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PROFESSIONALS

QUALITY COUNTS

STRATEGIC BUSINESS MOVES AND HIGH
STANDARDS HELP HURRICANE HYDROVAC STAY
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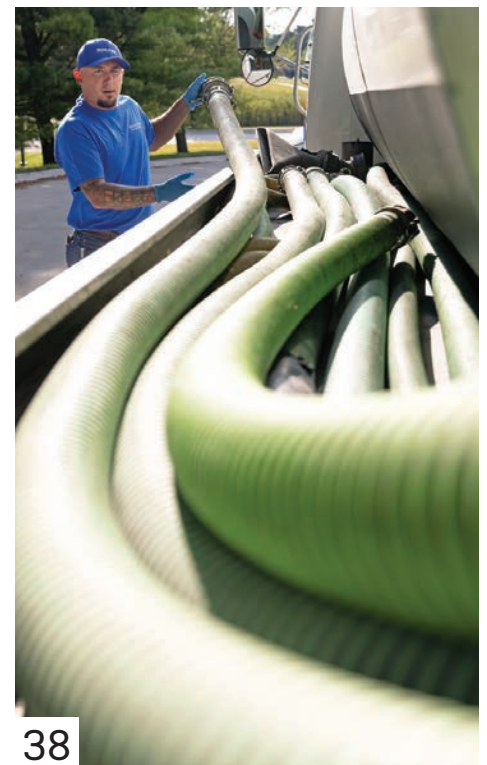
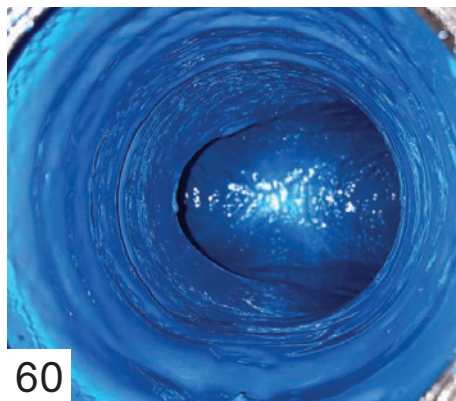
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// By Craig Mandli

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ON THE COVER // Hurricane Hydrovac has grown dramatically since its start in 2015 in Essex, Ontario. The company made strategic acquisitions that enables it to offer a wide range of services across southern Ontario. Having a base of experienced operators has helped create a reputation as a reliable provider of grease trap services, sewer cleaning and inspection, industrial cleaning, and trenchless pipeline work. "If you have a job that requires a vac truck, we can do it," says co-owner Shawn O'Keefe. "We're licensed to carry anything. A lot of guys in this business just dig holes. But we do everything, from handling emergency spills and sewer flushing to industrial cleaning and railroad work." (Photography by Eric Seals)



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Cleaner

FOR DRAIN AND PIPE CLEANING, INSPECTION AND REHABILITATION PROFESSIONALS

Published monthly by COLE Publishing, Inc.
1720 Maple Lake Dam Rd., PO Box 220, Three Lakes, WI 54562

Call toll-free 800-257-7222 | Outside of U.S. or Canada call 715-546-3346
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CONTROLLED CIRCULATION: 21,500 per month. This figure includes both U.S. and international distribution.

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Email me with comments, questions or opinions at editor@cleaner.com

SHIFT AND CHANGE

Saying yes to a new opportunity

IT'S BEEN A BITTERSWEET FEELING over the last few weeks knowing that this issue of *Cleaner* is my last.

The last four years as editor of the magazine have been by far the most interesting, challenging and informative of my career. I've learned more about this industry than I ever imagined when I started out.

Crafting and sharing stories about your fellow contractors, the latest equipment innovations and business advice has not only taught

me a lot and made me better in my own field, but also has given me an immense and lasting appreciation for the drain cleaning industry.

I'm so thankful to have had the opportunity to speak with and learn from so many contractors during my time working on *Cleaner*. While I hope you never outgrow the magazine and continue to find it helpful, I've been consistently blown away by what so many of our featured companies have already achieved. The ambition, dedication, knowledge and work ethic on display in these pages has been so fun to share with you. It's simply been a pleasure to tell your stories.

Thankfully, I'm not leaving the industry; we're just shifting some responsibilities around here at COLE Publishing.

I've talked many times in this space about seizing opportunities, taking risks and growing with your business. So it seems only right to take my own advice. While even small changes to your career — especially when you own your own business — can feel momentous, standing still is usually not an option. Keep moving, growing and learning, and a lot of those changes will pay off in some way.

While I've very much enjoyed my time at the helm of *Cleaner*, when we decided to revamp our e-newsletters — as a way to share even more content and become a more complete resource for our readers — I jumped at the chance to take on the challenge of that new project.

(If you're a subscriber you'll already have noticed the changes. If you're not, head to Cleaner.com to sign up.)

My colleague Kyle Rogers will be taking over as editor of *Cleaner*. He's been the digital editor for this magazine, among others, for several years. The magazine will be in good hands.

I'd like to say thank you to all the people here at COLE Publishing and the dedicated freelance writers who worked with me on this magazine behind the scenes. I couldn't have done it without your help.

A big thank-you also goes out to all the contractors, manufacturer representatives and other industry professionals who have been such valuable resources to me as I learned this industry.

Thanks for reading.

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



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CAMERA READY

Contractors on the Job

When photographers accompany *Cleaner's* profiled contractors on job sites, more photos are taken than can fit on the pages of the magazine. Here is another online gallery of bonus photos featuring some of the companies that have been profiled so far in 2022. >> cleaner.com/featured



ALTERNATIVE THINKING

Prairie Dog Control With a Vacuum Truck

Vacuum trucks are versatile machines — cleaning sewers, potholing utilities, prairie dog control. Yes, prairie dog control. That's what one man has been using a vac truck for over the past three decades. Read about the Colorado-based business Dog-Gone Prairie Dog Control in this online exclusive. >> cleaner.com/featured

OVERHEARD ONLINE

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— [How to Handle Your Business Getting Sued](#)

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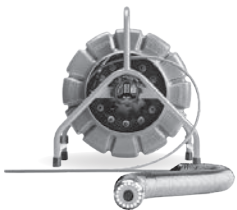
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◀ Hurricane Sewer Maintenance Services, a division of Hurricane Hydrovac in Essex, Ontario, provides inspection services as well as sewer cleaning. The company owns four camera trucks outfitted with IBAK inspection cameras.



QUALITY COUNTS

STRATEGIC BUSINESS
MOVES AND HIGH
STANDARDS HELP
HURRICANE HYDROVAC
STAY COMPETITIVE IN A
FLOODED MARKET

// By Ken Wysocky

Photography by Eric Seals

Every day, more than two dozen hydroexcavation and dry- and wet-vacuum trucks owned by Hurricane Hydrovac fan out across southern Ontario to expose underground utility lines, dig trenches, perform industrial cleaning, pump out septic tanks and flush municipal sewer lines.

Offering this broad range of services is a chief reason why the company — based in Essex, Ontario, about 15 miles southeast of downtown Detroit — has grown dramatically since its inception in 2015.

“We do all kinds of vacuum work,” says Shawn O’Keefe, who co-owns the company with business partner Max De Angelis. “If you have a job that requires a vac truck, we can do it. We’re licensed to carry anything.

“A lot of guys in this business just dig holes. But we do everything, from handling emergency spills and sewer flushing to industrial cleaning and railroad work.”

Strategic acquisitions also have played a key role in the company’s growth. In fact, the biggest acquisition — the 2015 purchase of Heaton Sanitation, which cleans grease traps and septic and holding tanks — essentially created Hurricane Hydrovac.

And in 2016, the company acquired Leamington-based Sewer Maintenance Services, which cleans and inspects municipal sewer lines and does trenchless pipeline rehabilitation work. The company was rebranded as Hurricane SMS and operates as a separate company from Hurricane Hydrovac (see sidebar).

Today, the company’s primary customers are gas and electric utilities, telecommunications companies, municipalities, general contractors that do roadwork and heavy construction, O’Keefe says.

WEALTH OF EXPERIENCE

O’Keefe, age 49, has deep roots in the excavation world. While attending high school and earning an engineering degree at the University of Windsor, he worked for his father’s company, Michael O’Keefe Ltd., which did excavating, septic tank pumping and industrial cleaning.

“I was running heavy equipment at age 15,” he recalls.

In 1996, after graduating from the university, O’Keefe started working for his father full time. Around 2009, he persuaded his father to add hydroexcavating to the company’s services. And in 2015, O’Keefe and De Angelis, whom O’Keefe knew after years of working together in the construction field, teamed up to buy Heaton Sanitation and form Hurricane Hydrovac.



Hurricane Hydrovac Ltd.

ESSEX, ONTARIO

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FOUNDED 2015

EMPLOYEES 85

SERVICES Hydroexcavation, sewer cleaning and inspections, septic and liquid-waste removal

SERVICE AREA Southern Ontario

WEBSITE hurricanehydrovac.ca



Operators Carmon Geffs and Tom Ross use a Foremost hydrovac to locate a utility line on a job site in Windsor, Ontario.



“IF PEOPLE BALK AT OUR PRICES, WE EDUCATE THEM AND EXPLAIN THAT TRUCKS COST ABOUT \$500,000 AND THAT LABOR RATES FOR EXPERIENCED OPERATORS ISN’T CHEAP, EITHER.”

SHAWN O’KEEFE

Heaton Sanitation is still in business and focuses mostly on cleaning septic tanks, grease traps and holding tanks, while its hydroexcavation services were folded into the Hurricane Hydrovac umbrella.

“We saw there was a growing need for hydrovac service,” O’Keefe says. “It was a great opportunity because at the time, there wasn’t a ton of competition. So we wanted to get in early, dominate our area and expand into southern Ontario.

“Now there’s a ton of companies entering the market — probably 10 times more than when we started. But there’s also a lot more need for hydrovac work, so for the most part, there’s plenty of work to go around. It’s just hard to get prices where they should be.”

ACQUISITION ADVANTAGES

O’Keefe and De Angelis debated the pros and cons of starting a company from scratch for some time before deciding that acquiring a company provided two big advantages: It eliminated a competitor and gave Hurricane Hydrovac a core group of veteran, experienced operators right away.

“By acquiring Heaton, we started out with a large customer base and operators with decades of experience, which was priceless,” O’Keefe notes. “Some of our guys have been operating hydroexcavation trucks for more than 25 years, which is a huge knowledge base.”

Starting out with a solid base of experienced operators also enabled the company to charge profitable rates, as opposed to a discounted rate to gain market share, he says.

“We don’t sell jobs based on price,” O’Keefe explains. “We sell based on providing the best service. If people balk at our prices, we educate them and explain that trucks cost about \$500,000 and that labor rates for experienced operators isn’t cheap, either.”

« Geffs and Ross excavate a trench on a job site for a new subdivision.

“We believe that customers want you to be available when they need you and they want you to provide good, quality equipment and knowledgeable people. When someone hires a hydrovac company, it’s a big expense. But they’ll accept that as long as they get good service.”

INVESTING IN EQUIPMENT

A critical part of providing good service is investing in quality equipment that maximizes productivity and profitability and minimizes downtime. And Hurricane Hydrovac’s fleet of equipment reflects that emphasis on service.

When Hurricane Hydrovac acquired Heaton, the former owned four hydrovac trucks and Heaton owned seven. Now the company owns a fleet of 13 hydroexcavation trucks, eight combination sewer trucks and five liquid-vacuum trucks.

Five of the hydrovac trucks are Vector HXX models built on Kenworth, International and Western Star chassis. They carry 15-cubic-yard debris tanks and 1,300-gallon water tanks and rely on CAT water pumps and blowers made by Hibon (a brand owned by Ingersoll Rand).

The company also owns two hydrovac trucks built by Foremost on Kenworth chassis with 15-cubic-yard debris tanks, 2,000-gallon



« A technician operates the controls of an IBAK inspection system.



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SHAWN O'KEEFE

water tanks, Cat water pumps and blowers from Robuschi-Gardner Denver; one Hydro Trencher unit built by Hi-Vac Corporation on a Western Star chassis with a 15-cubic-yard debris tank, two 500-gallon water tanks, a Cat water pump and a Hibon blower; and four T10

trucks built by Rival on Western Star chassis and featuring 10-cubic-yard debris tanks, 1,200-gallon water tanks, Robuschi-Gardner Denver blowers and water pumps made by Pratissoli (a brand owned by Interpump Group of S.p.A.).

A Wolf hydroexcavator, built by Westech Vac Systems on a Western Star chassis with a 15-cubic-yard debris tank, a 1,300-gallon water tank, a Cat water pump and a Hibon blower, rounds out the roster of hydrovac trucks.

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« Hurricane Hydrovac's equipment lineup includes a Vactor 2100 Plus used for sewer flushing and hydroexcavation, and a cube van outfitted with a RapidView IBAK inspection system.

MORE SERVICES, MORE TRUCKS

The company also owns eight Vactor 2100 combination sewer trucks built on Kenworth, Western Star and Sterling chassis; they feature debris tanks ranging from 12 to 15 cubic yards, Vactor-made water pumps and either blowers made by Roots (a brand owned by the Howden Group) or two-stage fans made by Vactor.

In addition, the company has invested in five liquid vac trucks built out on Peterbilt and Western Star chassis by Presvac Systems Ltd. and Hi-Vac; they feature 3,000 to 4,000-gallon debris tanks and vacuum pumps manufactured by Robuschi. Two liquid vac trucks built by Custom Vac Services and used primarily for septic and liquid-waste industrial work, feature Peterbilt chassis, 4,000-gallon debris tanks and vacuum pumps made by Robuschi.



Technicians hydroexcavate to expose a utility line at a job site.

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ENTERING NEW MARKETS

To expand its geographic footprint as well as add a valuable service increasingly requested by customers, Hurricane Hydrovac purchased Sewer Maintenance Services.

As implied by its name, SMS — which was renamed Hurricane Sewer Maintenance Services to reflect the Hurricane Hydrovac brand — provides sewer maintenance and inspection services. Hurricane Hydrovac already did sewer cleaning, but not inspections, which left a hole in its service offerings, says Shawn O’Keefe, co-owner of Hurricane Hydrovac, based in Essex, Ontario.

