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SEPTEMBER 2019
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FINDING A NICHE



A PLUMBING FIRM FINDS GROWTH AND EXPANDING
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ON THE COVER

Steve Palmer spent many years of his career starting and developing plumbing companies for other people. When he saw the trenchless relining trend continue to grow, he decided to embrace that specialty and start a business of his own, Lining & Coating Solutions in Olive Branch, Mississippi. (Photography by Will Vragovic)

COMING IN OCTOBER

CIPP Lining Methods & Projects

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- Audible battery alarm
- Winch mount for easy loading and unloading
- High Quality Stainless Steel & Brass Fittings
- Removable Top handle for easy storage

Motor: 23 hp Briggs & Stratton V-Twin
Fuel: Gas / Propane
Pump / Pressure: 8.5 GPM Pump @ 3,600 PSI
Frame & Reel: 100% Stainless Steel
Hose: 300' of 3/8" Piranha Jetter Hose – (5k PSI Max, 12k Burst)
Weight: 341 lbs
Dimensions: 55"H (with handle), 43 1/2" (without handle), 38"L x 25"W

1776 Standard Edition



- Patented Design: U.S. Patent #: D802,241
- Electric / Remote Start • Hour / Battery Gauge
- Pulsation Valve • Safety Relief Valve
- 13" Flat Free Tires • Audible battery alarm
- Winch mount for easy loading and unloading
- High Quality Stainless Steel & Brass Fittings
- Removable Top handle for easy storage

Motor: 23 hp Briggs & Stratton V-Twin
Fuel: Gas / Propane
Pump / Pressure: 5.5 GPM Pump @ 4,000 PSI
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Patriot - Micro Rod

Push Rod Exterior Jacket: Polypropylene
Push Rod Interior: Fiberglass
Push Rod Diameter: .27"
Conductor Wires: 6
Conductor Wire Size: 28 AWG
Lengths: 100'

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Patriot - Mini Rod

Push Rod Exterior Jacket: Polypropylene
Push Rod Interior: Fiberglass
Push Rod Diameter: .37"
Conductor Wires: 6
Conductor Wire Size: 20 AWG
Lengths: 100', 200'

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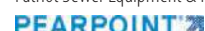


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A Season of Growth

Looking ahead to the next step in your business is always wise, but don't forget to enjoy where you are now

Embrace the seasons of life. And business.

If you look past the cheesiness, it's good advice.

Sometimes it's difficult to enjoy where you are. When it's winter, you wish it was summer; on a sweltering summer day, you might miss the cooler temperatures of autumn. If you live near your family, you're annoyed by frequent visits; when you move a few states over, you miss them like crazy.

It's easy to get caught up in wishing for an ideal situation; it's often less work than appreciating what you have and fully enjoying whatever you're experiencing.



Kim Peterson

Sometimes circumstances force you to think ahead. Our editorial schedule for each issue starts long before the magazine reaches you, and during the summer it's difficult to be planning winter issues. It makes time fly even faster, and the year feels almost over in a lot of ways. So I'm trying to slow those thoughts, and not let planning for winter issues (and 2020 ...) distract me from enjoying my summer.

That's the nice thing about seasons, work, life — everything is cyclical. You'll always have ups and downs, busy seasons and times of struggle, but time marches on. And even when things aren't changing fast enough for your liking, there is plenty to look forward to and enjoy.

When it comes to your business, maybe you won't see growth and change every month. But you don't want your business to grow so fast that it gets away from you. Controlling the trajectory of your business is an important skill to learn.

One company that has this pretty well mastered is PipeFlo Contracting, an Ontario-based pipeline rehab company featured in this month's issue. The company, owned by Bruce and Darlene Noble and their daughter Julia Noble, has doubled its workforce and increased its annual revenue to more than \$10 million in the last 10 years.

The Nobles have focused on slowly adding services that fulfill all their customers' pipeline repair needs and making sure their employees are well trained and happy in order to provide high-quality customer service.

Bruce Noble says the company will continue to grow, but the focus on providing the best technology and best service will never change. One part of that is always staying on top of new technology offerings and continually evaluating the quality and efficiency of field operations. Looking for ways to improve helps foster a mentality of growth: Even if you're only making a small change here or there, any tweak that improves efficiency will pay off down the road.

Noble's philosophy for controlled growth has paid off, and he anticipates further growth in the years ahead. "We tend to take a giant leap forward, then pause to assimilate and integrate the new workload as best we can before we take that next leap," he explains. "We're very cautious when we expand."

Embrace those seasons of growth when they come, and don't stress when things slow down a little. Take that time to catch your breath. Enjoy where you are. Then you can regroup and make your next move.

I hope you enjoy this month's issue. **c**



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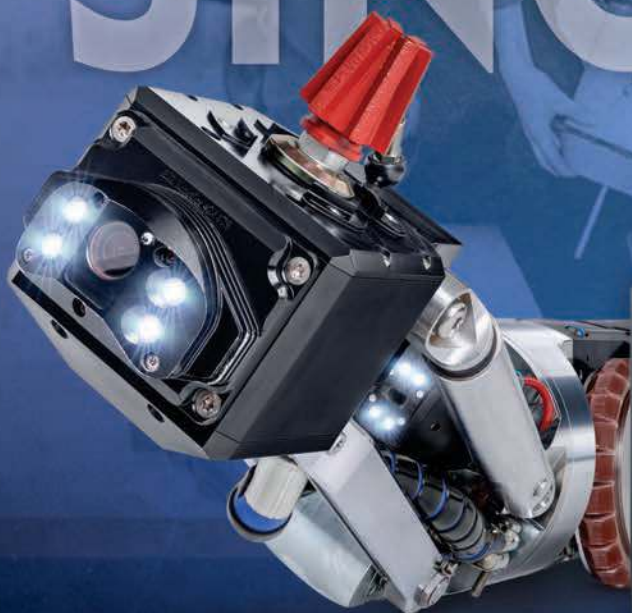
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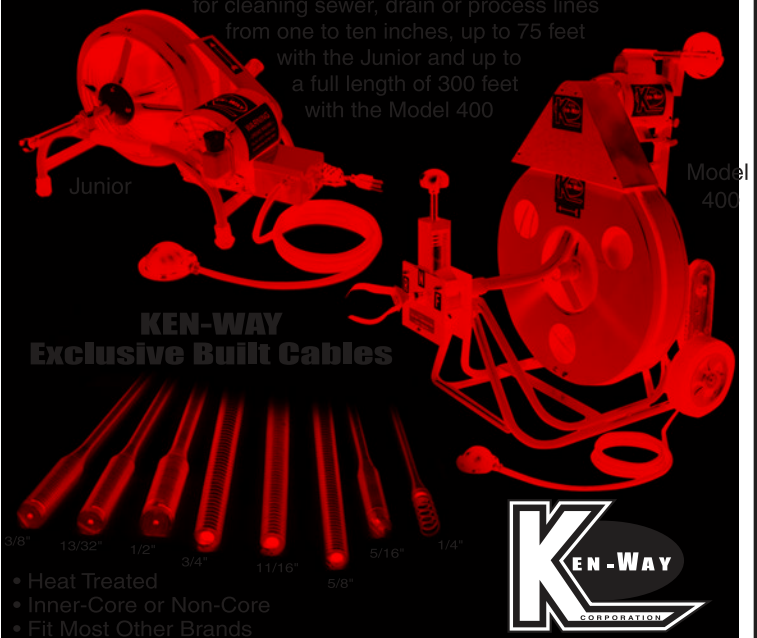
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CLOG FREE

Drain Cleaning Improves Performance of NYC Subway System

Over the summer, the Metropolitan Transportation Authority finally started making progress on a problem that has long plagued New York City's subway system: clogged drains. It meant excess water in the system, which produces many problems such as malfunctioning sensors and switches. Read more about the effort to clear the subway system's 10,000 drains in this online exclusive. >>cleaner.com/featured



THE RIGHT RESIN

What to Consider When Choosing Your CIPP Resin

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"If I drain clean and two weeks later the customer calls again with a backup, they're not going to pay me again. We camera it so that we know it was cleaned and we have proof that it was."

— Camera Inspections Critical to Company Gaining Customer Confidence

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SMART BUY

A Standardized Approach to Equipment Replacement

When it comes to timing the replacement of worn-out equipment, using some intuition is fine, but you'll get the best results if hard data is backing up your decisions. This online exclusive covers a few approaches to equipment replacement, all relying on different aspects of data sets to aid the process.

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- Improves vision.

The Universal Roller Skid

The Universal Roller Skid allows you to use your push camera in ways that were not previously possible.

- For 6" - 18" pipelines.
- Keeps camera centered.
- Maneuvers through 90° corners.
- Increases depth range.
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- Faster inspection.
- Protects push camera.



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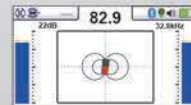
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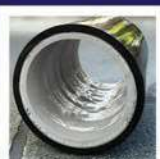
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contractor PROFILE

» Lining & Coating Solutions crew members (from left) Austin Palmer, Chris Vajcovec and Anthony Confalone feed Isituform lining material into a Perma-Liner Top Gun system on a lining job in Lakeland, Florida.



FINDING A NICHE

A plumbing firm finds growth and expanding opportunities by specializing in trenchless technology methods and taking on unusual projects

By Suzan Chin-Taylor //
Photography by Will Vragovic

When Steve Palmer saw the trenchless relining trend developing, he saw opportunity. An industry veteran and master plumber, Palmer made a career out of starting and developing plumbing companies for others. While managing a plumbing department for a large company, he decided to add lining and coating services, and in just a few years, that work was surpassing the plumbing side. When the owners were ready to take full management, Palmer decided to embrace this specialty niche, this time for himself.

He approached a larger firm, Upchurch Cos., with his idea, and they backed his venture. Palmer is now general manager of Lining & Coating Solutions, which has quickly gained a reputation for quality workmanship and a willingness to take on rehabilitation jobs that other contractors shy away from.

