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MARCH 2018  
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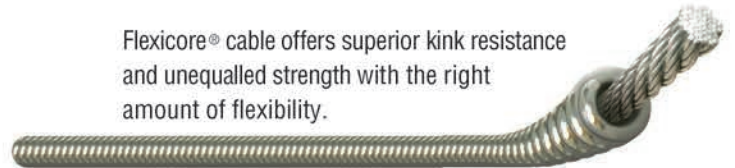
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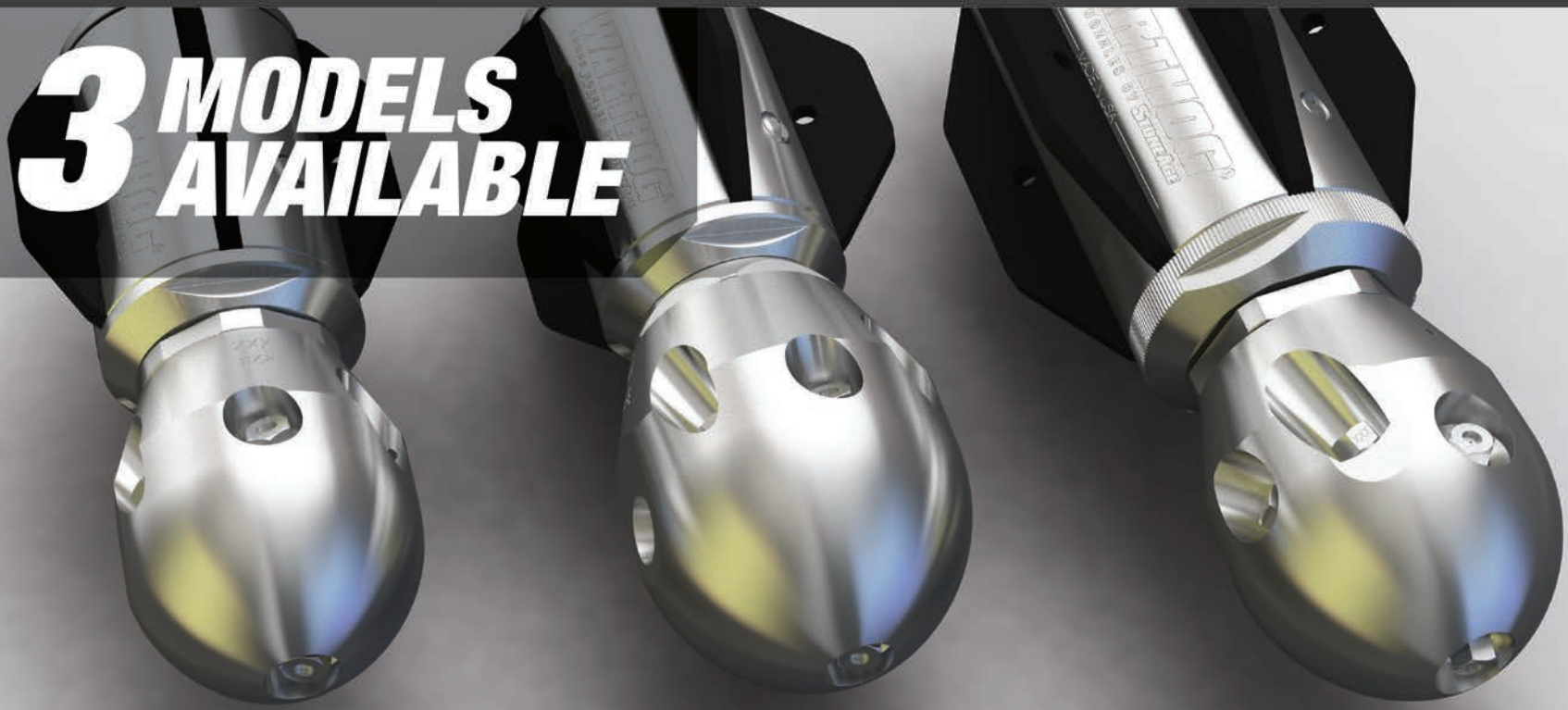


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### ON THE COVER

A crew from Diversified Underground in Aurora, Colorado, pothole to expose buried utilities. The company has steadily expanded its core services since its inception in 2000. (Photography by Carl Scofield)

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**CIRCULATION:** Circulation averages 25,642 copies per month. This figure includes both U.S. and international distribution.

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Luke Laggis

# Give Your Team an Advantage

Training opportunities can give you the ability to build a better staff

**T**he military sends new recruits to basic training. The NFL puts its players through training camp. What do you do?

I remember my first day working as a mason tender. I'd taken a semester off from college. When my summer job ended, I went to work for a local masonry company. We mostly built basements and poured concrete. My job wasn't complicated — mix mud, stack blocks, and puddle concrete.

But I'd never done any of it before, and while it was relatively simple, the difference between a good tender and a bad one was significant.

The masons mostly just expected me to know everything and to do it right — and fast — as soon as I got out of the truck that first day. It's not the most complicated job, but there are nuances. If you've never mixed mud, you're not going to know the right consistency. If you've never steered a wheelbarrow of concrete down a 2-by-8-inch plank into a sandy pit to pour footings, you might struggle the first time or two. I dumped one wheelbarrow, once. The hell I caught for it ensured it would never happen again, no matter how deep the pit, narrow the plank, or heavy the load.

I was thrown straight into the mix and was expected to keep up. But I was surrounded by experienced masons who could keep me from doing too much wrong, and as I said, it wasn't a very complicated job. Your business is a little different.

Sure, there are entry-level jobs, and new hires can ride along with experienced technicians until they get a handle on things, but shouldn't your people have a strong knowledge base and skill set before you send them out to represent your company?

Training in the sewer and drain industry is far from standardized. There aren't apprenticeships. There aren't technical degrees for drain cleaning. So what do you do? How do you ensure the people you're sending out to handle calls have the knowledge and skills to properly serve customers and represent your business? There's no standard answer, but there are some options.

We launched the Training for Success feature in January to help put some of those options in front of you. The first two installments covered NASSCO and Nezat Training and Consulting. In this issue, you'll read about the National Utility Contractors Association's NUCA University.

The association has offered training opportunities for a long time, primarily focused on safety issues. The new university initiative will combine those safety components with other topics in a comprehensive digital education platform covering anything and everything related to utility work.

Regardless of how you train new employees or help your experienced technicians stay up to date with new technology, there's always room for improvement. The more opportunities they're given to learn and grow, the more valuable they'll be. That's good for them and your business. And if your own in-house training system isn't so robust, the ability to offer quality outside training opportunities will open your hiring process to a wider pool of candidates.

I hope you find the feature helpful.

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

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## EQUIPMENT BUYING The Pros and Cons of Paying Cash Vs. Financing

Typically, there are three ways a company gets new equipment: paying out-of-pocket, getting a loan or leasing it. There are clear advantages to each payment option, but every company is different and not every option is right for every business. Here's some information to consider to determine the best equipment-purchasing method for your company. >>[cleaner.com/featured](http://cleaner.com/featured)

## 10 YEARS LATER Catching Up With Past *Cleaner* Cover Stars

Pipe Wrench Plumbing of Knoxville, Tennessee, and Red Lilly Plumbing of Los Angeles are two companies that were featured in *Cleaner* magazine back in 2008. Recently, we caught up with both of them to see how business has been going in the decade since.

>>[cleaner.com/featured](http://cleaner.com/featured)



“Think about something you already do well but are trying hard to do even better. Then weigh the input with the outcome. Sometimes ‘good’ truly is good enough, especially if that 5 percent gain is hugely disproportionate to the pain required to reach it.”

— 10 Tips to Boost Your Productivity on the Job  
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## INDUSTRY WISDOM 9 Successful Contractors Share Advice

For this online exclusive, we looked back at all the contractors profiled in the magazine in 2017 and put together a compilation of some of the industry wisdom they shared. See if the lessons they've learned from their experiences can help your business. >>[cleaner.com/featured](http://cleaner.com/featured)



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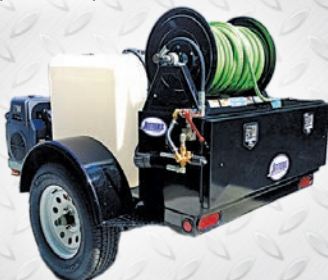


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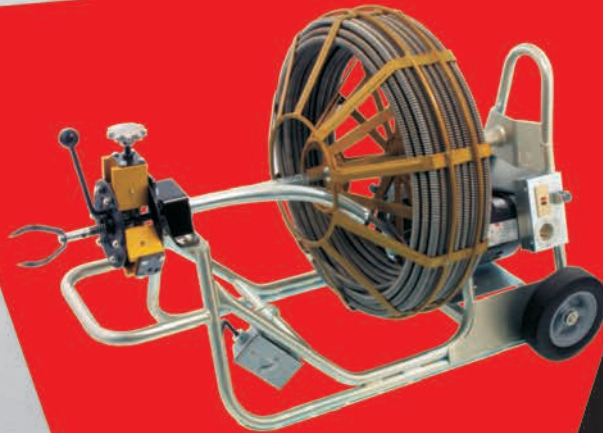
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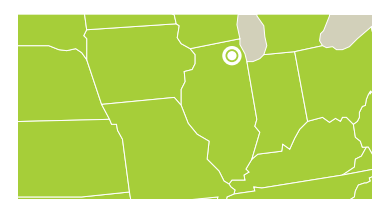
Jay's Plumbing & Sewer builds its reputation by developing professional employees and being there for customers every day

By Giles Lambertson // Photography by Rob Hart





◀ Jay DeFrates, owner of Jay's Plumbing & Sewer, stands in front of a truck at the company shop in Downers Grove, Illinois. The company covers a 25-mile service area and offers sewer repairs, sump pump repair, drain cleaning, fixture installation, water heater repairs and installation, power rodding, and jetting.



## Jay's Plumbing & Sewer

**LOCATION:** Downers Grove, Illinois

**OWNER:** Jay DeFrates

**EMPLOYEES:** 13

**SERVICES:** Leak search/diagnostic; fixture repair/replacement; ejector/sump pumps and backup system repairs; water heater repairs and replacements including tankless, sewer rodding/televising, hydrojetting, water treatment, sewer repair and replacement

**SERVICE AREA:** 25-mile radius of Downers Grove

**WEBSITE:** [www.jaysplumbing.net](http://www.jaysplumbing.net)

**A** professional is an expert in his field, someone with the knowledge, expertise, and skill to successfully complete the job. But “professional” also alludes to the character of a person. That is, a true professional is one who respects his work and the person for whom he’s working, which he demonstrates by being trustworthy, dependable and candid.

Jay DeFrates is a professional.

The owner of Jay’s Plumbing & Sewer in a western Chicago suburb can fix a leak with the best of them, sure. But he has instilled in his crew the need to offer customers a larger package. After the drip-drip-dripping has stopped, DeFrates hopes a homeowner will also notice that the work area is clean when the job is done and that the plumber who comes to the door is as courteous as he is knowledgeable — that he is a professional, in other words.

Jay’s Plumbing & Sewer is a professional shop with a philosophy, not just a business plan. After all, how many plumbing companies pledge in their online mission statement “to maintain an atmosphere of optimism, creativity, resourcefulness and excellence”?

“I like to think we do a little bit better than our competitors — that we do things with a little bit more finesse,” DeFrates says. “Anyone can get a job done, but when you can do it with finesse ... well, I think we bring that little extra to the table.”

To DeFrates, “finesse” means being “polite, neat and thorough.” Such a workplace culture doesn’t just spontaneously develop. It’s cultivated. “We constantly teach it to our crew,” he says. “Once they get it, they know they are

offering customers something above and beyond what others are offering.”

### FINDING HIS CALLING

DeFrates was born near the southern tip of Lake Michigan in northern Indiana, a contiguous part of Chicagoland. He first put a wrench on a pipe 30 years ago as an apprentice, working for several plumbing businesses. He also labored at other kinds of jobs as a younger man, including factory work, before getting his plumbing license and opening his business southwest of Chicago’s Loop in Downers Grove.

