know, drains will back up when you least expect. **C**

ABOUT THE AUTHOR

David Frey is a small-business marketing consultant and author of The Small Business Marketing Bible. He can be reached at www.themarketingbible.com.

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PROFILE

A crew from Murphy Pipeline works in and around the entry pit as new HDPE pipe passes over rollers on its way into the pit on a Swagelining job.

WITH AN EMPHASIS ON EDUCATION, FLORIDA'S MURPHY PIPELINE HELPS NEW TRENCHLESS TECHNOLOGIES GAIN A FOOTHOLD IN THE US

ANUNTAPPED MARKET

BY KYLE ROGERS PHOTOGRAPHY BY ROB HERRERA

WHEN ANDY MAYER CAME TO THE UNITED STATES FROM ENGLAND IN THE LATE 1990S, HE NOTICED THE OPPORTUNITY IMMEDIATELY.

He had his first experience with pipe bursting and Swagelining two decades prior while working as a 16-year-old engineering apprentice for British Gas. But those technologies were nowhere near as advanced in the United States.

"A country as big as America was still putting 30-ton excavators with 4-foot buckets in subdivisions

to install 6-inch pipe. It didn't make any sense to me," he says. "With my knowledge and background, it quickly turned into a no-brainer. There was an opportunity for trenchless technologies in the U.S., hence Murphy Pipeline was formed."

It was 1999 and work was sporadic at first. Gradually, awareness about the technologies grew in the U.S. and Murphy Pipeline Contractors has grown right alongside it. The company's proactive educational efforts have been key, not only for its own growth but also the trenchless industry as a whole.

"It all comes down to education and working with clients to explain the processes and the benefits," Mayer says. "It's taken about 15 years, but what I've seen in the U.S. — particularly with pipe bursting — is that trenchless technologies have become very accepted. It's now gathering a lot of momentum."



New HDPE pipe, attached to the bursting head, is pulled into the host pipe.





COMING TO AMERICA

After completing his apprenticeship, Mayer remained with British Gas for about 10 years, then started his own company, AJM Consults & Engineers. A little more than a decade after that, Mayer found himself being recruited by HammerHead Trenchless Equipment to bring his expertise to the U.S.

"Initially it wasn't to start up business and move here," he says. "It was to help a Florida contractor break into the market. But I thought prechlorinated pipe bursting was being done, and it turns out it wasn't. People had no idea what it was. There was a huge market potential in the U.S. and I just happened to be in the right place at the right time. I was going to be pretty individualistic in the U.S., whereas going back to England I would've been one of many."

Targeting an untapped market meant starting out small. It was just Mayer and a few crew members, and prechlorinated pipe bursting being a new technology, Mayer first worked with the Florida Department of Environmental

THE VALUE OF TRENCHLESS ON DISPLAY

One of Murphy Pipeline's biggest early jobs had the company bursting 25,000 feet of pipe in the Florida Everglades. The prechlorinated pipe bursting method was still so new to the United States that company president Andy Mayer had to bring in workers from his home country of England, where the technology was better established, to fill out the crew. They had more than the typical job site challenges to deal with.

"We were just really happy to have a job of that size," Mayer says. "We had our prejob meeting and I had all my people there, as well as a bunch of guys who had just gotten off a plane from England. There were park rangers who went through a list of animals in the Everglades that could kill us. They started with pythons and rattlesnakes, and we were sitting there and our eyes were wide. From there they moved on to crocodiles, caiman and alligators, saying that this was the only place in the world they all existed together, and our eyes grew wider."

Despite the unusual work environment (one alligator earned the nickname Five O'Clock Freddy for his daily trek across the job site), the project was a success and the largest prechlorinated pipe bursting job in the U.S. at the time of its completion in 2003. Murphy Pipeline's educational director, Todd Grafenauer, says it's an example of the kind of value that can be achieved employing trenchless methods.

"Everglades National Park has some of the most endangered species of any park in the U.S., and when you look at how to replace water main in a park system like that, you need something that is fast and efficient, and will significantly reduce the amount of digging you do with open trench," says Grafenauer. "I think it was a no-brainer for the parks system to use this kind of technology. That was a good project that served as a leaping stone for the company."

More recently, Murphy Pipeline was involved in another pipe bursting project in a particularly sensitive area. In early 2015, the company wrapped up the latest phase of a water main replacement in Arlington National Cemetery. Beginning in 2012, Murphy Pipeline has burst 44,500 feet of pipe in the 624-acre site where more than 400,000 of the nation's fallen soldiers are buried.

"Talk about an area needing a process that cannot impact the ground or disrupt operations," says Grafenauer. "Every day there were 25 to 30 funerals."

Crews stopped work and shut down equipment out of respect whenever a funeral procession passed, but without much advanced warning, it helped that the pipe bursting method produced minimal disruption to begin with.

"We burst in front of the Tomb of the Unknown Soldier. We burst in front of Kennedy's grave. Some of the areas we were able to work were incredible," says Grafenauer. "The value this technology has in an area like Arlington National Cemetery is why we do what we do." Protection and the American Water Works Association to get the method approved. It utilizes HDPE pipe that is disinfected and pressure tested above ground beforehand, allowing it to be put into service immediately after the burst and eliminating the need for temporary water services. Early projects were successful and from there it grew, beginning in Florida and then expanding throughout North America, serving mostly municipal customers.

Now there are about 60 employees companywide among three office locations — Milwaukee, Wisconsin; the Houston, Texas, area; and the headquarters in Jacksonville, Florida. Pipe bursting makes up most of the workload — about 80 percent. The company's other specialties, Swagelining and sliplining, make up the remainder. Murphy Pipeline uses bursting equipment from TT Technologies and HammerHead Trenchless Equipment, and pipe fusion tools from McElroy. Most of the HDPE pipe and fittings come from ISCO Industries and Ferguson.



GROWING SWAGELINING

Much of Murphy Pipeline's growth has been in prechlorinated pipe bursting, but one of the biggest opportunities for future growth lies in the other specialty Mayer brought with him from England — Swagelining.

The technology is similar to sliplining: A new pipe is inserted into the original host pipe. But whereas sliplining reduces the interior diameter of the pipe, Swagelining maintains inside diameter and flow capacity.

"Say a client has a 42-inch water transmission line. We could slipline that with 36-inch pipe fairly easily," says Todd Grafenauer, the company's educational director. "But the challenge with that is you're going to dramatically reduce flow. With Swagelining, we can actually select an HDPE pipe with an outside diameter larger than the host pipe. In the case of a 42-inch line we might select 44-inch HDPE. We're pulling a bigger pipe inside a smaller pipe."

That is accomplished by first passing the HDPE through a single reduction die, which temporarily reduces its size and allows it to be pulled through the host pipe. It remains in that state while the tension is maintained. After the pull is complete and that tension is released, the HDPE starts to expand until it's stopped by the host pipe, producing a tight fit. Grafenauer says the value of Swagelining starts to come into play once pipes exceed 16 inches in diameter.

"You can definitely still use pipe bursting for larger diameters, but it becomes less cost-effective," he says. "Once you get into water transmission mains where you're looking at 16- up through 65-inch, that's where Swagelining has really started to add value to our clients' rehab programs."

That's also why the technology hasn't yet taken off, says Grafenauer.

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"These types of projects are a little more challenging because you're







TOP DOWN

- New HDPE pipe passes through the reduction die as it's pulled into the host pipe on a Swagelining project.

- The TT Technologies hydraulic power and flow control units power one of Murphy's pipe bursting jobs.

- A TT Technologies QuickLock bursting rods box is set up at the edge of the exit pit.



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dealing with some extremely high dollar amounts and long design periods," he says. "When a community wants to replace a 6- to 8-inch water main, they can fund and design it in about three to six months. If you're dealing with 5 miles of 54-inch pipe, that could take five years to design, fund and work out all the logistics."

Even though it currently encompasses a smaller portion of the overall workload, Murphy Pipeline's customer education efforts are just as invested in Swagelining. Mayer says the need for the technology already exists, and he thinks more people will realize that in the coming years.

"There are instances where a large-diameter pipe blows and causes a lot of pricey damage, and that's spotlighting the need for this work," Mayer says. "It's only a matter of time before there will be a lot of this work, because it can be catastrophic. It's not a 6-inch line in a subdivision where you just go in and take care of it. That's not a big deal. If a 40-inch line blows downtown, that's catastrophic. You're talking millions of dollars."

Mayer recalls one of the first significant Swagelining jobs Murphy Pipeline took on in 2011 in Amarillo, Texas. The method was used to rehab 5,300 feet of 30-inch cast iron water main originally installed in 1927. The construction footprint was tight since the pipe ran under homes and busy roads, and the city wanted to maintain flow capacity because the pipe was a critical artery within the water system. Swagelining was able to fit the needs of the project in a way other methods couldn't.

"That was the first time anyone had ever Swagelined that size of pipe in the U.S.," Mayer says. "It was a milestone for us, and that's a project that always goes down as one of the most rewarding because we had a better solution for a municipality and they were willing to stick their necks out and let us work."