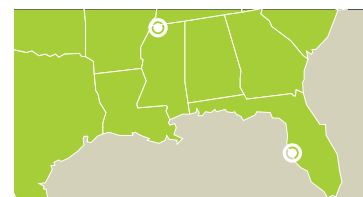
SETTING THE STAGE

Headquartered just outside Memphis, Tennessee, in Olive Branch, Mississippi, with a branch in Tampa, Florida, LCS has a crew of

10 that deploys from both locations as client projects demand. Palmer knew that lining and coating services could be lucrative and had seen firsthand how a focused effort to gain the trust of industrial and commercial clients — including manufacturing facilities, power plants, chemical plants, hospitals, schools and apartment complexes — can pay off.

“In the industrial market, managers prefer a sole source — one guy with all the different tools to serve all their varying needs like tanks, water pipe, pressure pipe, sewer, storm drains and manholes,” Palmer explains. “We had long-standing relationships with the industrial plants to handle their plumbing needs, so it was a natural progression to be able to offer them lining services. It was an easy sell to get rehabilitation projects.”

Knowing that marketing and networking would be key to building a large client base, Palmer began reaching out to other plumbing



Lining & Coating Solutions (LCS)

LOCATION: Olive Branch, Mississippi; Tampa, Florida

PRINCIPAL: Steve Palmer, general manager

EMPLOYEES: 10

SERVICES: Trenchless pipe lining, pipe coating, manhole coating, mainline CCTV inspection, reinstatement cutting and pipe repair, sewer rehabilitation (CIPP)

SERVICE AREA: Florida, Georgia, South Carolina, northern Kentucky, Louisiana, Tennessee, Arkansas, Indiana

WEBSITE: www.liningcoatingsolutions.com



» Field crew supervisor Austin Palmer connects a waterline to a Sunbelt Rentals pump before lining a sewer pipe.



Chris Vajcovec uses a RIDGID SeeSnake push camera to do a pre-lining inspection of a sewer line.

Austin Palmer and Austin Larsen set up a Top Gun inversion unit on a job site.



contractors who were also doing industrial work but didn't offer rehabilitation services. By doing this, he was able to acquire lining projects through these firms, giving those companies an opportunity to become a sole source repair, maintenance and rehabilitation vendor to their own customers.

Although LCS doesn't actively seek larger municipal lining projects, they do solicit for small, specialty projects that larger sewer service contractors can't perform profitably — such as a small municipality that needs 1,000 feet of mainline relined and five manholes rehabilitated. Those projects became a specialty niche for LCS and keep them very busy. Conversely, they also fill a void for smaller plumbing contractors and lining companies that have leads for projects that are beyond their staff or equipment capabilities. "We get a lot of business from the internet. Our website generates lots of interest, and almost 40% of our work comes from these other plumbing companies and smaller pipeline rehabilitation firms," Palmer says.

For mainline projects, LCS uses products from Masterliner Inc. The company also keeps bulk resin and transitional liners from HammerHead Trenchless on hand, and uses a Picote Solutions epoxy pump, resins from Schwalm USA, and flex liners and scrim liners from Perma-Liner Industries. "No one company is a one-stop shop, so you have to have relationships with everyone to make a job with multiple size pipes and installation requirements work."

"We had long-standing relationships with the industrial plants to handle their plumbing needs, so it was a natural progression to be able to offer them lining services."

Steve Palmer

CONSERVATION CREATES OPPORTUNITY

Recent water conservation methods and devices have created an unexpected business opportunity for LCS and other lining firms. Facilities choosing to upgrade their plumbing with water-saving devices such as low-flow commodes and faucets save energy and resources; but those updates in buildings with older pipes, cast iron in particular, lower the flow and create backup issues.

Case in point was a large high school in Indiana that had recently performed such an upgrade and didn't anticipate the ensuing flow

issues and backups. The project was challenging due to a very tight time frame for completion. LCS crews were given from when school closed for summer in June until just after Labor Day. The project involved descaling, flushing and lining 8,000 feet of cast iron pipe that encompasses the mainlines outside the perimeter of the school building and all interior building drains. The drains spanned from 2 to 8 inches in diameter, and while most could be accessed through fixtures, vent stacks or clean-outs, many involved floor drains with a 2-inch P-trap.

DIY technology expands the toolkit

Preferring spincasting application to blow-in epoxy for smaller-diameter pipes for certain applications, Steve Palmer, general manager of Lining & Coating Solutions decided he wanted the benefits of being able to offer this rehabilitation method but needed to bring it on board at a nominal cost.

The answer: Build your own spinner. After looking at some high-priced rigs that offered built-in computers, timers, automated winches and pulleys with thickness analysis readouts, Palmer asked his clients if all of these features were really necessary or that important to them. The consensus was that as long as Palmer and his crew could perform the process as required using their existing field-proven methods, a simple spincaster with a camera for monitoring application would suffice. In the rare instance where, after an application, an area needs an additional pass of coating to increase thickness, it can be readily accomplished.

With this positive response, Palmer moved forward with creating his own spinner and uses Warren Environmental, Picote Solutions, Behr and Sherwin-Williams epoxy products for his projects. With the DIY spinner, LCS is able to complete projects successfully without all the "bells and whistles" and to pass on the overhead savings to its customers and gain a better profit margin on spincasting projects.

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“I like it when somebody says they have a project that everyone else says can’t be done.

I like trying to figure out a way to do it and make it a long-term solution.”

Steve Palmer

The lining was performed using traditional drum-inversion CIPP with steam or hot-water cure. The crews would line several mainlines each day, cap them and leave them to cure overnight, returning the second day to perform robotic cutting to reinstate. The team of 10 worked six days a week on 12-hour shifts. Some weeks they took no days off in order to meet the deadline and handle other project commitments.

THE TOUGHER THE BETTER

“I like it when somebody says they have a project that everyone else says can’t be done. I like trying to figure out a way to do it and make it a long-term solution,” Palmer says. “We have a sweet spot: specialty equipment and small crews. We let others do the heavy lifting, and then we can come in and handle the delicate or more unusual lining processes and fix the problem.”

Such was the scenario at a nuclear power facility. An unusual increase to 20,000 gallons of water coming into the system revealed an

obvious inflow-and-infiltration issue somewhere in the facility. The source of the infiltration was discovered to be a nearby river from which water was drawn to cool the facility reactors that ran under a thick concrete slab.

Several contractors were called in to assess the situation, but no one could determine how to reline or rehabilitate the pipe due to the location and the small, 4-inch access holes to the 8- and 10-inch-diameter pipes. There were four different runs, each with four to six 90-degree bends each. After searching for a solution for over a year, Palmer was called in by the plant and developed a way to handle the job. Crews were required to go through extensive training before the project could commence, and the entire process took approximately 2 1/2 months to complete, with a total of 1,000 feet of pipe being rehabilitated successfully. The job was completed without interruption to the plant.



« Austin Palmer, Chris Vajcovec and Austin Larsen (from left) measure out the proper length of the lining material.

UNEXPECTED HELP

Palmer has come to value networking and cooperation, even with the competition. "There's enough work to go around for everyone, and you never know when another contractor can be your best ally," he says.

During another challenging project at a hospital that was experiencing similar issues as the school due to plumbing fixture upgrades and long-term buildup and tuberculation on older lines, the demands on Palmer's cutting and mechanical cleaning equipment took their toll. The LCS crews had to be very aggressive with the cleaning, lining and quick reinstatement in order to not interfere with the hospital's operation. In the four wings of the building, cleaning was performed during the day and installation of the liners during the evening, when flows were at their lowest point. The lines had numerous laterals coming in so getting the lines back in service quickly was paramount.

For this project, Palmer had brought three cutters: two robotic and one manual. By the end

✓ Anthony Confalone feeds the liner into the inversion unit.



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«The Lining & Coating Solutions crew includes (from left) Chris Vajcovec, Anthony Confalone, owner Steve Palmer, Austin Larsen and Austin Palmer.

“There’s enough work to go around for everyone, and you never know when another contractor can be your best ally.”

Steve Palmer

of one week and 56 reinstatements, all three units were down. “Robotics in sewers don’t work well in projects like these, as nine out of 10 lines will have been used during the lining cure process and as the laterals get reinstated. All that backed-up water gets dumped on the equipment, and they can only take so much before they need to be maintained and serviced,” he explains.

Palmer called upon a good friend who builds equipment and repairs cutters. A few weeks prior, this vendor had another client with a similar issue of cutters going down, and Palmer offered to send one of his team and his equipment to help them finish their project. As a result, in Palmer’s own hour of need, the vendor was able to find someone to return the favor; and within a very short window of time, help was on site to help Palmer and his crews finish the final three reinstatements. “It’s good to be friendly and network. When someone

needs help and you can, help them. You never know when you’ll need the favor returned,” Palmer shares.

LOOK BEFORE YOU LEAP

Before adding to his lineup, Palmer asks vendors for contacts of their clients and personally visits them to see

the product or process working in a real-world environment. His philosophy is that because they are also contractors, living with the equipment and looking to be profitable from its use, they will offer honest feedback on their experience. He also speaks to contractors who were interested in the same product but chose to go a different route. All of these interactions create a bigger network of contacts and resources for know-how and sources of new work.

LCS is always open to new opportunities or things that add value to its niche specialty, but Palmer takes a cautious approach to beginning new ventures. “I don’t jump into anything unless I’ve already got enough projects lined up to get me into it,” he says. “Don’t be afraid to ask the tough questions and share information when you’re considering something new.” **c**

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Revenue Generator

New York contractor invests in custom jetting truck designed to enhance efficiency, safety and customer satisfaction

By Ken Wysocky

When it came time to invest in a new jetter a couple of years ago, management at AP Plumbing decided to try something different from the two trailer jetters the Rochester, New York-based company already owned. Instead, they worked with HotJet USA to design a custom jetter truck that amps up productivity and employee comfort and safety — and revenue.

The result is a 2017 Isuzu NPR dually chassis outfitted with a 14-foot-long box body and a HotJet Xtreme Flow cold-water

jetter, plus numerous features aimed at making it a powerful profit center for the company, founded in 1986 by owner Andy Prestigiacomo.

“We wanted to boost productivity at every possible point,” says Don Dugan, industrial manager for the company, which provides industrial cleaning, residential plumbing, drainline inspection and cleaning, and hydroexcavating services in the Rochester metro area. “We came up with a lot of ideas that we gave to HotJet USA, and they ran with it. They designed a much more efficient machine that makes more money.”