From there, his crew rolls out 25 miles or so to plumb homes and commercial properties in places like Wheaton, La Grange and Naperville. The area includes new residential developments as well as an abundance of World War II-era residences, structures that are still sturdy and attractive but have been occupied long enough to begin to have issues. Ninety percent of the company’s work is residential, and this housing stock is one reason why.

“It is a general mix of houses, but there are a lot of older homes in places like Riverside,” he says. “Businesses — a lot of time — will have someone on staff to do the plumbing. But the things that need to be maintained in a person’s home are not the things that a lot of homeowners can do for themselves.”

DeFrates worked from his own home in the beginning, then began to stockpile inventory in a warehouse owned by his brother in a nearby town before finally moving the company into the current Ogden Avenue facility





Plumbing technician Mike Krejci installs a new hot water unit at a home in Downers Grove.

“Anyone can get a job done, but when you can do it with finesse ... **well, I think we bring that little extra to the table.**”

Jay DeFrates

in Downers Grove. He found plumbing work immediately. “I was at the right place at the right time,” he says. “A large remodeling company I knew about was going through some plumbers. They had a ton of work, and I was hungry. It just kind of worked out.”

He also began to develop expertise. At the same time he opened his business, DeFrates moonlighted as a licensed state Environmental Protection Agency inspector of cross-connection control devices — the backflow valves that prevent possibly tainted water from entering a potable water system. Seven years later, he tested out and became a certified plumbing inspector, subsequently inspecting plumbing work part time in Elmhurst and full time in Hinsdale.

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More credentials? He is a certified "competent person" for excavations and confined spaces, both of which can come into play in plumbing projects. The latter competency protects his crew members while his inspection knowledge protects homeowners. "When I was inspecting, I basically was making sure a job was done correctly." Though he is not inspecting now because he has more administrative responsibilities in the company, he says he gleaned knowledge from his inspection work that he regularly passes on to his crew.

### A SHIFT IN JOBS

As years passed, the steady work continued for the company, but DeFrates began to modify the range of jobs undertaken by his crew. He moved away from plumbing remodeled residences and working on new residential construction and small commercial properties. He moved instead toward service and repair work. He did so, he says, because there are fewer headaches in servicing existing plumbing systems. "And I think that's where the demand is."

## Bringing people into the trade

Skilled trades get short shrift in a society riveted to the notion that everyone should have a college degree and pursue a white-collar career. The fascination of the last couple of generations with manipulating electronic devices rather than turning wrenches has added to the difficulty of bringing in the best people.

Jay DeFrates, owner of Jay's Plumbing & Sewer in Downers Grove, Illinois, is well aware of the problem. Attracting qualified candidates for sewer and plumbing work is an uphill battle. "It's hard to find help. Younger people are not entering the trades — I mean all the trades, not just plumbing."

The issue was on his mind in October partly because he was looking to hire another plumber. The company website advertised for "an extraordinary plumber who is passionate about customer service" and doing quality work. Compensation promised the person hired included health and dental insurance, a 401(k), "a family atmosphere," and ongoing education programs. DeFrates says when he hires, he looks for qualified people who can be molded into superplumbers. "We like to make plumbers. Some of the best ones we have are the ones we have made ourselves."

DeFrates believes in education. He holds weekly training sessions for his technicians. He has instructed students at the area's Building & Fire Code Academy. And he wants to educate young people about the benefits of starting a blue-collar career. "We are looking for opportunities to speak at schools, anywhere young people will listen to us. It is important that someone does it."

Part of his zeal in converting young people to the idea of working in the trades is that he benefited as a young man from serving an apprenticeship and was helped along the way by veterans of the trade. "A lot of people offered me an opportunity when I was starting out, and I try to do the same for others. I sense a real need to give back. That's a soft spot for me."



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✦ The staff of Jay's Plumbing & Sewer includes (from left) Victoria Kosirog, Dan Ranallo, Jake Kantor, Mike Krejci, Jay DeFrates, Bruce Sartin, Bryan Kantor and Keith Wilmoth.

✦ Mike Krejci works on a toilet repair at a commercial job site in Downers Grove.



“When customers realize you can come on a Sunday for the same price as during the week when they have no one home to let you in, it usually is seen to them as a blessing.”

Jay DeFrates

Certainly there is enough potential work there — from jetting and repairing sewer lines to installing sump pumps and tracking down leaks. DeFrates trademarked a slogan to fit the changed focus of his company: “Your Problem Is Our Problem,” which emphasizes both the service nature of the business and the company’s personal approach to individual customer satisfaction.

His equipment, which includes pipe inspection cameras and electronic locators, has evolved along with the industry. His RIDGID cameras have become necessities, he says. “It’s common now to run a camera through a sewer along with a rodder. It’s almost standard to push a camera in there. More and more, it is not doing a customer justice if you’re not inspecting as well as rodding a line.”

Each Jay’s Plumbing & Sewer crew member supplies his own hand tools. Larger company equipment is hauled to work sites in five service vehicles — box trucks with a Ford or Chevrolet van chassis and a utility body. DeFrates prefers Goshen, Indiana-based Supreme service box bodies because they “come in a lot of different styles, with bins on one side or the other, or bins on the outside. They seem to be of great quality.”

CONTINUED >>



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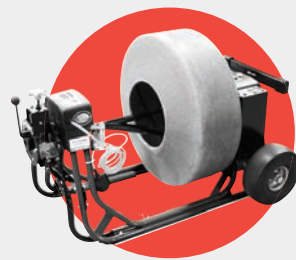
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◀ A crew works on the installation of a new lateral line clean-out at a residence in Downers Grove after jetting the line with a Spartan trailer jetter.

“When I personally was doing the work, it was always art to me: The finished jobs were works of art. I wanted my work to look better and be better than anyone else’s.”

Jay DeFrates

The company does pipeline work, so periodically, crews must dig up a lawn or alley to repair or replace a line. For such jobs, DeFrates leases excavation equipment for the same reasons so many other companies do. “Jobs that require excavation are not a big part of our work yet. That may come, but for now when I lease a mini-excavator or backhoe, it’s not my maintenance headache. I’m not paying for it when it’s just sitting around either.”

### LUCKY NUMBER 7

There is, in fact, not a lot of sitting around at Jay’s Plumbing & Sewer. The company offers customers service and emergency repair work seven days a week, from seven in the morning till seven at night. This “seven-seven-seven” schedule, as DeFrates refers to it, is not a common business schedule. What especially makes it appealing to customers is that the price of service work is the same every hour, every day.

“When customers realize you can come on a Sunday for the same price as during the week when they have no one home to let you in, it usually is seen to them as a blessing,” he says. Consequently, while the company’s office staff is not in the office on weekends, some crew members are on the job in people’s homes.

The service schedule was implemented within the last year. “It just kind of happened and works well,” DeFrates says. “Some guys prefer to have some days off during the week as opposed to weekends and others couldn’t work weekends, so it worked itself out. The ones who work weekends take off Monday and Tuesday or whatever days they want.”

Whatever days they are working, the six service technicians at Jay’s Plumbing & Sewer carry with them current know-how about doing their jobs. DeFrates keeps them informed by holding weekly hour-long training sessions. The in-house training ranges from new product knowledge and review of plumbing techniques to updates about company bookkeeping procedures. He and his service manager and general manager also welcome visits by manufacturers. “When parts change on a product, we have company reps come in and talk to us and show us what’s involved. It’s always very helpful to be a part of that circle.”



▶ Mike Krejci sets up a water ionizer on a kitchen sink.

### CONTINUED GROWTH

The 46-year-old company owner is a full-time administrator now, presiding over a company that he wants to keep growing. He is currently looking to add an employee and plans to roll out another service truck this year. All of which means DeFrates doesn’t have time to handle the tools any more.

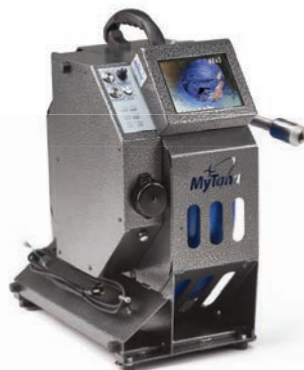
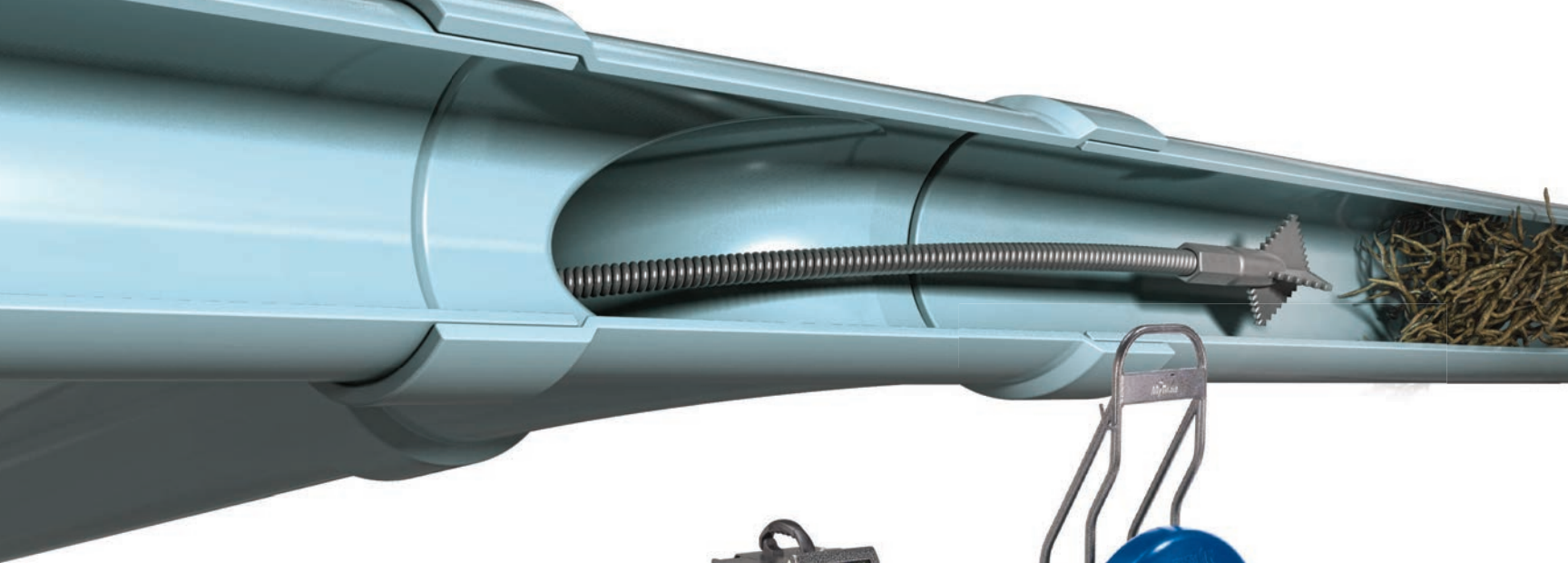
“When I personally was doing the work, it was always art to me: The finished jobs were works of art. I wanted my work to look better and be better than anyone else’s. It was hard to break away from that, but I think it’s part of the evolution of the company. You find key people who want to come behind you, and you let them do the work.” **c**

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# A Quick Solution

Simplicity and mobility help pipe lining system make short work of drainline rehab jobs

By Ken Wysocky

**W**hen it comes to equipment, master plumber Rick Ramsey believes more is more — as in more options to offer customers. That philosophy explains why the owner of Affordable Plumbing & Sewer in Kansas City, Missouri, owns two Quik-Shot pipe lining systems made by Pipe Lining Supply.

“If there’s a problem, I want to be the guy who’s able to fix it,” says Ramsey, who established his company in 1995 and provides service and repair plumbing, drain cleaning, and trenchless pipe bursting and lining services in the metro Kansas City area. “So I buy anything and everything that’s going to work and get the job done.”