EDUCATION IS THE KEY

Throughout the past 17 years, education has remained an integral part of Murphy Pipeline's growth. Grafenauer leads those efforts from the company's Milwaukee office.

"That's primarily what my involvement has been since day one," says

Grafenauer, who was introduced to Mayer during one of the company's first major projects. "It's the first step we need to do before we can actually work, because human nature is what it is. People do things they're comfortable with. Why are there communities that only do open cut? Because that's the way they've always done it."

A variety of different educational methods are used. Grafenauer often travels to potential customers' locations to give technical presentations about the trenchless methods. He'll cover the history of the technology, show videos of the work in progress, highlight actual case studies, explain the technology's value from a construction and design standpoint, and spend time afterward answering questions. Murphy Pipeline will also hold "open days" at actual job sites and send out invitations so people can see the technology firsthand.

"We just did this recently for a 10,000-foot pipe bursting job in the Dallas-Fort Worth area," Grafenauer says. "We invited cities and engineers from around Texas to come and see the technology in action. From that we got a good response and had well over 100 people just standing over the pit, watching crews pull the pipe into place. There's tremendous value in that because not only do they see the method work, but they can also look at the areas where work has already been completed and see the kind of environment we left behind."

Grafenauer says an open day at a job site can be the company's most effective educational tool, and while he can't put a hard figure on it, there's a direct correlation between the amount of work Murphy Pipeline gets in a certain area and the number of open days that have been held there. While seeing the effectiveness of the technology firsthand may be a significant selling point, Grafenauer says Murphy Pipeline's educational approach is a multistep process.

"The open day is an important step, but there's a lot of work we do beyond that I believe is critical," he says. "Maybe it's the initial phone call with a potential client. We also get a ton of emails — just basic questions — and it's important to get back to those people and spend the time to make sure they have the answers they were looking for."



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For contractors who rely heavily on customer education to ultimately sell their services, Grafenauer says it's important to understand the full scope of what customers need to learn. During Murphy Pipeline's early years, that meant focusing on the HDPE pipe material just as much as the actual bursting process.

"When I started doing this, before I could even talk to someone about our technologies, I had to cover the kind of pipe we install," Grafenauer says. "For some communities, the conversation ended right there if they didn't accept HDPE and were still stuck on installing ductile iron. What's good to see

"THERE WAS A HUGE MARKET POTENTIAL IN THE U.S. AND I JUST **HAPPENED TO BE IN THE RIGHT** PLACE AT THE **RIGHT TIME.**"

Andy Mayer

is there are now some industry groups who are doing a phenomenal job with research and education about plastic pipe, such as the Plastics Pipe Institute. I don't have to spend nearly as much time educating about HDPE anymore."

He also says contractors should be prepared to do a certain amount of work up front with no guarantee that it will turn into a profitable job.

"A part of our education process when we're looking at specific projects is feasibility," he says. "We spend a lot of time with communities on the front end going through

a feasibility analysis — which projects are good candidates, what risks might be present, and how can we mitigate those risks. Also involved in that is cost analysis and design guidance. But there's no guarantee that you're getting any work out of it. More often than not, it turns into a job. But if it doesn't, we don't have any issue with that. That's what education is. It's not about getting every job. We believe in the value of the technology and the proof is in the pudding — once you do work for somebody, how often do you go back and work for them? Almost every client we've ever worked with has had us back to do more work." C

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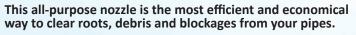
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Lens of Many Uses

Versatile vCam-5 camera system can inspect a wide range of lines

By Luke LeNoble

ewer and drain cleaning professionals are always keeping an eye out for products that will allow them to earn more money while making their lives easier, and Vivax-Metrotech was providing just that at the 2016 Water & Wastewater Equipment, Treatment & Transport Show.

The vCam-5 camera inspection system gives operators the flexibility to cover a range of inspections, including drainlines, mainlines and laterals up to 8 inches in diameter.

"What they like about it most is it's a small camera system, but it has the features of a big camera system," says Rich Jordan, product manager at Vivax-Metrotech. "With this system, we start at 3 inches and we can go up to 8 inches (in diameter), so we have a lot of versatility for the big jobs and for the small jobs."

The lightweight control module offers an 8-inch LCD, daylight-readable display and is designed for ease of use. Standard features include a full text writer with the ability to change fonts and background colors, built-in rechargeable batteries and camera test port.

Four interchangeable self-leveling camera head options range from 0.7 to 1.8 inches in diameter. One-touch recording captures JPEG sill images or video. Users can record about 20 hours of video onto the system's 300GB internal hard drive or directly to an SD card or USB thumb drive in AVI video format.

"It's a feature-packed product at an affordable price," Jordan says.

But perhaps the camera system's biggest selling point is

not just its ability to tackle a variety of inspection jobs, but the multitude of user options that go with it.

Users can choose between two reels based on which camera head configurations they have. Both reels offer stainless steel construction and come with a 5-watt, 512 Hz/640 Hz locatable sonde and traceable pushrod for mapping out lines.

The standard reel is available with 200 or 400 feet of standard-size pushrod. It offers a wide enough profile to roll without rocking and tipping yet slim enough to go through doorways. The MX Mini-Reel features a carbon fiber construction and is designed for use in confined areas or rooftops. The smaller diameter pushrod on the mini-reel allows for inspection of smaller lines from 1 1/2 to 4 inches in diameter.

"Versatility is important because the user will have the opportunity to inspect a range of pipes," Jordan says.



Rich Jordan, left, product manager at Vivax-Metrotech, explains some of the features of the control system on the vCam-5 inspection system to two 2016 WWETT Show attendees. The lightweight control module offers an 8-inch LCD, daylight-readable display and is designed for ease of use. (Photo by Luke LeNoble)

He says curious shoppers were interested in the variety of products the company had on display this year at the WWETT Show, which primarily includes locators and cameras, such as the vCam-5.

"We had another excellent show," Jordan says. "If we were a retailer and we had 15 of those things in the booth, we probably could have sold all 15 of them."

Jordan says it's that type of exposure and the face-to-face interaction with customers that keeps Vivax-Metrotech coming back to Indianapolis each year.

"We come to the WWETT Show because we have a giant audience," he says. "Thousands of people are going to walk through here, and it's just the market that we're trying to sell into — all of those players are right here. This is where we launch our new products, to show everybody the new technology." **800/446-3392; www.vivax-metrotech.com. C**



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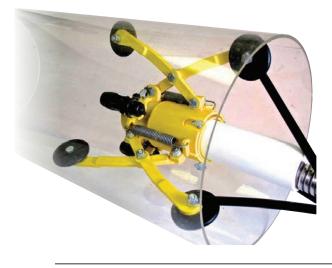
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See ads pages 61, 77	The Cable Center, Inc. 8318 Olive Blvd., St. Louis, MO 63132 800-257-7209 • 314-993-3099 • (f) 314-432-8024 thecablecenter@gmail.com www.thecablecenterinc.com	RIDGID, General Wire Spring	1" to 10"	65' to 400'	Flash Drive/USB Thumb Drive, SD Card, DVD, VHS		~	~	~		V
	Trio-Vision dba Cobra Tech 4806 Wright Dr., Bldg. C, Smyrna, GA 30082 800-443-3761 • 770-435-8991 • (f) 770-435-0402 www.cobratec.com • tomschmandt@cobratec.com	Trio Vision & Cobra Tech	6" to 72"	1000' to 4000'	HDD, Flash Drive/USB Thumb Drive, SD Card, Compact Flash, DVR, CD, DVD, VHS, Computer, PACP certified software	~	~	~	~	~	
See ad page 52	Vivax-Metrotech Corp 3251 Olcott St., Santa Clara, CA 95054 800-446-3392 • 408-734-1400 www.vivax-metrotech.com • info@vxmt.com	vCam Series of Inspection Cameras, vLoc and VM Series Utility Locators	1" to 6"	100' to 400'	Flash Drive/USB Thumb Drive, HDD, SD Card	~	~	~	~		V
WinCan See ad page 69	WinCan LLC 300 Cedar Ridge Dr., Ste. 308, Pittsburgh, PA 15205 877-626-8386 • 412-489-6229 www.wincan.com • sales.us@wincan.com					V					

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MONEY MANAGER

The Costs and Benefits of Being Connected



Erik Gunn is a magazine writer and editor in Racine, Wisconsin

They can do a lot for your business, but it pays to review your plans and usage frequently so prices don't get out of control

By Erik Gunn

he Apple iPhone will mark its 10th birthday next January — but can anyone imagine the world without it or its principal rival, the Android-based phone launched roughly 20 months later?

Neither of them were the first smartphones — mobile phones combining the convenience of cellphones with the power of computers. But they turned the smartphone from a specialized tool for a small slice of businesspeople into one found in nearly every pocket or purse.