“We wanted to get into camera work for sewers and SMS had been doing it for many years,” O’Keefe explains. “The owner was getting close to retirement age, so we approached him to see if he was interested in selling the business.

“It made sense because it goes together with things we already were doing. We also wanted to expand into the London market, but we knew we’d have to offer camera service because customers there want both services. So not having CCTV service was a barrier to entry in the London market.”

Why didn’t HH just start its own company or invest in inspection cameras? The answer is simple: Acquiring a company provides an established customer base, not to mention a wealth of institutional knowledge provided by employees, as well as the former owner, who stayed on board for about 1 1/2 years to ease the ownership transition, O’Keefe says.

The purchase of SMS also provides built-in opportunities to cross-market its services to HH customers and vice-versa.

“Hurricane Hydrovac still does quite a bit of flushing (sewer cleaning) for municipalities,” he says. “When those customers need video, we send them to SMS. It helps because if someone calls for that kind of work, they know we specialize in it, not just dabble in it.”

To serve customers, the company owns four camera trucks outfitted with IBAK inspection camera systems, and four Vactor 2100 combination sewer trucks with Kenworth and Western Star chassis. The trucks are equipped with debris tanks ranging from 12 to 15 cubic yards and blowers made by Roots (a brand owned by the Howden Group) or two-stage fans made by Vactor.

About half of the company’s clients throughout southwestern Ontario are contractors that install sewers and need to provide inspection videos to show they were installed correctly; the rest are municipalities that use the company for emergency work or to perform scheduled maintenance on a contract basis, he says.

An emergency job two or three years ago in Windsor exemplified the company’s capabilities. A roofing company accidentally spilled about 150 gallons of hot tar that drained into a catch basin, then traveled into a sewer main.

“Nobody thought anything of it at the time,” says Justin Hayes, general manager of Hurricane SMS. “And nobody said anything about it, either — until a homeowner reported a sewage backup.”

The main problem was a 2-to-3-foot-long plug of solidified tar in roughly 15-by-20-inch-diameter, egg-shaped brick combination storm and sanitary sewer. Workers broke through the plug, but when they pulled back the nozzle, the hole kept collapsing in on itself, he explains.

The crew switched from hot water, which they figured would melt the tar (but it didn’t) to cold water, which made the tar more brittle and easier to break up.

In addition, the company brought in a water truck to ensure a continuous water supply for the Vactor 2100 combination sewer truck they were using to flush the line, Hayes says.

Using a Warthog nozzle from StoneAge, workers finally were able to break up the tar plug.

“We flushed for eight hours straight, hammering back and forth,” he says. “We also pulled out about a 10-foot-long slug of tar that had settled on the bottom of the sewer line, like a big snake, plus some smaller chunks.

“On a scale of one to 10, this job was probably an eight. We were there until about 3 a.m. the next day. But honestly, I love jobs like that — challenging jobs that are out of the ordinary and where our equipment, our guys and our experience all come into play. Situations like that are what make work fun.”

Hurricane Hydrovac also invested in a Hi-Rail dry-vacuum truck built out by Guzzler Mfg.; it’s equipped with special wheels that enable it to drive on railroad tracks when needed. It features an 18-cubic-yard debris tank and a Hibon blower and is used to clean up spills at railroad yards or in rail tunnels.

Investing in quality equipment also works as an employee retention tool, O’Keefe notes.

“They need to believe in the ownership of a company. If employees see a company doesn’t invest in new equipment and start thinking it won’t be here in a few years, they’re less likely to stick around. Plus, guys love to run newer trucks.

“We don’t cut corners on maintenance, either. One of the most frustrating things for an operator is showing up on a job with a truck that’s not working 100% and having to explain that to a customer. We don’t put our guys in that position.”

To that end, the company runs its own repair shop with eight to 10 full-time mechanics, another eight or employees that do painting and sandblasting and a couple more that do metal fabricating.

“With a repair shop, we can control the time it takes for repairs,” O’Keefe says. In addition, the shop has enough room for about 18 dozen trucks indoors, which saves money on winterizing them, he adds.

QUALITY COUNTS

The company prides itself on providing customers with fast, quality work. To ensure that requires building a culture that rewards hard work and integrity. Part of that culture was built by veteran Heaton employees that stayed on board after the acquisition, O’Keefe notes.

A lead-by-example ethic instilled by O’Keefe and De Angelis also sent a strong message to employees.

“Nobody here is too good to get dirty or do dirty work,” O’Keefe explains. “Max and I and our managers aren’t afraid to get out in the field. I still run (excavation) equipment on most days. The easiest way to earn the respect of employees is to get out there with them.”

CONTINUED >>

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» The crew at Hurricane Hydrovac includes (from left) Mike Talbot, president Shawn O’Keefe, Andrew Beaudoin, Steve Hamza, Carmon Geffs, Tom Ross, Kaleigh Hayes and Heather Moric.

“NOBODY HERE IS TOO GOOD TO GET DIRTY OR DO DIRTY WORK... THE EASIEST WAY TO EARN THE RESPECT OF EMPLOYEES IS TO GET OUT THERE WITH THEM.”

SHAWN O’KEEFE

As an example, O’Keefe cites a sewer replacement project that didn’t go as planned last summer, which required a crew to dig up the line and reinstall it.

“On a Friday night, I went down into about a 10-foot-deep trench, up to my knees in mud, to fix the sewer myself. You have to lead by example.”

OPTIMISTIC OUTLOOK

Looking back, O’Keefe says the biggest business mistake he ever made was not entering the hydroexcavation market earlier.

“We should’ve started 10 years before we did,” he says. “We would’ve had an even better head start.”

But looking ahead, the entrepreneur expects continued growth for Hurricane Hydrovac — no tapping on the brakes ahead. And some of that growth could come from expanding services geographically and perhaps even buying more companies.

“I don’t think you can stop growing,” he says. “And I don’t see a slowdown in sight. But we’re looking for organic growth, maybe by spreading farther east more than we have.”

Whatever growth occurs, O’Keefe doesn’t want it to come at the

expense of quality control and customer satisfaction.

“We’re not looking to quickly double or triple in size. If we can grow 10-20% a year, that would be sustainable. And we’re always open to more acquisitions if the right opportunities come along.” c

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UNLEASHED POTENTIAL

Preparation, operation and maintenance come together for better vacuum excavation performance

// By Chris Thompson

REGARDLESS OF THE application or job site, vacuum excavation operators know they have the versatile tool needed to get the job done. What was once originally popularized by their role in providing support on directional drilling jobs, vacuum excavators are now being used for irrigation installation, landscaping and a variety of green-industry tasks. In short, the popularity of vacuum excavators continues to grow in the underground construction industry.

One reason for this growth is that vacuum excavators are designed to mitigate damage on the job with their versatility, ease of use and soft excavation traits. This makes them the ideal machine for the damage-conscious contractor, especially with today's job sites often being more compact and congested. But even though vacuum excavators are designed for simple, safe excavation, contractors can't realize the full benefits if they don't understand how to properly use and maintain their machines.

And with a machine designed to boost operator efficiency, it is no surprise that vacuum excavation best practices are just as simple. In fact, they can be broken down into only three parts: preparation, operation and maintenance.

PREP WORK

As with any underground construction job, preparation is the key to success. And preparation for vacuum excavation begins with identifying the ground conditions of the job site. Some will have soft, loamy topsoil, some will have clay and others may have limestone or rock. Each of these conditions will require a different strategy, so it's important for operators to understand their ground conditions before beginning work. Determining ground conditions can be a challenge

ONE OF THE BIGGEST SELLING POINTS OF VACUUM EXCAVATORS IS THAT THEY HAVE MINIMAL MAINTENANCE REQUIREMENTS — AND THE ONES THEY DO HAVE ARE SIMPLE.



^ Vacuum excavators — both hydroexcavators and air excavators — are versatile machines that can improve a contractor's efficiency when used correctly. The best way for contractors to set themselves up for success is to understand and follow best practices. (Photo courtesy of Ditch Witch)

when working in new regions, but local dealerships are great resources for understanding soil conditions around the area.

The next step is to decide between air and hydro excavation, or both. Soil type comes into play here too because air excavation works best in softer soil types, making hydroexcavation the best solution for rock and clay conditions.

Hydroexcavation is typically the traditional choice and is generally the more efficient solution but using air excavation eliminates the

need for liquid spoils disposal. For contractors working far away from a spoils disposal site, avoiding disposal requirements can boost productivity. Determining which excavation solution is the best fit for the job will set a contractor up for the most efficient and safe operation.

OPERATING FOR EFFICIENCY

Once you have chosen your machine and have it on the job site, you need to keep it running efficiently and protect it from any unnecessary damage.

Operational best practices begin with the vacuum excavator's wand. Operators should constantly move the nozzle around within the excavation area and keep the spray nozzle 8 inches from the ground or utility that is being exposed. Holding the nozzle closer than 8 inches or directly applying the excavator to a certain area could cause damage to an existing utility.

It's also important to never use the nozzle as a shovel or pry bar. Putting the nozzle into the dirt can cause damage to the wand and result in costly downtime. If an operator is struggling to excavate through hard soil or heavy clay, they should use a hot water heater rather than moving the nozzle closer.

Hot water heater packages can help break down soil without applying additional water pressure.

However, water temperature should stay below 150 degrees F.

Operators should also be mindful of their water or air pressure. When using a hydroexcavator, operators should always keep water pressure below 3,000 psi, whereas an air excavator should stay below 300 psi. That said, it's also best practice for operators to consult the utility owner if they are using a vacuum excavator to expose utilities, as they may have their own requirements for using hydro

or air excavation. For example, some gas line owners recommend using a maximum of 2,200 psi when exposing their utilities with a hydroexcavator to prevent any damage.

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TECH PERSPECTIVE

MAINTAINING SUCCESS

One of the biggest selling points of vacuum excavators is that they have minimal maintenance requirements — and the ones they do have are simple. Manufacturers are designing their vacuum

ABOUT THE AUTHOR

Chris Thompson is the vacuum excavator product marketing manager for Ditch Witch.

excavators to eliminate daily maintenance and grease points, allowing operators to focus on their job site tasks.

The most important daily maintenance task for operators is to always dump and clean the debris tank and empty the freshwater tank at the end of every day. This prevents complications that could limit vacuum excavator productivity.

Another maintenance best practice is to routinely check cyclonic, debris and water filters, as obstructions can reduce the suction power and water pressure of the machine.

WORK CONFIDENTLY

Vacuum excavators are versatile machines that can improve a contractor's efficiency when used correctly. And the best way for contractors to set themselves up for success is to understand and follow best practices. This will not only keep operators moving quickly but also reduce the likelihood of causing damage to existing utilities or job sites. **c**



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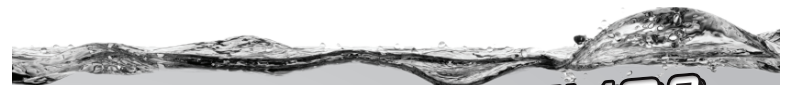


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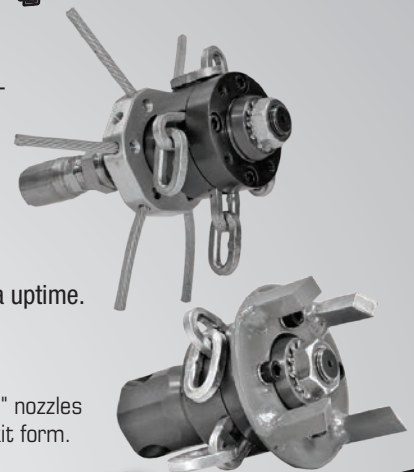
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COMPLETE TRENCHLESS SOLUTIONS

HammerHead evolves with a complete line of trenchless equipment that serves the entire life cycle of pipe // By Luke Laggis

HAMMERHEAD TRENCHLESS HAS become a well-known name in the trenchless industry. From its launch in 1989 with the HammerHead Mole piercing tool to today with a broad range of pipe rehab and replacement products, the company has focused on building tools and equipment to serve customers' specific needs.

Jeff Urbanski is the company's senior manager of marketing and training. He has 20 years of trenchless industry experience and played an integral role in developing HammerHead University to advocate and support hands-on training and education.

Cleaner recently spoke with Urbanski about the company's culture, product development philosophy and the future of the industry.

CLEANER: Tell us a little about the history of HammerHead and how it serves the water and wastewater industry.

Urbanski: The HammerHead Mole piercing tool was initially produced out of a converted chicken coop on one of our founder's properties. What

began as three friends with a drive to create a better earth-piercing tool has transformed into the industry's most complete offering of trenchless solutions from a single source. The evolution of HammerHead Trenchless encompasses a focus on trenchless technologies that service the entire life cycle of the pipe, embracing the rehabilitation and replacement of existing infrastructure. Contractors across the world have utilized our technology to grow their businesses several fold and we are a part of contractor's day-to-day lifestyles.



HammerHead University is an innovative educational experience that includes both virtual and in-person training to provide hands-on learning opportunities, including job site simulation.

CLEANER: What differentiates your trenchless pipe rehab equipment from the competition?

Urbanski: HammerHead has always stood out to the contractor regarding quality of products and the service we provide both from the office and on the job site. HammerHead spends a tremendous amount of time perfecting their products using the voice of the customer — the contractor. Those ideas and concepts are a living tribute to the relationships we have with our installers. In the drain/waste world change is inevitable to keep up with the growing problems with infrastructure. We continue to innovate and produce new products that allow our customers to test them and validate their effectiveness both short and long term. In the drain cleaning world, HammerHead's PB30 has been an extremely popular product for many years, along with our current offering of CIPP solutions, most notably HammerHead's Bluelight system.

CLEANER: What sort of applications do they best serve?

Urbanski: As we look at rehabilitation and replacement of sewer and water pipes, I pointed out our PB30 as our replacement



JEFF URBANSKI

Senior Manager of
Marketing and Training

YEARS IN THE INDUSTRY: 20

» The newest addition to the HammerHead Same Path technology line, the HydraSlitter system provides a minimally invasive alternative to open cut replacement of 1/2- to 1-inch-diameter lead waterlines.

tool for lateral pipes. It can burst pipe and is a very compact, yet powerful unit that has the ability to upsize pipe, designed for the 4- to 6-inch market. It has become an easy asset for contractors to use in small, confined spaces along with utility-based jobs. As for the Bluelight system, it has been a significant part of the last four years at HammerHead. Bluelight is the fastest growing and most exciting product we have in the market today. It allows contractors to utilize current CIPP equipment and improve their efficiency on the job site by curing liners at five times what conventional lining methods will do. This improves contractors' effectiveness along with their profitability for their business.