Over the years, Ramsey has invested in many other pieces of drain cleaning and pipe rehab equipment made by Picote Solutions, Spartan Tool and GI Industries, plus SeeSnake inspection camera systems made by RIDGID. He bought his first Quik-Shot system about two years ago after a point repair lining job went south.

“One of the bladders blew up,” he explains. “The patch was fine, but I still had to finish the rest of the line. That’s when I started Googling for lining alternatives and ran across the Quik-Shot.”

A Pipe Lining Supply representative came to Kansas City to do a demonstration for Ramsey, who was impressed enough to buy a unit. About 14 months later, he bought another one. “It works really well,” says Ramsey, who runs 11 service vehicles and employs 10 people. “It’s so much less invasive than excavating, and all I need is one point of entry and I can shoot (a liner) up to 300 feet long.”

## SOLO STRENGTH

Simplicity and mobility are the Quik-Shot’s strengths. In fact, Ramsey says he commonly lines pipes by himself, which is unusual. The unit weighs about 50 pounds, which makes it easy to transport to hard-to-access places such as roofs, basements and narrow easements. “I even used one in a basement crawl space,” he says. “It’s very user-friendly.”

In a normal configuration, the machine stands only 36 inches high; in its smallest configuration, it will fit into a 12-by-12-by-24-inch opening. Contractors can use air pressure, supplied by a compressor, or water pressure — or both — to invert the liner.

The unit is engineered to use a minimum of moving parts, which reduces the chances of breakdowns. In addition, users can wet-out the epoxy liner, calibrate it (ensure the epoxy fully impregnates the liner at



▲ Rick Ramsey, owner of Affordable Plumbing & Sewer in Kansas City, Missouri, feeds a liner into a Quik-Shot inversion unit on a lateral lining job.

the correct thickness), and shoot it all in one process, which minimizes handling and streamlines the installation process.

“I just run the liner through the (calibration) rollers to get the correct thickness of epoxy,” he explains. “Then the ‘gun’ inverts the liner inside out so the epoxy-coated side goes against the pipe. Then I insert a calibration bag and

## Affordable Plumbing & Sewer

**LOCATION:** Kansas City, Missouri

**MACHINE:** Quik-Shot pipe lining system from Pipe Lining Supply

**FUNCTION:** Trenchless pipe repairs

**FEATURES:** Lightweight for easy transport and small enough to work in space-constrained areas; air- or water-pressure inversion capabilities; suitable for 3- to 8-inch-diameter pipes; minimal moving parts; one seamless process for wetting-out, calibrating and inserting the liner

**WEBSITE:** [www.affordableplumbingandsewerkc.com](http://www.affordableplumbingandsewerkc.com)

**PRICE:** About \$45,000

**QUIK-SHOT WEBSITE:** [www.pipeliningupply.com](http://www.pipeliningupply.com)



run hot water (about 120 degrees F) through it to cure the epoxy. By the time I remove the calibration bag, the liner is about 70 percent cured.

“On average, I can do a 100-foot job in about six hours,” he continues. “That’s extremely good. That’s compared to about two days for pipe bursting and three days to excavate and repair.”

## NEW MARKET

Demand for pipe lining is strong in Kansas City, driven by the aging infrastructure that plagues so many large American cities. Most homes built before 1985 in the metro area have either Orangeburg, cast-iron, clay, or concrete sewer laterals — and the Quik-Shot can handle them all.

“I can shoot anything,” Ramsey says. “I regularly shoot two to three lines a week — and sometimes four. The great thing is being able to fix pipes under streets without tearing up pavement. Doing a street cut will cost at least \$10,000, so the Quik-Shot gives me a big competitive advantage, plus it’s so versatile. It’s dramatically changed how I operate.”

Ramsey estimates he’s lined about 1,000 pipelines in the last two years and less than a dozen have gone south. The learning curve for using the Quik-Shot wasn’t steep; Ramsey says he felt comfortable after using it about 10 times within one month. “There always are issues that come up, but once you understand how the system works, you can overcome most of them.

“The thing is, once the genie is out of the bottle (the liner is inserted), there’s no going back,” he adds. “If your compressor or the gun breaks down, you’ve only got about 45 minutes after the liner is in to reinvert it and pull it out. You really have to pay attention to what you’re doing — be on your game all the time. It can be very stressful.”

On the other hand, Ramsey estimates that by opening up a new market for his company, the Quik-Shots have more than doubled his revenue, which means he has more than recouped the cost of the roughly \$45,000 machine. “Financially, it’s been a game-changer,” he says. **C**

**“It works really well.**

It’s so much less invasive than excavating, and all I need is one point of entry and I can shoot (a liner) up to 300 feet long.”

Rick Ramsey

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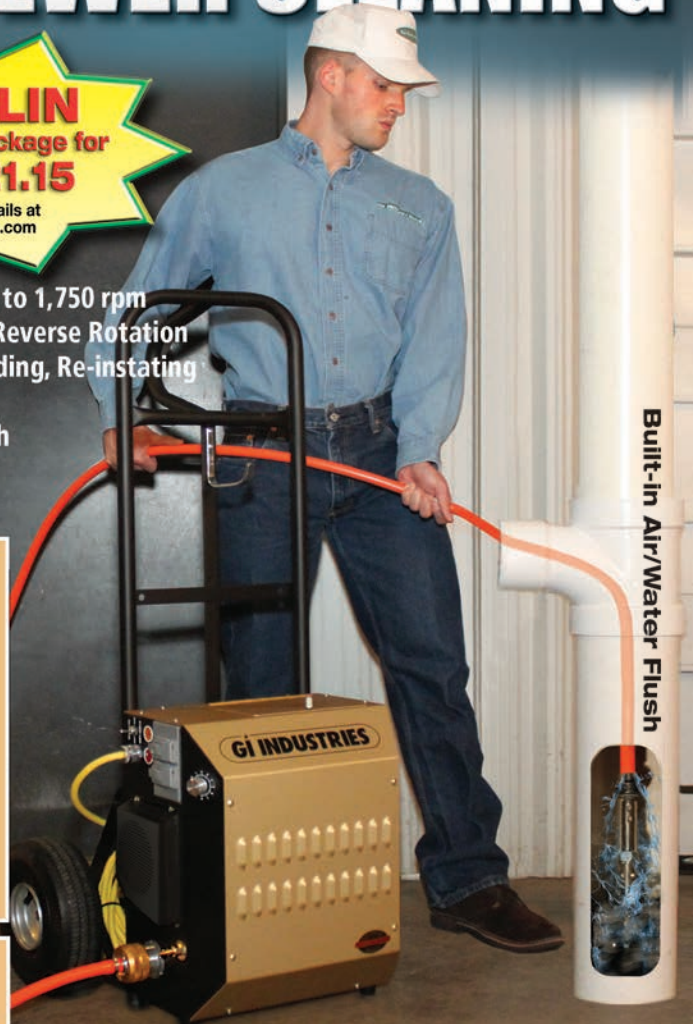
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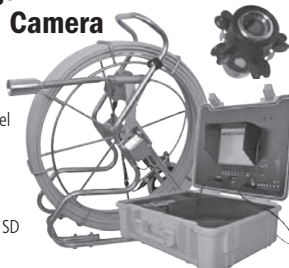
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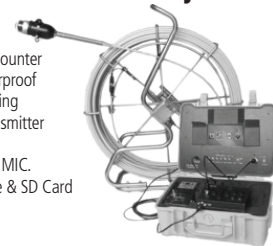
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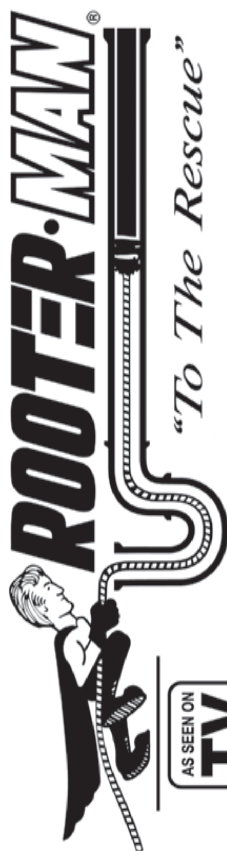
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# College for Contractors

The National Utility Contractors Association is working to provide easy access to training resources

By Jared Raney

**A** new resource is brewing for utility contractors of all stripes at the National Utility Contractors Association. They're calling it NUCA University, a comprehensive digital education platform covering anything and everything related to utility work.

Step one, going on now, is combining and organizing the 50 years of material that NUCA has accrued.

"Our goal is to disseminate this information in a timely manner, with a minimum amount of effort from our members," says Jim Stepahin, director of education and training.

A big part of the process is bringing all their knowledge into the digital age and finding a way to incorporate it into their website. They are also interested in working new media into the university, such as animation and video.

This isn't NUCA's first foray into digital education, as they have hosted webinars in the past and are in the process of developing that feature further.

Stepahin says they hope to begin rolling out the platform through 2018.

As far as topics, NUCA is open to suggestions, but it will certainly encompass their current educational offerings, such as confined-space training, competent person training and pipelayer classes. "We're just in the throes of beginning to develop those kinds of things but would welcome any industry input," Stepahin says.

Right now, the organization's current training portfolio is focused on safety. The NUCA Competent Person Class is their most popular, with over 400,000 individuals completing the course since its beginning. Their confined-space training is also popular, with 250,000 trainees to date.

"Our classes are taught by our authorized instructors, many of whom are listed on our website under the safety training link," says George Kennedy, vice president of safety. "We developed the program; we train the instructors; and we created all of the materials."

The trainers go through their own separate education program through NUCA to become authorized. "They have to apply, and they have to be selected based on their background and experience, their knowledge of OSHA, and their ability to be a trainer," Kennedy says.

The base cost for each of those trainings, which are offered as stand-alone opportunities, is \$150 for members and \$175 for nonmembers. Trainers may charge more depending on travel or other factors.

"In addition to offering live training, we also have courses on discs that we can actually send to people; they can actually conduct their own classes if they want," Stepahin says. Pipelayer Training consists of three modules, or chapters, that can be bought individually for \$495 each or as a package for \$1,335.

"The pipe installation training program covers the fundamentals of water and sewer pipe installation using modern equipment and technologies. These programs can help your crews to work together safely and productively," according to the NUCA website.

Chapter 1 covers job layout; Chapter 2 is excavations, trenching, manholes and backfilling; and lastly, working with pipe is Chapter 3.

In addition to these programs, there are a number of resources available across the site for members only, such as "Toolbox Talks" and "NUCA Pit Stop."

"We're in the process of a new strategic plan," Stepahin says. "We're really excited about our NUCA University, and we have a definite road map forward. ... That's where we're headed with the information that we have currently at hand. But we're always looking for new avenues of communicating." **c**

"Our classes are taught by our authorized instructors, many of whom are listed on our website under the safety training link. We developed the program; we train the instructors; and we created all of the materials."

George Kennedy

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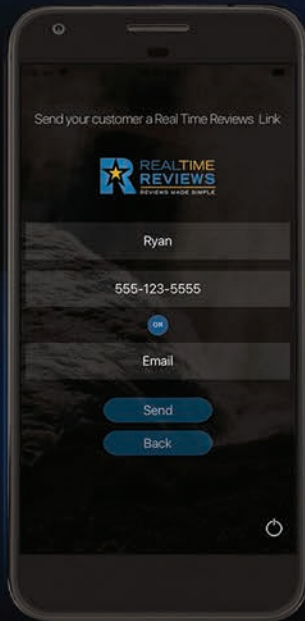
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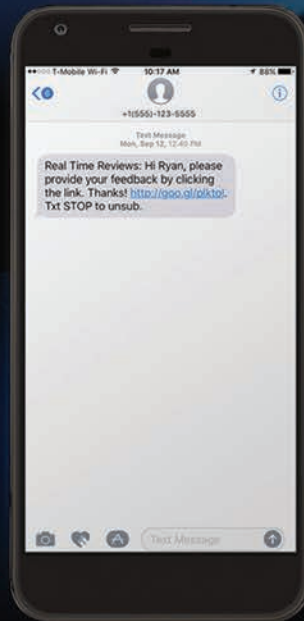
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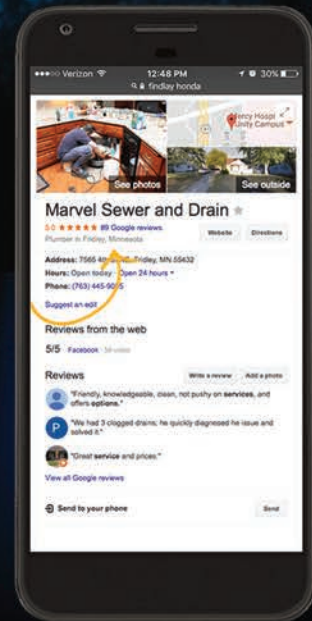
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◀ Rudy Padilla (left) and Mike Canandy of Diversified Underground use a Vermeer vacuum excavator to expose an underground electric line.