The box body reflects the biggest change from the two trailer jetters the company already owns. With the jetter skid-mounted inside a truck, crews now can work year-round, which greatly increases productivity and boosts revenue.

“Our No. 1 objective was an enclosed trailer,” Dugan notes. “During winter around here, once temperatures fall below freezing, jetters don’t work very well, even if you use antifreeze. It’s easy to blow out pumps.

“But now we can service customers 24 hours a day, 365 days a year, no matter what the weather is like,” he adds. “That’s great because customers in a jam don’t want to hear that we can’t work until the weather warms up.”

CONTINUED >>

✓ AP Plumbing technician John Fowler starts a cleaning job with the custom jetter truck the company designed with HotJet USA.



AP PLUMBING ROCHESTER, NEW YORK

OWNER: Andy Prestigiacomo

PRODUCT: HotJet USA jetting truck

FUNCTION: Cleaning sewer pipes in commercial, residential and industrial settings

FEATURES: 14-foot-long box body on an Isuzu NPR dually chassis; HotJet USA Xtreme Flow jetting unit; UDOR U.S.A. triplex plunger water pump (4,000 psi at 18 gpm); 600-gallon water tank; rollup side door; dual-telescoping Hannay reels with electronic payout and rewind; 500 feet of 1/2-inch-diameter hose and 300 feet of 3/8-inch-diameter hose, both made by Piranha Hose Products; remote-control operation

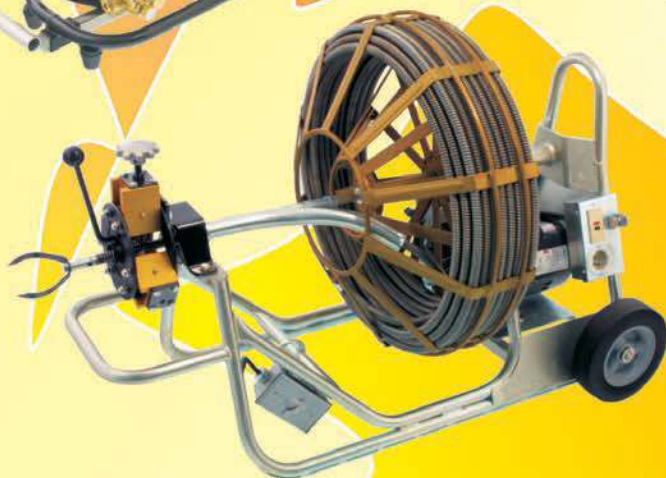
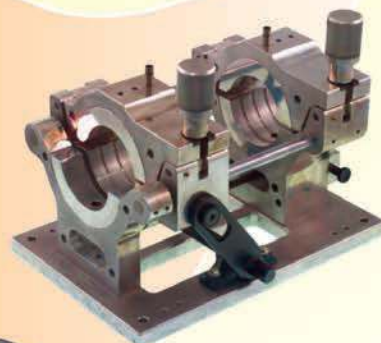
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EFFICIENCY ENHANCERS

AP Plumbing also opted for the Isuzu cab-forward design; its tight turning radius makes it highly maneuverable even in tight quarters — another timesaving feature. And HotJet custom-built the box body with a rollup door on the passenger side, which allows for curbside jetting.

“Instead of working off the back of a jetter, we work out of the side of the vehicle,” Dugan explains. “That way, if we’re in a roadway, our employees work inside more of a safety zone than a

the dually rear wheels. The UDOR U.S.A. triplex plunger pump generates 4,000 psi and 18 gpm.

The truck is primarily used for commercial, industrial and residential work, mostly for cleaning sanitary and storm sewers. To further increase productivity, technicians use nozzles made by Enz Technik and Warthog nozzles manufactured by StoneAge.

“They’re more efficient nozzles,” Dugan explains. “You can buy the best equipment out there, but if you put junk on the end of the hose, you get what you get.”

In addition, the truck features remote-control operation, another efficiency boost.

So far, Dugan hasn’t come across a job the truck couldn’t handle. In one instance, technicians encountered a 300-foot-long, 4-inch-diameter cast iron sewer pipe at a retail store. The line, which was badly tuberculated,

was backing up three or four times a week. Even worse, access was limited, either via a toilet or two clean-outs inside the building, Dugan says.

“We also had to work upstream, which makes it even more difficult,” he says. “And we had just four hours to complete the job, which had to be done at night.

“But it worked out perfect. We finished the job in about three hours, using Enz chain-cutter descenders and an Amthor International vacuum truck to collect the debris.” The company also relies on a RIDGID SeeSnake inspection camera and two other cameras made by Envirosight: a ROVER X robotic camera and a Verisight push camera.

At a cost of \$120,000, the jetting truck represents a significant investment. But Dugan says it will easily pay for itself. “I love it. All the guys love operating it. They all want to take that truck instead of the tow-behind jetters. They call it the ‘jet in a box.’ We couldn’t be happier with it.” **c**

“We came up with a lot of ideas that we gave to HotJet USA, and they ran with it.

They designed a much more efficient machine that makes more money.”

Don Dugan

danger zone in the back of the vehicle (or behind a trailer). And we don’t need a flagman or have to take time to set up cones like we do if we work off the back.”

The design also features two Hannay telescoping reels, located in the middle of the cab. “They’re heavier-duty reels that are very durable,” Dugan notes. “You get what you pay for. We have some Hannay reels that are 10 years old and still working.”

One reel holds 500 feet of 1/2-inch-diameter hose and the other carries 300 feet of 3/8-inch-diameter hose, both made by Piranha Hose Products. “We typically use the 1/2-inch hose for 3- to 6-inch-diameter pipes and the 3/8-inch hose for trapways and difficult bends because it’s more flexible,” Dugan says.

The reels also feature electronic rewind and payout controls, which minimize technician fatigue. “When you’re pulling everything back by hand, you’re pretty shot in a short period of time. Plus, when you manually pay out hose while jetting, the speed is inconsistent. Electric payout provides a consistent speed, and that makes for a better cleaning job.”

Dual reels also save time by eliminating the need to swap out hoses for different applications. It’s also safer than disconnecting hoses that might still be under pressure, blowing out the connection. “Again, it’s all about safety and efficiency, which in turn makes more money,” Dugan points out.

BIGGER TANK, BETTER PRODUCTIVITY

The jetter itself features a large 600-gallon water tank, which improves efficiency by minimizing the need for time-consuming tank refills; because it weighs so much when full, the tank sits atop

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Engage Your Crew

Meeting with employees individually fosters accountability and shows appreciation

By Kate Zabriskie

"There are only two of us in my department. Why should I bother with a formal meeting? We sit right across from each other."

"I tried meeting individually with my direct reports, but they had nothing to talk about. Besides, we're all adults. We know what we're supposed to be doing at work."

Without trying too hard, it's easy for many managers to compile a long list of reasons not to meet with the people they supervise.

And guess what? The volume of reasons does not outweigh the value and importance of a regularly scheduled tête-à-tête with a direct report.

BENEFITS OF REGULAR ONE-ON-ONE MEETINGS

If used correctly, over time managers and employees can enjoy many benefits by meeting one-on-one.

- **Visible appreciation:** Time is currency. If managers carve out time for their people and are prepared when they meet, they show they value their direct reports.
- **Better thinking:** Regular one-on-one meetings give managers and employees space to step away from the urgent and immediate and to think more holistically and strategically about work, goals and development opportunities.
- **Stronger results:** Accountability tends to improve when people have an opportunity or a requirement to report on their progress.

Accountability tends to improve when people have an opportunity or a requirement to report on their progress.

THE PERFECT ONE-ON-ONE

Once a manager has bought into the value of one-on-one meetings, the next step is to execute them in a way that works for the manager and the employee. Good one-on-one meetings are not one-size-fits-all activities. That said, there are a few guidelines that can make a one-on-one meeting successful.

1. **Pick a schedule and stick to it.** One-on-ones shouldn't regularly disappear from the calendar simply because something else suddenly comes up.
2. **Choose a frequency that makes sense.** For some people, meeting once a month may be enough. For others, meeting weekly may be more appropriate. Every relationship is different. Furthermore, circumstances evolve. Depending on what's happening inside and outside of the company, an employee's needs could change drastically. Meeting frequency should be looked at from time to time. If the rate of meetings is correct, managers and employees should not routinely find themselves with no reason to meet.
3. **Follow a written agenda.** Well-run one-on-one meetings are not free-for-all conversations. They follow an agenda just as any other good meeting does. A one-on-one meeting agenda might include such topics as current projects, progress on yearly development goals, current challenges and so forth.
4. **Put employees in the driver's seat by having them manage and document the agenda.** As a manager, you may create the initial agenda format. But once you do, your employees should take ownership of the documents associated with their one-on-one meetings.

TROUBLESHOOTING

One-on-one meetings rarely go from nonexistent or dysfunctional to perfect overnight. For that reason, managers should prepare to overcome a variety of obstacles.

Obstacle 1: Employees question the new meeting.

Solution: Reduce the surprise factor. If a manager has never held one-on-one meetings, they might come as a surprise to employees. To avoid feelings of uncertainty, confusion or worse, socialize the idea before loading the calendar with unexpected surprises. *"This year, I would like to focus more on individual development. Within the next week or two, please expect to see a*



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meeting request from me. I believe we will all benefit if I spend time with each of you individually at regularly scheduled intervals. How often we will meet will depend on each of your needs and what we decide together."

Obstacle 2: An employee doesn't take charge of the meeting.

Solution: Show them how. A good agenda can go a long way toward making the conversation flow. Although employees should have ultimate responsibility for keeping the agenda, this may take time. In the beginning, managers may have to model what they want to see. *"For our first few meetings, I'll prepare the agenda. Once we've found our groove, my plan is to turn it over to you to own. This means you'll add to it between meetings and bring a copy for you and me when we meet."*

Obstacle 3: An employee gives short or general answers to questions.

Solution: Get specific. The more focused a manager's questions are, the better the conversation tends to be. For example, instead of asking, *"What are you working on?"* a manager might say, *"Tell me about the project that is going best right now and why that is."*

Obstacle 4: An employee seems unresponsive.