CLEANER: What are some recommendations for customers shopping for pipeline rehab and replacement equipment?

Urbanski: Every job for a contractor is different. Every job demands and needs different tools. That's why at HammerHead we pride ourselves on offering a full set of trenchless tools for their trenchless toolbelt. Customers can purchase our products directly on our shop site and go to our brand site for more detailed information. The biggest takeaway I have is: No two jobs are alike, and you need to have a full offering of tools to meet the demands of the consumer.

CLEANER: How has the company as a whole evolved over the past eight years under the Charles Machine Works umbrella?

Urbanski: When HammerHead was initially acquired by Charles Machine Works, it was distinctively known for the HammerHead Mole. HammerHead supported areas of pipe replacement, but it wasn't until we entered the CIPP market that we recognized the potential for the rehabilitation of existing infrastructure. As the organization continued to analyze the underground construction industry there was a lot of excitement around the opportunity for growth in rehabilitation. HammerHead has grown tremendously and now as a division of The Toro Company we feel that growth is only going to continue, and we could not be more excited for what is to come.

CLEANER: What kind of solutions and capabilities does HammerHead provide contractors? How do you see the trenchless rehab/repair industry evolving?

Urbanski: In the space of rehabilitation and replacement there isn't too much that we do not touch. Other than excavation, we can burst pipe, we can use our winches to slip line, or pull liners in



place, and we can cure liners in place. We can do point repairs; we can help with the cleaning of pipe. There are all these pieces that come together to make up HammerHead. We also offer a breath of services, featuring our training team that includes ex-contractors. Our training team goes out into the field and assists contractors and installers to understand the best use of our products and how they are effective on the job site. We even offer yearly recertification with our HammerHead University. Contractors can come to the university for additional education that allows for the growth of their team or the transition of their team. Today, there's a big push to draw in the younger generation to come work in our industry. The best way to do that is to offer unique and innovative education. We pride ourselves on our unique way to educate everyone that steps foot in our industry.

As I stated earlier, every job site is different. The knowledge and education that comes from being live at the job site is imperative. The voice of the customer is what drives HammerHead. Where do I see innovation today? I see it with equipment becoming smaller but more powerful and effective. Speed is one of the biggest things I'm seeing right now. Look at light cure in the CIPP world and resins with longer pot life but shorter cure time. Those innovations, through chemistry, have occurred to advance our industry and keep up with the demands of the deteriorating infrastructure. We are looking at our environmental footprint and what it is doing out in the industry and how it's impacting our environment. The smaller and more energy efficient we make products the better it's going to serve the contractor today and our environment in the future.

CLEANER: Tell us more about the philosophy behind HammerHead University.

Urbanski: Like many things at HammerHead Trenchless, the inception of our HammerHead University came from the voice of the customer. The key thing we want to do is create an innovative

BEHIND THE GEAR

educational experience. Trade schools are great, but we don't see many trade schools training students on trenchless technology. So, we built a comprehensive curriculum that offers in-person and virtual training as well as an eLearning capability that will be available soon. The cool thing about having those different elements is that everyone learns differently. Some people must do it; some people need to read it; some people need to hear it. Some people need a combination of everything, and HammerHead University achieves all that and more.

For in-person training, we have a 5,000-square-foot facility designed specifically to provide hands-on learning opportunities in a distraction-free and risk-free environment for trenchless contractors, installers, project engineers, utility companies and municipal crews. One of the amazing capabilities of HammerHead University is job site simulation. Whether it be working in a two-story facility, a basement or even a manhole in a city street, HammerHead University has the tools to simulate any job site.

CLEANER: Do you sell direct to contractors or go through distributors?

Urbanski: HammerHead is unique in the sense that our R&R products are almost exclusively sold direct to customers. As a component of our direct sales, we have an e-commerce platform for consumables or smaller parts at www.hammerheadshop.com. Other categories like our gas utility products and the HammerHead Mole are sold through the Ditch Witch dealer network.

CLEANER: What's on the horizon for HammerHead? Are new product lines in development?

Urbanski: Well, being a publicly traded company, we can't really tell you any of our secrets that are coming. But Toro prides itself on developing new products and HammerHead is never going to stop. We're working on multiple new opportunities and things that will be coming down the pipeline. You can see just in the last year, we launched our new bursting unit, the 175XT along with the solution to replace lead lateral services with HydraSlitter. We also launched a new epoxy system and our fast-curing point repair resin. Every year this is going to continue with HammerHead, we're not going to slow down. And it doesn't have to be just the development of a product. It can be development of services or aspects.

You're going to see a lot more from HammerHead. On the education piece you're going to see education in our learning management system through HammerHead University, you're going to see learning in a variety of new ways, because that is also a product whether you recognize it or not. It can be a service; it can be a variety of ideas. HammerHead is not going to stop offering new solutions because our customers are the lifeblood of our company and that's what keeps us going.

CLEANER: What do you want your customers to think of when they hear the name HammerHead Trenchless?

Urbanski: We want our customers to think of HammerHead Trenchless and say they are a trusted adviser with a complete suite of solutions for every pipe rehab and replacement opportunity. HammerHead offers widgets, but it's our service we want to be remembered for. Even if it's the middle of the night, if you're on a job site, we are there to help you through. Our staff is knowledgeable about not just HammerHead products, but the industry and other technologies that are available so they can make recommendations and work on solutions for the customer. Our training staff has over 100 years combined of field experience that we can bring to our customers. HammerHead Trenchless is about products, service and education. **c**

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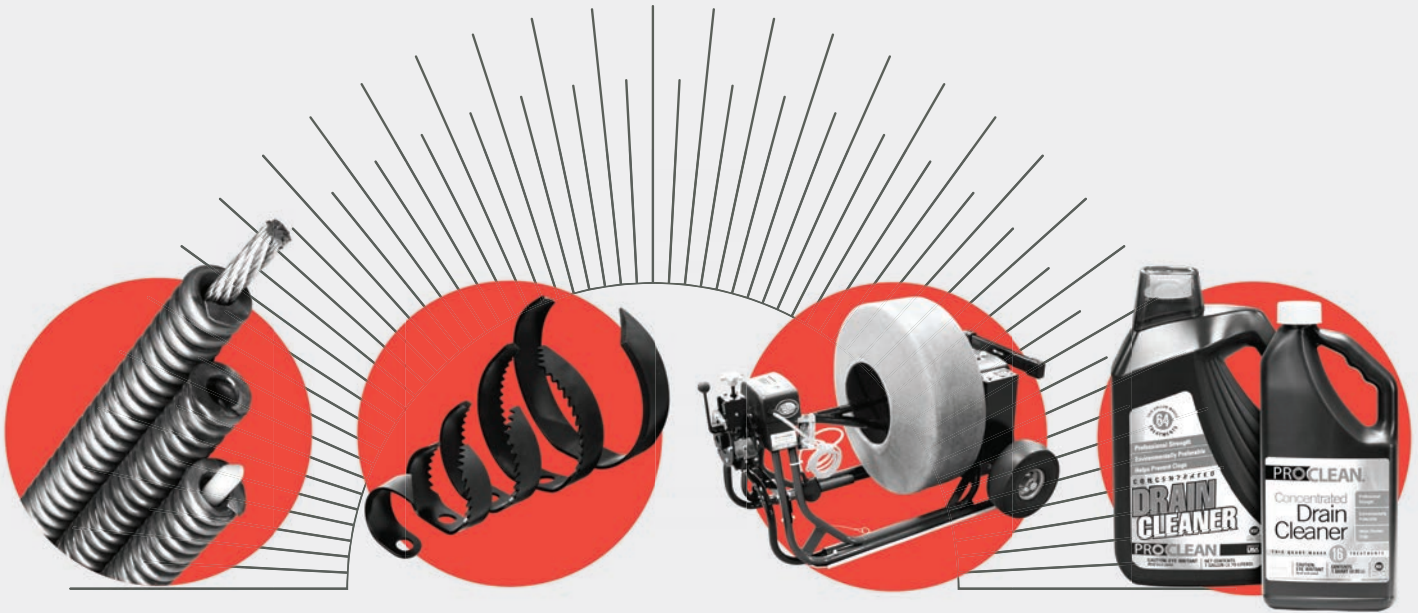
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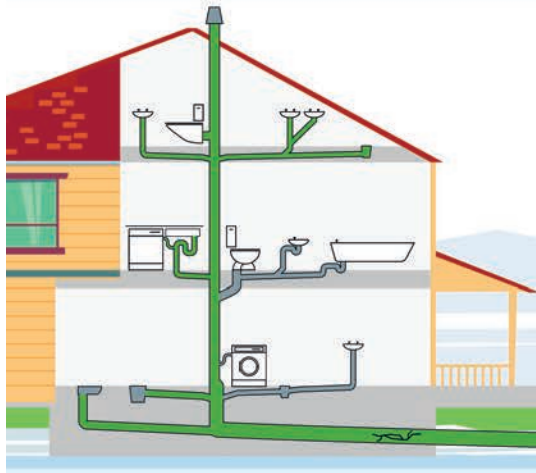
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✔ Behle Inc. CEO Craig Aukamp says the company is the largest complete plumbing company in Ames, Iowa. Behle offers a wide variety of plumbing, sewer and septic solutions statewide.



A COMPLETE COMPANY

MULTIPLE DIVISIONS ALLOW BEHLE INC. TO OFFER COMPLETE PLUMBING, SEWER AND SEPTIC SERVICES THROUGHOUT IOWA

// By Giles Lambertson

Photography by Scott Morgan

“**BEHLE INC.**” MAY NOT BE AN ESPECIALLY DESCRIPTIVE company name; but after 26 years in business in Ames, Iowa, most residents recognize Behle Inc. as the home of quality plumbing and sewer solutions.

“We are the largest *complete* plumbing company in the area,” says Craig Aukamp. The Behle CEO says the diversity of services the company offers separates it from competitors. “We offer so many services, while others only offer pieces of what we do.”

Company founder and owner Randy Behle began to fit the pieces together when he formed the company in 1996. He had gotten his start in plumbing services as the employee of a Roto-Rooter franchise in the area.

“He learned the business and continued learning from that day to this. He’s still learning,” says Aukamp, who brought his business management experience to Behle when he joined the company a year ago.

“I have great respect for Randy. His passion, his willingness to help customers and people in general. That is what really drew me to the company — and it’s a good company. We provide services that people don’t realize they need until they need them. You don’t call someone to look at your pipe until you need someone to look.”



» Behle team lead Adam McDowell measures settled solids in a grease trap.



Behle Inc.
AMES, IOWA

OWNER Randy Behle
FOUNDED 1996
EMPLOYEES 26
SERVICES Sewer and drain cleaning, septic tank installation, cleaning and repair, grease trap cleaning, plumbing services, and trenchless sewer and drain services
SERVICE AREA Principally Ames area, but across the state upon request
WEBSITE www.behleinc.com/sewer-repair/



◀ Adam McDowell unwinds hose from a Behle vacuum truck.

↘ McDowell pumps out a grease trap on a commercial job site.



STATEWIDE SERVICE

At the outset, Behle Inc. was pretty much a one-man operation. Behle took care of the pipes, his late wife took care of the books, and the company grew. Today, it employs 26 people. The heart of its service area is the city of Ames, Story County and adjacent Boone County, but calls are made anywhere in Iowa.

“We’ll travel throughout Iowa for you!” the company website declares. Aukamp says that’s not just a rhetorical flourish. “A high percentage of the work — maybe 80-90% — is in Boone and Story counties, but we really are starting to venture out to other counties and it’s paying off.”

Some of the need for Behle service outside Ames stems from its septic tank services. Iowa is a rural state, after all, and many homes are served by individual wastewater systems. “Septic systems are alive and well here in Iowa,” Aukamp says. The company has service agreements with property owners to periodically pump the tanks and will repair them as needed.

“We install new systems, too, but typically our septic business is service and repair.”

The entire state is a reasonable territory for the company because Ames is virtually in the center of Iowa. Sioux City and Council Bluffs are to the north and west, Cedar Rapids and Davenport to the east, Des Moines about 30 miles south. And all those septic tanks lie in between.

The company’s Roto-Rooter plumbing and drain cleaning services are limited by territory to four counties — Story, Boone, Greene and Carroll — but Behle’s lining, jetting and septic services are available anywhere. The company name is carried to all jobs on the sides of 15 trucks and vans.

Long-distance service calls are more problematic than they used to be, of course, because of the recent spike in fuel prices. Aukamp says the service company is “feeling the fuel price pinch like any other company,” but that distant customer calls for help will continue to be answered.

“We hope the price comes down, but we remain customer-focused and won’t shy away from answering calls.” So far, the company hasn’t felt compelled to add a surcharge to offset



“WE PROVIDE SERVICES THAT PEOPLE DON'T REALIZE THEY NEED UNTIL THEY NEED THEM. YOU DON'T CALL SOMEONE TO LOOK AT YOUR PIPE UNTIL YOU NEED SOMEONE TO LOOK.”
CRAIG AUKAMP



fuel costs. “We’re charging what we always have charged. We’re not going to gouge our customers.”

Not all Behle Inc. customers are a trek away, of course. Besides homeowner calls from the city, local meat-processing companies, restaurants and other industrial and commercial firms are regular customers.

The largest customer is Iowa State University. Behle Inc. has a service contract with the university. Calls from customers there range from campus maintenance and other university departments to fraternity and sorority houses. Iowa State staff and students account for about half of the city’s population of nearly 70,000.

PROVIDING OPTIONS

Company techs work in four separate divisions. The company’s foundation remains its

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« McDowell finishes paperwork after a completed job.

» McDowell removes a cap to attach a vacuum hose.



“EVERYONE HERE IS A TEAM PLAYER. EVERYONE HELPS OUT AS NEEDED.”