# OPEN TO Opportunity

Colorado contractor bores into hydroexcavation, locating and inspection markets

By Ken Wysocky // Photography by Carl Scofield

If ever a company was aptly named, it's Diversified Underground, based in Aurora, Colorado. Since its inception in 2000, the company has steadily expanded its core services by following a simple formula: Determine what services customers need, and invest in advanced, reliable equipment that can efficiently deliver those services.

The results speak for themselves. When owner Richard Chuapoco and his wife, Helena, started the company as a horizontal directional drilling outfit, he started out with one employee — himself — and one drilling machine, a Vermeer 7x11. Today, the company employs 43 people and owns two larger directional drills, one tandem-axle

vacuum truck, eight small trailer-mounted hydroexcavation/vacuum units, and a wide array of pipeline inspection camera systems, says Mark Allen, the company's general manager.

Moreover, the company has increased its revenue every year since 2001, including an average of 22 percent revenue growth since 2013. And the company recently purchased 40 acres of property, located east of Denver in Watkins, where it plans to build an office and equipment storage facility. Before that, management ran the company from construction trailers.

How Diversified Underground got from where it started to where it is today illustrates the value of not only listening to customers, but also keeping an eye on the overall marketplace



“We already had a lot of contacts in the industry – knew general contractors and people who needed private utilities located. **We grew the business through a lot of beating the bushes, making phone calls and word-of-mouth referrals.**”

Mark Allen



Branden Witt, head locator with Diversified Underground, lines up a Vermeer D20X22 horizontal directional drilling unit in preparation to install underground electrical utilities for new traffic lights.

— being alert to other business opportunities. That’s no small task in an industry that demands speed and an intense focus on a daily basis. In short, when drinking water from a fire hose, it’s hard to come up for air and look at the big picture. But it’s worth the effort, Allen says.

“Our largest advantage is that our clients know they can call us and we’re a one-stop shop,” Allen explains, pointing to the company’s horizontal drilling, hydroexcavating and utility-locating capabilities. “For example, if an engineering firm needs a gas line installed for an apartment complex, we can locate and identify all the utilities and mark them. Then after the firm does the surveying, we can pothole and find the depths of all the lines we located. After that, we can do the drilling, if needed. We don’t do just one piece of the pie — we can do it all.”

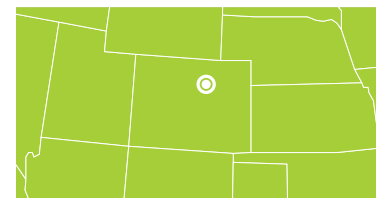
Another key to the company’s growth: Hiring more estimators, which also requires management to delegate

things they used to handle. In 2012, for instance, the company hired two more estimators, bringing the total to three. That contributed greatly to the company’s recent growth spurt.

“Yes, it’s hard to give up some of those responsibilities,” Allen concedes. “But it’s the natural way for a business to grow. If you try to do everything yourself, you can only do so much before you get spread too thin.”

#### STARTING SMALL

Allen and Chuapoco met while they were both working for a utility locating outfit in Denver during the mid-1990s. Then Allen moved to Australia to work on a large cable-laying project, during which time Chuapoco quit his job and struck out on his own, focusing on directional drilling. When Allen returned from Australia in 2002, the two joined forces and agreed to explore



## Diversified Underground

**LOCATION:** Aurora, Colorado

**FOUNDED:** 2000

**OWNERS:**

Richard and Helena Chuapoco

**EMPLOYEES:** 43

**SPECIALTIES:** Directional drilling, vacuum excavation, and utility locating

**SERVICE AREA:** Central Colorado

**WEBSITE:**

[www.diversifiedunderground.com](http://www.diversifiedunderground.com)





Supervisor Josh Allen (right) and head locator Branden Witt evaluate the signals from a Digital Trak F5 walkover locator to assist drilling operator Mike Canandy on a directional drilling job.

“We don’t bid on big projects because we just can’t compete with companies that own 10 or 12 drills. They can do thousands of feet a day, while we can only do hundreds.

**But we’ve developed a good niche market.”**

Mark Allen

expanding into utility line locating.

“We already had a lot of contacts in the industry — knew general contractors and people who needed private utilities located,” Allen says. “We grew the business through a lot of beating the bushes, making phone calls and word-of-mouth referrals.”

The company’s first big break occurred when it landed a contract to locate utilities at Denver International Airport — a service it still provides today. Literally a small city, the airport is constantly expanding and upgrading its facilities, which creates strong demand for locating services.

Around that time, it occurred to Chuapoco and Allen that the company could grow by seeking dedicated hydroexcavating contracts from construction companies. “We already were doing potholing for our own projects,” he explains. “But we started thinking that if things were kind of slow in between drilling jobs, it just made sense to go out and make something happen and grow it.”

Michael Griego (left) and Scott Canadas pothole to locate a utility line after drilling a core through the concrete in downtown Denver.



## Multipurpose machines for a multiservice company

It seems only fitting that Diversified Underground has invested in eight SpoilVac hydroexcavators made by VACMASTERS. Why? The machines are a perfect complement to the company’s multifaceted service offerings, capable of everything from exposing utility lines and slot trenching to cleaning culverts and catch basins and performing caisson excavations.

In addition, the trailer-mounted SpoilVacs are more maneuverable than larger hydroexcavating trucks, which has opened a new niche market for the Aurora, Colorado-based outfit: excavating and vacuuming in difficult-to-access locations, says Mark Allen, the company’s general manager.

“The medium size of these units allow us to offer customers a good competitive

price and grab a piece of the market that bigger trucks can’t enter,” Allen

says. “A lot of our competitors run big vacuum trucks and charge a lot more to be on a job site ... but we can outbid those bigger trucks. So in many cases, we can locate utilities faster and more economically with the SpoilVacs.”

Allen also lauds the units’ reliability. One of the units is more than 10 years old but “still runs like a champ,” Allen says. On-the-job breakdowns are a profit killer, he says, noting that the company is paying employees’ wages even though they’re not able to work. In addition, Diversified Underground is usually the second contractor on a job site after pipeline locators. Tasked with finding the depth at which pipelines are located, the company must finish its work before the next contractor — usually excavation companies — can get in.



## CONTINUED EXPANSION

That led to even further expansion from construction potholing to engineering and design work. So instead of just getting hired to locate and expose utility lines, Diversified Underground got into the design and engineering work that precedes those services. Essentially, that meant collecting all the maps and data from existing tier-one and tier-two utility owners in the area where a project is occurring, marking all those utilities, exposing them and recording all the horizontal and vertical data.

“Before we were just potholing wherever they told us to,” Allen says, explaining the difference. “But after that, we started doing everything on the front end, too.”

That service shift occurred around 2005 and 2006. “It opened up opportunities to work for more than just (general) contractors around town,” Allen points out. “It’s also more profitable than chasing small contracts for private (utility) locates.” Another advantage: The company didn’t need to make considerably more investments in equipment. “We could basically use the same equipment but just sell those services to a broader target audience.”

Today, the company owns two directional drilling machines, a Vermeer 20x22 and Vermeer 16x20, and eight trailer-mounted SpoilVac hydroexcavators,

As such, no one wants to be the contractor that has to stop working, creating a negative domino effect that puts projects behind schedule. “Getting in and out quickly is important,” Allen says. “We always seem to be under the gun.”

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

That’s not to say Allen doesn’t ever think about investing in a larger hydroexcavating machine. “But every time we look at the price tag of a big truck, we say, ‘No, let’s just get another SpoilVac,’” he says. “They’re very reliable workhorses. We know we can take them to a job site and get work done in a timely manner with minimal breakdowns. You just can’t ask for much more than that.”

manufactured by VACMASTERS. Each SpoilVac features an 800-gallon, carbon-steel debris tank that tilts up to 45 degrees for gravity-fed drainage; it has a powerful positive displacement blower (780 cfm), 36 hp Kubota diesel engine, high-pressure waterjetting system (2,250 psi at 3 gpm), and 800-gallon water tank.

Diversified Underground also owns a tandem-axle Vector combination truck built on a 2015 Western Star chassis. Features include a 13-cubic-yard



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General Manager Mark Allen and a portion of the Diversified Underground team outside the company shop in Aurora, Colorado.

debris tank, 1,600-gallon water tank, Cat pump (20 gpm/2,500 psi), 27-foot extendable boom, and Robuschi USA 125 blower. The company relies on locating equipment made by Vivax-Metrotech and Radiodetection as well as RIDGID SeeSnake self-leveling pipeline inspection camera systems.

Ultimately, the company's three business sectors — each of which generate about a third of the company's revenue — feed off the other. For example, locating work leads to hydroexcavating (potholing) work. Better yet, Allen says his employees' locating work tends to be more accurate when they know their colleagues are following behind to do the potholing. "We do potholing based on marks done by other companies, and they're not as accurate," he explains. "That's because they don't have a horse in the race."

Accuracy is a big deal because if a utility mark is off by just, say, 6 inches, it can result in wasted time doing unnecessary potholing while technicians probe for an underground line that's not quite where the marks indicated it's located. "It's not like they're being lax or malicious," Allen says. "They're just handling large workloads. And even though their marks are accurate, according to standards dictated by law, being just a few inches off becomes extremely time-consuming."

### STILL DRILLING

Even though the company has grown significantly since Chuapoco started out and expanded its services, it still does a considerable amount of directional drilling. Most of the work centers on smaller projects, such as drilling bores for running cables to street and parking-lot lights, or for irrigation systems at golf courses and for telephone lines, Allen says.

"If the pipe is 12 inches in diameter or smaller, we'll put it in the ground," he says. "Locating and hydroexcavating go hand in hand, but drilling plays in the ballpark with them only every so often. It's more of a separate entity.

We don't bid on big projects because we just can't compete with companies that own 10 or 12 drills. They can do thousands of feet a day, while we can only do hundreds. But we've developed a good niche market."

The company doesn't shy away from more challenging jobs, either. That includes some big projects, such as the installation of four 300-foot-long 4-inch-diameter conduits for electrical lines under a runway at Buckley Air Force Base in Aurora. Or drilling bores for more than 3,000 feet of new waterlines at the Denver Zoo. "We were there on and off for almost three months," Allen says. "We had to bore line through the zoo to the hippo and giraffe enclosures. It was interesting and challenging — a lot of after-hours work."

**"In the long run, I'd like to add two to four more hydrovacs and four to six more locators.**

**I think there's enough of a market to support that."**

Mark Allen

Looking ahead, Allen sees more growth potential because Denver is one of the fastest-growing cities in the country in terms of commercial and residential development. "The housing market is booming and Denver is just blowing up, so things look good for our industry," he says. "In the long run, I'd like to add two to four more hydrovacs and four to six more locators. I think there's enough of a market to support that."

Moreover, after the company moves into its new facilities, it'll have enough space to hire more office staff and sales managers, which will provide the





Josh Allen, Michael Griego and Scott Canadas (from left) drill a concrete core in a sidewalk in downtown Denver to reach a buried utility line.

resources to go after more contracts. As for adding more services, Allen says the company has the tools and equipment — pipeline inspection cameras and combination trucks — as well as the know-how to get into pipeline inspections and jetting drainlines.