Solution: Leverage silence. When managers don't get immediate feedback, they sometimes mistake silence for nonresponsiveness.

It's important for managers to remember they already know the questions. The employee is hearing them for the first time and may need some time to digest and think about what's being asked. Instead of rephrasing questions that don't produce an immediate answer, managers need to get comfortable with letting silence sit in the room.

REEVALUATE FROM TIME TO TIME

Like anything, one-on-one meetings can get stale. It's important to look at the format and frequency from time to time and to solicit feedback regarding what's working and what isn't.

If you've fallen out of the habit of holding regular one-on-one meetings or if you're not getting all you could from them, now is the time to take another look. After all, can you really afford not to? **c**

ABOUT THE AUTHOR

Kate Zabriskie is the president of Business Training Works, a Maryland-based talent development firm. She and her team help businesses establish customer service strategies and train their people to live up to what's promised. For more information, visit www.businesstrainingworks.com.



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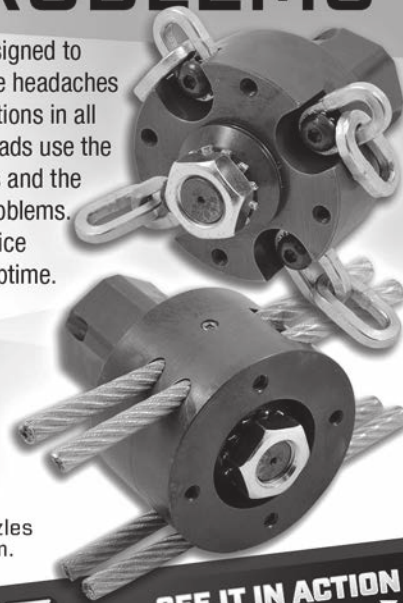
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DYNAMIC REPAIR 40 Arnot St., Unit 20, Lodi, NJ 07644 973-478-0893 • (f) 973-478-0895 www.dynamicrepairs.com dynamicablerepairs@yahoo.com See ad on page 75	GWS, RIDGID, Vision Technology, Insight Vision, Pearpoint, Gator Cam				✓				✓
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EPL SOLUTIONS, INC. 1330 W Collins Ave., Orange, CA 92867 714-453-9760 www.epls-usa.com • sales@epls-usa.com See ad on page 75	Gvision Camera System	3" to 12"	200' to 400'	HDD, Flash Drive/USB Thumb Drive, DVR, Direct to Apple® devices	✓		✓		✓
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Create an Elite Crew

Good CCTV operators should be self-motivated and highly trained

By Traci Browne

A couple hallmarks of good CCTV inspection operators are resourcefulness and an abundance of common sense when it comes to solving safety issues and problems with equipment. But how do you find — or rather, develop — workers with this skill set? What does it take to become a CCTV operator?

Initiative is one of the key traits to look for in an operator, says Matt Timberlake, regional vice president of Ted Berry Co. “You not only have to be savvy with technology, but you need to be savvy enough to adapt. You need to be a continual learner. That’s at the core of the really good CCTV operators out there.”

While a good salary and the promise of working with robotics may attract people to sewer and water systems, CCTV inspection operator is by no means an entry-level job. “You shouldn’t be a CCTV operator unless you know how sewer systems function and how manholes work and don’t work,” Timberlake says. Once those basics are covered, CCTV inspection training can begin.

Michael Kerr, NASSCO training director, says a good CCTV inspection operator has a desire and ability to learn and is a self-motivated individual. He says that today’s inspection operators not only need to be skilled at manipulating the robot, but they must also interpret what they are seeing.

“You not only have to be savvy with technology, but you need to be savvy enough to adapt.”

Matt Timberlake

GRADUAL TRAINING

Both Timberlake and Kerr suggest a gradual training program: one where a candidate is working alongside an experienced operator to get to know the equipment and to observe how the operator codes.

Once trained on the robotics, Timberlake sends his operators for NASSCO Pipeline Assessment and Inspector Training certification



▲ A good CCTV inspection operator is resourceful and self-motivated and has the desire to keep learning and evolving with new technology.

programs. Operators can then work independently on smaller diameter pipe to build experience until finally they become what he refers to as the “elite crews” of pipe inspection — the operators who are inspecting 100-plus-inch pipes.

Steve Sebastian, national training manager for Envirosight, says that as robots progress and are equipped with better cameras and sensors for other data, the information they gather combined with software analysis helps minimize variances in operator perception. Meaning, the software will be able to accurately determine if a pipe is 30% blocked or if it’s more like 50%. Better accuracy could mean the difference between a relatively inexpensive repair and a costly pipe replacement.

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However, that level of sophistication will require more skill and training for the operators.

Envirosight uses a support network all across the U.S., and those partners are responsible for training the end user. Sebastian says the company's approach is to teach operators the basics of the equipment and give them a few weeks to put that training into use in real-life scenarios. Local support is what makes this layered approach to training possible.

"We don't want to overwhelm them with the fancy stuff until they are capable of handling the basics," Sebastian says.

Once the operator has the basics down, the trainer comes back to cover the reporting software and other functionalities of the robot.

Given the fact that these robots are significant investments for drain cleaning companies, it's no wonder resourcefulness and common sense are traits to look for. Also, let us not forget that CCTV inspection operators are not just responsible for their equipment, but they are also responsible for crew and public safety. **c**



After completing training, operators can work independently on smaller diameter pipe to build experience.



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« After earning a business degree, Julia Noble (left) joined her parents Bruce and Darlene Noble as a co-owner of their pipeline cleaning and rehabilitation company, PipeFlo Contracting, in Hamilton, Ontario.



DRIVEN TO **GROW**

PipeFlo Contracting goes all-in on boosting customer satisfaction with a wide array of services and equipment

By Ken Wysocky // Photography by Bruce Bell

In a span of 10 years, PipeFlo Contracting doubled its workforce to 60 employees and increased its annual revenue to more than \$10 million.

That growth was driven by an emphasis on offering customers a suite of trenchless services while continually adopting new technologies that enable employees to provide those services efficiently and cost-effectively, says Julia Noble, who co-owns the Hamilton, Ontario-based company with her parents, Bruce and Darlene Noble.

“We kept adding services to better serve our clients,” she says. “Whenever we saw our customers had a need, we filled it. We grew organically by fulfilling those needs.”

Offering a comprehensive line of services allows PipeFlo to complete contracts in a timely manner for projects involving many different pipe sizes and rehabilitation requirements. “In effect, we’ve become like a small public works department that helps our clients resolve pipeline problems,” Bruce explains.

A plumber by trade, Bruce is no stranger to no-dig technology, having run a trenchless pipe rehab company from the mid-1980s to the late 1990s, when he sold it. “I remember going to the first trenchless technology trade show in Washington, D.C., around 1996,” he recalls. “The technology at the time was very rudimentary, but I saw huge upside in the benefits and advantages. I figured these new trenchless products would be the future of pipeline rehabilitation.”

When the Nobles established PipeFlo in 2003, they had no aspirations to develop a large business. At the time, the company’s services centered primarily on pipeline inspections and maintenance, with limited pipeline rehabilitation services.

But after Julia, armed with a business degree, joined the

company in 2009 as a full-time director of operations and business development, its services broadened dramatically. Today, PipeFlo does UV-light-cured pipe lining and spot repairs, pipe bursting, sliplining, channel lining, pipe seals, sonar and laser profiling, and centrifugally cast concrete pipe lining.

“Younger blood comes into the company and all of a sudden, it’s just go, go, go,” Bruce says with a laugh. “You wake up one day and you have 45 to 50 trucks and 60 employees.”

✔ Technicians Ryan Bishop (left) and Roberto Larenjeiro prepare for a residential lateral lining job with a HammerHead Trenchless QuikLok inversion drum.



PipeFlo Contracting Corp.

LOCATION: Hamilton, Ontario

OWNERS: Bruce, Darlene and Julia Noble

FOUNDED: 2003

EMPLOYEES: 60

SERVICES: Pipeline cleaning and inspections (including sonar and laser profiling) and trenchless pipe rehab via UV-cured pipe lining, pipe bursting, grouting, sliplining and centrifugally cast concrete lining

SERVICE AREA: Greater Toronto area

WEBSITE: www.pipeflo.ca



▲ Roberto Larenjeiro sets up for an inspection job with a CUES inspection system.

“Whenever we saw our customers had a need, we filled it.

We grew organically by fulfilling those needs.”

Julia Noble

MORE SERVICES, MORE EQUIPMENT

Over the years, the company has built up a large fleet of equipment. For starters, it owns six Vactor combination vacuum trucks that feature 10-cubic-yard debris tanks, 300-gallon water tanks and 8,000 cfm Roots blowers (Howden).

For cleaning smaller-diameter pipelines, PipeFlo relies on a truck-mounted water jetter made by Harben. Mounted on a GMC flatbed truck, the unit features a 600-gallon water tank and a 4,000 psi, 16 gpm pump.

For inspecting mainline sewers, the company owns seven Mercedes-Benz Sprinter and Ford Transit vans equipped with CUES inspection camera systems. For

Working underwater

The value of PipeFlo Contracting’s emphasis on service diversity was vividly displayed during a challenging pipe bursting project near Ottawa, Ontario, in November 2017.

At issue was a 15-inch-diameter, roughly 230-foot-long corrugated pipe that carried stormwater from a parking lot at a nuclear plant into an adjacent river. “It was a very old pipe, corroded and rotted out,” says Bruce Noble, co-owner of the company, based in Hamilton. “There wasn’t much of it left.”

Replacing the pipe would’ve been prohibitively expensive. The project not only would have required building a cofferdam to create an excavation pit in the river, it also would have spurred a time-consuming and expensive permitting process and environmental assessment, Noble explains.

From its roster of available technologies, PipeFlo decided to use pipe bursting technology from HammerHead Trenchless. “We were told it’s difficult to burst corrugated pipe because it ‘accordions’ up,” Noble says. “But we welded a blade on the back of the pipe bursting head that split open the top of the pipe, which prevented it from folding up.”

Dave Allen, field operations manager at PipeFlo and a 15-year employee, developed a game plan for the process. “He’s an intelligent, innovative employee who always comes up with solutions for challenging projects,” Noble says.