CRAIG AUKAMP

Roto-Rooter franchise, with divisional employees also providing traditional plumbing and drain cleaning services. Septic repair and cleaning and grease trap cleaning constitute a separate division. Sewer repair and jetting has its own crew. The newest division is trenchless pipeline repair.

Technicians sometimes help across division lines, of course. “Everyone here is a team player,” Aukamp says. “Everyone helps out as needed. Heck, I’ve gone on jobs and I have little knowledge to offer. But for the most part, each employee works in a specific division of the company.”

Fourteen years ago, Behle Inc. began to offer trenchless solutions for pipe repair. Aukamp says it happened by chance after someone asked if the company offered the services. “Well, Randy doesn’t turn down business, so he learned on the job how to do it and has been doing it ever since. It’s a good chunk of the business.”

Behle opted to go with the Nuflow pipe lining system, offering both pull-in-place and inversion remedies for failed pipe. The former is an epoxy liner pulled from one entry point to another one and hardened with UV light. Inversion involves insertion of a liner from a single point of entry. “Once that liner is fixed in place, it ain’t moving,” Aukamp says of the process. “It’s guaranteed for at least 10



years, but the truth is it probably will last longer than you or I.”

Behle customers with a failed pipe have a choice: Dig it up or reline it. Aukamp says the company pushes the trenchless option “because it’s a better solution. It’s quicker and doesn’t leave a yard dug up. But there still is a portion of our pipe repair jobs that involve digging up the pipe. It’s a customer’s choice.”

When digging is chosen, techs utilize a Bobcat skid loader with a backhoe attached. Also in the equipment yard are two jetters — a US

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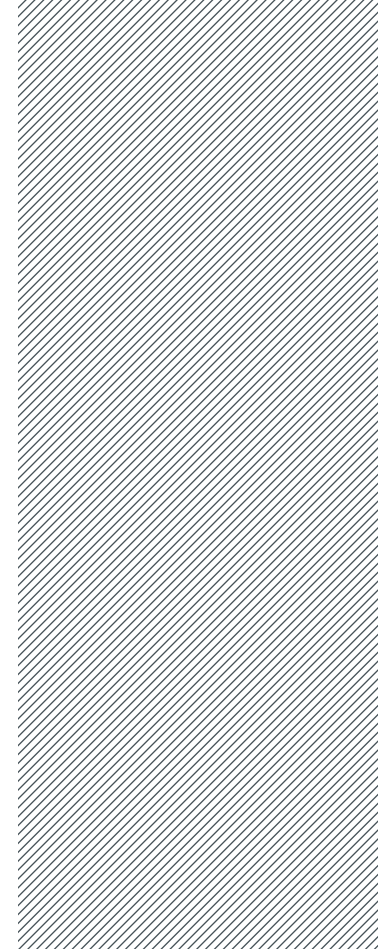
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« McDowell empties the grease pumping truck at the Behle shop in Ames, Iowa.

“OUR LINING DIVISION IS GETTING BUSIER ALL THE TIME. I THINK YOU’RE GOING TO SEE THAT SOLUTION GETTING MORE AND MORE POPULAR.”
CRAIG AUKAMP

Jetting unit and a Harben jetter, each a 375-gallon unit. Camera inspections are primarily done with RIDGID camera systems.

FULL SERVICE

Aukamp sees a bright future for the “complete” company, particularly for trenchless work.

“Our lining division is getting busier all the time. I think you’re going to see that solution getting more and more popular. There’s no one else around here doing lining at the level we’re doing it, the typical 4- and 6-inch line. It’s still a pretty new solution for customers and no one else can get into it without some serious investment.”

Furthermore, Aukamp feels good about the synergy of the company’s divisions, none of them

an outlier to the company’s signature identity as a plumbing, sewer, drain and septic service company. Upgrades in equipment will occur, he says, but branching into a new service field isn’t likely. Aukamp believes the company is well positioned for continued progress.

Despite fuel prices undercutting profits, Aukamp isn’t sure whether it’s a good time to establish another branch office. “I’ll say it this way, in the six-to-12-month outlook, we’re not seeing that. But I’m not foolish enough to say that I’m never going to do that. If the opportunity presents itself...” c

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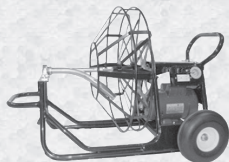


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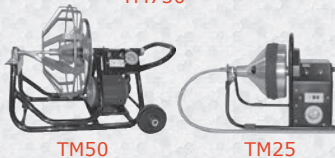
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	Chizel 10- Tier 2 Stainless Steel Body	General Stubborn Blockages - sharp cutting edge-	4" - 12"	8 to 80	10,000	varies per NPT size	4	6	1/2"
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	Flat Nose	General Cleaning	4" - 12"	8 to 80	10,000	varies per NPT size	Cust Spec	Cust Spec	1/2"
	Button Dual Groove	General Cleaning	2" - 12"	2.5 to 80	15,000	varies per NPT size	Cust Spec	Cust Spec	1/4" - 3/8" - 1/2"
	Tow Hook	Pulled by Cable or to Pull A Cable	2" - 12"	2.5 to 80	15,000	varies per NPT size	Cust Spec	Cust Spec	1/4" - 3/8" - 1/2" -1"
	Mini-Mole	Special tapered thread for use in small tube cleaning on rigid lance	.200" - 1"	1.7 to 20	10,000	varies per NPT size	Cust Spec	Cust Spec	Special tapered thread
	Rodder Jets	General tube cleaning for use on Rigid Lance - male thread	.250" - 1"	1.7 to 40	15,000	varies per NPT size	Cust Spec	Cust Spec	Various male thread sizes
	Cnt-r-KUT™ EMAX	Roots and Other Blockages Rotating Chain & Cable	3" - 12"	4 to 80	10,000	varies per NPT size	Cust Spec	Cust Spec	1/4" - 3/8" - 1/2"
	Cnt-r-KUT™ CDMAXe	3 Flexible Guide Vane Kit for nozzle centering - for your existing nozzles	3" - 12"	1.7 to 80	10,000	varies per NPT size	n/a	n/a	1/4"-3/8" - 1/2"
	Mega-Thruster PX Revolver	Full 360° rotating nozzle for cleaning & polishing; designed for long runs	2" - 24"	1.7 to 80	10,000	varies per NPT size	Cust Spec	Cust Spec	1/4"-3/8" - 1/2"
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 enz ENZ USA INC. 1585 Beverly Ct., Unit 115 Aurora, IL 60502 877-369-8721 • 630-692-7880 (f) 630-692-7885 www.enz.com salesusa@enz.com SEE AD ON PAGE 63	Bulldog Antiblast	Anti-Toilet Blowing in Residential	8" - 24"	55 to 80	1,500 - 1,800	17 lbs.	6		1" - 1 1/4 "
	Bulldog	Cleaning grease, roots, deposits, etc.	8" - 24"	50 to 120	2,000 - 2,900	17 lbs.	7	6	1" - 1 1/4 "
	Rotodrill	Cleaning blocked pipes, frozen pipes, heavy debris	2" - 14"	13 to 80	2,000 - 4,000	25 lbs. to 1.5 lbs	1	6	1/2" - 1"
	Grenade	Flushing heavy debris	6" - 12"	40 to 80	2,000 - 3,600	11 lbs.		10	1"
	Chisel 60.100L	Penetrating clogs, root masses, frozen pipes	6" - 16"	50 to 80	2,000 - 3,600	6 lbs.	4	6	1"
	10.125TR Chain Scraper	Root removal, hard grease, hard deposits	5" - 12"	14 to 80	2,000 - 3,600	6 lbs.		6	1"
	10.200R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	8" - 16"	50 to 80	2,000 - 3,600	78 lbs.		6	1"
	10.400R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	16" - 32"	80 to 120	2,000 - 3,600	105 lbs.		6	1"
	14.200 Milling Cutter	Removal of concrete & mineral deposits	8"	80 to 120	2,000 - 2,200	178 lbs.		6	1" - 1 1/4 "
Bulldozer 50.100G	Flushing debris from larger pipe	16" - 40"	40 to 80	2,000 - 3,600	57 lbs.	1	8	1"	
 General PIPE CLEANERS GENERAL PIPE CLEANERS 1101 Thompson Ave., McKees Rocks, PA 15136 800-245-6200 • 412-771-6300 www.drainbrain.com info@drainbrain.com SEE AD ON PAGE 2	Chisel Point Nozzle	Penetrating, breaking up debris	4" - 10"	12	2,500	4 oz.	4	6	1/2"
	Traction Nozzle	Sand and mud removal	4" - 10"	12	2,500	8 oz.	1	6	1/2"
	Cleaning Nozzle	Maintenance Cleaning	4" - 10"	12	2,500	12 oz.		8	1/2"
	Spring Leader Nozzle	Guiding hose around tight bends	2" - 10"	1.5 to 8	1,500 - 3,000	4 oz.		3 to 4	1/8" - 1/4" - 3/8"
	Downhead Nozzle	Dropping down Ts	2" - 4"	1.5 to 4	1,500 - 3,000	2 oz.		3	1/8"
	Chain Saw Nozzle	Cutting roots	4" - 10"	4 to 12	2,500 - 3,000	2 lbs.		2 to 4	3/8" and 1/2"
	Rotary Nozzle	Scour pipe walls clean	2" - 10"	1.5 to 12	1,500 - 3,000	2 oz. to 10 oz.		2 to 4	1/8" - 1/4" - 3/8" - 1/2"
 HYDRA-FLEX <small>FLUID INNOVATION</small> HYDRA-FLEX, INC. 8401 Eagle Creek Pkwy., Savage, MN 55378 952-808-3640 www.hydrflexinc.com hello@hydrflexinc.com	Reaper 1/4"	Cutting through and removing blockages and flushing debris in sewer lines	2" - 4"	6 or 8	4,000	0.4 lbs.	1	3 or 4	1/4" NPT
	Reaper 3/8"	Cutting through and removing blockages and flushing debris in sewer lines	3" - 6"	6, 9 or 12	4,000	1.12 lbs.	1	4	3/8" NPT
	Reaper 1/2"	Cutting through and removing blockages and flushing debris in sewer lines	4" - 8"	12, 15, 18 or 24	4,000	1.54 lbs.	1	4	1/2" NPT
	Reaper 1"	Cutting through and removing blockages and flushing debris in sewer lines	6" - 18"	40, 60 or 75	3,000	4.7 lbs.	1	8	1" NPT
	Marksman	Cutting through and removing debris at distances of 20-30 feet. Could be used in locations like lift stations or manholes. To be used with a gun + lance.	N/A	15, 20 or 25	2,500	1.93 lbs.	1		1/2" NPT

MANUFACTURER



MYTANA LLC
 746 Selby Ave.
 St. Paul, MN 55104
 800-328-8170 • 651-222-1738
 (f) 651-222-1739
 www.mytana.com
 mytana@mytana.com
 SEE AD ON PAGE 37

NAME OF NOZZLE

APPLICATION

PIPE DIAMETER

FLOW RATE (GPM)

MAX OPERATING PRESSURE (PSI)

WEIGHT

OF AVAIL FRONT JETS

OF AVAIL REAR JETS

HOSE SIZE/ CONNECTING THREAD

Cornering	Flushing through corners, general cleaning	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.	1	3	1/8" - 1/4" - 3/8" - 1/2"
Penetrating Thrust	Pulling while boring through soft blockages	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.	1	3	1/8" - 1/4" - 3/8" - 1/2"
Monster Flush	General cleaning, flushing, pulling	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.	1	6	1/8" - 1/4" - 3/8" - 1/2"
General Flusher	Flushing while pulling	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.		6	1/8" - 1/4" - 3/8" - 1/2"
Blind Thrust	General cleaning at long distances	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.		4	1/8" - 1/4" - 3/8" - 1/2"
Degreasing-Deicing	Flushing ice and grease	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.	3	6	1/8" - 1/4" - 3/8" - 1/2"
Rotating	Sidewall cleaning, rinsing	2" - 8"+	2 to 8	1,500 - 3,000	< 8 oz.		4	1/4" - 3/8" - 1/2"
Drophead	Cleaning through tight bends and drops	1 1/2" - 2"	2	1,500	< 8 oz.		3	1/8" - 1/4"
Hex Nose	Pulling, penetrating, cleaning	1 1/2" - 8"+	2 to 8	1,500 - 4,000	< 8 oz.	0, 1	4, 6	1/8" - 1/4" - 3/8" - 1/2"
Radial Nose	Cleaning, penetrating, flushing	4"+	12 to 18	3,000 - 4,000	< 8 oz.	0, 1, 3	4, 6	1/2"



TAKING SCIENCE TO THE SEWER

NOZZTEQ INC.
 2901 Peoria St., Ste. 3,
 Peru, IL 61354
 866-350-0624 • 779-201-5130
 www.nozztequsa.com
 info@nozztequsa.com