“It’s certainly not out of the question that we could utilize the equipment we have on a subcontracting basis.” **c**

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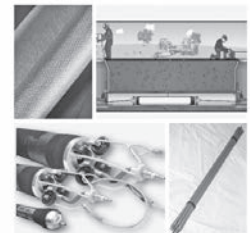
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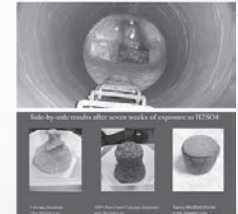
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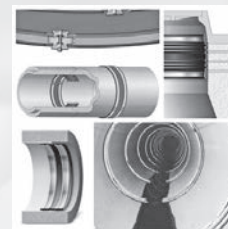
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Erik Gunn

# Don't Differentiate Days Off

Transitioning to a paid time off system may make your employees happier and save you time, money, and hassle

By Erik Gunn

**V**acation. Sick time. Holidays. Personal days. If you offer some or all of these to your employees, it can be dizzying to keep track of it all.

With so many designations, it's common to run into confusion or even conflicts about how you administer them — from people taking sick days just because they've run out of vacation to which holidays people observe based on their culture, religion or other circumstances.

For these and countless other reasons, more and more employers are taking a different approach — paid time off, or PTO.

**"I believe PTO helps companies to recruit, engage and retain employees. In this tight labor market, anything you can do to entice a candidate to your organization or an employee to stay with you is a benefit."**

Sylvia Francis

many are mid- to large-size firms, Francis considers them suitable for employers of any size, including small service-companies in the wastewater industry.

"I believe that small employers may actually benefit more from a PTO plan than a large employer," she says. Small employers with fewer resources may be harder pressed to cover unscheduled absences, she points out. "If an employee has PTO, they can plan absences, thus giving the organization the ability to plan for coverage.

"Paid time off is a policy that combines leave into one bank," explains Sylvia Francis, who oversees compensation and benefits for the Regional Transportation District in Denver. Francis also serves on an advisory panel on employee benefits for the Society for Human Resource Management.

## MORE FLEXIBILITY

Francis considers PTO an improvement over traditional, categorized time off. "It is an alternative that seems to fit our society much better, as folks strive for a better balance between work, home and play," she says.

An estimated 57 percent of employers offer PTO plans, and while

"For the employer, PTO has been proven to reduce unscheduled absences," Francis says. The out-of-vacation employee who decides to take a sick day for an extra day off won't call in until that day. "Under PTO, you can schedule that day off, aiding the employer in covering your absence more easily."

PTO can also streamline recordkeeping and personnel management. "Instead of managing different time-off categories for each employee, managing a PTO plan is a simple matter of noting when an employee uses some of his or her banked days of PTO," she observes.

## EMPLOYEES BENEFIT

But PTO isn't just good for employers. It offers "more flexibility for the employee," she says. "If they do not use sick time regularly, they have a choice to use the time for vacation or just personal days. No questions asked; no doctor's notes."

The so-called millennial generation (typically identified as workers now anywhere from their late teens or early 20s to perhaps as old as 40, depending on whom you ask) are said to especially seek better work-life balance. "But I think this cuts across generations," says Francis, who first implemented a PTO plan more than 15 years ago. Aging baby boomers and midlife members of Generation X "want more flexibility to travel, spend time with grandkids, etc."

And if workers view the plans positively, that helps the employer as well. Increasingly, job seekers "are requiring flexibility in their workplace," she says. "I believe PTO helps companies to recruit, engage and retain employees. In this tight labor market, anything you can do to entice a candidate to your organization or an employee to stay with you is a benefit."

## VARIETY OF PLANS

PTO plans aren't one-size-fits-all. Some combine just sick and vacation days, treating holidays separately, while others include holidays. Still others may wrap in floating or personal days (assuming those were offered before the transition to PTO).

Some employers realize savings from changing to PTO, but that varies tremendously depending on what the previous plans covered, whether the business has an inordinate amount of unscheduled absences before the change, what categories of time off the new PTO plan covers, and how new and old plans compare with respect to the total number of days off provided.

WorldatWork, an organization for human resources professionals that focuses on compensation, found in a 2016 survey that, on average, PTO plans reduced total time off to 16 days from 20 days for first-year employees and to 27 days from 37 days for employees with 20 or more years. But that's "really a moving target, based on how the organization structures its PTO plan," Francis notes.

And there are costs to putting a new plan in place — updating your payroll software, for example, but perhaps more significantly, taking the time to research and design the best plan for your particular business.



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It's also critical to understand what regulations apply to PTO plans. The federal government doesn't regulate them currently, but individual states have implemented rules, and they aren't all the same.

Colorado, where Francis works, requires employers to permit employees to use PTO as soon as they earn it, for example; that's different from most vacation plans in which workers accrue time off over the course of the year but typically have to wait until the next year to take it.

### MAKING THE SWITCH

Employers need to plan carefully when switching to a PTO plan from one that differentiates kinds of time off. How will current leave be converted to PTO? What policies will you set for how, or whether, leftover PTO time at the end of the year can be carried over to the next? How do you manage the cost of paying out unused PTO to a worker who leaves your employment with time still "in the bank"?

And because lengthy illnesses happen, some workplaces add in a separate extended illness bank that may accrue a handful of days a year and takes effect when a verified illness lasts beyond a certain amount of time, such as three days.

When making the change from traditional time-off policies to PTO, Francis says, "You also must communicate, communicate, communicate to employees about the PTO benefits to the employee."

Some employees may view a PTO conversion as taking away sick time or forcing them to take vacation time when illness strikes.

"In my experience, a good explanation and plenty of communication can reduce the 'noise' about the change," says Francis, who recommends that employers be transparent and "honest about why you implemented PTO and the benefits to the employee as well as the organization."

She adds, consider surveying employees or enlisting a committee to help develop a PTO plan: A committee that has bought into the change "will become champions and make the transition a heck of a lot easier."

And communication needs to continue after implementation so that expectations are clear all-around. "The biggest problem I have seen is that employees see PTO as vacation only and 'forget' that sick time was combined with vacation to become PTO. Some will use all their PTO for fun and neglect to save any for illness."

If you find that managing many different categories of time off is becoming more complicated for your business, consider whether the PTO approach could help you. It might save you money and time in the long run. **c**

"If (employees) do not use sick time regularly, they have a choice to use the time for vacation or just personal days.

**No questions asked;  
no doctor's notes."**

Sylvia Francis

Based in Racine, Wisconsin, Erik Gunn writes for magazines on business and other topics.



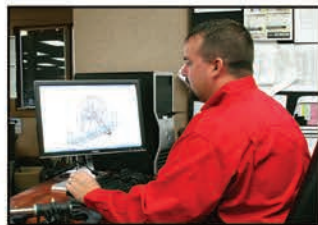
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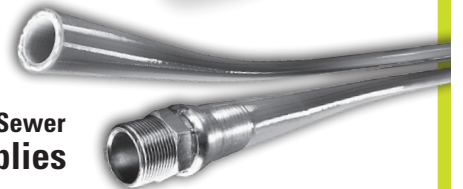
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# Take a Smarter Approach to Bidding

Contractors risk bringing trouble to their business without a planned approach for taking on more work

By Neil Feldman

For contractors looking to expand, it may be tempting to significantly ramp up bidding output by firing off as many quotes as possible on various types of projects. But an overly zealous approach to taking on new business can easily backfire.

“It’s important to evaluate your business and have a clear direction where you want to take it,” says Jim Gaffney, owner of Goshen Mechanical in West Chester, Pennsylvania. “Taking on too much in a short period of time can put a lot of stress on a business and can lead to serious problems.”

Those problems could include not having sufficient labor to handle the work, taking on projects outside of your comfort zone, taking on projects with questionable clients, and impeding cash flow.

“Taking on too much in a short period of time can put a lot of stress on a business and can lead to serious problems.”

Jim Gaffney

consideration is the type of labor being used. If you’re a union shop you’ll never be competitive bidding nonunion work against open shop contractors, and so quoting those jobs is a waste of time for estimators.”

The next consideration is the size of projects you’re comfortable taking on.

“If you have a few employees and a bonding capacity of \$3 million, you can’t be looking at new apartment complexes and other projects that will require a lot of capital and manpower,” Kontorovich says. “It makes good business sense to err on the side of conservativeness to ensure you don’t bite off more than you can handle at a given time.”

Kontorovich notes that it’s better to have multiple smaller- to moderate-sized projects running simultaneously rather than managing one large one. If something goes awry or the money doesn’t flow as fast as expected on one project, it’s much easier to handle if there are multiple projects running.

## WHAT TO CONSIDER

Prior to commencing a push to take on more work, contractors are well-advised to establish a clear strategy and approach to a ramped-up estimating effort. “There’s a lot to consider when determining what type of work to take on,” says Vitaly Kontorovich, owner of Vital Plumbing in Brooklyn, New York. “The first

The actual customers being quoted are another key consideration when looking to expand. “It’s important to run a Dun & Bradstreet report and have a good sense of the credit history of a prospective account,” says Bill Soper, senior estimator at Calvert Mechanical in Baltimore. If you’re on the fence about a particular new client, Soper suggests treading lightly by starting with a couple of small opportunities.

## THE BIDDING PROCESS

It’s relatively easy to get on a lot of bidders’ lists and in short order have more projects to quote than you can get to. Trying to estimate jobs too quickly, however, can undermine diligent practices and result in costly mistakes. It’s important to allow ample time to review vendor quotes to ensure they are accurate and pricing is optimal. On projects where multiple manufacturers are noted as acceptable, estimators are well-advised to have at least two of them provide figures, especially on moderate and larger jobs where a lot of the same items are called for.

There’s a fine line between putting proposals together expeditiously and putting too many together too fast. “You don’t want estimators under so much pressure to churn out quotes that they end up making costly mistakes,” Gaffney says. “General contractors rely on competitive bids to win their work, so if they rely on a quote with a mistake, they will do whatever they can to hold you to that number.”

Gaffney notes that a couple mistakes with bids will quickly spread within the contractor community.

Following up on bids is nearly as important as submitting them. General contractors and end users are busy juggling many things at once, and quite often, those who are diligent with follow-up will be a top contender when it comes to buying out that package. “Sometimes things get very hectic, and we are trying to purchase many different trades for multiple projects at the same time,” says Bill White, senior estimator and purchasing manager at Walsh Brothers, a Boston-based construction management firm. “I appreciate subcontractors who follow up weekly because it gets my mind thinking about that package, and I turn to that subcontractor when I need to ask questions or confirm scope.”

## STAYING ORGANIZED

Though it may seem like an obvious point, maintaining an organized bid schedule and updating it daily is extremely important. It’s easy to get caught up and neglect a handful of bids or begin reviewing certain bids the day before they’re due. By maintaining a schedule and adjusting bid dates as necessary, estimators can prioritize and focus on those jobs that are due sooner.

Lastly, it’s important to not take jobs below the margin threshold you’re comfortable with. “Just adding a lot of volume at tight margins is not a good approach,” Kontorovich says. “You need to have some cushion in it in case labor goes over budget or the money doesn’t flow as fast as you expected. You’re in business to make money and passing up bad jobs and jobs with no money in them is just as important as getting proposals out and negotiating good work.” **C**

“It makes good business sense to err on the side of conservativeness to ensure you don’t bite off more than you can handle at a given time.”

Vitaly Kontorovich



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# The Danger Below

Out of sight shouldn't mean out of mind for cross-bore hazards

By Jared Raney

It seems improbable from the surface: With all the thousands of square feet of soil, what are the odds that two 6-inch pipes would get in each others' way?

Yet, for such a seemingly unlikely situation, the potential danger of a cross bore is severe.

The ground is getting more and more crowded with buried utilities. With everything from fiber optics, communication lines, natural gas, sewer, water, and electrical lines going into the ground, the odds of running into a problem aren't as slim as one might think.