They're still a business tool, and they're relied on more and more by all of us, including septic pumpers and drain cleaners. And neither they — nor the data they bring to the palms of our hands — are cheap. But are they worth it anyway?

You can get smartphone apps to track business mileage, manage cloudbased task lists and much more. Smartphones can also tie into your databases back at the shop. With features such as Google Maps, they're supplanting stand-alone GPS devices for many of us. And they allow rapid communication between you and your crews and among crew members themselves whether by email, text messaging, or good old-fashioned voice phone calls (how 20th century!).

"It's almost like you've got a mini office there in your hands. Even with the cost of use it's still a lot cheaper than the old way of doing things. Time is money, and it saves time." Hollis T.Warren Jr.

'NAKED' WITHOUT THEM

Hollis T. Warren Jr. owns Hollis Warren Inc., a septic service located in central Delaware near Dover, the state capital. His drivers have been using Apple iPhones on the job for 10 years — about as long as they've been around. "I never thought it would be that big a deal," says Warren. "But you feel naked if you don't have one on you anymore."

They're a necessary communication tool, he says. Drivers can phone ahead to let customers know they're on the way. If they lose their way en route to a job, they can call for directions or call up Google Maps. When the work is finished, the driver can take the customer's credit card payment on the spot using the phone.

A driver who runs short of a needed part can just call back the office for the item to be driven out to the job instead of having to stop, drive back to

fetch it, and then return. By avoiding lost time, "it's going to save you a lot of money," says Warren.

Warren's employees can choose to use their own iPhone or one issued by the business. In either case, they must follow rules: No personal calls or web surfing during work hours. "They've got breaks and lunch when, if they've got something personal, they can go and use them for that," Warren points out. And no calls while driving — that's against Delaware state law unless the driver can talk hands-free.

Before the iPhone, the business used two-way radios. Warren says there's no comparison between that technology and the iPhones. The radios could only communicate back to the office — and they cost nearly 10 times what an iPhone cost. "You can spend as much as \$5,000 for one radio in the truck."

He's never put pencil to paper to measure what the phones are worth, but he estimates they probably net him a 10 to 15 percent savings on various costs. And that's even when you consider that his current business data limits are probably too low. "We're always going over — so it's expensive using them sometimes," Warren admits. But the convenience they offer is worth it. "It's almost like you've got a mini office there in your hands," he continues. "Even with the cost of use it's still a lot cheaper than the old way of doing things. Time is money, and it saves time."

The smartphone equation

If you don't have smartphones in your business, chances are you're wondering about them. But even if you do, you might benefit from a closer look at how you're using them. Either way, you may want to consider a few important factors about bringing (or keeping) smartphones on the job where you work.

Whose smartphones will your employees use — their own, or a company-issued one?

If they use their own, you'll need to work out clear and fair policies reimbursing them for the cost of their phone use for business purposes. You may find an advantage to simply getting everyone a company phone for company business. In either event, be sure to establish clear policies and procedures, as Warren points out. Making sure they can't fritter away your work time on Words with Friends or Angry Birds games is just the start.

What are the best cellular networks in your region?

Service varies around the country, and as the big carriers continue to invest in improving their coverage, the best carrier this week could fall behind six months down the road. Ask people you know; you could start with your employees, who probably have their own phones already and can CONTINUED >>

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tell you about their experiences. *Consumer Reports* from time to time ranks the various carriers; it wouldn't hurt to see what the magazine's most recent report says about the carriers in your area.

What specific plan will be best for your business?

Data plan structures are changing all the time. Early on, carriers offered unlimited data plans (for a definite markup, to be sure); later they backed away from them. Now they're coming back, pricier than ever — but it's an open question whether they're worth the expense. Even "unlimited" plans have their limits: If your usage goes over a certain level, carriers may effectively slow down your data speed.

Under most plans, though, data is priced in increments of 5 or 10 gigabytes a month — and if you go over, there's a premium charge. You can see the dilemma: Do you go with a rich plan that might be more than you need, essentially "wasting" the additional dollars it costs compared to a cheaper plan that's closer to your actual usage? Or do you go with a lean one, risking that you'll go over it and have to pony up more?

Only you can decide which answer suits your situation better. Once you do choose, watch your bills: If you're always paying overage charges, you'll probably be better off stepping up to a monthly data plan with a higher ceiling. And if you always use a lot less than you're paying for, you can switch downward after a few months.

Note — I'm saying plans, not carriers; carriers typically lock you into a contract of two years or some other fixed term, which remains in place even if you shift your data plan up or down.

Would you do better on a 'pay as you go' plan?

An alternative to going with the big carriers and their two-year contracts is a no-contract plan, paid for by actual usage and able to be terminated at any time; providers include Tracphone, Ting, Consumer Cellular and others. They may promise substantial savings, but you'll have to consider your own usage patterns.

Running some hypothetical comparisons with Ting's calculators, if your actual data usage is way under the big carrier's monthly data plan limit, you might realize substantial savings by switching. If your usage usually approaches your actual limit, however, the savings don't appear to show up.

Choose wisely

Like a lot of business decisions, adding smartphones or switching plans may require you to make some careful comparisons. Take the time and choose the option that best suits your needs. After all, isn't getting the best deal you can one of the smartest things you can do? **C**





PRODUCT FOCUS

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By Craig Mandli

INFORMATION SYSTEMS

FORBEST PRODUCTS MULTIFUNCTION CONTROL STATION

The multifunction control station from **Forbest Products** allows users to type and edit on a 10inch LCD color monitor with embedded keyboard interface. Users can record videos or take a snapshot with either a USB flash drive or SD card by pressing the green buttons on the panel or operating the remote control. The multifunction control station supports



Forbest Products

Forbest's pan-tilt and standard inspection camera systems. Control buttons on the panel are designed for remote controlling camera head rotation for over 20,000 hours continuously for the pan-tilt camera. The heavy-duty waterproof case includes a sunshield over the LCD monitor and the built-in rechargeable battery that lasts three hours. **877/369-1199; www.forbestusa.net**.

SENSORAY MODEL 4012

The **Model 4012** compact digital video recorder from **Sensoray** is optimized for embedding in OEM systems. It records audio and video to USB storage media in MP4 format and captures JPEG images on the fly without interrupting recording.



Two incremental encoder interfaces allow position information to be overlaid directly onto the video. The A/V outputs allow live video, recorded A/V or JPEG snapshots to be displayed on an external monitor. The date and time are maintained by a real-time clock with battery backup. To implement a complete embedded DVR, simply connect power, the custom keypad and a USB storage device. The board encodes standard NTSC/PAL composite video using efficient H.264 compression. Audio from the onboard microphone or stereo line-level inputs is digitized and compressed using AAC encoding. Bit rates can be tailored to match application requirements and storage capacity. **503/684-8005; www.sensoray.com**.

INSPECTION CAMERAS

ARIES INDUSTRIES PATHFINDER MODEL TR3310

The **Pathfinder Model TR3310** mainline inspection system from **Aries Industries** operates with long life in harsh pipe conditions. It is a powerful, steerable tractor with a pan-and-tilt camera and self-cleaning lens. Forward weight



distribution results in better traction for long pulls and fast inspections. Continuous-duty-rated motors, all-gear-driven drivetrain and improved pressure testing ensure reliable operation. With various wheel sizes, it sets up quickly to match pipe contours. A standard-configuration tractor operates in 6- to 24-inch-diameter relined pipe. A Large Line Kit provides navigation in pipes up to 36 inches in diameter. An adjustable electric camera lift with a 7.1-inch extension keeps the camera centered in a wide range of pipe sizes for full visibility. It operates with the Aries Master Controller that enables wireless remote operation using a dual joystick Xbox controller for ease of use. **800/234-7205; www.ariesindustries.com**.

CUES DIGITAL UNIVERSAL CAMERA (DUC)

The **CUES Digital Universal Camera (DUC)** is a high-resolution, digital CCTV, side-scanning camera designed for rapid and detailed condition assessment of wastewater systems. It can inspect and assess 5,000 feet or more per day, increasing revenue while reducing expenses. The system produces a high-resolution digital video scan of internal pipe conditions in 6- to



60-inch pipe, and a flat unfolded view of the pipe to facilitate rapid assignment of observations. An expanded flat unfolded view of the pipe is provided for measurement purposes. This low-maintenance camera has no moving parts and is driven through the pipe without the need to stop or pan and tilt. Drive the unit on cruise control to the remote manhole or through multiple manholes for maximum efficiency. **800/327-7791; www.cuesinc.com**.

DEEP TREKKER DT340

The **DT340** pipe crawler from **Deep Trekker** comes with everything needed to perform a quick and efficient pipeline inspection without requiring a dedicated service truck or additional generators. It includes internal batteries that last between six and eight hours, a lightweight handheld controller with a built-in screen for viewing, wheel track options and plug-and-play integrations, all packed up into two carrying cases. It allows users to access hard-to-reach sites to begin easy pipeline inspections



in just minutes. It is fully submersible up to 164 feet. **519/342-3177**; www.deeptrekker.com.