BL Swiper (Med)	Reduces blown toilets/services	4" - 36"	10 to 266	400 - 4,000	2 - 12 lbs.		4 to 6	1/2" - 3/4" - 1" - 1 1/4"
JAWS 100	High performance sewer cleaning or storm water cleaning	6" - 12"	5 to 80	400 - 4,000	4 lbs.		4	1/2" - 3/4" - 1"
Multi-Global Nozzle	Sewer and pipe cleaning for penetration	2" and Up	4 to 170	400 - 4,000	2 lbs.	4	1 to 6	1/2" - 3/4" - 1" - 1 1/4"
JAWS	High performance sewer and pipe cleaning heavy debris	6" - 30"	30 to 265	400 - 4,000	7 lbs.		5	1/2" - 3/4" - 1" - 1 1/4"
IceBear Penetrating Nozzle	Sewer and pipe cleaning penetrating nozzle	1" and Up	4 to 170	400 - 4,000	1 - 3 lbs.	3		1/4" - 1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
C-RAY 200	Bottom cleaning for sewer and pipe	12" - 36"	30 to 265	400 - 4,000	22 lbs.	1	6	1/2"
C-RAY 400	Bottom cleaning for sewer and pipe	15" and Up	40 to 350	400 - 4,000	42 lbs.	1	8	3/4" - 1" - 1 1/4" - 1 1/2"
BL Swiper (large)	Ventura effect type nozzle to clean with water in the line and sucks the water down	15" and Up	40 to 265	400 - 4,000	13 lbs.		39	
Spinner Nozzles (No rebuilds)	Grease and other obstructions	4" and Up	14 to 350	400 - 4,000	3 - 15 lbs.	2		1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
Goblin Grease Eater	Grease nozzle sewer lines or storm lines	6" and Up	40 to 350	400 - 4,000	12 lbs.	1	10	3/4" - 1" - 1 1/4" - 1 1/2"
MONRO-JET	Hydro-Excavation	2" - 8"	3 to 20	2,000 - 36,000	2 lbs.	1		1/2"
MANTA	Bottom cleaner for recycled water trucks	12" - 72"	60 to 528	900 - 3,000	45 - 60 lbs.	1	8 to 12	1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
FIR	All stainless type penetrators	2" - 12"	5 to 80	400 - 4,000	1 lb.	1	3 to 6	1/8" - 1/4" - 3/8" - 1/2" - 3/4" - 1"
C-RAY 800	Dual truck operation for double the flow for large pipes	36" - 96"	120 to 350	400 - 4,000	50 lbs.		8	3/4" - 1" - 1 1/4" - 1 1/2"
Sweagle	Ejector Nozzle with Tier 3 Design	10" - 60"	60 to 350	400 - 3,625	19lbs.		6	3/4" - 1" - 1 1/4" - 1 1/2"
Paikert Intruder Cutter	Low Speed High Torque Impact Cutter	4" - 27"	58 to 120	1,450	Depends on the Setup			3/4" - 1" - 1 1/4" - 1 1/2"



ROOT RAT
 PO Box 740,
 Bolivar, OH 44612
 800-288-7873 • 330-874-4300
 (f) 330-874-4448
 www.rootrat.net
 kelly@chempure.com
 SEE AD ON PAGE 30

1" Root Rat	Roots and Encrustations	8" - 30"	40 to 120	Up to 5,000	5 lbs.		3	3/4" or 1"
1/2" Root Rat	Roots and Encrustations	4" - 10"	5 to 18	Up to 8,000	1 lb.		2	1/2" or 3/8"
3/8" Root Rat	Roots and Encrustations	2" - 6"	4 to 12	Up to 5,000	8 oz.		2	1/4" to 3/8"



SEWER EQUIPMENT
 1590 Dutch Rd.,
 Dixon, IL 61021
 815-477-7611
 www.sewershop.com
 sales@sewerequipment.com
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Avanti	Rotating penetrator for ice, roots and mineral deposits	3" - 12"	15 to 80	2000 to 4000	0.75 - 2 lbs		6	1/2" - 3/4" - 1"
Tri-Star	Chisel penetrator for ice, grease, and hard scale	3" - 20"	15 to 80	2000 to 4000	0.25 - 4 lbs	4	6	1/2" - 3/4" - 1" - 1 1/4"
Rondo	Final cleaning for pre-commissioning pipe and cleaning before re-lining	3" - 18"	12 to 80	2000 to 4000	0.5 - 3 lbs		3	1/2" - 3/4" - 1"
HW	Flushing for heavy debris	6" - 24"	30 to 80	2000 to 4000	0.5 - 17 lbs		12	1/2" - 3/4" - 1" - 1 1/4"
Roto-Max	Rotator for roots, grease, solids, and heavy debris	4" - 32"	18 to 80	2000 to 4000	2 - 16 lbs	1	6	1/2" - 3/4" - 1" - 1 1/4"
Dual Degree	General cleaning with excellent flushing power	4" - 18"	18 to 80	2000 to 4000	2.5 - 9 lbs	1	8	1/2" - 3/4" - 1"
RDS	Rotator for grease and general cleaning	3" - 24"	15 to 80	2000 to 3500	1.3 - 14 lbs		6	1/2" - 3/4" - 1" - 1 1/4"
Wiesel	General cleaning for long-distance jetting	4" - 18"	18 to 80	2000 to 4000	0.5 - 1.5 lbs	1	8	1/2" - 3/4" - 1"
Combi Chain Cutter	Aggressive cleaning for complete removal of roots and concrete residue	6" - 24"	30 to 80	2000 to 2500	5 - 19 lbs		6	3/4" - 1" - 1 1/4"
Mega	Heavy flushing for debris in large lines and culverts	4" - 120"	18 to 80	2000 to 4000	3 - 50 lbs	1	11	1/2" - 3/4" - 1"
Power Jet	Ejector-style flushing for 16" and larger water filled pipes and ditches. Increase flow volume 4X with low working pressure for debris removal	16" - 120"	60 to 80	2,100	82 lbs		12	1" - 1 1/4"
Wamax	The ultimate milling system for removal of concrete, grout, protruding taps, roots, and anything that can block a line	4" - 40"	30 to 100	2000 to 2900	17 - 82 lbs		8	3/4" - 1" - 1 1/4"
Rotojiggler	Vibrating nozzle for removal of mineral deposits, concrete, and slag	4" - 16"	15 to 65	2000 to 2900	2 - 6 lbs		6	3/4" - 1" - 1 1/4"
K114 Chain Rotor	Adjustable to aggressively clean up to 62" diameter pipe	10" - 62"	80 to 100	2000 to 2900	44 lbs		6	1 1/4"
Eel Cutter	Chain cutter with short body and flexible centering skid to maneuver through bends and bad offsets	4" - 8"	18 to 65	2000 to 2900	3 - 6 lbs		6	1 1/4"

MANUFACTURER



SEWERPROSHOP, LLC
 1061 Triad Ct. Ste. 1,
 Marietta, GA 30062
 877-864-9394 • 470-592-1715
 (f) 770-984-2802
 www.sewerproshop.com
 info@sewerproshop.com
 SEE AD ON PAGE 34



SPARTAN TOOL
 1619 Terminal Rd.,
 Niles, MI 49120
 800-435-3866
 www.spartantool.com
 sales@spartantool.com
 SEE AD ON PAGE 80

SUTTNER AMERICA COMPANY
 14864 W Ridge Ln.,
 Dubuque, IA 52003
 800-831-0660 • 563-556-3212
 (f) 800-821-0660
 www.suttner.com
 sales@suttner.com
 SEE AD ON PAGE 47



TRITON HYDROTOOLS
 11210 S Choctaw Dr., Baton
 Rouge, LA 70815
 800-633-7696 • 225-275-7696
 www.shamrocktools.com
 sales@tritonhydrotools.com

NAME OF NOZZLE	APPLICATION	PIPE DIAMETER	FLOW RATE (GPM)	MAX OPERATING PRESSURE (PSI)	WEIGHT	# OF AVAIL FRONT JETS	# OF AVAIL REAR JETS	HOSE SIZE/ CONNECTING THREAD
Emperor Nozzle	Flushing debris from large lines	12" - 32"	80 to 120	2,000 - 2,500	19.8 lbs.		12	1" - 1 1/4"
Penetrator Nozzle	Flushing heavy debris in lines with off sets	6" - 16"	50 to 80	2,000 - 4,000	15.4 lbs.	1	8	3/4" - 1 1/4"
Power Pull Nozzle	Mud, Sand, Silt	4" - 12"	18 to 80	2,000 - 4,000	1.5 - 9 lbs.		8	1/2" - 1 1/4"
Spear Nozzle	Penetrating clogs/blockage, root mass	8" - 24"	50 to 80	200 - 4,000	6.2 lbs.	4	6	3/4" - 1"
General Nozzle	All around sewer cleaning, prevent maint.	4" - 16"	18 to 80	2,000 - 4,000	1.5 - 9 lbs.	1	8	1/2" - 1"
Arrow Nozzle	Penetrating clogs/blockages, frozen pipes	4" - 16"	18 to 80	2,000 - 4,000	1 - 2.5 lbs.	3 + 1	8	1/2" - 1"
Stealth Nozzle	Flushing heavy debris	8" - 24"	60 to 80	2,000 - 4,000	17.6 lbs.		8	3/4" - 1 1/4"
Raptor Nozzle	Penetrating clogs, roots/grease masses	4" - 24"	18 to 80	2,000 - 4,000	2.4 - 5.5 lbs.		3(1/2") 6(1")	1/2" - 1"
Big Foot Nozzle	Flushing debris from floor of large pipes	16" - 48"	40 to 120	2,000 - 3,000	33 - 56 lbs.		6 to 14	1" - 1 1/4"
Twister Nozzle	Cleaning grease, light roots, mineral deposits	8" - 24"	50 to 120	2,000 - 4,000	15.4 lbs.	5	4	1" - 1 1/4"
Typhoon Nozzle	Grease, light crust, light roots	6" - 12"	18 to 80	2,000 - 4,000	11 lbs.	4	6	1/2" - 1"
Antiblower	Shallow sewer line or close to home	6" - 16"	40 to 80	2,000 - 3,000	9 lbs.	1	8	3/4" - 1"
Sandshoe	Sand, dirt and rocks	4" - 18"	12 to 18	2,000 - 4,000	7 lbs.		4	3/8" - 1/2"
Rotating	Scrubbing pipe walls	2" - 12"	4 to 18	2,000 - 4,000	1 - 3 lbs.		3	1/4" - 3/16" - 3/8" - 1/2"
Q Nozzle	Downhill jetting	4" - 12"	12 to 18	2,000 - 4,000	1 - 2 lbs.	3	4	3/8" - 1/2"
Rocket Nozzle	Long distance jetting	4" - 12"	12 to 18	2,000 - 4,000	2 lbs.	1	4	3/8" - 1/2"
Closed Nozzle	Standard jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb.		4	3/8" - 1/2"
Open Nozzle	Standard jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb.	1	4	3/8" - 1/2"
Brass Ball	Stainless steel hose jetting	2" - 8"	4 to 18	2,000 - 4,000	1 lb.		4	3/16"
Non-Rotating Mini Sewer Nozzle	Various	Various		7,252	Various	Various	Various	Various
Non-Rotating "Compressor" Sewer Nozzle	Various	Various	4.5	7,252	Various	Various	Various	Various
Non-Rotating "Predator" Sewer Nozzle	Various	Various	6.6	7,252	Various	1	3	Various
Non-Rotating "Root Ram" Sewer Nozzle	Various	Various	7.9	7,252	Various	1	6	Various
Non-Rotating "Grease Ball" Sewer Nozzle	Various	Various		7,252	Various	0	8	Various
Non-Rotating "Hydro Mole" Sewer Nozzle	Various	Various		7,250	Various	4	3	Various
Non-Rotating "Negotiator" Sewer Nozzle	Various	Various	7.9	7,252	Various	Various	Various	Various
Non-Rotating "Ball Type" Sewer Nozzle	Various	Various		4,200	Various	Various	Various	Various
Non-Rotating "Bullet" Sewer Nozzle	Various	Various		7,252	Various	Various	Various	Various
Warhead & Warhead Radial Nozzles	Various	Various		7,250	Various	Various	Various	Various
Ultimate Penetrator	High Performance Double Duty - Clears Blockages and Flushes	4" - 30"	10 to 150+	1,000 - 4,000+	5 lbs. - 31 lbs.	0 or 1	3, 5, 8 or 10	1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
Super Grenade	High Performance Heavy Duty Mainline Cleaning - Fast and Easy	2" - 30"	8 to 150+	1,000 - 6,000+	1.1 lbs. - 7 lbs.	0 or 1	3, 5, 6 or 8	1/2" - 3/4" - 1" - 1 1/4"
TriStar Chisel	High Performance Front-Boring Penetrator for Stubborn Blockage	2" - 30"	10 to 90+	1,000 - 3,000+	1 lb. - 4 lbs.	3 or 4	3, 5, or 6	1/2" - 3/4" - 1"
Shamrock-et	High Performance Penetrating and Sweeping	6" - 18"	30 to 80+	1,000 - 3,000+	12 lbs	0 or 1	3	3/4" - 1" - 1 1/4"
Boat Nozzle	Heavy Duty Flat Bottom Sweeper for Sand, Silt, Gravel and Large/Heavy Debris	24" - 60"	65 to 150+	1,200 - 3,000+	51 lbs.		11	1" - 1 1/4" - 1 1/2"
Cobia	Heavy Duty Multipurpose - Efficiently Clears Sludge, Mud and Debris	6" - 36"	30 to 120+	1,000 - 3,000+	3 lbs. - 10 lbs.	0 or 1	6 or 10	1/2" - 3/4" - 1" - 1 1/4"
Rotating Nozzles-Blaster (Fast Rotating) and Huracan (Slow Rotating)	Removing Residue and Sidewall Buildup/Deposits	2" - 24"	6 to 120+	1,000 - 6,000+	2 lbs. - 10.9 lbs.	0, 1, 2 or 4	3, 4, 6 or 8	1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4"
Mini-Tadpole/Tadpole/Little Shamrock	Steel Skid Nozzles with Long Service Life for Sweeping Medium to Large Lines	6" - 60"	30 to 120+	1,000 - 3,000+	9 lbs. - 27 lbs.	0 or 1	9 or 12	3/4" - 1" - 1 1/4"
Sand & Sludge Nozzle/ Contractor Special	Aluminum Alloy - Glides Over Sand and Sludge to Quickly Sweep Lines	6" - 18"	30 to 90+	1,000 - 3,000+	3 lbs.	0 or 1	8 or 12	3/4" - 1"
Grease Nozzle	Aluminum Alloy - Smooth and Streamlined to Penetrate Grease and Ice Blockages; Great for Inclines	4" - 18"	12 to 90+	1,000 - 3,000+	2 lbs.	0 or 1	5 or 6	1/2" - 3/4" - 1"