"In the majority of instances, you don't have any records on private property. Your typical homeowner has no idea where his or her sewer lateral is," says Greg Scoby, Cross Bore Safety Association board member and president of Crossbore Consultants.

"When you get on private property, all bets are off. So you have to take an approach that you know there's a minimum of water, sewer, gas, and maybe electric and communications on every parcel, and you need to proactively identify the locations of those."

## CROSS BORE 101

A cross bore is "the unintended conflict between two underground utility features, typically associated with trenchless installation," according to Scoby. The biggest danger comes with gas lines.

"It becomes an immediate issue when somebody's cleaning the drainline with the tooling used to cut roots or debris, or anything else in those lines. The plastic surfaces that are installed (for gas lines) do not present much of a barrier for that tooling," Scoby says. "So the tooling will go ahead and cause a rupture of the gas line. ... Depending on the type cutter head, plastic pipe does not have any resistance to damage. It just cuts through it like butter."

Ruptures in the pressurized natural gas lines from cleaning equipment can cause gas to travel through the sewer laterals and back up into structures. From there, all it takes is a spark to cause a catastrophe.

There are also potential dangers when it comes to hitting electrical lines, but beyond that, the danger is minimal. Of course, cross bores still cause damage that can delay projects and cost some serious dollars for everyone involved.

"I would avoid any intrusive cleaning method without having put a camera in the line. Anything other than water — any cutting or mechanical, anything like that — I would try to take a look at the line with a camera

**"When you get on private property, all bets are off.**

So you have to take an approach that you know there's a minimum of water, sewer, gas, maybe electric and communications on every parcel, and you need to proactively identify the locations of those."

Greg Scoby

before you do any of that stuff. That's for sure," says David Guillory, vice president of business development of Compliance EnviroSystems.

## PREVENTION AND MITIGATION

Cross-bore safety programs entail two aspects: prospecting — any predrill inspection or locating work — and postbore video inspection. Both are essential to preventing or at least mitigating cross-bore risk.

For both pre- and postinspection, video is a necessity, but Compliance EnviroSystems uses a number of locating techniques and equipment, including submeter GPS collection devices. Scoby recommends that ideal prospecting is putting a sonde down the line in addition to video inspection.

"Essentially our process is, if you're going to be on site ... we identify all the gas infrastructure related to the area that we're inspecting," says Nick Spano, project manager for Compliance EnviroSystems.

Compliance EnviroSystems, a sewer cleaning and evaluation company, has several contracts specifically inspecting for and identifying cross bores. That encompasses both post-bore inspection in new infrastructure and inspection of legacy systems — systems that were put in place with trenchless methods before the danger of cross bores was fully realized and safety programs put in place.

"We locate it all, using subsurface locating tools, mark it on the ground with flags and paint, and then compare it to the sewer," Spano says.

## BEYOND INSPECTION

Another important aspect of cross-bore mitigation is GIS mapping.

"This is big data. I mean, just every inspection of a lateral is megabytes of video," Scoby says. "There's a lot of importance in not only getting the equipment out there and inspecting, but then housing that within a data structure that allows you to go back and find that record. You can have the best information in the world, but if you can't put your finger on it, it's meaningless. ... You need to develop some type of GIS system for it."

When contracted to locate cross bores, Compliance EnviroSystems puts together a full data package for their clients, combining their video files with GIS to create an all-encompassing picture.

Across the industry, you'll hear again and again that a lack of records for existing infrastructure is a huge hurdle for sewer cleaning contractors and drain installers. Getting those utilities mapped is a constant, ongoing struggle for many municipalities.



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“We are mapping exactly what’s in the ground,” Spano says. “We’re pairing that with the videos and the inspection reports, and essentially then creating a map for our client that shows the exact location of all the utilities and that there are no cross bores.”

## TOP OF MIND

Though the onus is mostly on gas utility companies to avoid or repair cross bores in the first place, much of the burden eventually falls on cleaners, for whom the concern is omnipresent.

“In general, we have a number of tools that we use to clean sewer lines. ... The high-pressure water — there’s really no danger in damaging the gas pipes with just the water pressure,” Spano says. “When we use some of our more invasive tools — root cutters or tap cutters, chain cutters — we have a strict policy that we never put those tools anywhere that the camera has not been.”

Cross-bore safety is part of NASSCO’s Pipeline Assessment Certification Program, and that certification is usually required by gas companies for contractors on cross-bore projects.

“It’s an issue that is going to be around for a while. There’s a lot of risk associated with it,” Scoby says. “As awareness has increased, I think most companies’ installation practices include enhanced measures, if you want to call them that, to prospect and then to verify that you did no damage. But there was a lot of intervening years there where the awareness was not as elevated as it is now.”

For cleaning contractors in the field today, cross-bore safety is summed up succinctly by Spano: “We would always inspect a pipe before putting in something that could potentially damage a gas line.” **■**

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# Chemical and Mechanical Root Control

By Craig Mandli



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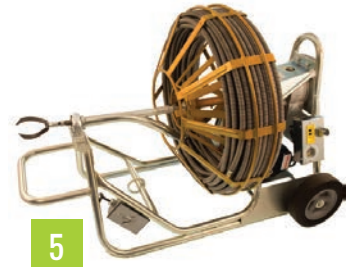
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## CABLE MACHINES

### 1 / DURACABLE DM175

The **DM175** from **Duracable** has a continuous-weld, aluminum alloy frame that is as strong as steel. The upright design allows for service technicians to maneuver through tight spaces with ease. It uses a direct-drive system with a 10-1 gear ratio for more torque. Built-in stair climbers and an easy accessible toolbox make it convenient to use. To avoid back and leg injuries, ramps are available to help load and unload the machine. The machine fits either a 23- or 27-inch enclosed polyethylene reel and can run 11/16- or 3/4-inch cable. It is used for mainlines, industrial, commercial, residential, overhead, and wall clean-outs, floor drains, grease, and roots. **877-244-0556; www.duracable.com.**

### 2 / 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 and manufactured 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.**

### 3 / GENERAL PIPE CLEANERS SPEEDROOTER XL

Using easily interchangeable drums, the **Speedrooter XL** from **General Pipe Cleaners** clears tough clogs in 3- to 10-inch lines. It has a 3/4 hp motor and 100-foot-capacity drums for Flexicore cable. Change the drums to add cable lengths or swap cable sizes easily. Loosen three knobs and remove the drum to switch between 3/4- or 5/8-inch cables in the large drum design. With a see-through inner cage, quickly gauge how much cable remains — or substitute the small drum with 100 feet of 1/2-inch cable for smaller lines. A variable-speed cable feed offers driving and pulling power for long, tough jobs, feeding and retrieving 3/4-, 5/8- and 1/2-inch cables. Turning a knob on top of the feed adjusts 3/4- or 5/8-inch cables. **800-245-6200; www.drainbrain.com.**

### 4 / GI INDUSTRIES TCM 5000

The high-speed **TCM 5000** pipe cleaning machine from **GI Industries** combines high-flow air/water flushing with brushing at variable speeds to provide the operator more control in various applications, creating a jetter and cable machine in one package. The variable-speed (0 to 1,750 rpms) control allows customers to use cleaning/drill heads or devices from other manufacturers. It provides contractors greater flexibility in deciding which tools are correct for their application. These systems can clean 1/2- to 24-inch lines at over 150 feet on a single unit. **800-724-1944; www.giind.com.**

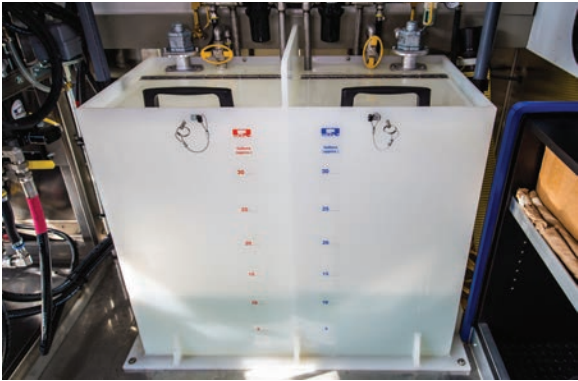
### 5 / GORLITZ SEWER & DRAIN MODEL GO 68HD

The **Gorlitz Sewer & Drain Model GO 68HD** heavy-duty electric drain cleaning machine is available in two different versions — either with an open steel reel or enclosed polyethylene drum — and can be outfitted with an optional power feeder. It comes with a standard configuration of 150 feet of

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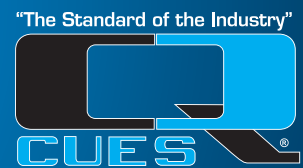
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11/16-inch hollow-core cable, which should reach most blockages with a single reel. It weighs 185 pounds, and adding a loading ramp and electric winch to any vehicle makes transportation quick and simple. It is designed to clean pipes from 3 to 8 inches in diameter. **877-446-7548; [www.gorlitz.com](http://www.gorlitz.com).**

#### 6 / MYTANA MFG. M888 CABLE MACHINE

The **M888** cable machine from **MyTana Mfg.** clears roots and obstructions from 3- to 10-inch lines. The unit ships with a 150 rpm, 1/2 hp motor. With its easy reel change design, additional reels and the gearbox can push the cable up to 400 feet. The upright design is easier on a technician's back than sled-style machines because the transport handle is already at operator height. Built-in stair climbers and a removable pneumatic loading wheel allow a technician to load in and out efficiently. Safety features include an air-actuated foot pedal, reverse switch, and built-in GFCI circuit with watertight electrical switches and boxes. The automatic feed/retriever is standard, and the unit is available with 11/16- or 3/4-inch cable in either 100- or 125-foot lengths, with a choice of ends. **866-948-7576; [www.mytana.com](http://www.mytana.com).**

#### 7 / PICOTE SOLUTIONS DRAIN CLEANING CHAINS

High-efficiency, high-speed drain cleaning chains from **Picote Solutions** attach to Picote Miller drive units. The Original and Cyclone range from 1 1/4 to 10 inches. The Cyclone opens up to the inside diameter of the pipe to descale and remove the finest of roots. The Original rolls around the inside of the pipe, removing roots and heavy tuberculation. Special drill heads and removal tools are available for severe, heavy-duty roots and blockages, all without damaging the host pipe. To prevent further root infiltration, the coating system seals and forms a watertight, noncorrosive pipe. This easy-to-use system coats the pipe using a coating pump and brush application to work the resin into the host pipe. **219-440-1404; [www.picotesolutions.com](http://www.picotesolutions.com).**

#### 8 / PIPE LINING SUPPLY ULTRA HIGH SPEED

The **Ultra High Speed**, or UHS, drain cleaning machine from **Pipe Lining Supply** makes the challenge of removing roots from sewer drains fast and easy. There are four models available to attack all of the pipe sizes encountered as a drain cleaning professional. The cables operate at over 3,000

rpm and are sheathed inside a sleeve that remains stationary. Various cutting heads are available to remove roots, and the units can be used with a camera, allowing the user to see what they're doing as the cable moves down the line destroying roots. By the time the technician reaches the end of the line being cabled, the withdrawal of the cable can be videoed for final inspection. By cleaning and seeing what they are doing, technicians can eliminate wasting time running cutter heads where there is nothing to remove. **888-354-6464; [www.pipeliningssupply.com](http://www.pipeliningssupply.com).**

#### 9 / SPARTAN TOOL MODEL 2001

The **Model 2001** professional-grade cable machine from **Spartan Tool** has a capacity of 162 feet and cleans lines 3 to 10 inches. Its smart motor automatically senses difficult blockages and ramps up the power, while an automatic motor safety brake stops the drum fast. It disassembles quickly for easy movement up and down stairs or into and out of trucks, or tread crawlers and pneumatic tires can be used for easy transport while assembled. The dial-a-cable power feed allows for quick cable changes and feeds cable in and out automatically. An independent rotating inner drum prevents the kinking and buckling that can break cables, while the outer drum keeps dirt contained to help keep technicians and living areas clean. **800-435-3866; [www.spartantool.com](http://www.spartantool.com).**