Here’s how it worked: Using a 250-ton static-burst HammerHead unit, a work crew pulled the bursting head and the HDPE pipe from a pit dug near the building’s foundation. On the other end, the company employed scuba divers and barges to move the already fused-together length of pipe onto the river.

Initially, both ends of the pipe were capped, filling it with air to make it buoyant. Then the divers removed a cap on one end, which allowed it to fill with water and sink, he says.

The divers then connected the pipe to the bursting head, which was waiting inside the end of the deteriorating pipe, under about 12 feet of water. After that, crews started the pipe bursting process. The pipe bursting pull took an entire day; the whole project lasted about 2 1/2 weeks, Noble says.

“The client was very happy with the final result,” Noble says. “An open-cut replacement would’ve taken forever, with all the environmental concerns. But we could circumvent all that with pipeline rehabilitation.

“Other companies they talked to didn’t know what to do. So they came to us and asked if there was any way to fix this. We get this a lot — customers asking us to fix problems that no one else can deal with. We figure if we all put our heads together, use our past experience and think it through, we can come up with a way to cross any hurdles.”

larger-diameter pipes, the company relies on an Isuzu cube truck outfitted with laser and sonar profiling systems made by CUES.

For pipe lining, the company prefers fiberglass-reinforced liners made by BKP Berolina Polyester GmbH & Co. and cured with a UV light train built by IMS Robotics GmbH. To line laterals, PipeFlo uses the liners from LMK Technologies.

In addition, the company recently started using the Bluelight LED-curing system developed by Aarsleff Pipe Technology; the system now is produced and distributed in North America by HammerHead Trenchless. For lining short pipeline runs and connections, the company uses UV-light cure technology made by Cosmic Engineering GmbH.

EUROPEAN INFLUENCES

Bruce says the company learns about new technology by attending trade shows in Europe. A good example is the UV-cured, glass-reinforced liner system the company purchased in 2006 from BKP Berolina in Germany.

"UV-cured liners cure faster than steam or ambient curing and there's less chance of (lining) failure," he explains. "It's also a cleaner and quicker way to line pipes (the liners come ready to use,

eliminating the time-consuming process of wetting out liners on site) and requires a much smaller equipment footprint on job sites."

To line pipes with centrifugally spun concrete, PipeFlo invested in a CentriPipe high-speed spincast system manufactured by AP/M Permaform. The company uses AP/M Permaform's PL-8000 concrete. The company also owns an AP/M Permaform system for lining manholes and other vertical structures.

For pipe grouting, PipeFlo invested in a CUES grouting system, carried on a 22-foot GMC truck chassis. The company uses grout made by Avanti International and a grout pump made by Cat Pumps.

The company has also invested in four robotic cutters made by Cosmic. They're designed for performing more difficult and specialized tasks, such as cutting out intruding connections, removing hardened mineral deposits and reinstating laterals. The company also owns a HammerHead pipe bursting system.

To keep such a large inventory of specialized equipment in working order, the company employs a full-time mechanic. This helps minimize costly downtime on job sites and avoid the delays incurred when equipment must be sent back to a manufacturer for repairs. "Being able to repair specialized equipment in-house in a minimal amount of time adds value for us," Julia says.



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⤴ A PipeFlo crewmember lowers a camera into a manhole at the start of a sewer inspection.

DIVERSITY DRIVES SUCCESS

Meeting customers' needs isn't the only reason the company emphasizes service diversity. Bruce says the philosophy also allows PipeFlo to avoid using subcontractors, which gives it better control over quality and meeting project deadlines.

"Plus, if one area is slow, we can offer alternative work in another division," Bruce adds. "That also helps us minimize layoffs because we can downsize crews in one area and shift them to another area to service a backlog of work. Diversity keeps employees engaged and builds a knowledgeable workforce. So it works as an employee-retention tool, too."

Operating this way requires cross-training for technicians. Much of the training is provided by equipment manufacturers, while the balance comes from senior technicians that provide on-the-job supervision. An employee who wants to learn how to operate a vacuum truck, for instance, will "shadow" a senior leader on a truck for a few weeks, then get behind the wheel under that senior technician's supervision, Julia says.

Within several weeks, the employee is allowed to go to a job site alone, but is supervised by another team leader on site. "The whole process might take anywhere from a month to two or three months, depending on how technical the service is," she says. "In the end, we

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have some field staff who can operate a combo truck or a video truck, install a UV liner, and step in and help us perform confined-space entry work.”

TRAINING REDUCES TURNOVER

Cross-training helps the company work more efficiently because work doesn't stop if employees get sick or take vacations. “From that standpoint, it's very beneficial in terms of scheduling,” Julia says. But the variety of work also helps employees avoid burnout or boredom.

“It's not easy working out in the field,” Julia says. “Sometimes a guy comes in and says he needs a break. So we can put him on another service for a week or two. We are fortunate to be able to provide them with a (job) change in-house, as opposed to losing valuable, trained employees to our competitors.

“Cross-training also keeps employees motivated because they know that if they can perform multiple services, they'll always have work and steady employment,” she adds.

Management works with employees to determine what jobs they'd like to try. Sometimes a new employee might try several different positions, then talk with someone in human resources about where they fit the best. Doing work they enjoy also leads to better customer satisfaction, Bruce points out.

“Cross-training also keeps employees motivated

because they know that if they can perform multiple services, they'll always have work and steady employment.”

Julia Noble

“The quality of work and the finished product is better when they get to choose what they want to do,” he says. “It's a win-win-win situation for the company, the employee and the client.”

Running a cross-training program requires constant vigilance. Julia says that for each service the company provides, the company strives to have at least two employees who can operate each truck or machine.

Making sure the company can meet that standard requires daily meetings with dispatch operations personnel and monthly meetings with the company's administration team. “We need to closely manage the quality assurance, production and efficiency of field operations,” she says. “We discuss ongoing contracts, labor requirements and truck situations. It gives everyone a chance to step back and see where we need to improve.”

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Technician Daniel Juhasz monitors an inspection during a residential sewer repair job.

AN EYE ON TECHNOLOGY

The Nobles anticipate further growth in the years ahead. But Bruce says it will be controlled growth, a philosophy that's served the company well thus far. "We tend to take a giant leap forward, then pause to assimilate and integrate the new workload as best we can before we take that next leap," he explains. "We're very cautious when we expand."

There's a strong possibility the company will also expand its customer base geographically, too, as well as branch out into different but related services, such as relining water pipes. "It's a new area of technology and a new market that we're just starting to develop," Bruce says. "We can't use existing (pipe lining) technology because those liners aren't designed to carry drinking water."

But whatever PipeFlo does, its focus on new techniques, machines, equipment and processes will remain constant. "We'll always have an eye on new technology," he says. "You have to stay ahead of the curve — keep a keen eye out for new methods of infrastructure rehab." **c**

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Spend Money Wisely

You won't see a good return on every new business investment. Learn from these mistakes.

By Joan Koehne

Operating a successful business requires astute money management. Yet all business leaders can pinpoint a time in their career when they threw money away on a venture that didn't go as planned. When you don't earn the anticipated return on your investment, the most important thing is to learn from that experience.

Brian Smith, owner of X Rooter Sewer & Drain Cleaning in Rhinelander, Wisconsin, says his biggest money waster was his company's venture into septic pumping. About 15 years ago, Smith bought a septic truck and a 100-acre farm to spread waste, and the company started pumping septic tanks.

Things didn't go as planned. X Rooter was losing money, in part because another company was lowballing and keeping rates down. He wasn't able to devote more time to the septic service, so he sold off the business after a year. The company experienced about \$100,000 in losses.

Smith learned a valuable lesson from the company's short-lived expansion into septic pumping: Focus on what makes you money. For X Rooter, the focus is sewer cleaning, drain cleaning and video inspections.

"Septic pumping wasn't a good fit for the company," Smith says. "It was stretching me too thin."

While X Rooter no longer pumps septic tanks, the company remains closely associated with the septic service industry.

"I work with septic pumpers, and they give me business and I give them business. It's a win-win situation," Smith says. "They can focus on where they make money, and I focus on where I make money."

ADVERTISING WOES

Sinking money into ineffective marketing can be a big money waster, says Hugh McLaughlin, owner of 88 Drain in Tucson, Arizona. McLaughlin says hard solicitations like billboards, direct mail flyers, phone book ads and taxi roof signs are no longer worth the money.

"Now, everybody goes to the internet or their phone," McLaughlin says.

Yet digital marketing can be just as big of a money waster as print ads, he says. 88 Drain determined it was wasting money on pay-per-click ads that cost \$5 to \$7 per click, whether or not the click resulted in a sale. The company also pulled out of online referral services, like Angie's List and HomeAdvisor, because it was competing against other aggressive contractors for the same leads.

Instead, 88 Drain uses its website as the hub for digital marketing by regularly updating the site with customer reviews and monthly specials. Without spending money on advertising, 88 Drain is ranking well organically on search engines.

"Our marketing dollars have gone to almost nothing. We focus on having our guys encourage clients to go to the website and leave a review," McLaughlin says.

Ben Smith, owner of Marvel Sewer and Drain in the Minneapolis area, also identified advertising as a big money waster. He says one-time ads in school calendars, sports schedules or "Best of" pages don't provide a good return on his investment.

"Our marketing dollars have gone to almost nothing.

We focus on having our guys encourage clients to go to the website and leave a review."

Hugh McLaughlin

"Specifically, the ads that are \$200 to \$300 have never done anything for me, and I hardcore track everything," Smith says. He says \$295 is the "I gotcha price — the price that someone will most likely say, 'OK. You know, that might work. Here's some money.'"

SEEING RESULTS

Instead of wasting money on flash-in-the-pan promotions, Marvel Sewer and Drain partners with a marketing firm for comprehensive, ongoing campaigns. The company also gives away its trendy superhero-theme branded coffee mugs, shirts, caps and can covers. Marvel Sewer and Drain spends more in the long run for its ongoing marketing strategies, but it also experiences better results.

One thing that doesn't cost a penny is the company's commitment to customer satisfaction. By focusing on service, Marvel Sewer and Drain does little things to please customers, like arriving on time, being courteous and cleaning up after themselves.