EASYCAM 5150M

The **5150M** from **EasyCAM** comes with a heavyduty, midsize, 200-foot pushrod that easily navigates in 2-, 3- and 4-inch pipe. It can run cordless up to 12 hours. Its portable hand-held monitor records to an SD card or is available with a Wi-Fi option. The color camera comes with a sapphire lens. Its modular design with plug-and-play components allows repairs to happen quickly. The unit is owner-repairable, drastically reducing the downtime for repairs. **239/260-2056**; **www.easycamllc.com**.



ELECTRIC EEL ECAM PRO 2

The Ecam PRO 2 from Electric Eel allows technicians to quickly inspect 3- to 10-inch pipelines. It includes a stainless-steel-housed, 1.68-inch-diameter self-leveling color camera with sapphire lens, 20-LED light ring and high-resolution CCD element. A flexible camera spring navigates 3-inch P-traps. The auto iris adjusts lighting automatically. The unit comes standard with 200 feet of Kevlar-braided 1/2-inch-diameter pushrod, industry-standard 512 Hz sonde, 10.4-inch daylight-readable monitor with click-touch controls and one-touch recording directly to a USB flash



drive. It has an on-screen footage counter, a two-hour battery with built-in charger, adjustable light controls, 16 pages of text writing with memory saves, voiceover recording, an 8x zoom function, audio/video-out jacks, 8-inch wheels for easy maneuverability, a secure-locking reel brake and powder-coated steel tube and bar construction. **800/833-1212; www.electriceel.com**.

GENERAL PIPE CLEANERS GEN-EYE PRISM

The **Gen-Eye Prism** video inspection system from **General Pipe Cleaners** lets the operator use a tablet or smartphone to monitor and record inspection work. A Wi-Fi transmitter inside the unit sends video to a designated device up to 500 feet away. The compact, rugged command module

weighs 3 pounds and can be mounted securely on any GL or POD reel. An expandable cradle on top of the unit safely supports a standard-size tablet, and adjusts for optimal viewing. Optional brackets for mini-tablets and smartphones are also available. It offers an on-screen distance counter, a nine-page titler with full keyboard, a power port, date and time stamps for records, and an LED dimmer control. Systems include a self-leveling color camera that automatically keeps the picture right side up, and 2-, 3- and 6-inch trap skids. Its 512 Hz transmitter permits quick, accurate camera tracking with a Hot Spot pipe locator. **800/245-6200; www.drainbrain.com**.

HATHORN CORPORATION WI-FI CAMERA SYSTEM

The Wi-Fi camera system from **Hathorn Corporation** delivers 200 feet of pushrod attached to a slim 1.4-inch self-leveling camera head. It includes a 512 Hz sonde transmitter and a rechargeable lithium-ion battery pack, on-screen footage counter and adjustable lighting controls. The user can record video and take snapshots on any type tablet or mobile device up to 200 feet away with a custom mobile app. Recorded files can



General Pipe Cleaners

be emailed or downloaded straight to a computer. The system allows users to recharge their mobile devices directly from the control unit. 905/604-7040; www.hathorncorp.com.

ID-TEC C70

The **C70** camera nozzle from **ID-TEC** is a combination of a video and cleaning nozzle for diagnosing and jetting 7- to 30-inch pipelines. It has seven replaceable jets for cleaning when moving forward, along with a camera and lighting for video recording on the pullback. The video is recorded in the



nozzle and downloaded to special software on a tablet via Wi-Fi when the nozzle is lifted out of the manhole. The software combines GPS coordinates with GIS mapping to determine the nozzle's location and nearby manholes and pipelines. The operator uses the software to review the video or to code the PACP report and to determine if further procedures are required for this line before he moves on to the next. It has internal memory and battery life for at least eight hours. Live view while jetting is optionally possible over Wi-Fi. **503/504-8474; www.sr-series.com**.

INSIGHT VISION CAMERAS IRIS PAN & TILT

The **IRIS Pan & Tilt** mainline crawler from **Insight Vision Cameras** incorporates a motorized crawler and a power rewind/feed assist cable drum. The level rewind reel allows the video cable to be rewound at the same speed as the crawler moves to avoid running over the cable. The unit allows full 360-degree rotation and 180-degree pan for lateral sewer pipe inspection. It can be used for inspection of pipe from 6 to 12 inches in diameter, and up to 18 inches with an optional pneumatic wheelset. The motorized drum holds 600 feet of flexible and rugged



video cable that will withstand the harsh environment found in sewer pipes. It is built with a telescopic handle and self-contained wheels for easy movement and portability. The system operates on Windows 7 64-bit software with 500GB of solid-state drive. The unit incorporates an integrated accessory power outlet, multiple recording ports, HDMI external port, 10-inch LCD touch screen, Windows apps, snapshots, on-screen footage, text writer and internet remote desktop support. **800/488-8177; www.insightvisioncameras.com**.

MEDIT GECKO 9050

The **Gecko 9050** pipe crawler from **Medit** is a heavy-duty inspection device designed to drive down 6-inch or larger pipes. It has an interchangeable panand-tilt camera head with auto-level, a wide-angle field of view, manual focus feature, and built-in high-powered SMD lights to illuminate the inspection area. The camera head, flexible Kevlar-braided cable and two-drive crawler unit are fully waterproof, while the flexible cable is abrasion- and acid-proof. The live



image is displayed on an 8.4-inch color LCD monitor with image and video capture to an SD memory card, a full keyboard to add text to captured files, and an on-screen foot counter. Options include a 512 Hz sonde, larger wheels and a camera raiser. **800/239-9934**; www.fiberscope.net.

MYTANA MFG. COMPANY MS11-NG

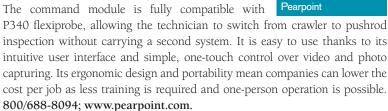
The MS11-NG midsized video inspection system from MyTana Mfg. Company can be used to inspect 3- to 4-inch lines with up to 150 feet of range. It has a 1 1/2-inch color self-leveling camera head; built-in 512 Hz transmitter, allowing a technician to locate during the inspection; and a daylight-readable 6.4inch monitor. Record or upload an inspection using the MyTana viewer app, available for iPhone, iPad



and Android. Built-in Wi-Fi allows multiple viewers on relining/rehabilitation projects. Inspection records can be uploaded to YouTube or still photos emailed to customers. Media connects through RCA jacks on the front of the unit. 800/328-8170; www.mytana.com.

PEARPOINT P350 FLEXITRAX

The Pearpoint P350 flexitrax offers inspection professionals an advanced portable crawler system with the simplicity and transportability of a pushrod system and the functionality and performance associated with more complex crawler systems. It is a modular system designed to meet the tough requirements of most inspection environments. The command module is fully compatible with



R.S. TECHNICAL SERVICES TRANSTAR AND TRAKSTAR

Ideal for assessment of lines 6 to 30 inches in diameter and up to 2,500 feet in length, the TrakSTAR from R.S. Technical Services has a 40x zoom camera in an integrated pan/tilt head with remotecontrolled high-intensity dual LED light



arrays. It has programmable pan/rotate limits with on-screen instructions, home function and onboard diagnostics, including internal pressure and humidity sensors. Options include inclinometer and laser crack measurement diodes. Paired with the TranSTAR six-wheel-drive steerable tractor, dual 90watt motors provide inspection capabilities in larger lines without the need for additional gear trains or transmissions. It has three forward speeds, reverse and freewheel for rapid retrieval, a tilt-up connector and integrated rearview camera. Optional elevator systems and multiple tire configurations make this combo versatile. 800/767-1974: www.rstechserv.com.

RATECH ELECTRONICS PAN N' TILT PUSH CAMERA

The Pan n' Tilt Push Camera from Ratech Electronics can be used in pipes and drains as small as 4 inches in diameter. Originally used as a mainline camera, the unit has been redesigned to fit into small lateral pipes. Now the user can see everything closer and at different angles with a pan-and-tilt attached to the push cable. This camera can be purchased as a retrofit to existing Ratech systems or as a stand-alone unit. It rotates fully 360 degrees and 210 degrees up and down, allowing the user to view the pipe condition easier and in more detail. An



optional steerable gooseneck assists the camera in the direction the tech needs it to go. Combining it to a Ratech control unit such as the Elite SD provides recording capability using SD/USB drives and allows MPEG video capture and JPEG image capture of pipe inspections. It comes with a 512 Hz sonde, an onscreen text display overlay system, electronic distance counter, time, date and eight pages of memory. Standard Gel-Rod cable length supplied is 200 to 400 feet. 800/461-9200; www.ratech-electronics.com.