MANUFACTURER

USB-USA LLC

7565 Owl Creek Dr.,
Douglasville, GA 30134
844-285-5770
www.usb-usa.com
info@usb-usa.com
SEE AD ON PAGE 73

NAME OF NOZZLE	APPLICATION	PIPE DIAMETER	FLOW RATE (GPM)	MAX OPERATING PRESSURE (PSI)	WEIGHT	# OF AVAIL FRONT JETS	# OF AVAIL REAR JETS	HOSE SIZE/ CONNECTING THREAD
Primus 3D	Grease, Crusts, Light Roots	4" - 24"	18 to 120	2000 - 4,000	2.6/7.0/8.3/20.1	1	3/4/5/6	1/2 - 3/4 - 1 - 1 1/4
Rocket 3D	Sand, Silt, Large Debris	4" - 24"	12 to 120	2,000 - 4,000	6/2.6/4.85/11.4/44		6/8/10/12	1/2 - 3/4 - 1 - 1 1/4 - 1 1/2
Pipe Wolf 3D	Total Blockages from Roots, Grease & other Organic Matter	4" - 24"	14 to 120	2,000 - 4,000	2.4/5.7/11.9		6	1/2" - 3/4" - 1" - 1 1/4"
Bagger Max 3D	Sand, Silt, Solids, Sludge & other Heavy Debris	18" - 96"	50 to 120	2,000 - 3,000	33/53/66/114.5	5	6/8/10/12	3/4" - 1" - 1 1/4" - 1 1/2"
Chisel	Total Blockages from Roots, Grease, etc.	2" - 15"	8 to 120	2,000 - 4,000	22/33/66/1.54	4		1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4"
FS 3D	Total Blockages from Roots, Grease & other Obstructions	2" - 15"	8 to 80	2,000 - 4,000	22/44/66/1.54/3.7	4	6/5/6/8	1/4" - 3/8" - 1/2" - 3/4" - 1"
Tri-Jet 3D	Mud, Sand, Silt - Everyday Cleaning	4" - 48"	60 to 120	2,000	4.8/12.1/17.6/23.1/44		12/15	1" - 1 1/4"
FD 2 3D	Half-Open or Complete Open Drains - Mud, Sand, Silt	4" - 12"	14 to 120	2,000 - 4,000	2.6/4/8.3/14.3		6/8	1/2" - 3/4" - 1" - 1 1/4"
3D Extreme	Mud, Sand, Silt	6" - 15"	40 to 120	2,000 - 3,000	9.4	1	8	3/4" - 1" - 1 1/4"
3D Cleaning	Everyday Cleaning - Sand, Mud, Silt, Grease	4" - 15"	14 to 80	2,000 - 4,000	.6/12.1/17.6/23.1	1	6/8/10/12	1/2" - 3/4" - 1" - 1 1/4"

VAC-CON, INC.

969 Hall Park Rd.,
Green Cove Springs, FL 32043
904-284-4200
www.vac-con.com
info@vac-con.com
SEE AD ON PAGE 13

C70 HD Video Cleaning Nozzle	Sewer Cleaning and Inspection	6" - 40"	40 to 170	2,000 - 4,000			12	3/4" - 1" - 1 1/4"
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WARTHOG NOZZLES BY STONEAGE

466 Skylane Dr.,
Durango, CO 81303
866-795-1586 • 970-259-2869
www.warthog-nozzles.com
info@warthog-nozzles.com
SEE AD ON PAGE 12

Warthog WGR Magnum	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	13 lbs.	1	4	1"
Warthog WG-1	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	10 lbs.	1	4	1"
Warthog WGP-1	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	10 lbs.	1	4	1"
Warthog WHP	Sewer jetting	6" - 18"	15 to 50	1,500 - 4,000	4 lbs.	1	2	1/2" - 3/4"
Warthog WH	Sewer jetting	6" - 18"	10 to 45	1,500 - 8,000	4 lbs.	1	2	1/2" - 3/4"
Warthog WS - 1/2	Sewer jetting	4" - 8"	8 to 20	1,500 - 5,000	3 lbs.	1	2	1/2"
Warthog WT - 3/8	Sewer jetting	3" - 6"	5 to 12	1,500 - 5,000	1 lb.	1	2	3/8"
Warthog WV - 1/4	Sewer jetting	2" - 4"	3 to 8	2,000 - 5,000	1 lb.	1	2	1/4"
Warthog WD 1-1/4	Sewer jetting	8" - 36"	80 to 120	1,500 - 5,000	11 lbs.	1	6	1-1/4"
Warthog WT - 1/2	Sewer jetting	3" - 6"	5 to 12	1,500 - 5,000	1.2 lbs.	1	2	1/2"

5

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SEE ADS ON PAGES 29, 57	ALLAN J. COLEMAN 5725 N Ravenswood Ave., Chicago, IL 60660 773-728-2400 www.allanjcoleman.com • customerservice@allanjcoleman.com	AQUA MOLE, DIRECT HIT, WARTHOG
SEE AD ON PAGE 77	AMERICAN JETTER 6908 Pine Grove Rd., Knoxville, TN 37914 866-944-3569 • 865-524-4647 • (f) 865-247-5105 www.americanjetter.com • andy@americanjetter.com	AQUA MOLE, WARTHOG
SEE AD ON PAGE 51	BUCHER MUNICIPAL NORTH AMERICA 105 Motorsports Rd., Mooresville, NC 28115 704-658-1333 www.buchermunicipal.com	ENZ USA
SEE AD ON PAGE 21	DCD 1703 Toll Gate Dr., Maumee, OH 43537 855-SHOP-DCD www.dcdrain.com	MONSTER & AQUA MOLE, SPINNER, FLUSHER, DEICING/DEGREASER NOZZLES
SEE AD ON PAGE 59	 EPL SOLUTIONS, INC. Thinking Ahead 1330 W Collins, Orange, CA 92867 714-453-9760 • (f) 714-462-8103 sales@epls-usa.com • www.epls-usa.com	ENZ USA, HYDRA-FLEX REAPER, WARTHOG, AQUA MOLE
SEE AD ON PAGE 79	 GAPVAX, INC. 575 Central Ave., Johnstown, PA 15902 888-442-7829 • 814-535-6766 • (f) 814-539-3617 www.gapvax.com • scott@gapvax.com	GIANT TURBO NOZZLE, HYDRA-FLEX (MARKSMAN, MACHETE, REAPER, RIPSAW), GENERAL PUMP HYDROEXCAVATION NOZZLES, SEWER PRO SHOP (BLUE STAR NOZZLES), WARTHOG
SEE AD ON PAGE 77	HOTJET USA 14773 S Heritage Crest Way, Riverton, UT 84065 800-624-8186 • 801-545-0777 www.hotjetusa.com • sales@powerlineindustries.com	ARTHUR PRODUCTS, HYDRA-FLEX, USB-USA, WARTHOG NOZZLES BY STONEAGE
	JETTER DEPOT 1595 Redi Rd., Ste. 100/200, Cumming, GA 30040 770-406-8248 • 678-431-8136 • (f) 678-807-2944 sales@jetterdepot.com • www.jetterdepot.com	NUOVACONTEC
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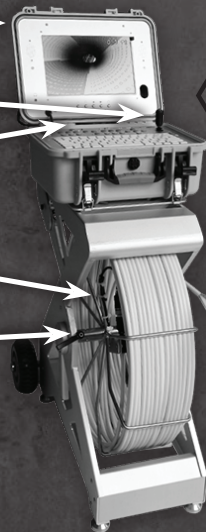
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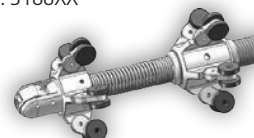
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Kate Zabriskie

4 STRATEGIES FOR ON-THE-JOB TRAINING

Establishing a clearly defined training routine will get new hires up to speed faster // By Kate Zabriskie

“I’m overwhelmed. I learned a new piece of equipment today. The person showing me what to do knew everything. The problem I had was the deep dives. He spent so much time on troubleshooting techniques. It was just too much for my first day.”

“I can follow the steps, but I have no idea why I’m doing what I’m doing. I sort of feel like a trained monkey. I hope nothing goes wrong because I will have no clue how to fix it if something does.”

Despite our best efforts, it’s not as easy as it looks to get the training equation right. We train too early, we train too much or we make a host of other errors. While some of us learn from our mistakes, many of us practice a cycle of rinse and repeat as we make the same blunders year after year.

The good news is it doesn’t have to be this way. With some careful planning and follow through, you can avoid problems many people will encounter again and again.

ARE YOU CONNECTING THE DOTS AS WELL AS YOU SHOULD, OR COULD YOU DO A BETTER JOB?

STRATEGY ONE: KEEP TRAINING RELEVANT AND IMMEDIATELY APPLICABLE

Countless onboarding programs attempt to teach everything a person would ever want to know or need to know about a job in the first few hours, days or weeks. The information is important, but it has no immediate value. Subsequently, learners become overwhelmed, and then they don’t have opportunities to apply or reinforce what they’ve learned for weeks or even months.

Good training coordinators know the value of careful pacing, and they practice just-in-time training when they can. Ask yourself, what does my new hire need to be successful in the first day, the first week and the first month? Teach to those needs as much as possible, and save the more in-depth information for a more appropriate time. What do you need to prioritize?

STRATEGY TWO: CONNECT TO WHY AGAIN AND AGAIN

When people don’t know why they are doing something, they don’t understand the big picture. While they get the process at a surface level, their limited understanding potentially keeps them from following procedures later.

As a basic example, say someone is learning how to use a printer/copier/scanner/fax machine and part of the process is putting the guard up on the paper tray with jobs over 100 sheets. Without an explanation of why that’s important to do, that person might take it upon themselves to skip that step back on the job. Only when papers are scattered all over the floor and have to be re-collated do they realize the importance of raising the guard. And when you’re training people to use equipment much more dangerous than a copier, it’s important to explain the “why” for processes, especially safety procedures.

Great trainers make connections. They repeatedly explain why they’re doing what they’re doing, why procedures are written as they are, and so forth. Are you connecting the dots as well as you should, or could you do a better job?

STRATEGY THREE: USE MULTIPLE CHANNELS TO CEMENT LEARNING

I showed her how to do it, she did it, and now she’s trained. Maybe that’s true for the simple stuff, but for the complex processes and procedures, multichannel encoding reigns supreme.

For example, show trainees in real time how to complete a process. Then do it again, at the same time providing a narration track while the learner takes notes. Next, have her read aloud the notes she’s taken. Finally, have the trainee demonstrate the procedure.

The multichannel approach allows learners to see, to hear, to write, to speak, and to do whatever process they are learning. Depending on the learner, some senses may be more powerful than others. And in rare cases where there is no preference, repetition wins the day. What can you do differently to engage more senses?

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STRATEGY FOUR: TEACH WITH REFERENCE TOOLS

It's one thing to conquer a task during a class setting or one-on-one coaching, but it's entirely another to reproduce those results on the job.

People who have mastered the training function know to develop and teach reference tools in addition to processes themselves.

Ask yourself what kinds of support you need to develop. Decide where you need to incorporate them in your training plans. Those who learn how to solve problems themselves are worth their weight in gold. In addition to strong productivity, these people are also usually happier and more motivated than those who don't have the tools to stand on their own feet.

Four strategies and none hard: Make training relevant, connecting to why, repeating information using different channels and incorporating the tools learners should use to solve problems on the job. If done deliberately and with routine, you will almost certainly get a good result. **c**

ABOUT THE AUTHOR

Kate Zabriskie is the president of Business Training Works, a Maryland-based talent development firm. She and her team provide onsite, virtual and online soft-skills training courses and workshops to clients in the United States and internationally. For more information, visit www.businesstrainingworks.com.

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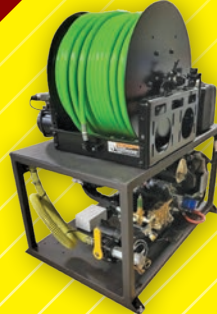
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MORE TO OFFER

Quick-cure pipe coating system expands business opportunities for Chicago-area contractor

// By Ken Wysocky

WHEN THE ART INSTITUTE OF CHICAGO contacted Trenchless Innovations to see if the pipeline rehab company could fix leaking drainlines in its parking garage, co-owner John Reid was positioned to offer a great solution: coating the lines with an epoxy lining applied with a SprayPoxy MiniSpray+ system.

“The pipes were leaking into classrooms located below the parking structure,” Reid explains. “It would’ve cost the museum a ton of money to rip out walls and ceilings to repair those pipes.

“But we descaled them (using drain machines from Picote Solutions) and coated about 400 feet of 4-inch-diameter, cast iron drainlines. And with the SprayPoxy coating, those pipes won’t scale up again.”

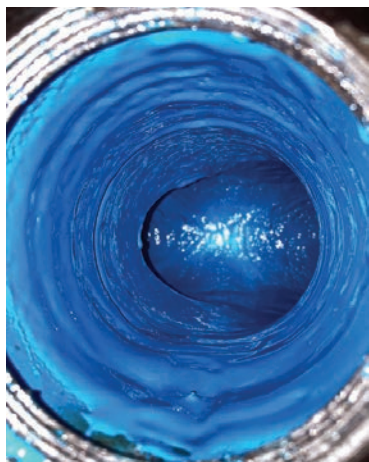
The company, based in Crete — a southern suburb of Chicago — bought the SprayPoxy unit in March for around \$22,000. It paid for itself after two or three good-size jobs, Reid notes.

Furthermore, the investment added yet another technology to the company’s toolkit, which already included pipe lining systems from LMK, Perma-Liner Industries and LightRay (brands owned by Waterline Renewal Technologies) as well as SpeedyLight from Sewertronics.

“We want to be able to offer as many options to customers as possible,” Reid says. “Customers prefer to deal with a one-stop shop.”

The company primarily uses the SprayPoxy system to seal cracks, pinhole leaks and other defects in 4-inch-

« The user-friendly SprayPoxy MiniSpray+ system allows 45 minutes to an hour of work time before the epoxy hardens, so it wastes less epoxy.



TRENCHLESS INNOVATIONS INC. CRETE, ILLINOIS

CO-OWNER John Reid

MACHINE SprayPoxy MiniSpray+ pipe coating technology from SprayPoxy Oy

FUNCTION Rehabbing 1 1/4- to 8-inch-diameter pipes unsuitable for pipe lining

FEATURES Automatic pulling system, air-motor driven spray head, heated hoses and epoxy tanks for smooth epoxy flow, creates a corrosion-free pipe lining

COST About \$22,000

WEBSITE www.trenchlessinnovations.com

diameter cast iron sewer laterals and other drainlines as well as vertical 4-inch-diameter pipes.

AMP UP EFFICIENCY

A chief advantage of the SprayPoxy system is a shorter curing time, which greatly increases productivity. Pipes require three epoxy applications, and other coating systems require as much as two hours of curing time between applications, Reid says.