"Building that customer rapport is what's really driven my business since day one," Smith says.

Likewise, satisfied customers are key to success for LH Plumbing Services in Fairfield, Ohio.

“My best marketing strategy is word-of-mouth and referrals,” says Linda Hudek, owner of LH Plumbing Services. “Any money I’ve put into marketing in the past has been fruitless.”

Despite not investing in advertising, Hudek has more work than she can handle — but this wasn’t always the case. When she started her business in 2010, Hudek was looking for commercial plumbing jobs in the area. To access business leads, blueprints and invitations to bid, she subscribed to an online resource. Looking back, Hudek says she should’ve saved the money on the annual subscription. Over time, she found inexpensive ways to find leads, like talking to the contractors she knew.

Another unnecessary expense for Hudek is the finance fee she pays on loans. Hudek has had second thoughts after taking out business loans to purchase equipment.

“I wish I would’ve paid cash. I’m still stuck with the payment months later,” she says. She’s learned that it’s better to pay cash for certain purchases — just wait until you can afford them.

LEARN FROM OTHERS

A big money waster for Russell Joe Jr., owner of Quality Sewer & Drain Cleaning, has been direct mail marketing. He’s spent \$500 to \$1,000 on several different campaigns but hasn’t gotten a sales lead. The company even specifically targeted neighborhoods where it did a lot of work.

“For every job, we find out how they heard of us,” Joe says. He has yet to pick up a job from the mailers in his service area of North Shore and Cape Ann, Massachusetts. He’s also tried Angie’s List and HomeAdvisor, but he says he’s too busy to be glued to his computer, watching for and responding to leads.

“If you’re just starting out, it might be good to get your foot in the door, but once you’re established and you’re busy, it’s too hard to respond within minutes,” he says.

Before he spends a bunch of money on something, Joe consults with a couple of the friends he’s made at trade shows or through social media. All of them own businesses, and some of them do sewer maintenance and rehab, like Joe. They give and receive advice in a group message or phone call.

“We’ve become good friends and share ideas that way,” he says.

All pumping or cleaning contractors probably have similar money-wasting stories to tell. But don’t feel too bad about a few dollars going down the drain in an effort to build the business. Sometimes entrepreneurial spending pays off, and sometimes it doesn’t. Remember the credo — “Nothing ventured, nothing gained.” **c**



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Make the Right Call

Working around underground utilities requires careful preparation and constant communication

By Doug Riseden

Utility lines for electricity, phone, cable TV and many others are increasingly being buried underground, making repairs to water pipelines more and more complicated. While putting lines in the ground offers aesthetic improvements and helps protect utilities from storms, it means there are countless obstacles for utilities and contractors doing underground work.

Statistics show that on average there are more than 300,000 incidents each year related to utilities being struck during repairs and installation of new services in the water and wastewater industry. These incidents cost millions of dollars in lost time, damages, loss of service and loss of fire suppression services. Not long ago, workers building a new section of Interstate 4 in Orlando, Florida, struck a natural gas line. The ensuing excavation and repair closed this busy east-west corridor for over 12 hours, causing serious delays and closures of local businesses. As you can imagine, there was a lot of anger from the traveling public and businesses seeking damages.

There are four primary precautions for ensuring that you stay safe and minimize the chances of causing damage during excavation:

- Call 811
- Take notes and photos
- Use the right tools
- Communicate with utilities.

CALL 811

811 is a nationwide service that will give you all the information you need to make a request to locate pipes and other underground infrastructure. When you call 811, you can find out if it's safe to dig, with requests usually completed within two to three days and a locate lasting 30 days. This process can also be done online — simply search “811” with your state and the appropriate website will most likely be at the top of the search.

Make sure that you wait for the locate to be completed before you dig — it's the law. Almost all utilities are a member of 811 and



➤ Always call 811 for a utility locate before digging on a job site. The time it takes is well worth it, considering the potential costs of damages, lost time and lost service if you strike a utility.

will be willing to come to your dig to help ensure that their utilities don't get hit. In case of an emergency repair, it is also critical to call 811 before you start. The staff can quickly provide info and provide service around the clock. If you uncover an issue or hit a utility line during a dig, 811 staff has contact information to reach the right people at any time to help find someone who can make the repair. You might have to pay the repair costs depending on many factors, but regardless, the repair must be made and can't be ignored.

Statistics show that on average there are more than 300,000 incidents each year related to utilities being struck during repairs and installation of new services in the water and wastewater industry.

TAKE NOTES

Make sure that you take plenty of pictures before, during and after the excavation is done. Note the locate marks and flags prior to digging, but keep in mind that occasionally the actual location of the utility and the marks are very different. Take pictures of where lines are actually located. Is the natural gas line underneath the waterline or next to it? Gas lines have a minimum bury depth of 24



inches, while water has a 36-inch minimum bury depth. However, it's not uncommon to find some strange things in the trench such as lines that cross over others at intersections or Ts. Take lots of notes and use them to update your utility maps, and educate other workers and management. Take the time to help your employer and your utility become a better and safer place to work.

GET EQUIPPED

The right tools are critical for safe excavation. Vacuum trucks and trailers are ideal for both identifying other utilities and safely excavating the work area. There will be exceptions, mostly for new construction when you could use backhoes and mini-excavators. But in every other case, the ground has been previously disturbed so a vac unit will be the best, safest and most economical way to go. Using a probe while looking for other utilities during your dig is necessary but requires caution. Use your experience and common sense when probing for utilities to avoid lines being struck.

COMMUNICATE

With so many lines crisscrossing underground, the issue of various utilities attempting to make their repairs at the same time happens more frequently and has resulted in many changes, including the need to schedule repairs, new businesses being formed to locate utilities, and 811 laws. Look to have a representative of a specific utility on site to assist your dig. This will be time well spent, and it will pay to be patient. An ounce of prevention is worth a pound of cure, and a little precaution to prevent a crisis is better than a huge repair afterward.

Get to know the other utility companies in your area and consider having monthly or quarterly meetings to discuss issues and ongoing or future projects. Use photos and notes from your previous repairs to point out issues and problems to others. If you build friendships with these folks, you're more likely to be able to reach them after normal business hours (since this is when most of our emergencies take place).

Working near utilities is complicated business and the lack of space underground will become further complicated as utilities get replaced. If you take the steps above, you will be in a much better position to excavate more effectively, avoid striking other utilities, and save time and money. **c**

ABOUT THE AUTHOR

Doug Riseden is the technical support manager for Krausz USA and has worked in the public utility field for over 20 years.

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Mainline Sewer Inspection

By Craig Mandli



INSPECTION CAMERAS

1 / ARIES MOBILE PATHFINDER SYSTEM

The Mobile Pathfinder System from Aries Industries is a lightweight, portable system for accurately inspecting mainlines 6 inches or larger. It includes a transporter, camera and lightweight reel operated by an all-in-one remote control. The transporter comes in a variety of wheel sizes and is equipped with a rear-viewing camera and an adjustable electric lift to keep the camera centered in a range of pipe sizes. It comes with a WiperCam Pan & Tilt camera with an in-the-pipe cleaning system and field replaceable wipers. The camera has a 300-degree viewing angle and LED lighting system to capture pipe details and ensure accurate assessments. The lightweight reel has 1,000 feet of low-friction, multiconductor cable, making the system fully portable. The transporter, camera and reel are controlled by a single, all-in-one remote control with rechargeable wireless keyboard. 800-234-7205; www.ariesindustries.com.

2 / CPI PRODUCTS / CAVALLERO PLASTICS UNIVERSAL ROLLER SKIDS

Universal Roller Skids from CPI Products / Cavallero Plastics fit most push cameras and are designed to improve performance and protection in pipes from 3 to 16 inches in diameter. According to the manufacturer, using a plastic roller skid can protect a push camera from debris inside pipes and keep the lens from impacting pipe walls.

A properly sized and fitted roller skid also keeps the camera centered for an improved image. 413-443-0925; www.cplproducts.com.

3 / EASYCAM M5200

The M5200 sewer camera from EasyCAM is owner serviceable and only 12 inches tall and 27 inches wide. The camera head width is only 1 3/8 inches, which allows it to perform easily in 2-, 3- and 4-inch pipe. A robust fiberglass core allows the heavy-duty, midsize push cable to push through underground turns with ease. It offers 10- to 12-hour battery life and a Wi-Fi feature, which lets images be viewed on a tablet by customers in the comfort of their home. Wi-Fi also allows recorded videos to be uploaded with a couple clicks to any Dropbox or YouTube channel. Weighing only 38 pounds, this 200-foot sewer camera is available with a repair kit, allowing the technician to make field repairs. 239-260-2056; www.easycamllc.com.

4 / ELECTRIC EEL ECAM PRO 2

The eCAM Pro 2 mainline pipeline inspection camera system from Electric Eel has a stainless-steel-housed, 1.68-inch self-leveling color camera with sapphire lens; 20-LED light ring with an impact-resistant polycarbonate light ring cover; and high-resolution CCD element. The auto-iris adjusts light automatically. A flexible camera spring navigates 3-inch P-traps. The unit comes standard with 200 feet of braided fiberglass premium 1/2-inch-diameter pushrod (with a capacity of 400 feet available on the reel), 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, voice-over recording, an 8x zoom function, audio/video out jacks, 8-inch wheels for easy maneuverability, a secure-locking reel brake, and rugged powder-coated steel tube and bar construction. 800-833-1212; www.electriceel.com.

5 / ENVIROSIGHT ROVVER X

The ROVVER X inspection crawler from EnviroSight lets an operator control inspections, view and record digital video, log observations, generate reports and link directly to asset management software. All these capabilities are packed into a simple, three-piece layout, with no CCU or other components to clutter the workspace. Twelve-wheel options — plus camera lift, carriage and illumination accessories — mean it transforms in seconds to inspect any size line. The crawler is six-wheel drive with proportional steering to navigate past obstacles and has overlapping wheels to climb offsets. Powerful motors and a geared six-wheel drivetrain maximize travel range. It is built on an expandable digital backbone, with the ability to add side scanning and laser profiling, view data from onboard sensors, automate tasks with macros and measure defects on screen. Its firmware updates automatically to the latest features. 866-936-8476; www.envirosight.com.