RAUSCHUSA MOBILE PRO

The MOBILE pro portable mainline system from RauschUSA has a lightweight cable reel with built-in 12-inch monitor. The dual-joystick control unit, which fits in a 17-inch-square footprint, can easily fit into the bed of a truck or ATV. Professional-quality videos and photos can be recorded directly to the system via SD



card, or an optional laptop can be connected for use of industry-standard data collection software. The Cubix 300 motorized cable reel, loaded with up to 1,000 feet of cable and electronic distance counter, connects to the powerful C135 tractor, which includes inclination, remote-controlled electric lift, fourwheel-drive steering and a rear-viewing camera. The KS 135 C camera has infinite rotation for continuous joint inspection, built-in lasers for crack and joint measurement, and 120-1 zoom. The unit can be used in 6- to 96-inch pipe diameters. 877/728-7241; www.rauschusa.com.

SEAROBOTICS TANKBUG

The TankBUG from SeaRobotics provides safe and cost-efficient removal of sediment and debris from water storage facilities and reservoirs. The remotely operated vehicle system is built around a compact vehicle base. On the front end, an articulated suction and brushing assembly has been optimized to handle the



rigors of working on ground and elevated storage tanks. Applicable to steel, concrete or fiberglass, the unit enables cost-effective cleaning and inspection of all sizes and types of tanks. Cleaning and inspection of in-service tanks without the use of divers reduces the cost of maintenance, and if done regularly, improves tank life. Optional plate and coating thickness and other sensors can improve the inspection process and provide data for comprehensive inspection reports. 561/627-2676; www.searobotics.com.

SOURCE ONE ENVIRONMENTAL PORTABLE CRAWLER SYSTEM

The portable crawler system from Source One Environmental is an advanced and portable sewer video inspection system. This all-in-one system incorporates a motorized crawler, power rewind and feed assist cable drum. Using a pan-and-tilt camera, the crawler has 360-degree rotation and CONTINUED >>

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VIVAX-METROTECH TYPE-CP INSPECTION SYSTEM

The **Type-CP Inspection System** from **Vivax-Metrotech** gives municipalities and plumbing contractors a low-cost tool to inspect mainlines. The system's reel comes with either 200 or 400 feet of stiff pushrod that's flexible enough for easy entry and turns. The 1.8-inch D46-CP self-leveling camera can be used to inspect 4- to 8-inch pipes. The adjustable Type-B skid has a range from 8 to 12 inches. The system includes the vCam-5 Control

Module with an 8-inch color LCD; transmitting sonde; digital recording to USB thumb drives, SD cards or to the internal hard drive; full-function keyboard; internal microphone; AC/DC power; rechargeable batteries; distance counter; and camera LED brightness control. The control module ships ready to use with PACP software such as POSM, WinCan and MuniXS. **800/446-3392;** www.vivax-metrotech.com.

WOHLER USA VIS 350

The Wohler USA VIS 350 visual inspection system provides everything needed to inspect pipelines, precisely locate damage and accurately document the results of the inspection. It can be used to inspect waterlines of 2 inches and larger with a pan-and-tilt camera head to ensure no damage is overlooked throughout the pipeline. The



Vivax-Metrotech

e Wohler USA

camera head has an integrated transmitter that facilitates location detection by the Wohler L 200 Locator, which has an easy-to-read color display. Technicians can record video footage and store photos on a 2GB SD card for documentation and archiving purposes. **978/750-9876; www.wohlerusa.com**.

ZISTOS PIPE & VAULT INSPECTION SYSTEM

The **Zistos Pipe & Vault** inspection system is designed to perform safe inspections from street level of underground vaults, pipes and manholes for maintenance conditions, cracks and corrosion without the need for confined-space entry. The batterypowered display and submersible video pole camera system allow the operator to visually assess areas for problems. The system uses a built-in 432-1 zoom camera with LED illumination, which connects to an



articulating/telescoping pole that can pivot 180 degrees in either direction.

Images are viewed on a 5.6-inch LCD display with a built-in DVR recorder. It can record live video or still images to an SD card, enabling maintenance and repair operations to be documented. A built-in GPS receiver can display and record location information on the video as coordinate data. **631/434-1370**; www.zistos.com.

LASER PROFILERS

ENVIROSIGHT ROVVER X LASER PROFILER

Attaching in seconds to the ROVVER X inspection crawler, the laser profiler accessory from **Envirosight** helps geometrically profile the inside of buried pipelines. Captured profile data is readily analyzed to verify proper pipe



installation, plan relining projects, determine remaining pipe life, monitor erosion/corrosion, quantify defects and analyze partial collapses. The accessory attaches without tools and requires no electrical connections. A hinged mounting system makes it easy to deploy in tight spaces, and twin carbon fiber arms ensure extra rigidity. It can profile lines up to 18 inches in diameter when mounted directly to the ROVVER X crawler. Larger lines are addressed by mounting the accessory to a skid that is pulled by the crawler. Profile data can be transferred seamlessly to WinCan inspection software, the laser module of which can trend diameter and deformation frame by frame to generate a solid model, ovality graph or color plot. It operates up to 16 hours on a single AA battery. **866/936-8476; www.envirosight.com**.

MAPPING SOFTWARE/SYSTEMS

IBAK 3D-GEOSENSE SYSTEM

The **3D-GeoSense** system from **IBAK** uses a sensor in the camera to provide users with a 3-D map of the lateral. The XYZ coordinates can be determined when the camera is moving both forward and backward, immediately providing the operator a real-life site plan with the width, length and elevation data of the lateral being inspected. It can be used in push or lateral launch applications. Additional third-party software is required. **800/656-4225; www.rapidview.com**.



PIPELINE ANALYTICS WINCAN VX

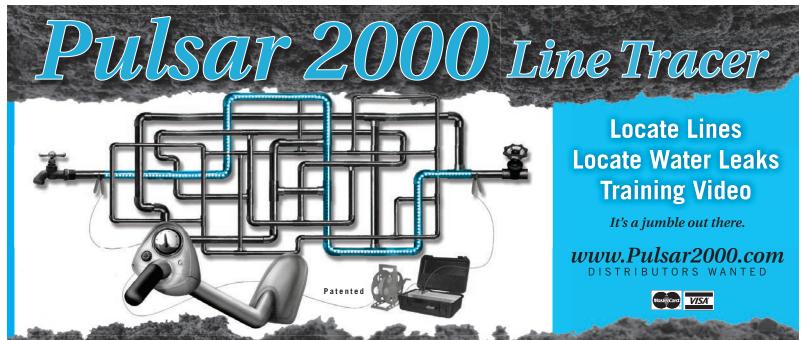
WinCan VX from Pipeline Analytics emphasizes a productivity-oriented, fully customizable user interface with cloud-based data access and substantially enhanced reporting and analytical capabilities. It offers new support for valueadded processes like pipe cleaning, rehabilitation and leak detection. It can help augment existing

functional areas like GIS, laser/sonar scanning, side scanning, image measurement and municipal database integration. To accommodate large municipalities, it has been performance benchmarked on databases exceeding 5 million records. **877/626-8386; www.pipelineanalytics.com**.

CONTINUED >>

Pipeline Analytics





The **Pulsar 2000** line tracer is designed primarily to locate metallic pipes. The Pulsar 2000 is a directional line tracer. Connect the Pulsar's powerful and unique transmitter to your target pipe and locate only that pipe. Locating can be accomplished under floors, in walls and in ceilings. The Pulsar 2000 does not require grounding.

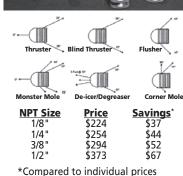
Leak detection personnel... The Pulsar 2000 is a must have locator. Now you can quickly identify the pipe location, thereby reducing the search area of the leak.

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you want to learn more about the Pulsar 2000 and our leak locating equipment, please call **1-888-752-5463** or e-mail **jsmll@aol.com** for a free demonstration video or CD and references of satisfied customers.

We have been using the **Pulsar 2000** along with the XL2 fluid detector and Geophones since January 1989 in our leak locating business. Our leak locates are **accurate 95% of the time**, but I can honestly say, the line we trace is always there. Our equipment is userfriendly and requires very little training, as you will see on the video. Purchase the **Pulsar 2000** line tracer, XL2 fluid detector and Geophones, and start locating leaks immediately.







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SONAR PROFILING

IDS NORTH AMERICA STREAM EM

Stream EM from **IDS North America** is a vehicle-towed radar solution for extensive 3-D mapping of underground utilities and features. To accomplish this task, it uses massive arrays of multi-polarized, multi-frequency antennas.



The use of a massive array enables it to perform fast scans of large areas while maintaining a high level of accuracy. Being multi-polarized provides optimal detection of both longitudinal and transversal features without the need to perform multiple scans. It is easily dismountable, enabling it to be transported in a van. It can be reconfigured for mapping sidewalks and difficult areas. It includes a massive array of 40 antennas in two polarizations, the ability to be towed by a vehicle up to 9 mph while running continuously, accurate to as little as 2 inches with GPS or total station integration, professional subsurface survey with ability to transfer data to CAD and GIS formats, and advanced acquisition and navigation software. **303/681-8775; www.idscorporation.com**.