“That can make for a really long day. But with the SprayPoxy system, each coat cures in 30 to 45 minutes.”

The system also wastes less epoxy. Other systems mix the epoxy coating at the pump, and it then can take 15 to 20 minutes for the product to make its way down through a hose and into the spray head, Reid explains.

“The hoses are 60 feet long and it takes two epoxy cartridges — which cost \$125 each — to completely surcharge both hoses. As

» Trenchless Innovations lead technician Kevin Wall watches a camera monitor as he epoxy coats a section of 4-inch-diameter, cast iron pipe inside an art museum in Chicago, using a SprayPoxy MiniSpray+ system from SprayPoxy Oy.

a result, all that epoxy left in the hose gets thrown out after each coat. So after three applications, you've thrown away hundreds of dollars' worth of product, plus the hoses."

But with the SprayPoxy system, the epoxy is mixed just before the spray head, so only about 1 foot of material inside the hose gets thrown away, he says.

Furthermore, the SprayPoxy system allows for around 45 minutes to an hour of work time before the epoxy hardens. With other systems, work time is lost as the mixed epoxy travels through the hose.

"So when it reaches the spray tip, you really have to work fast," Reid says. "It's much more convenient when the epoxy is mixed at the head instead of at the pump.

"It's a very user-friendly system," he adds, noting that it takes about a month or so for operators to become fully proficient at using it.



"IT DEFINITELY OPENS UP MORE OPPORTUNITIES FOR US. WE NOW CAN DO JOBS THAT WE NEVER THOUGHT WE'D BE ABLE TO DO."

JOHN REID

EXPANDING MARKETS

When the company first started to consider investing in a SprayPoxy system about a year ago, Reid says he was intrigued by the business doors it might open. So far, so good.

"In a lot of cases, it's hard to line pipes with multiple tie-ins or vertical stack pipes," he points out. "But this allows for those kinds of applications and enables us to offer customers alternatives.

"It definitely opens up more opportunities for us. We now can do jobs that we never thought we'd be able to do. In the past, we used to shy away from jobs at bigger buildings. But now the SprayPoxy system has opened up a bigger market for us.

"Plus more and more engineers are finding out about this technology and spec'ing it for jobs, so it pays to be able to do those kinds of jobs. It puts you ahead of competitors that can't offer the same technology." c

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PRODUCT SPOTLIGHT

MANHOLE SHORING BOXES KEEP UTILITY WORKERS OUT OF HARM'S WAY

By Craig Mandli

Underground sewer maintenance work today utilizes many trenchless construction and rehabilitation procedures designed to reduce the need to excavate or dig trenches to install and maintain these systems. However, many heavy-duty manhole construction and rehabilitation projects still require wide, deep, worker-entry trenches. That's why taking proper shoring precautions with every manhole excavation is paramount for keeping work crews safe and on the job.

Xtream Duty Manhole Boxes from Pinnacle Mfg. are strong enough to handle the pressure from unstable soil conditions and provide a safe space for workers, protecting them from a trench collapse. Whether digging the foundation for a building or laying pipes or wires, these manhole boxes ensure worker safety and can play a major role in the prevention of cave-ins and injuries.

"Pinnacle Xtream Duty products are constructed with precision materials that provide the ability to reduce weight, offer the highest pipe clearance, and maintain the ability to reach or exceed industry expected depth ratings," says Matthew Bliss, director of engineering for Pinnacle.

Simply put, manhole boxes help maintain a safe working environment for workers. They are specifically designed to offer protection on the third and fourth sides of a trench or excavation. Working in any kind of trench is accompanied by the risk of injury, as a dangerous situation can easily present itself. Pipework can be a dangerous task, but fitting a manhole box around the work area is an easy way to avoid accidents and injuries.

Xtream Duty Manhole Boxes come standard with tapered dog doors for ease of access in regard to the municipal and maintenance sectors of excavations. These boxes are intended for use in excavations



for water, sewer, gas and electrical installations. If the job requires, trench boxes are available for the more expansive projects, according to Bliss.

"Pinnacle spent two years developing a product that meets and exceeds industry expectations while offering a competitive product, both in performance and delivery," he says. "Our customers have been impressed with the weight of our products first and foremost, as this reduces the overall logistics cost to the users. Secondly, customers have been impressed with the support from our quality, sales and engineering teams." 256-840-8031; www.pinnaclecfg.net

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By Craig Mandli

» CLEANING NOZZLES

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SewerProShop's Blue Star sewer cleaning nozzles are manufactured with optimized 3D hydromechanics by Intersewer, located in Germany. Water coming from the pressurized sewer hose is first divided by a conically shaped piece and turned around in the nozzle chamber, then guided directly to the stainless steel nozzle inserts via five-axis computer numerical control precision. The nozzles are made in one piece, reducing the chance of failure under pressure for greater safety and performance. Utilizing case-hardened steel, stainless steel and ceramic inserts, the nozzles can also be used with recycled water. 877-864-9394; www.sewerproshop.com



5 // USB-USA GATOR AND MINI GATOR

High-performance Gator and Mini Gator nozzles from USB-USA cut and remove roots, grease, blockages and scale in various pipes ranging from 2 to 20 inches. Encased in a compact stainless steel body, the strong reinforced internal design rotates the head. 3D fluid mechanics in the head smoothly direct all the incoming high-pressure water to the four rotating jets in the rear of the head and one in front. These rotating jets create a powerful 360-degree all-around complete cleaning of the pipe, flushing and removing debris in fewer passes. The offset front jet eliminates blockages easily and effectively. The Gator is capable of being used on hose between 3/4 to 1 1/4 inches, while the Mini Gator Nozzle can be used on 3/8- to 1/2-inch hose. Case kits include an additional skid to centralize it in larger pipe. 844-285-5770; www.usb-usa.com



6 // VAC-CON SEWER ROBOTICS C70

The Sewer Robotics C70 video nozzle, distributed by Vac-Con, features eight cleaning jets, a battery pack, LED lighting, Wi-Fi and a self-leveling HD camera for video recording and jetting 6- to 40-inch pipelines. The durable nozzle easily threads onto any jetting hose to help cleaning crews and asset managers record HD, auto-upright video at low cost during pipe cleaning operations. Once the pipe is cleaned, the video is downloaded with a single touch of a button and automatically uploaded to the Sewer Analytics web cloud, together with the date, time and GPS location of the cleanings. Video is recorded on an SD card inside the nozzle and downloaded to the included tablet via integrated Wi-Fi as soon as the nozzle has returned to the manhole. 904-284-4200; www.vac-con.com



7 // WARTHOG NOZZLES BY STONEAGE WGR ROOT DESTROYER

The WGR Root Destroyer from Warthog Nozzles by StoneAge is jetted to send max force to specially angled side jets optimized for root cutting. Controlled rotation and powerful jets create a water blade proven to clear roots faster, saving time, water and money. The nozzle has 1- or 1 1/4-inch inlet options and is designed to remove roots quickly and efficiently from pipe sizes 8 to 36 inches. The streamlined design prevents the tool from catching inside of the pipe, and the flush style head protects the front shaft seal for extended fluid life. It can help eliminate the use of mechanical tools that can damage the pipe. 866-795-1586; www.warthog-nozzles.com

» HYDROEXCAVATION EQUIPMENT

8 // DITCH WITCH HX30G

The HX30G from Ditch Witch is powered by a 31 hp Vanguard gas engine for optimal suction power and water pressure. It has a 542-cfm blower, 3,000 psi water pressure capacity and 4.2 gpm water flow. It comes with the choice of a 500- or 800-gallon tank, and is also available in a variety of trailer configurations, including the VT9 trailer – which, when equipped with the 500-gallon tank, does not require a CDL to transport. 580-336-4402; www.ditchwitch.com



9 // DYNABLAST HV590FLS-12VRED

The HV590FLS-12VRED hydrovac water heater from Dynablast produces 590,000 Btus with an output temperature of 175 degrees F at 7 gpm. An optional electronic 12-volt thermostat can hold more precise water temperature. The unit is suitable for colder climates and improves digging in clay-filled areas. It enables fuel savings of 3/4 gph and weight reduction of 250 pounds over the current 690,000 Btu model. It comes with ETL certification for safety, which also includes certification on the coil for higher efficiency and heat transfer, stainless steel target plate for increased coil life and serviceability with momentary override control. 905-867-4642; www.dynablast.ca



10 // EASY-KLEEN PRESSURE SYSTEMS WILDCAT HEATERS

Wildcat Heaters high-pressure, oil-fired hot-water/steam heaters and hydraulic pump systems from Easy-Kleen Pressure Systems are designed for reliability and efficiency, and are installation-ready for vacuum trucks and hydroexcavators. A full range of heater options includes dry steam, redundancy packages, schedule 80 and 160 stainless steel or A53 boiler pipe, and fine-tuned temperature and flow-control systems. All coils are manufactured in-house, with CRN boiler-approved coils now available. Heaters can be designed for mounting in a cabinet or supplied as a completed cabinet unit. They are CSA and ETL approved. Hydraulic pumping systems are available. 800-315-5533; www.easykleen.com



11 // HI-VAC X-15 HYDRO EXCAVATOR

The Hi-Vac X-15 Hydro Excavator can be used for potholing, daylighting and utility location. A modular design provides clean and intuitive controls and simple, planned maintenance accessibility for critical systems. It is ideal when on-site dumping is required and for off-highway applications that require a high legal payload. A 15-cubic-yard debris tank, high payload capacity and 1,600-gallon freshwater capacity result in fewer costly offsite trips. Power is provided by a 6,200 cfm 28-inch Hg high-performance blower and a triplex water pump that delivers 25 gpm at 4,000 psi. The top-mounted, 360-degree boom ensures accessibility in all directions while a heavy-duty, hydraulic vibrator facilitates fast and efficient unloading of the debris body. An optional severe-duty, 700,000 Btu boiler safely heats water for frozen ground applications. 800-752-2400; www.x-vac.com



12 // IMPERIAL INDUSTRIES HYDRO 3600 HYBRID EXCAVATOR

The Hydro 3600 Hybrid Excavator from Imperial Industries is short and compact for maneuverability in tight spaces. It is user-friendly, efficient and can be operated easily by a single person and is designed to minimize time spent on the job site. It includes a 3,600-gallon hauling capacity (customizable sizes available), optional water capacity, code and noncode availability, a three-stage lift hoist with built-in vibrator and full opening rear door for easy dumping, 20 gpm jetter up to 4,000 psi (adjustable), a National Vacuum Equipment 1600 blower and a moisture trap and grit ridder. Options include a 16-function remote control for easy operation of the boom, jetter, blower and vacuum. 800-558-2945; www.imperialind.com



13 // RIVAL HYDROVAC T7 TANDEM AND T10

The T7 Tandem from Rival Hydrovac was designed primarily to be a unit that could be loaded with debris and drive within legislated road limits with most types of debris on board. The unit comes standard with a scale that reads real-time weights both in the cab and on the wireless remote to confirm weight prior to travel. The T10 is built with the same features and operating system, but with larger capacities and components. It is popular with clients who do both utility and industrial work. It is available in three chassis layouts to meet weight restrictions in a given area. An air compressor option allows for excavating with air when required, while a truck-mounted coring system allows for removal of hard surfaces prior to nondestructive excavating. 403-550-7997; www.rivalhydrovac.com



14 // SOIL SURGEON HYDROEXCAVATING TOOL

The Soil Surgeon hydroexcavating tool fits any sewer combination truck equipped with a telescoping 6- or 8-inch boom. The tool has a 1-inch water connection. The operator controls water pressure and power through truck controls. It has a 6-foot Tuff-Tube with handles to guide the unit down for potholing or side to side for trenching. Six jets boring inward cut the soil, while six boring outward bring the tube down. 949-363-1401; www.soilsurgeoninc.com



15 // TORNADO GLOBAL HYDROVACS F3 ECO-LITE

Tornado Global Hydrovacs engineered the F3 ECO-LITE to have big functionality in a midsized platform. It was made specifically to legally haul large payloads in urban environments, and does so with a debris capacity of 10 cubic yards and a water capacity of 1,250 gallons. A float-style indicator is positioned on the outside of the debris tank, so monitoring volume is quick and easy. It comes with a boom capable of reaching to 26 feet with 342 degrees of rotation and an 8-inch boom hose. The truck uses a 3,800 cfm Robuschi 125 blower, a Pratisoli KT28 water pump and a Dynablast 740,000 Btu burner. A hydraulic dump door measuring 48-by-52-inches is mounted on the back of the tank and sits 42 inches high for easy use over bins. 877-340-8141; www.tornadotrucks.com



PRODUCT FOCUS

16 // TRUVAC FLXX

The TRUVAC FLXX is a vacuum excavator built to perform for utilities and contractors installing, replacing and repairing underground infrastructure, utilizing both air and hydroexcavation options for all conditions. This machine offers more power and maneuverability to work in tight urban settings where street excavation jobs can include supporting, repairing and installing a city's water, sewer, power and telecommunications infrastructure. It has the highest legal payload capacity in a midsize truck with a 10-cubic-yard debris body. In addition, it offers Park-n-Dig, an always-connected water source; safe and precise digging with the DigRight one-touch flow control technology; a water heater to dig in all types of weather/material conditions; a 22-foot boom reach with 340-degree rotation; and a DigFast option to maintain peak vacuuming performance and a clear airstream in the vacuum tube. 800-627-3171; www.truvac.com



17 // VERMEER VXT300

Vermeer's VXT300 truck vac is outfitted with an 8-cubic-yard spoil tank, 6-inch dig tube and the ability to carry up to 800 gallons of water so crews can maximize productivity on the job. It is designed with a low overall height of 11.5 feet to efficiently transport spoils from the job site to the dumpsite. The vac truck is built on a Kenworth T370 truck chassis with a 350 hp diesel engine and a six-speed automatic 3,000 RDS Allison transmission. The truck's PTO drive powers its Roots 624 vacuum blower with a maximum flow of 3,500 cfm and maximum suction of 18 inches Hg. The water pump is capable of producing 10 gpm at 3,000 psi for productivity on large jobs as well as when digging at deeper depths. 800-837-6337; www.vermeer.com