6 / EPL SOLUTIONS GVISION CAMERA SYSTEM

The Gvision camera system from EPL Solutions offers a rugged, compact solution for inspecting pipelines 3 to 12 inches in diameter. Available with 200 to 400 feet of pushrod, the reel has a stiff, yet flexible fiberglass cable that is optimized for farther pushes through turns and bends. The color camera is self-leveling and includes a powerful, convenient, always-on 512 Hz transmitter for quick and precise area determination. The anti-glare LCD monitor delivers

a clear, crisp picture even in direct sunlight. To record video inspections, connect a USB storage device or Apple mobile device directly into the USB port. The DVR outputs HD quality videos, which can be stored and shared from a mobile device. 714-453-9760; www.epls-usa.com.

7 / FORBEST PRODUCTS FB-PIC3188XX/4188XX

The FB-PIC3188XX/4188XX portable lay-flat camera system from Forbest Products comes with a 1-inch waterproof color camera head or 1-inch self-leveling color camera head with a built-in 512 Hz sonde transmitter, stainless steel spring kit and bright LED lights. It comes with 130 feet of 5.3 mm or 200 feet of 6 mm fiberglass cable, with a high-resolution 7- or 10-inch color control station with USB and SD recording. Typing and editing is optional for the 10-inch multifunction control station. The lay-flat design is convenient for one user to operate the camera independently. 877-369-1199; www.forbestusa.net.

8 / GENERAL PIPE CLEANERS GEN-EYE USB

The Gen-Eye USB video inspection system from General Pipe Cleaners/General Wire Spring records videos and photos on USB flash drives. The command module has a USB port to store up to 128 GB of video or still images; a 10.5-inch LCD color monitor for crisp, clear pictures; a full-size, waterproof keyboard for on-screen titling, footage counter, date and time stamp, and voice-over microphone. All are safely contained in a heavy-duty Pelican case that weighs 12 pounds. Three models are offered: the Gen-Eye USB; the USB-W with Wi-Fi to record inspections on your smartphone or tablet; and the USB-P premium inspection system that includes all the features of the USB, plus a sunlight-readable screen and a four-hour battery for remote operation, as well as the Wi-Fi transmitter. 800-245-6200; www.drainbrain.com.



9



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11



12

9 / HATHORN M5W MICRO REEL

The M5W Micro Reel from Hathorn delivers everything needed to perform quick inspections in pipes ranging from 1 1/2 to 3 inches in diameter and up to 100 feet in length. The camera is easily portable, weighing only 15 pounds. The system comes equipped with a 512 Hz transmitter and a resettable on-screen footage counter. The video is streamed directly to any mobile device, which can be used as your monitor. Audio and video can be recorded to a mobile device as well. The files are saved on the device and can then be transferred via email or text or to the cloud. 905-604-7040; www.hathorncorp.com.

10 / MYTANA MFG. DRAINSTEER

The DrainSteer from MyTana Mfg. uses high-pressure water for propulsion, steering and cleaning as it captures live inspection video from inside lateral lines. Its design makes it able to traverse multiple bends in pipe, steer through branches and levitate above debris. With these special capabilities, municipal contractors and commercial plumbers can locate failed pipes, cross bores and blockages, as well as perform cleaning. It is fully water-driven, as six propulsion nozzles generate the power needed to pull its own flexible hose through multiple bends, and a side nozzle on the camera can be aimed to steer through diverging pipes and hover past obstacles. An optional forward-facing nozzle can be pulsed to clear debris and other obstructions. The system works with any high-pressure water source, including pressure washers and combination trucks. Its 1/2-inch hose comes in lengths from 115 to 190 feet. 800-328-8170; www.mytana.com.

11 / PEARPOINT FLEXITRAX P550C

The flexitrax P550c from Pearpoint is designed around simplicity of operation. Ready to use 30 seconds after powering on, it requires minimal training to operate, letting the user concentrate on pipe inspection. A large, 12.1-inch, HD, daylight-visible screen combined with a full-size keyboard and dedicated function keys guide the user through the survey process, making the system faster and easier to use. Built in is a high-capacity internal lithium-ion battery, providing power for up to a full day's typical usage, and 128 GB of solid-state memory, sufficient for over 90 hours of video recording. This portable and modular crawler system can be customized for the inspection of a vast range of pipes, in all locations. Its rugged, ergonomic design makes it easy to transport and wheel on site, allowing users to reach access points beyond the range of their vehicle. 800-688-8094; www.pearpoint.com.

12 / PERMA-LINER INDUSTRIES DRAIN/PIPE INSPECTION CAMERA SYSTEM

Perma-Liner Industries offers a drain/pipe inspection camera system with either a 130-, 165- or 197-foot option of 1/4-inch-diameter cable. The 7-inch monitor offers LCD color with universal installation brackets, a push record button, SD card slot and rechargeable battery that lasts up to five hours per charge. The camera head is made of 304 stainless steel, measures 1 1/2 by 3 1/4 inches, and features a view angle of 120 feet, focal distance of 5 to 47 inches, 1/3-inch Sony CCD, 480 TV lines sensor and self-leveling feature. The camera head is waterproof up to a maximum of 65 1/2 feet underwater. The inspection camera boasts two roller skids: a mini skid with a diameter of 2 3/4 inches and another universal skid with a diameter of 4 3/4 to 6 inches. The camera system is a lightweight design at approximately 25 1/2 pounds. 866-336-2568; www.perma-liner.com.

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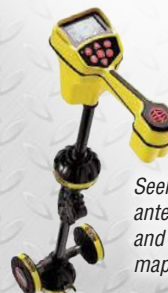
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14



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15



16



13 / RAPIDVIEW IBAK NORTH AMERICA MICROLITE PUSHROD SYSTEM

The **MicroLite Pushrod System** from **RapidView IBAK North America** is a lightweight, small-diameter push system with a durable steel frame construction that delivers a high-quality image for all contractors and plumbers. Fitted with 100 feet of push cable, powerful LED lighting and an auto-uprighting camera, it is designed to inspect pipelines 2 to 4 inches in diameter. The entire system is powered by rechargeable batteries and is equipped with the positionable **MicroLite Command Console**, which includes a 10-inch touch-screen monitor, full Windows operating system, two USB connections and recording software. 800-656-4225; www.rapidview.com.

14 / RATECH ELECTRONICS PAN N' TILT PUSH CAMERA

The **Pan n' Tilt** push camera from **Ratech Electronics** can be used for pipes and drains as small as 4 inches in diameter. It can be used as a retrofit to existing systems or as a stand-alone unit. It rotates fully 360 degrees and 210 degrees up and down, allowing users to view the pipe condition easier and in greater detail. An optional, steerable gooseneck can assist. Combining this camera with a control unit such as the **Elite SD** enables recording capability using SD/USB drives and allows MPEG video capture and JPG image capture of pipe inspections. Also included is a 512 Hz sonde, an on-screen text display overlay system, electronic distance counter, time, date and eight pages of memory. It comes with 200 to 400 feet of Gel Rod cable. 800-461-9200; www.ratech-electronics.com.

15 / RIDGID CS65X

The **RIDGID CS65x** digital reporting monitor has Wi-Fi and Bluetooth, as well as immediate access to footage from drainline inspections. It provides one-touch image recording for fast, efficient documentation of inspections, along with a new, faster processor and solid-state hard drive. It has ample storage for multiple jobs and docks to the **SeeSnake Max rM200** camera system for on-site reporting. It has a built-in, water-resistant keyboard for easy addition of on-screen titles and annotation of captured media, as well as a daylight-viewable display for a clear in-pipe image. It has a companion app compatible with Android and iOS devices. 800-769-7743; www.ridgid.com.

16 / SPARTAN TOOL EXPLORER

The **Explorer** modular camera system from **Spartan Tool** has a control box that is compatible with five different pushrods up to 400 feet in length, letting the user quickly adapt to any environment. Included **WinCan** software allows the user to map full plumbing systems for future reference, and files can be saved to a **WinCan** account, the cloud, external USB drives and the system's internal storage. The stainless steel camera head provides a crisp, color picture to the super-bright, sunlight-readable LCD. Change out reels to create a system that provides the ability to tackle any size job. 800-435-3866; www.spartantool.com.

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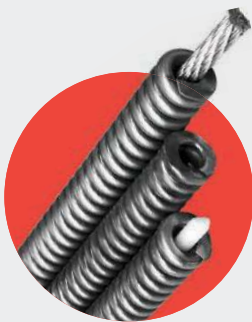
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17

17 / TROJAN WORLDWIDE C100-512SL

The C100-512SL self-leveling color camera system from Trojan Worldwide is a lightweight, easy-to-operate system designed for 1 1/2- to 4-inch lines. It has a 1-inch, self-leveling waterproof color camera head with adjustable LED lights. The 512 Hz sonde transmitter is built into the spring of the camera, which allows more flexibility when maneuvering around sharp turns, and also creates a stronger signal for locating. The system has a 115-foot durable pushrod and a built-in footage counter. The display screen is a 7-inch LCD with DVR, with SD card recording and a built-in microphone for voice recording. The built-in battery offers seven hours' runtime and has an AC adapter for charging or direct power. Also included is the SD card, USB adapter for the SD card, protective visor, two skids and a waterproof case for the entire system to fit in for easy transportation. 800-392-4902; www.trojanworldwide.com.

18 / VAC-CON SEWER ROBOTICS C70

The Sewer Robotics C70 HD video cleaning nozzle, distributed by Vac-Con, boasts eight interchangeable cleaning jets, double sapphire lenses, LED lighting and a self-leveling HD camera for optimal video recording and clarity. It is designed to jet pipelines ranging from 6 to 40 inches. To ensure durability and longevity on the job, it is equipped with an eight-hour-plus runtime and is fully submersible. It offers a flow of 40 to 170 gpm and operates at a pressure of 2,000 to 4,000 psi. The Wi-Fi-integrated nozzle allows for wireless video downloading to the included tablet, which also features GPS. It is offered in a protective case kit, which includes the nozzle, tablet, pipeline viewing software, jet inserts and battery charger. A range of optional accessories is also available, including skids and assessment software. 904-284-4200; www.vac-con.com.