RADIODETECTION CORPORATION RD1500

The **RD1500** ground-penetrating-radar utility locating system from **Radiodetection Corporation** includes an internal GPS, onboard Wi-Fi and a highresolution touch screen. It allows users to create depth slices and review their locate path on screen while on site, and selectively enhance shallow/small, medium



depth/size, or deep/large targets using FrequenSee. By recording grid scans, users can view not only line views but also perform depth slices, increasing the clarity of the collected data. FrequenSee exploits the wide-bandwidth antenna and allows the user to select the low, medium or high part of the frequency spectrum to focus on the desired features, selectively enhancing small, medium, large or all targets for easier viewing and detection. It includes an external GPS and the Enhancement package, which enables PC users to slice through the exported depth data and export data to other formats. **877/247-3797; www.radiodetection.com**.

RIDGID SEEKTECH SR-24 LINE LOCATOR AND RIDGIDTRAX APP

The **RIDGID SeekTech SR-24 Line Locator** paired with the **RIDGIDtrax app** simplifies locating jobs and streamlines the creation of accurate maps of underground utilities to protect critical assets. The SR-24 is a locating receiver that uses integrated Bluetooth communications to transmit data and GPS coordinates to a mobile device. Its omnidirectional antennas capture the complete signal field, making it easy to locate a line and follow its path. Pairing an SR-24 with the RIDGIDtrax app for iOS or Android allows for creation of



visual maps of underground utilities using a phone or tablet. Multiple lines can be traced, color-coded and named on an overhead satellite image of a job site. The SR-24 weighs 3.5 pounds, has a battery life of eight hours, wireless range of 200 yards and can be programmed to detect any active frequency from 10 Hz to 35 kHz. **800/769-7743; www.ridgid.com. c**





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Mainline Sewer Inspection

By Craig Mandli

PROGRAM ALLOWS CITY TO SCAN 3,000 FEET OF PIPE QUICKLY

PROBLEM

The city of Muscatine, Iowa, experiences high-flow conditions in its sanitary sewer interceptors that run through flood control levees on the Mississippi River. As a designated critical sewer, the U.S. Army Corps of Engineers ordered the city to inspect its interceptors on a regular basis. However, bypassing and dewatering high-flow pipes so they can be taken offline to accommodate CCTV inspection can be an expensive and time-consuming process, often with mixed results.



SOLUTION

The city chose instead to use low-voltage conductivity to test its largediameter mains. By turning off the pump station and allowing a temporary buildup in effluent flow, **Electro Scan**, in partnership with Municipal Pipe Tool, was able to inspect all 3,000 feet (12 segments) of 24- and 27-inch CIPP-lined RCP in less than a day and half. Additionally, defects often not seen on CCTV were located and quantified in gpm. All work was done in accordance with ASTM F2550 and newly issued 7th Edition, Volume 1, of the *Operations & Maintenance Manual of Wastewater Collection Systems*.

RESULT

While nine of 12 pipes had little to no defects, two segments had multiple defects. In fact, combined defect flows for the two pipes accounted for nearly 80 percent of the infiltration flows for the 3,000-foot project. The city was happy with the speed and efficiency of the project and the level of data provided. **800/975-6149; www.electroscan.com**.

SONAR SYSTEM USED TO IDENTIFY BLOCKAGES IN LONG PIPE RUN

PROBLEM

A Kansas municipality needed to locate and clear a pipeline blockage in a line with a 10,000-foot reach. The downstream end had a valve that machinery could potentially become lodged in, complicating the project.

SOLUTION

Hibbard Inshore used a submersible float with multiple sonars to identify the



debris/blockage within the pipeline. Forward-looking sonar continuously updates, has a field of view of 120 degrees and can see objects up to 50 feet ahead of the vehicle. The company was able to obtain real-time feedback of the vehicle's progress to ensure it did not swim past the valve. The forward-looking sonar also filled in the gaps between profiles to ensure they were not missing any areas of higher debris between scans and abnormalities.

RESULT

The forward sonar identified one such feature and its location — a grate that was at the invert of the pipe. If not dealt with, the grate may have been forced downstream into the valve over time, causing major operational issues. **248/745-8456; www.hibbardinshore.com**.

ACOUSTIC INSPECTION REDUCES PRECLEANING IN CCTV INSPECTION PROGRAM

PROBLEM

Hillsborough County, Florida, serves a population of over 500,000 in the area surrounding Tampa. They have set an internal goal of CCTV inspection of approximately 1,700 miles of gravity sewer over the next five years. Management wanted to maximize the efficiency of the process and target their precleaning efforts on the pipes that needed it.



SOLUTION

The Sewer Line Rapid Assessment Tool (SL-RAT) from InfoSense was developed for rapidly identifying sewer line blockage conditions. It is based on measuring an acoustic signal transmitted between manholes in an active sewer line segment. Commonly encountered sanitary sewer defects such as roots, grease and breakages naturally obstruct acoustic energy; this changes the pipeline's acoustic properties and produces a measurable impact on the acoustic profile. An algorithm is used to exploit these variations and provide a real-time evaluation of the segment's blockage condition. A two-person crew can typically screen 2 to 3 miles of sewer per day. The units are GPS-enabled. Downloaded data can be visualized in Google Earth or integrated with a GIS system using SHP file exports.

RESULT

Hillsborough County purchased two SL-RAT units in mid-2015. In the first eight months of operation the technology had screened over 170 miles of their system and reduced unnecessary precleaning activity by over 80 percent, saving the county over \$500,000 so far. 877/747-3245; www.infosenseinc.com.

DIGITAL TECHNOLOGY IMPROVES INSPECTION EFFICIENCY

PROBLEM

Taylors Fire and Sewer District in Taylors, South Carolina, is party to a 2006 agreement with Renewable Water Resources that requires elimination of inflow and infiltration in their wastewater collections system



by 2021. This municipal subdistrict serves 10,000 parcels in central Greenville County, and is responsible for 130 miles of gravity line and 3,602 manholes. Aside from nine inline flow monitors and some spotty legacy analog inspection records, Taylors had no empirical system data. They'd need to inspect their entire system, identify problem areas, then plan, schedule and budget for rehabilitation.

SOLUTION

In 2008, they replaced an old CCTV rig with a Ford F450, outfitted with a CUES K2 Base Station and TV reels. Inspection software now includes **PipeLogix** with **Lateral Module**, and the Cityworks/ArcGIS CMMS integrated digital utilities management package, used to locate assets, manage workflow, prioritize repairs and issue work orders. Taylors ports PipeLogix information directly to Cityworks for upper management to review work orders and work to date. The all-digital inspection system allows all units to connect and share data, decrease significant man-hours required by clunky analog systems, and eliminate errors introduced into analog data through a less-than-accurate analysis and reporting process.

RESULT

The efficiency has allowed the district to exceed their goal of inspecting at least 8 miles of line annually, with the project on track for completion by 2020. **866/299-3150**; www.pipelogix.com.

LOCATOR AND CAMERA SYSTEM LEADS PLUMBER TO DRAINAGE ISSUE PROBLEM

A Kentucky plant manufacturing solid rod towers and monopoles was having a drainage issue. The plant was bought from a previous owner, so the current occupants didn't have drawings of the sewer lines for the building. They did know that the system consisted of old cast iron pipes buried in dirt under 8 inches of concrete.



SOLUTION

The company owner called Logan Higginson of A-1 Septic & Plumbing Services in Henderson, Kentucky. Higginson used his **Spartan Tool** locator and **Sparvision200** camera system to survey the pipes. He discovered that the entire plumbing structure ran underneath the 7-acre building. He was also able to use the locator to pinpoint the location of the problem. Scale buildup was causing debris to get caught in a pipe 7 feet underground. They would have to dig through the concrete and dirt to get to the pipe and replace it, using trench boxes for safety since the pipe was so deep.

RESULT

With the CEO and maintenance crew watching, digging started and A-1 led them directly to the problem. "Having (them) looking over your shoulder, then hitting your mark is awesome," says Higginson. "I wish we would have gotten into this a long time ago." **800/435-3866**; www.spartantool.com.



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PRODUCT NEWS •

PRODUCT SPOTLIGHT

Isuzu FTR Class 6 medium-duty truck returns to market

By Luke LeNoble

The 2018 Isuzu FTR Class 6 medium-duty truck from Isuzu Commercial Truck of America offers a four-cylinder engine for greater fuel efficiency and a low-cab-forward design for better visibility and improved maneuverability.

The 25,950-pound GVWR truck is slated to go into production in mid-2017, marking Isuzu's return to the Class 6 medium-duty truck segment.

"Up until 2009 we had a Class 6, low-cab-forward vehicle," says Brian Tabel, executive director of marketing. "We've had a number of customers over the years still request and have a demand for our truck. Over the course of a period of time, we've done research to determine the best avenue for us to bring the truck back to market.

"The truck will be assembled here in the United States and, similar to its predecessor, have a lot of domestic-supplied components that will ultimately make up the truck."

Owners have the option of a 50- or 100-gallon fuel tank. The truck will be powered by Isuzu's 4HK1-TC 5.2-liter turbocharged, four-cylinder diesel engine and mated to an Allison 2000 Series automatic transmission.