## CUTTING NOZZLES

#### 10 / ENZ USA CUTTING BALL

The water-driven cutting ball nozzle from **Enz USA** is available in 3- and 4-inch sizes. It can move easily around curves in 3- to 6-inch polyethylene, steel or concrete pipes while safely removing roots and mineral deposits, resulting in no damage to the pipe. It works without impact but has the ability to switch to a vibrating nozzle. It comes with a hard metal front blade for pipes that are more than 50 percent clogged. The side blades are self-sharpening and maintain their sharpness over their entire service life. The cutting ball operates with controlled rotation speed and is capable of running on recycled water. It is leak-free. **877-369-8721; [www.enzusainc.com](http://www.enzusainc.com).**

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### 11 / NOZZTEQ LUMBERJACK

The **Lumberjack** cutting nozzle from **NozzTeq** is a low-torque, high-speed cutter for use with high water pressures. It is effective at cutting roots but is also commonly used to remove grease, tuberculation, protruding laterals and other buildups. Because it's low-torque, it's unlikely to cut through host pipes. The bearings are sealed, grease-lubricated, water-cooled, and largely maintenance-free, according to the maker. Water-cooled bearings are long-lasting and don't need additional lubrication. The cutters rotate at a minimum speed of 10,000 rpm with flow rates from 10 to 250 gpm at varying pressures. They operate in pipes from 3 to 48 inches. All models clean with chain links that have optional cutting blades for severe blockages. All models come with a propelling jet housing and some have tow rings. **866-620-5915; www.nozzteq.com.**

### 12 / STONEAGE WGR SWITCHER

The **WGR Switcher** sewer nozzle from **StoneAge** can run in pulling or cleaning mode without being removed from the pipe. By doing the job of two different nozzles, it uses less water and time compared to making multiple runs with different nozzles. When the pump is idled down and brought back to pressure, it will switch the water flow between two different patterns of jets. One jet pattern pulls and flushes debris down the pipe, and the other is a cleaning and descaling pattern for cleaning deposits and cutting roots. The two-tools-in-one unit navigates pipes 8 to 36 inches in diameter and handles pressures up to 5,000 psi at up to 100 gpm, running more jobs with one tank of water. **970-259-2869; www.stoneagetools.com.**

## JETTERS

### 13 / AMAZING MACHINERY BOSSJET MAX

**BossJet Max** jettters from **Amazing Machinery** offer versatile hose reel configurations: no reel, a fixed reel or a 360-degree stainless steel pivoting reel, and a mounting bracket for an optional remote hose reel for indoor jetting. They come with Honda, Kohler, Yanmar or Vanguard engines, with or without electric start. Pump options include Cat, A/R and General, with

pressures up to 4,200 psi and flow rates up to 5.5 gpm. The frame is powder-coated, 1.5-inch, tubular steel, which wraps around the engine and pump for protection. Each unit comes with a laser nozzle and washdown accessories with a 50-foot leader hose. **800-504-7435; www.amazingmachinery.com.**

### 14 / AMERICAN JETTER 51 SERIES HOT JETTER

The **51 Series Hot Jetter** from **American Jetter** offers increased cleaning power for grease cutting and de-icing by heating the water up to 190 degrees F. Consistent power is provided by Kohler gasoline engines up to 74 hp, with flows of 8.5 to more than 20 gpm and pressure to 4,000 psi. The rear reel provides precise cleaning speeds and easy access to the jet hose with the included hose guide. Low-water shut-off prevents pump damage if the 330- to 600-gallon tank runs low. The optional 1-mile open range wireless remote option allows for water on/off, engine shutdown, and hose reel control. The heavy-duty square tubing trailer offers a 2 5/16-inch ball coupler and standard electric brakes. **866-944-3569; www.americanjetter.com.**

### 15 / EASY KLEEN PRESSURE SYSTEMS GROUNDHOG JETTER

The **Groundhog Jetter** from **Easy Kleen Pressure Systems** is designed to blast through clogged pipes. It is compact and easily transported in a pickup truck or van, with trailer options available. It includes a fully welded, powder-coated 2-inch steel tube frame, drilled and tapped, which houses the 200-gallon water tank constructed with 1/2-inch poly complete with level sights and 16-inch cover. It has a gasoline-driven engine with accessible breather and 10-gallon fuel tank, General Pump with gearbox drive, 12-volt hose reel complete with hose guides, and swivel and foot pedal control. It comes with a 300-foot 3/8-inch jetter hose, an emergency shut-off valve and hour meter. An optional remote includes hose reel-in, motor off/speed control and pressure on/off. **800-315-5533; www.easycleen.com.**

### 16 / GAPVAX GJET

The **GJet** truck jetter from **GapVax** offers 500- to 3,000-gallon stainless steel water tank options and 40 to 100 gpm water pump options along with a front-mounted hose reel, various toolbox options, room for a vice or crane, and 10-foot tube trays. **888-442-7829; www.gapvax.com.**

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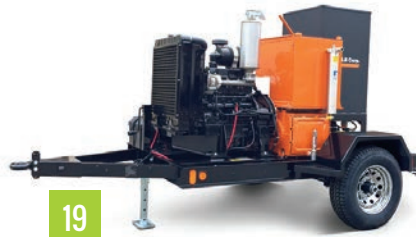
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#### 17 / HOT JET USA HOTJET II

The **HotJet II** sewer and drainline jetter from **Hot Jet USA** is a dual-purpose machine that cleans drains and serves as a high-powered, hot-water pressure washer. It can be used to clean drains up to 300 feet long and 12 inches in diameter. It has a 35 hp Vanguard engine by Toyota, delivering 10 gpm at 4,000 psi using hot or cold water, mounted on a diamond plate tandem-axle trailer, powder-coated for durability. **800-624-8186; www.hotjetusa.com.**

#### 18 / MONGOOSE JETTERS BY SEWER EQUIPMENT MODEL 184

The **Model 184** jetter from **Mongoose Jetters by Sewer Equipment** has a tubular steel frame, corrosion-resistant prepainted subassemblies, state-of-the-art controls, a strong hose reel, high-quality diesel engine and the Mongoose Run Dry Pump. **877-735-4640; www.mongoosejetters.com.**

#### 19 / NLB 335 DHW

The **335 DHW** hot-water jetting unit from **NLB** has a dependable triplex pump capable of 15 gpm at 3,500 psi; a Kubota v3600 66 hp engine provides the power in a direct-drive configuration that eliminates the PTO and PTO maintenance. Its 700,000 Btu burner unit addresses the demands of the many cycles, long hours, and transportation requirements in the life of a typical hot-water unit. An overhead-mounted water tank is easy to winterize and has integrated water lubrication lines and a 75-micron inlet strainer that can be rinsed or cleaned, eliminating the traditional filter. A rupture disk has also been eliminated from the unit's design and replaced with a self-resetting pop-off valve, saving time and money for the operator. **800-227-7652; www.nlbcorp.com.**

#### 20 / RIDGID KJ-1350 WATER JETTER

The **RIDGID KJ-1350 Water Jetter** propels a highly flexible hose through 1 1/4- to 4-inch lines, blasting through sludge, soap and grease blockages. As users pull the hose back, it power scrubs the line, flushing debris away and restoring drainlines to free-flowing capacity. A working pressure of 1,350 psi and flow of 1.4 gpm provides fast, effective cleaning

of lines. It comes standard with a 1.5 hp motor that draws a maximum of 14 amps, can run on most standard 115-volt circuits, and is CSA and UL standards approved. Simply guide the hose into the drain while the thrust propels the hose down the line. Activate the pulse action to easily navigate difficult bends and traps, and utilize the pressure control valve for quick and easy pressure adjustment. An optional H-10 cart makes for easy job site transport. **800-769-7743; www.ridgid.com.**

#### 21 / SUPER PRODUCTS SUPERJET

The **SuperJet** truck-mounted jetter from **Super Products** has a double-acting, single-piston hydraulically powered water pump that offers a 1-1 oil-to-water ratio and rated design capacity of 100 gpm and 3,000 psi continuous duty. Its modular water tank setup easily accommodates capacities from 1,000 to 3,200 gallons. It has a single-engine design that emits lower sound levels, reducing fuel use by 40 percent compared to dual-engine units. Its rear compartment is heated with an 80,000 Btu/h heater that enables year-round operation in freezing environments. An easy-to-use control panel performs a number of functions including adjustable engine throttle with water pressure speed dial, on/off water pump PTO, water pressure and gallons per minute, and hose reel joystick as well as pay-in/pay-out with speed control. **262-796-5939; www.superproductsllc.com.**

#### 22 / VAC-CON HOT SHOT

The **Hot Shot** high-pressure water jet machine from **Vac-Con** is designed for removing stones, bottles, cans, grease, sludge, and other debris from sanitary sewer and/or storm drainlines. Engineered for one-person operation, all high-pressure water and hose reel controls are located at the front of the machine for ease of operation and increased safety. Models are available with 1,000- and 1,600-gallon water tanks. Options include variable flow, articulating hose reel, polyethylene water tanks, 30 gpm at 3,000 psi water pump system, auxiliary engine or hydrostatic drive, cold-weather recirculation system, side-mounted toolboxes, air purge system, hose footage counter, arrow board, strobe lights, inspector cam, high-pressure spray bar, hose rewind guide, 600 psi hand-gun system with 25 feet of hose, and a selection of nozzles. **855-336-2962; www.vac-con.com.**

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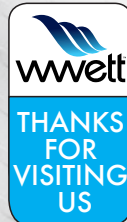
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### 23 / VACTOR RAMJET 850 SERIES

The **RamJet 850 Series** truck jetter from **Vactor** has a choice of front- or rear-hose reel locations and productivity-enhancing options such as an aluminum rear shroud and an optional Jet Rodder water pump-heated cabinet. An integral aluminum rear shroud with heavy-duty, see-through Lexan windows is available. Large service access doors on both sides of the shroud enable easy greasing, maintenance and service. The rear shroud keeps the hose and components warm and protected, which is a big advantage for operators who need to quickly set up and clean while working in extremely cold conditions. It comes standard with a certified flow of 0 to 80 gpm at a variable pressure up to 2,500 psi at the hose reel for the flexibility to clean any size line. The Jet Rodder water pump-heated cabinet keeps the pump and plumbing covered and protected at all times. 815-672-3171; [www.vactor.com](http://www.vactor.com).

## ROOT CHEMICALS

### 24 / DUKE'S ROOT CONTROL RAZOROOTER II

Diquat-based **Razorooter II** root-control herbicide from **Duke's Root Control** is registered by the U.S. Environmental Protection Agency for controlling nuisance tree roots in sanitary sewer collections systems and received a classification of "evidence of noncarcinogenicity for humans." In 2014, the EPA further approved an amendment of labels to lower the signal word from "warning" to "caution." Crews insert a hose from manhole to manhole, preparing to fill the affected sewer pipe with herbicide. The foam is released, compressing against pipe surfaces and penetrating cracks, joints, and connecting sewers. Roots are killed on contact, decay naturally and slough away. Application is designed to prevent root-related stoppages for two to three years. 800-447-6687; [www.dukes.com](http://www.dukes.com).

### 25 / LENZYME TRAP-CLEER FOAMING ROOT CONTROL

Foaming root control from **Lenzyme Trap-Cleer** has double the active ingredient dichlobenil of previous solutions, along with a latex base designed to help it stick to roots longer. It is easy to apply and provides a slower foaming action to coat the entire pipeline and eliminate fast-foam-over messes. 800-223-3083; [www.lenzyme.com](http://www.lenzyme.com).

### 26 / ROOTX CHEMICAL ROOT CONTROL

Chemical root control from **RootX** is a long-term solution to pipeline root intrusion. It stunts new root growth without damaging the pipe, clearing pipeline roots that can cause blockages and sanitary sewer overflows. The chemical won't harm water treatment systems and is registered with the U.S. EPA for both sanitary and storm use (EPA Reg. No. 68464). Simplicity of application enables crews to perform root control on demand or as scheduled preventive maintenance. 800-844-4974; [www.rootx.com](http://www.rootx.com).