18



19

19 / VIVAX-METROTECH VCAM-6

The vCam-6 HD inspection system from Vivax-Metrotech includes features such as text writer, voice-over, locatable sonde and traceable pushrod as standard equipment. The standard reel is available with 200, 300 or 400 feet of pushrod and choices of 1.3- or 1.8-inch self-leveling HD camera. The system includes a daylight-viewable control module with a 9.7-inch HD LCD monitor, distance counter and internal rechargeable batteries with five-plus hours of battery life. Video recording and JPG-format pictures can be saved to the internal 1 TB hard drive. The control module has built-in Wi-Fi to stream live video and snapshots to smartphone apps or directly to a computer for recording to the hard drive. 800-446-3392; www.vivax-metrotech.com.



20

20 / WOHLER USA VIS 700

The VIS 700 HD inspection system from Wohler USA provides flexible features needed for a variety of inspection applications. It offers razor-sharp, HD images; zoom; a focus function via joystick for precise inspection; and the ability to stream live images and video via wireless LAN. It comes with a removable touch-screen monitor with adjustable handgrip; automatic screen rotation; on-screen keyboard for notes; a voice-over recording option; an easy-to-clean, removable pushrod; and variable pan-and-tilt speed via joystick. 978-750-9876; www.wohlerusa.com.

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Want a single machine to tackle the many challenges you face in a workday? The new M745 Workhorse cleans drain *and* sink lines, and lets you throttle speed to get the job done fast, safely and completely.



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22



21

MAPPING SOFTWARE

21 / WINCAN SOFTWARE

Maintaining sewers starts with understanding sewer condition, and WinCan software makes it easy to collect detailed, standards-compliant inspection data. It identifies trends, pinpoints hot spots, prioritizes maintenance and lets the user forecast budgets. Its broad range of reporting and data visualization tools lets the user drill down to the insight needed. Integrate with a choice of GIS mapping systems, or use the internal mapping tools for increased capabilities. It works with all brands of sewer inspection technology — including crawlers, zoom cameras and push cameras — as well as all major applications of side scanning, laser profiling, manhole scanning and other emerging technologies. It also integrates with many municipal asset management applications. Its modular design lets users expand capabilities as needs evolve. Add-on modules support emerging technologies like side scanning, laser, sonar and 3D visualization. 877-626-8386; www.wincan.com.

SONAR PROFILING

22 / CUES CATVS

The CUES CATVS system is a TV and sonar system that transmits both video and sonar on a single multiconductor cable. Users can double their productivity by performing both sonar and TV inspections in one run. It is suitable for partially and fully charged pipelines, including difficult-to-inspect siphons. This system is designed to work with the OZII camera and the Marine Electronics Sonar using a standard CUES gold cable. It can be adapted to multiple platforms including TV/sonar float, sonar-only float, steerable and nonsteerable Pipe Ranger transporters, and the Mudmaster transporter. Users can perform up to 5,000-foot inspection distances, depending on the equipment configuration. The system can be quickly and easily retrofitted and/or upgraded on most trucks/vehicles. 800-327-7791; www.cuesinc.com. **c**

Mainline Sewer Inspection

By Craig Mandli

RAPID ACOUSTIC INSPECTION LEADS TO FOCUSED CLEANING EFFORTS

PROBLEM / With a time-based maintenance program, Little Rock Water Reclamation Authority in Arkansas annually serviced 40% of its small-diameter collections system using high-cost resources such as CCTV or cleaning. Some of these serviced segments had plenty of flow capacity, while blockages in other parts of the system were being missed and causing overflows. Despite having a highly sophisticated cleaning program, Little Rock looked to enhance its program and reduce its sanitary sewer overflow count by implementing new technologies.

SOLUTION / In January 2017, Little Rock started utilizing the Sewer Line Rapid Assessment Tool, or SL-RAT, from InfoSense to rapidly screen 100% of its small-diameter pipes for blockages on an annual basis at very low cost. High-cost resources such as cleaning and CCTV were focused on the 20% of the system that was determined to have blockages through acoustic screening.

RESULT / By deploying resources based on condition, rather than time, Little Rock reduced time spent on unnecessary cleaning. By utilizing acoustic technology to screen before cleaning, Little Rock cleaned 32% fewer linear feet but increased cubic yards of debris removed by 116% in 2017. By 2018, SSOs were reduced by approximately two-thirds without hiring any additional personnel. 877-747-3245; www.infosense.com. **c**



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SPOTLIGHT

Collect sewer data with ease

By Craig Mandli



Collecting data from sewer system inspections can be a complicated, tedious process, often including multiple software programs and pieces of hardware. Using the equipment can be complicated and time consuming. Trio-Vision faces those issues head-on with AssetDMS.

Utilizing an operator-friendly, intuitive touch-screen interface, AssetDMS makes collecting and analyzing pipe survey data second nature. The data collection process is simple and highly streamlined, with built-in user prompts that ensure critical information is captured accurately. Compatible with a wide range of manufacturers' CCTV systems, it allows for import/export from any certified Pipeline Assessment and Certification Program (PACP)/Lateral Assessment and Certification Program (LACP)/Manhole Assessment and Certification Program (MACP) database. PACP reference photos are included to eliminate the need to memorize all the codes and rules.

"The entire system was developed with the end user always in mind," says Hildemar Sanchez, software sales and support and electronic engineer with Trio-Vision. "It is made simple and quick to use, minimizing data entry time and maximizing accuracy."

A comprehensive and extensive reporting suite provides easy-to-understand analysis reports to help technicians make well-informed and accurate decisions regarding the health and rehabilitation requirements of underground infrastructure systems. The data collection process was developed specifically to enable the user in the field to collect data without having to manage multiple screens and complex database software programs. Utilizing the touch-screen interface is second nature, especially for young, technology-savvy technicians.

Users can select their choice of video-recording formats, and a continuous digital video recording is made of the inspection view as it appears on the TV monitor. This becomes a permanent record of defects found. The digital video encoding includes both sound and video. These images or video clips can be easily launched for viewing during inspection report review. Depending on the nature of the project, video logging and image capture are available. These may be entered in video surveys either in real time or later, from previously recorded inspections.

"The system is the result of 30 years of industry field knowledge combined with 24 years of software development and process reengineering," Sanchez says. "Users have found it very easy to use, and it doesn't require the tech to memorize any NASSCO regulations to generate a fully compliant inspection. That minimum training time is key." 800-443-3761; www.assetdms.com.



1 VAC-CON RECYCLER TRUCK-MOUNTED COMBINATION MACHINE

The Vac-Con Recycler's recycling components include a two-stage water filtration system with a stainless steel first-stage filter for removal of large particulate. The second-stage filter is self-cleaning and features a high-pressure backflush at 2,000 psi. It has water flows of 50 to 80 gpm, and water pressure can be activated or deactivated regardless of system revolutions per minute, due to a hydraulic control located at the control panel. The recycling system operates with freshwater and recycled water. During recycling, water is used from the debris tank directly and does not enter the freshwater system. Freshwater and recycled water are completely separated from one another. 904-284-4200; www.vac-con.com.

2 WATER CANNON FL-ABB 200 SURFACE CLEANERS

The FL-ABB 200 stainless steel surface cleaners from Water Cannon Inc. - MWBE have an added air-recovery design and hook up to pressure washers and wet vacuums for almost any cleaning requirement. The cleaners remove dirt, paint, grime and even graffiti from a wide variety of surfaces. There is no overspray or flying debris, providing a safe and clean work area. They are available in 12-inch single-arm and 21- and 30-inch double-arm floor models. The air recovery port will accept 2-inch vacuum hose. Floor units are standard with three or four caster wheels, and all units are rated to 240 degrees F. The professional line is ready to use with no tools required for assembly. 800-333-9274; www.watercannon.com.



3

3 COXREELS MULTILOBE SEALS

COXREELS' upgrades to the nitrile 1.5- and 2-inch in-line swivels have advanced multilobe sealing technology. The enhanced seals are designed to maximize seal integrity, improve overall seal performance and maximize seal life. Testing has shown that the performance of the multilobe seals exceeds that of the standard O-ring, cup and T-seals for large-capacity fluid handling and high-volume delivery in both high- and low-pressure applications. Additionally, the new seal geometry has a better resistance to compression set, a leading cause of premature seal failure. 800-269-7335; www.coxreels.com.



4

4 SPARTAN TOOL REVOLUTION DRAIN CLEANING MACHINE

The Spartan Revolution, a private label of the Picote Mini Cleaner, is a high-speed machine for cleaning, descaling and blockage removal. The Revolution is designed to work in P-traps, U-bends and pipes with multiple 90-degree bends. It is made with a specially produced, highly flexible, durable outer casing, which is flame, abrasion and chemical resistant. 800-435-3866; www.spartantool.com. **c**

New Jetstream website offers a more intuitive experience

Jetstream of Houston announced the launch of its new website. Featuring a fresh design and improved navigation, the site offers visitors a more intuitive digital site experience to better serve industrial cleaning customers with its waterblasting solutions. The new website gives visitors easier access to information on products, services, solutions and resources, and the site platform is easier to maintain and manage.

TRY TEK announces new website and online store

TRY TEK Machine Works announced the launch of its new website and online store. New enhancements include easy navigation; more responsive, user-friendly desktop, mobile and tablet versions; new products; and a new online store. The new site can be viewed at www.trytek.com.

Vac-Con announces new Michigan dealership

Vac-Con announced that it has added Lakeshore Municipal Equipment to its dealer network. Lakeshore Municipal Equipment is a family-owned company located in Holland, Michigan. It is the primary Vac-Con dealership for the state of Michigan and will support all functions including sales, service and parts.

Pipe Lining Supply adds a new technical representative and sales

Pipe Lining Supply announced the promotion of Chris Gorum to the position of technical representative and sales serving Texas. He has been with Pipe Lining Supply since 2015 in the warehouse division. Gorum will support Pipe Lining Supply's customer base with training, advice and sales for CIPP lateral lining and AIPPR pipe coating projects for drain, waste and vent in Texas and surrounding areas. **c**



Chris Gorum



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