» JET/VAC COMBO UNITS

18 // BUCHER MUNICIPAL NORTH AMERICA FLEXLINE

The FlexLine C120 and the more agile C60 from Bucher Municipal North America are now available. The combination sewer cleaners are used for preventive cleaning, emergency cleaning of mains, septic, collection tanks and hydroexcavation. They offer 8- and 15-cubic-yard capacities, 7.2 and 14.5 psi, a jetting hose reel with more than 492 feet of capacity, a 5-inch suction hose with 7-foot extension, a hydraulic end cover that opens upward, automatically minimizing obstructions on roads and sidewalks, two control panels placed for easy operation, and a 5,100 psi at 5 gpm hydroexcavation pump. 704-658-1333; www.buchermunicipal.com/us/en



19 // SUPER PRODUCTS CAMEL MAX SERIES

The versatile Camel Max Series combination sewer cleaner from Super Products comes in a variety of model configurations: 900 Dump, 1200 Dump, 1200 Eject and 1200 Wastewater Recycle. All 1200 models come standard with a high dump subframe, eliminating the need to back up a ramp for debris removal. The 1200 Dump is capable of dumping into a 42-inch container while maintaining a low overhead height and a low center of gravity for increased stability. The 1200 Eject allows operators to have the only controlled way to dump safely into a 48-inch container without additional containment products. The 1200 Wastewater Recycle enables operators to clean sewers without freshwater, and is capable of cleaning nearly 3,000 feet of sewer pipe per day and saving 60,000 gallons of water per week. 800-837-9711; www.superproductsllc.com





20

» ROOT CONTROL EQUIPMENT

20 // ARTHUR PRODUCTS CNT-R-KUT G1 EMAX

The Cnt-r-KUT G1 EMAX from Arthur Products is an interchangeable cutter nozzle to clear roots and debris. The centering devices can be modified for custom applications. They help operators tackle tough jobs, including when using drain cleaning nozzles in tight spaces in damaged sewers, and technicians can expect to achieve maximum cleaning spread in drains and other pipes. 800-322-0510; www.arthurproducts.com



21

21 // DURACABLE CABLE DRAIN MACHINES

To get tough roots out of a drainline, classic cable drain machines from Duracable are ideal. The DM55 sled-style machine or big uprights like the DM162 or DM175 are powerhouse machines with a direct drive 10:1 gearbox ratio to provide all the power and torque needed to tackle heavy roots. The company has 108 cable styles and 167 blade styles to choose from so techs can customize their root cutting system. Once the line is clear, treat it with a product like Root Destroyer or RootX to prevent regrowth of roots without harming the tree itself. 800-247-4081; www.duracable.com



22

22 // ELECTRIC EEL MODEL C

The Model C dual-cable sectional drain cleaner from Electric Eel runs up to 200 feet of 1 1/4-inch, self-feeding dual cable in 8- or 10-foot sections that require no handling when rotating. It spins cable at twice the revolutions per minute of a continuous cable machine for cleaning 3- to 10-inch lines for distances up to 200 feet. One-man operation means less time and labor expense. A heavy-duty, 1/2 hp motor comes standard, and 3/4 and 1 hp motors are also available. A custom-designed gearbox ensures higher quality, lower cost and parts availability. The heavy-duty, fully adjustable safety clutch keeps cable and tool breakage to a minimum and provides overload protection. A fold-down handle allows for easy transportation, storage and use in crawl spaces. Its carry handle allows for balance and easy transport. 800-833-1212; www.electriceel.com



23

23 // GORLITZ SEWER & DRAIN MODEL GO 68HD

The Model GO 68HD heavy-duty electric drain cleaning machine from Gorlitz Sewer & Drain is available in two different versions, either with an open steel reel or enclosed polyethylene drum, and it can be outfitted with an optional power feeder. Standard configuration is 150 feet of 1 1/16-inch hollow-core cable, which should reach most blockages with a single reel. Overall weight of this machine is 185 pounds. Adding a loading ramp and electric winch to any vehicle makes transportation quick and simple. It is designed to clean pipes from 3 to 8 inches in diameter. 877-446-7548; www.gorlitz.com



24

24 // OATEY HERCULES R-D ROOT DESTROYER

Hercules R-D Root Destroyer from Oatey is a slow dissolving, nonacidic, noncaustic herbicide formulated to eliminate and prevent root growth in sewer lines. By preventing sump and ejector pump root damage, it eliminates overflow damage, sewage flow restriction and backup odors. It is safe to use in lines leading to septic tanks, cesspools and dry wells, and is harmless to the environment. 800-321-9532; www.oatey.com

PRODUCT FOCUS

25 // SPARTAN TOOL MODEL 1065

The Model 1065 is Spartan Tool's original professional-grade cable machine. It offers a 250-foot range to clean pipe from 3 to 10 inches in diameter. The Dial-A-Cable power feed allows for quick cable changes and feeds cable in and out easily, while the blockage-sensing smart motor senses the need for more power when encountering a difficult blockage. A fully enclosed drum helps keep customer's living areas clean, and the unit has a rugged design for tough jobs. 800-435-3866; www.spartantool.com



» SAFETY EQUIPMENT

26 // CREWPLEX

CrewPlex is a hands-free communication solution to help crews overcome the challenges of continuous communication in environments where noise, distance, and task complexity can affect safety and productivity. It enables the user to connect the entire team with one system. Users can talk and hear each other in real time without delay and without voice triggering or pushing a button. Its audio quality provides better communication in all environments, especially in operations where noise levels can exceed 100 dB. Available connectivity to two-way radio systems keeps workgroups in touch with a supervisor and extends the communication reach of an entire work team. A variety of headsets are available to meet the needs of different jobs. 888-321-2739; www.crewplex.com



» TRUCK/TRAILER JETTERS

27 // AMERICAN JETTER 51T SERIES 2650

The 51T Series 2650 trailer jet from American Jetter offers 26 gpm at 5,000 psi. Dual Kohler electronic fuel injection gasoline engines provide consistent power and create 114 hp, saving up to 20% fuel, while avoiding problems associated with carburetor engines. Low water shut-off prevents pump damage if the optional 600 to 800-gallon tanks run low. The main reel holds up to 500 feet of 1/2-inch hose, and speed control allows for precise cleaning in both directions. A long-range wireless remote option allows for water ON/OFF, engine shutdown and hose reel control. The heavy-duty square-tubing trailer offers standard electric brakes on both axles. 866-944-3569; www.americanjetter.com



28 // CAM SPRAY 3012H COMPACT SKID MOUNT JETTER

The 3012H Compact Skid Mount Jetter from Cam Spray is designed to go into a high cube van or pickup bed and take up as little space as possible while still flowing 12 gpm at 3,000 psi. Features include a Honda iGX 800 fuel-injected gasoline engine with oil alert and hour meter, powering a gearbox-driven plunger pump with ceramic plungers, stainless steel valves, pressure gauge and 80-mesh water filter. The pump is protected by an unloader valve and secondary pop-off. A power pulse feature is used for navigating longer runs and elbows. The 100-gallon tank includes low water shut-off and a float valve to manage filling the tank. An industrial coated skid platform and frame offers transferability between vans, trucks and trailers, while mounting flanges and D-rings allow for the machine to be fastened or tied down. The machine measures 52 inches long by 41.5 inches wide by 50 inches tall. 800-648-5011; www.camspray.com





29 // GAPVAX G7 JETTER

The G7 Jetter from GapVax is built on a heavy-duty, contractor-grade NATM-certified trailer. Several engine choices, including Cummins diesel, are certified and sized appropriately for the water pump combinations. The unit's hose reel is hydraulically powered with a direct-drive gearbox and variable-speed control. The hose reel offers a 3-foot (curbside) articulation from center of bearing, 180-degree rotation and a capacity of 800 feet of 3/4-inch jetter hose. The polyethylene plastic water tank is available in 300-, 500-, 600- or 700-gallon capacities. The water pump is center-fed for optimum performance. The controller is interlocked with safety features that will show low fuel levels and low water, and is capable of a complete engine shutdown in an emergency. 888-442-7829; www.gapvax.com



30 // GENERAL PIPE CLEANERS JM-2512 TYPHOON

The JM-2512 Typhoon from General Pipe Cleaners delivers 12 gpm at 2,500 psi to blast grease, sediment and debris from 4- to 12-inch drainlines up to 400 feet long. A 200-gallon holding tank carries enough water to handle remote locations where access to water is limited. It offers electric brakes, safety strobe light, safety cones, rear fold-down stabilizer jacks, retractable hose guide arm and antifreeze system as standard equipment. Its reliable 24 hp Honda engine with electric start and 7-gallon fuel tank ensures extended performance on stubborn stoppages. On-demand Vibra-pulse helps slide the nozzle around tight bends and propels the hose down long lines. Two hose reels — a jet hose reel with 400 feet of 1/2-inch hose featuring variable-speed electric rewind, and a water supply hose reel carrying 150 feet of 3/4-inch hose — are mounted at the rear of the unit next to the pressure gauge and output valve. 800-245-6200; www.drainbrain.com



31 // HOTJET USA HOTJET II

The HotJet USA HotJet II trailer-mounted jetter is available with hydraulic hose reels and a 37 hp Vanguard fuel-injected engine. Operating with hot or cold water, it runs at 12 gpm at 4,000 psi, cleaning 2- to 12-inch lines, making it an alternative between small-output and larger-output machines. It arrives turnkey with a 330-gallon water tank, detergent tanks and full power-washing capabilities for cleaning, disinfecting and sanitizing after the job. It includes a hydraulic hose reel, heavy-duty 7,000-pound-rated tandem axle trailer (single axle also available), rear control panel with a remote control, two heavy-duty diamond plate side toolboxes and one front toolbox. 800-624-8186; www.hotjetusa.com



32 // JETTERS NORTHWEST EAGLE-300/4020-SW-DWR

The 20 gpm, 4,000 psi Eagle-300/4020-SW-DWR trailer-mounted jetter from Jetters Northwest can clean larger lines with its 20 gpm flow-capability and 4,000 psi velocity, yet can easily be adjusted down for jetting smaller sewers or sensitive lines. With up to 600 feet of jetter hose, its DC-powered hose reel sits on a 180-degree swiveling base and operates even if the jetter runs out of fuel. The wireless remote offers safe control of jetting on/off, engines on/off, throttle/pressure up/down and reel-wind. Manual controls are panel-mounted on the swiveling hose reel. Powered by emissions-friendly Kawasaki fuel-injected/liquid-cooled engines, these jettors are built on industrial-duty trailers with brakes for safety and can be towed with a full water tank. Choose between 300- or 600-gallon tank sizes. Twin fender-mounted tool bins allow for significant storage-space and aluminum wheels provide a sharp appearance. Pulsation control helps the jet nozzle pull through long runs. Four jetting nozzles are provided, and several root/grease nozzles are optional. 877-901-1936; www.jettersnorthwest.com

33 // MONGOOSE JETTERS BY SEWER EQUIPMENT MODEL 184

The Mongoose Jetters by Sewer Equipment Model 184 comes with a run-dry pump offering 18 gpm at 4,000 psi, a tubular steel frame, corrosion-resistant pre-painted subassemblies, state-of-the-art controls, strong hose reel and high-quality gas engine. It is suitable for drain cleaning and sewer jetting, remote access locations, mainlines up to 12 inches in diameter and commercial and industrial lines. The trailer unit comes with a water tank capacity of 300 gallons and standard hose reel capacity of 600 feet of 1/2-inch hose. The trailer setup consists of a 6,000-pound-rated single-axle trailer, and the addition of a wireless remote-control system makes this equipment a true one-man operation. It is also available as a van pack or truck-mounted unit. 815-835-5566; www.sewerequipment.com



34 // MYTANA ROM COMPACT JETTERS

MyTana offers two compact and budget friendly ROM-built truck-mounted jetters suitable for house connections and light industrial work. Both models fit medium-duty commercial vehicles and deliver 15 gpm at 4,000 psi for work in lines up to 24 inches. The smaller Economic has a hydraulic hose reel that swivels 225 degrees and holds 300 feet of 1/2-inch hose. A second reel is for water fill hose. The EcoFit features three reels. Two hydraulic hose reels swivel 270 degrees along with the control panel, each with a hose entry guide. The main reel has 300 feet of 1/2-inch hose but could hold up to 550 feet of hose. The second reel can hold up to 300 feet of 1/2-inch hose. A third reel houses the water fill hose. Both models include a handheld remote control unit and pulse action. Built by ROM, with tried-and-trusted high-pressure technology backed by decades of experience. 800-328-8170; www.mytana.com



35 // VACALL ALLJET

Vacall's AllJet truck-mounted jetter is an easy-to-operate, efficient sewer root maintenance machine. The hydraulically powered triplex plunger water pump is capable of 87 gpm at 2,000 psi with other power options available. The hose reel telescopes out 54 inches from a retracted position and swivels 200 degrees to properly direct the 600-foot jetting hose. It uses a single-engine PTO design and a 1,600-gallon UV-resistant polyethylene water tank. Operator-friendly features include four locking aluminum tool storage cabinets, a rear-view camera, roll-up doors and a washdown system, with options including LED lighting packages, an extendable rear canopy and a heating and insulation package inside the all-aluminum rear compartment. 800-382-8302; www.vacall.com



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INDUSTRY NEWS

Aliaxis acquires Aquarius Spectrum

Aliaxis SA announced the acquisition of Aquarius Spectrum, a provider of advanced acoustic water leak detection and pipe condition assessment solutions for water infrastructure. Aquarius Spectrum will be part of Aliaxis Next, Aliaxis' newly created division, which develops adjacent businesses in the field of water management and preservation. Aquarius Spectrum, an Israel-based technology company, has developed systems that proactively monitor water distribution networks. Aquarius sells leak detection technology worldwide that leverages acoustic sensors and sophisticated analysis engines to detect water leaks and pinpoint their exact location. **c**

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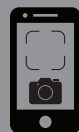
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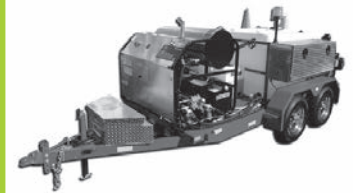
JETTERS – TRAILER



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