## ROOT CUTTER

### 27 / SOUTHLAND TOOL S906M1-AK

The **S906M1-Ak** root/tap/pipe cutter from **Southland Tool** works for recycler units. This process improves hydraulic performance and eliminates internal corrosion. Advanced kinetics improve the friction coefficient, which reduces drag, saves water and increases productivity. In testing, units have been left weeks without oil and show no signs of corrosion. Since recyclers can have 50 micron-plus particles, the user only needs to open the motor, remove the particle and wipe down internals to keep working. It is available for lines from 6 to 30 inches in tail nozzle sizes, for hoses 3/4, 1, 1 1/4 and 1 1/2 inches, and for flows from 40 to 170 gpm. 714-632-8198; [www.southlandtool.com](http://www.southlandtool.com). **C**



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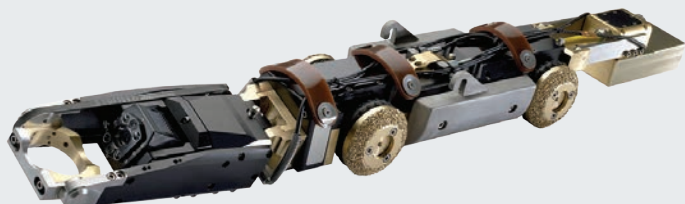
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## SPOTLIGHT

# Schwalm Robotic USA continues the robo-revolution in sewer repair

By Craig Mandli



Technology is taking over the world. It's no different in sewer repair.

While many of the tried-and-true methods of line repair have remained constant for decades, sometimes a technological advancement can truly save time and make a technician's job easier. That's exactly what Schwalm Robotic USA is doing by introducing the Talpa FSR 1330 sewer robot to the U.S. market.

The German-manufactured sewer robot is designed for use in pipe diameters from 6 to 12 inches. The extent of the robot's freedom of movement and thus its ability to reach all areas within its field of operation is critical to its range of applications. Its controls allow the operator to move the carriage forward and backward, rotate the working arm through 200 degrees on both sides, raise and lower the working arm, rotate the tool holder continuously through 360 degrees, pan the camera up and down, and control the lighting — all via joystick control.

"The Talpa FSR can be used for pretty much anything you need to do in a sewer but have trouble getting to," says Casey Kane, national sales manager for Schwalm USA. "Most of the current applications where it is being used are in lining and pipe cutting."

The Talpa FSR 1330 is equipped with a powerful LED spotlight and a high-resolution CCD color camera. The camera's lens can be cleaned by remote control using an integrated cleaning device. The robot holds a stable position within the sewer pipe without needing to be additionally wedged or secured for its milling work. Its substantial weight and low center of gravity give it good surface grip, allowing it to be tilted to either side by more than 45 degrees on its longitudinal axis without tipping over.

"The contractors that are using these love their durability and that they are typically easy to repair," Kane says. "Most repairs can be done in their own shop."

Attachments such as milling heads, grinders and brushes are attached to the robot using a universal connection thread located on the air motors.

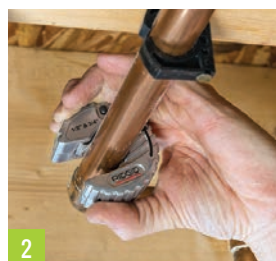
"We've found that contractors really love the number of attachments that are available on the Talpa," Kane says. "It really is an easy-to-use, versatile product." 864-414-9658; [www.schwalm-usa.com](http://www.schwalm-usa.com).



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### 1 PRESSCISION PPT PRESSURE TEST INSTRUMENT

The Presscision PPT test instrument is a digital test platform for regulatory pressure and temperature testing. Applications include fuel gas lines, drain waste vents, water supply lines, medical gas installations and fire suppression systems. It provides test automation to eliminate human error and subjectivity from the test process, accurate pressure and temperature measurement using certified sensors, permanent recording of comprehensive test data records, and hard-copy test reports generated at the completion of each test. 774-521-9132; [www.presscision.com](http://www.presscision.com).

### 2 RIDGID C-STYLE CLOSE QUARTERS COPPER TUBING CUTTERS

RIDGID's C-Style Close Quarters Copper Tubing Cutters are perfect for cutting tubing in tight spaces; they cut three sizes with only two tools. The 1/2- and 3/4-inch combined tubing cutter has a quick-change feature that allows easy switching between the two sizes, with the second cutter designed for 1-inch tubing. Each comes with a spring-loaded cutter wheel that provides constant pressure on the tubing and features the X-CEL Wheel Pin for quick wheel replacement without tools. In addition, slots were added around the outside of each cutter for a flat-head screwdriver to advance and rotate the tool where access is limited. 800-769-7743; [www.ridgid.com](http://www.ridgid.com).

### 3 PETERSEN PRODUCTS MULTI-FLEX ANNULAR SEALS

Petersen Products' Multi-Flex Annular Seals slip over the end of a pipe, creating a seal between the inner bypass pipe and the outer main pipeline. Annular Seals are possible for almost any size, pressure, chemical or temperature requirement. The seals are very flexible, easy to install, and offer many inflation connection options. The seals are ideal for bypassing a pipeline during repairs on a variety of small to large temporary pipeline connections. 800-926-1926; [www.petersenproducts.com](http://www.petersenproducts.com).

### 4 WATER CANNON INC. - MWBE 12-VOLT FLUID TRANSFER PUMP

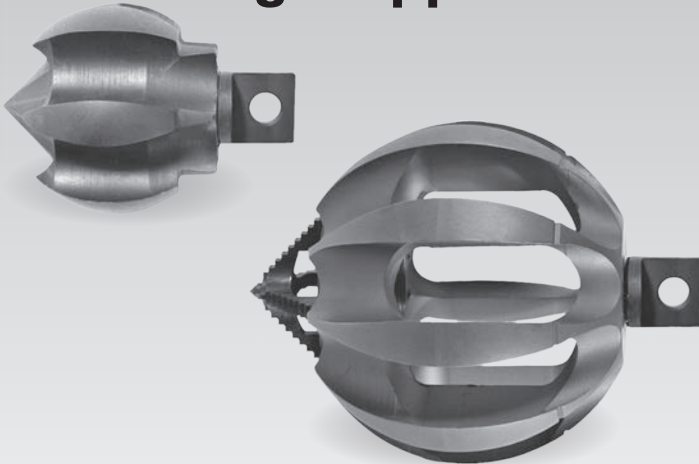
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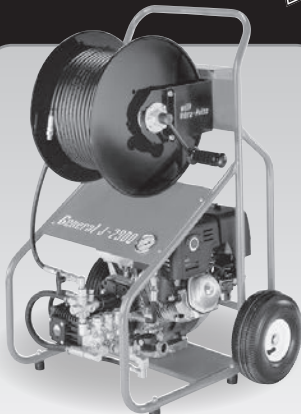
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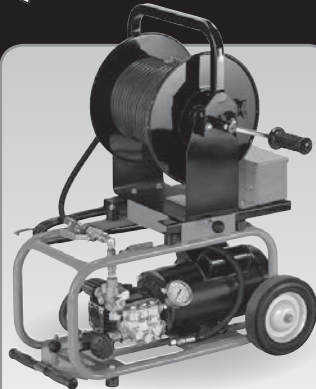
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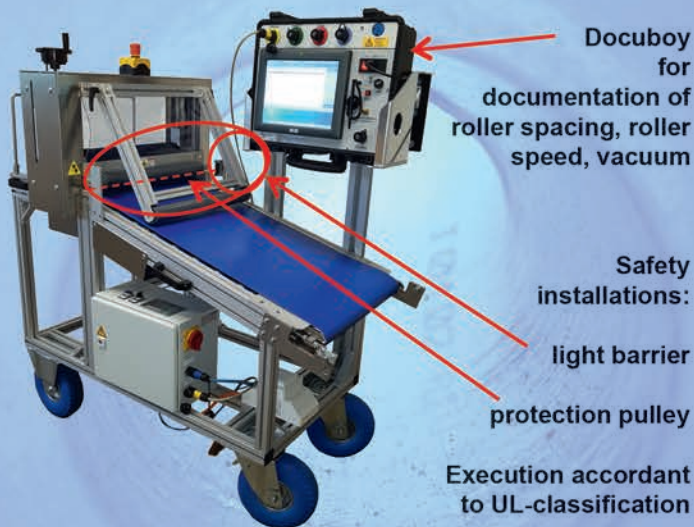


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## industry NEWS

### Founder of Jack Doheny Cos. passes away

#### *Jack Doheny was an industry leader for more than four decades*

Vacuum truck and sewer cleaning industry leader John “Jack” Leary Doheny, founder of Jack Doheny Cos., passed away Jan. 1 at his home in Vero Beach, Florida. He was 87.

After serving the country in the U.S. Air Force, Doheny joined his uncle’s company and traveled across the U.S. with his father to demonstrate coiled and sectional rodding machines. In 1973, he started his own business, Jack Doheny Supplies, which today is under the Jack Doheny Cos. umbrella. Jack Doheny Cos. is North America’s largest provider of sewer cleaning, pipeline inspection, and multiuse vacuum trucks for sale, rental, service, parts and training.

Doheny will be remembered for his industry leadership. In 2014, he was named a “Standard Bearer” by the National Association of Sewer Service Companies (NASSCO), one of a select group of leaders who have contributed to the protection of underground infrastructure through the development and implementation of industry standards.

“I believe it would be hard to find anyone who is against sewer cleanup,” Doheny shared during his Standard Bearer interview. “It’s as American as Chevrolet and apple pie. For me, it’s also a family tradition. My father lived to be 107 and was instrumental in changing the way sewers are cleaned. I am proud to be part of this legacy and hope to follow in his footsteps to contribute to this great industry for many years to come.”

In lieu of flowers, the family requests donations be made to the Jack Doheny Memorial PACP Scholarship Fund, c/o NASSCO Inc., 2470 Longstone Lane, Suite M, Marriottsville, MD 21104.



Jack Doheny

### Nu Flow Technologies expands manufacturing capabilities

California-based Nu Flow Technologies announced its move to an expanded manufacturing facility in Ontario, Canada. The newly built 38,000-square-foot plant includes a research and development laboratory, a metal fabrication shop, painting facilities and a chemical formulation area as well as a 25 percent larger manufacturing capacity for increased demand.

### Hackney names new northeast regional sales manager

Hackney has hired Michael Puhl as its northeast regional sales manager. He will be charged with growing the company’s beverage, special applications and aftermarket presence in the region including the states of Pennsylvania, New York and New Jersey. Puhl has over 10 years’ management experience and previously worked at The Home Depot and Schwan’s. **c**



Michael Puhl



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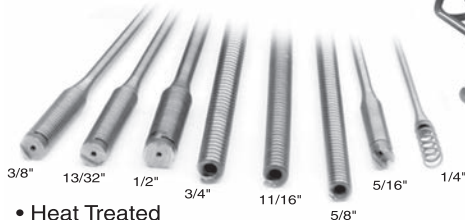
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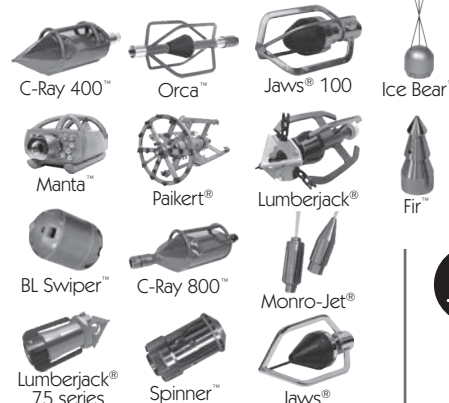
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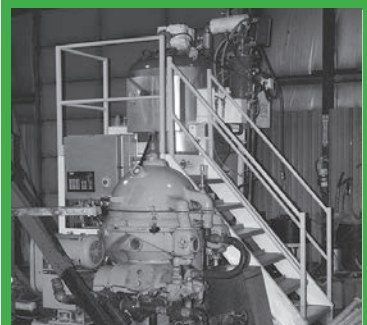


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