"Probably where it's going to be the most unique is by having a four-cylinder engine in a Class 6 truck," Tabel says. "From an overall cost of ownership and operation of the vehicle, it will be quite a bit



different than anything else that's in the marketplace."

The engine carries a B10 durability of 310,000 miles, which means that 90 percent of engines should reach that mileage before requiring an overhaul. Horsepower, torque and other ratings have not been finalized.

"The overall cost of ownership for any of our vehicles is probably priority No. 1," Tabel says. "With how fuel-efficient the truck operates, and if they can keep the truck on the road, then it really benefits them for their overall business. Also, as future emission requirements come upon us from the government, it's going to be driven more on smaller, high-fuel-efficient diesel engines and that's another reason that we've moved in this direction."

Eight wheelbase configurations can accommodate bodies from 16 to 30 feet, allowing for a wide variety of body applications. A clean backof-cab design provides more space for body applications compared to the previous F-Series truck.

Wide-step and wide-opening doors allow for easy entry to the cab, which features three-across seating and extra storage space behind the seats. Additional interior amenities include a side-under safety mirror, overhead console and a suspension driver's seat. 877/478-0828; www.isuzucv.com.



VAC2GO CERAMIC-LINED PORTHOLE ELBOWS

Ceramic-lined porthole elbows from Vac2Go are designed to last longer than steel elbows and reduce downtime. Ceramic-lined porthole elbows feature wear resistance, extending the life of vacuum truck fittings. Elbows are available in 45 and 90 degrees. **855/822-7426**; www.vac2go.com.

COXREELS STAINLESS STEEL REELS

Z Stainless steel and powder-coated steel reels from COXREELS are available in either 316 or 304 grade to best match the corrosion resistance of the reel to the application. 800/269-7335; www.coxreels.com.

SUPER PRODUCTS WASTEWATER RECYCLING SYSTEM

The Camel 1200 sewer cleaner from Super Products features a wastewater recycling system designed to save operators water, time and money. A six-stage water filtration process enables effective sewer cleaning without the need to refill the freshwater tank. An injector plate serves as a primary filter that separates solids from liquids collected in the debris body (12-yard capacity). The collected water travels through a series of filters, strainers and a separator that removes particles from the liquid via centrifugal action. The unit also features a water pump designed for wastewater recycling and high-pressure applications. 800/837-9711; www.superproductsllc.com.





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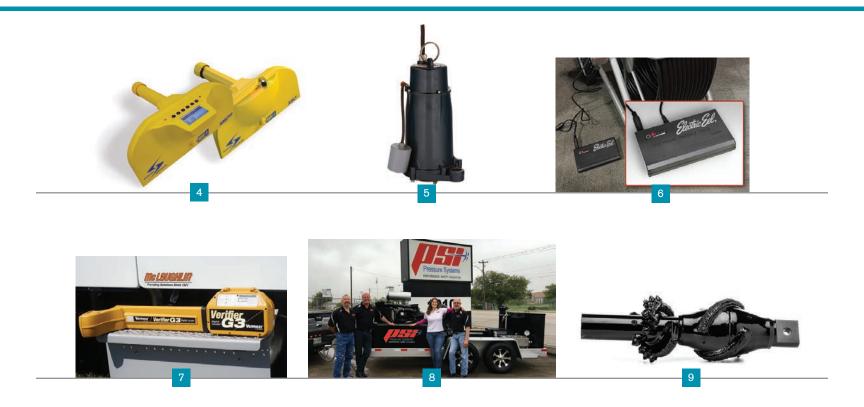


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AML Pro and AML+ all-material locators from SubSurface Instruments use ultrahigh radio frequencies to locate buried plastic, metal, wood, cable and pipe in any soils at depths of more than 20 feet. Locators feature digital microprocessor technology, a lithium rechargeable battery pack and GPS reporting, eliminating the need for an auxiliary piece of tracking equipment on the job site. **855/422-6346**; www.ssilocators.com.

FRANKLIN ELECTRIC GRINDER PUMPS

O IGP Series grinder pumps from Franklin Electric operate across 208 to 230 volts. The IGP-A (automatic) and IGP-M (manual) are designed to handle low-pressure sewage applications and feature a cutter system that operates at 414,000 cuts per minute. Other features include a non-clogging, corrosion-resistant brass impeller with a shut-off head of 130 feet and a 2 hp single-phase, 3,450 rpm start/run motor with built-in overload protection. **260/824-2900**; www.franklinwater.com.

ELECTRIC EEL MFG. PORTABLE BATTERY PACK

The portable battery pack from Electric Eel Mfg. is designed for use with the Ecam Ace, Ace Wi-Fi and Ace 2 pipeline inspection cameras. The lithiumion battery pack operates up to five hours. Features include a battery gauge and low-power alarm. Output voltages are 12 volts via DC jack and 5 volts via USB port. Batteries come with a wall adapter for charging. 800/833-1212; www.electriceel.com.

MCLAUGHLIN UTILITY LOCATOR

The Vermeer Verifier G3 utility locator from McLaughlin features a durable design with antennas mounted in rubber isolators for tough job site conditions. A new combination screen eliminates the need for users to toggle between screens. Users can engage the semiautomatic gain on urban or congested job

sites where signal distortion is common, or use the manual gain method when working in less congested areas. Estimated depth is automatically displayed instead of having to manually press a button. A compass icon provides straightforward visual representation of a utility's position in reference to the receiver. **800/435-9340**; www.mclaughlinunderground.com.

8 PSI PRESSURE SYSTEMS CORP HIGH-PRESSURE PUMPS

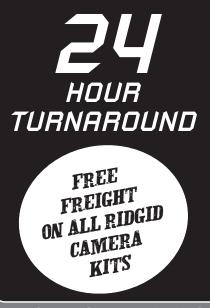
The NX-Series (NX-365, NX-600 and NX-800) of high-pressure pumps from PSI Pressure Systems Corp are designed for waterblasting applications. Operators can match most nozzle sizes with the unit displacement because of the pumps' standard transmission and electronically controlled engine. The Smart Water System conversion system operates in a pressure range of 8,000 to 40,000 psi (300 bar and 2,800 bar) without having to change or remove the discharge manifold, accessory manifold, rupture disc assemblies or pressure gauges. Pumps cannot be operated with a conversion kit that does not match the rupture disc. **855/775-5055; www.psipressuresystems.com**.

DITCH WITCH BACKREAMER

The Sandhog HD backreamer from Ditch Witch is compatible with the JT9, JT20, JT25 and JT30 horizontal directional drills and is designed for soft and sandy soils. Aggressive cutting, mixing and packing combine for more efficient pullback on the job. Carbide cutting teeth and spiral plates further improve pullback efficiency and lower torque while maximizing the capacity for fluid flow. A barrel-shaped body is designed to better sculpt a true-to-size bore path. Replaceable, hardened steel nozzles increase fluid flow flexibility. The backreamer is available in 2 3/4-inch shaft size with 2 IF threads and 3 1/4-inch shaft with 2 3/8 API threads ranging in diameter from 8 to 18 inches. 800/654-6481; www.ditchwitch.com. **c**

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RapidView IBAK North America adds two dealers

RapidView IBAK North America added Sewer Equipment of Illinois as the exclusive dealer for RapidView IBAK North America pipeline inspection and rehabilitation equipment in northern Illinois and Wisconsin and Sewer Equipment of Kansas as the exclusive equipment dealer in Kansas.

RauschUSA adds two distributors

Fredrickson Supply (Grand Rapids, Michigan) and GPM Equipment Solutions (Arlington, Texas) joined the RauschUSA network of authorized distributors and will offer the entire line of RauschUSA pipeline inspection products.



Isuzu produces 30,000th N-Series gas truck

Isuzu Commercial Truck of America produced its 30,000th Isuzu N-Series truck on June 10 at the Spartan Motors facility in Charlotte, Michigan. Assembly of the N-Series gas trucks began at Spartan in April 2011.

Makita U.S.A. wins vendor award

Makita U.S.A. was named Sphere 1 Vendor Partner of the Year for the second straight year at the membership's annual meeting in Orlando, Florida. Makita U.S.A. earned the best overall score on the Sphere 1 Annual Support Card, which ranks all 97 vendors on six separate criteria. Sphere 1 is a cooperative of independent tool, fastener and concrete accessory distributors.

Hydra-Flex relocates headquarters

Hydra-Flex, manufacturer of fluid-handling equipment, moved its office and manufacturing facility to a larger site in Eagan, Minnesota.

Woolpert names president

Scott Cattran was named president and CEO of Woolpert. Cattran has been with the national architecture, engineering and geospatial firm for 17 years, joining the company as phase manager in 1999.

Cityworks adds three employees

Cityworks announced the hiring of Bridget Suda, Gregor Wilke and Larry Solien. Suda joined the sales department while Wilke and Solien became part of the client relations team. The company also promoted Greg Walters to a position in the client services department.

Virgo Fleet releases new catalog

Virgo Fleet, a retail supplier of truck accessories, released a new 84-page product catalog. Buyers can browse items in the catalog on the company's website, virgofleet.com.

LMK Technologies exec named to trenchless technology board

Rick Gage, vice president of sales at LMK Technologies, was named to the board of directors for the Midwest Society of Trenchless Technology. The nonprofit organization was established in 1998 to promote trenchless technology education and its benefits.



ASTM F2561 standard renewed for more five years

The ASTM international committee voted to renew ASTM F2561 for another five years. ASTM F2561-16 is the standard practice for rehabilitation of a sewer service lateral and its connection to the main using a one-piece main and lateral CIPP liner.

Dwyer Group names vice president

Lori Johnson was named vice president of brand management for the Dwyer Group. Johnson will guide the brand management teams for Mr. Rooter, Rainbow International, Glass Doctor, Mr. Electric, Aire Serv and Dwyer Group International.



Lori Johnson

Wastequip announces dealer network for OEM parts division

Wastequip's Go To Parts division signed exclusive agreements with 10 dealers covering the South, Southeast, Midwest and Mid-Atlantic regions.

McAlpin joins Nexstar Network sales team

Nexstar Network added Lucas McAlpin to its membership sales team. McAlpin has worked in the plumbing, heating, cooling and electrical trades for eight years and has 15 years of sales experience.



Cretex Speciality Products redesigns website

Cretex Speciality Products redesigned its website, www.cretexseals.com. New features include mobile optimization, easier navigation, product landing pages, and representative and distributor locator maps.

Itron signs contract to improve water access in Mali

Itron signed a contract with the Malian Drinking Water Supply Management Company, water provider to 160,000 customers in Mali, to help the utility improve its water supply and decrease nonrevenue water.

SubSurface Instruments acquires distributorship for Fuji Tecom locators

SubSurface Instruments acquired the master distributorship for the entire range of Fuji Tecom pipe and cable locators. **c**

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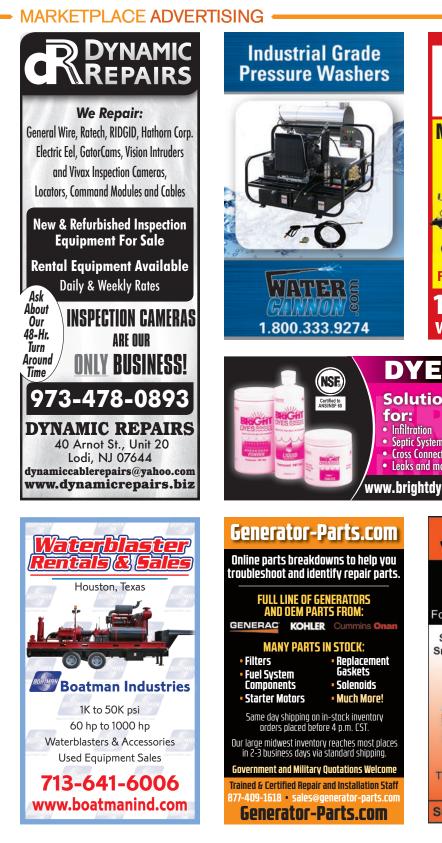
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1974 Ford F-600 jet truck: 23,000 GVW, 1,650 psi, 65 gpm. 300 Cl industrial engine for pump with 500 ft. of hose on truck, reel plunger, Myers pump. Works well. Great truck for sewer and drain company. Needs a little TLC. \$11,000. 801-807-8335 (C09)

1996 International 4600: DT 466, 250,000 miles, 1,800 gallons, Battioni 380cfm pump. Pump just rebuilt. Good compression on engine. Starts in cold every time. 970-456-9972 (C10)

Used and rebuilt cable machines in stock: RIDGID K-7500, K-40, K-60, K-1500, Spartan #1064, #300, #100, Electric Eel model #C machines. The Cable Center: 800-257-7209. (CBM)

2004 Sterling Camel Hydrovac. One owner, 46,000 miles, \$50,0000. 2006 Sterling Camel Hydrovac. One owner, 41,289 miles, \$135,000. 916-747-3819. Request pictures at cdscar@aol.com (C09)

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New 3,200 U.S. gallon, carbon steel, DOT certified 407/412 vacuum tank; dump type with full open rear door and a Presvac PVB-750 vacuum-pressure pump installed on a 2016 Peterbilt 348 cab and chassis. (Stock #13634A-D) www.VacuumSalesInc. com, (888) VAC-UNIT (822-8648). (CBM)

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2004 Freightliner FL80 Vactor 2100 combination sewer cleaner/hydroexcavator. 6-cylinder Cummins main engine. Allison automatic transmission. 12-yard debris tank. Hydroexcavating package w/washdown gun. 1,500-gallon capacity water tank. 6-cylinder John Deere aux. engine, dual fans (3,750cfm). Many recently rebuilt components including: 80qpm/2,000psi water pump rebuilt 2015, main engine fuel pump and injectors, aux. engine new injectors, torque converter, cotta transmission new 2015, new fans in 2015 and brand-new tires. Great catch basin unit, well maintained and well cared for.

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2007 Sterling Vactor 2100PD tandem-axle combination cleaning truck. Ex-city owned, well maintained, and equipped with California Carb Compliant DPF System. See details of this unit and other cleaning and CCTV inspection units at www.empireequip.com. Contact Craig at 714-639-8352. (CBM)

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Vactor 2100 body parts unit with blower on a 2005 Sterling (no engine & transmission) (Stock# 0311V) www.VacuumSalesinc.com (888) VAC-UNIT (822-8648) (CBM)

Vac-Con V390LHA combination unit with Roots 827 blower, 1999 International Model 2554 cab and chassis. (Stock #3918C) www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648). (CBM)

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Used RIDGID NaviTrack, Gen-Eye Model 100 and Goldak Model 4400. The Cable Center 800-257-7209. (CBM)

Water leak detector. Goldak 4360 combo kit includes 5600 pipe locator and 777A water leak detector. Like new. For sale: \$1,900. 325-347-5802 (C09)

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PUMPS



Honda model WP40X, 8 hp, 4" with hoses. Honda 4 hp, 2" pump with hoses. The Cable Center: 800-257-7209. (CBM)

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Liquid vacs, wet/dry industrial vacs, combination jetter/vacs, vacuum street sweeper & catch basin cleaner, truck & trailer mounted jetters. All available for daily, weekly, monthly, and yearly rentals. VSI Rentals, LLC, (888) VAC-UNIT (822-8648) www.vsirentalsIIc.com. (CBM)

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2015 IBAK Premium Mainline Pipe Inspection System installed in '05 trailer. Includes equipment rack, workstation, and desk. Orpheus, T76 tractor, KW305 reel, 1,000' mainline cable, BS 3.5 vehicle-mounted control panel. Call Matt 618-566-3003 (C09)

Envirosight Rovver 125: Includes a lightly used 650' cable that was purchased for \$7,200 last summer. Additional 550' cable. Last time it was used was in May 2016 and a circuit board burnt out. We are using a different brand of sewer cameras at this time and are not interested in repairing the system. \$3,500. For more information please email swedlundmidwest@frontiernet.net. (C09)

Aries Saturn case unit: Approximately 750 ft. cable, pan and tilt camera, setup for DVR, lots of extras. Also comes with Aries push cam. This system works good. \$15,000. dlamke@envspec.com 920-261-4000 (C09) CUES Inspector General portable 800' with DVD, OZII, extensions, rollers, guide. Low, low, low hours. Mike@roaringforkrooter.com for photos inquiry. 970-456-9972 (C10)

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Used SeeSnake Camera Systems in all sizes; Used General Wire Spring Camera Systems in all sizes; Used machines in all sizes. We want your trade! The Cable Center: 800-257-7209. (CBM)

2001 Chevy 2500 TV van. 30,000 miles. RST camera & tractor, POSM software. One owner. \$35,000. Pictures upon request at cdscar@aol.com 916-747-3819 (C09)

2009 RST 6" to 36" mainline TV inspection system complete, less vehicle. Steerable wheeled tractor, pan, tilt and zoom camera with diagnostics. Cable reel with 1,200' of single conductor cable, computer, controllers and more. \$26,000. For an equipment list visit www.northernsewerequipment.com or call Bruce at 605-575-7060. (C09)

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2005 CUES F550 diesel 16 ft. box truck. Full-opening rear doors, 62,000 miles, cityowned. Diesel generator, CUES equipped, 1210 reel, 1,000 ft. gold cable, 1208PCU, ProData 2000, LCD monitors, desk controllers, CUES Shorty OR Pipe Ranger, OZ 2 camera, onboard water. Pictures available on request. Call Alan Grant at CTC LLC for further details - 404-915-0063. (C09)

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Used and rebuilt camera kits in stock: RIDGID Mini Compact, Mini Color, Standard Self-Leveling, General Gen-Eye I, II and III, Aries Seeker, and SRECO kits. The Cable Center: 800-257-7209. (CBM)

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