

Cleaner

FOR DRAIN AND PIPE CLEANING, INSPECTION AND REHABILITATION PROFESSIONALS

APRIL 2019
CLEANER.COM

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ON THE COVER

Ken-way Excavating co-owner Charlie Fisher was introduced to pipe bursting in Denver and wanted to bring its advantages to Iowa, where the company now uses it frequently in septic installation work. The Ken-way Excavating crew includes, from left, Derek Vesely, Kyle Jacobson, Mitch Fountain and Tucker Schroeder. (Photography by Mark Hirsch)

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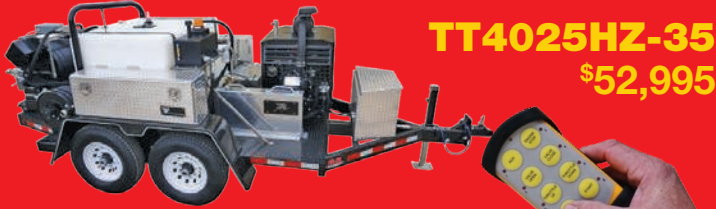
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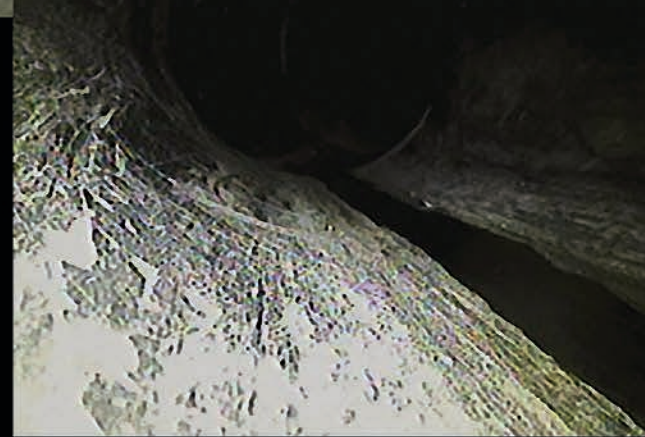
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Kim Peterson

Cultivate Relationships

Meeting new contacts in this industry is something I look forward to every year

People are what make this industry so special. Never is this more clear to me than each February in Indianapolis. I spent a few days at the Water & Wastewater Equipment, Treatment & Transport Show again this year, and I'm always excited to see how many people turn up to take classes on Education Day, walk through the expo hall to check out the new trucks and equipment, and catch up with industry colleagues and friends.

This was my sixth time attending the WWETT Show. I started out working the registration desk; then as a digital editor I helped out in the COLE Publishing booth and spent time walking the floor in order to meet exhibitors and attendees, see new equipment and garner new article ideas for the websites I was responsible for.

The WWETT Show is always a good time. From my first year, walking the hall and thinking various versions of “Oh so *that's* what that looks like in person. Now I see how that works,” to this year watching a CIPP demo and actually understanding the process, I've learned a lot.

Now as an editor, my time at the show looks a little different. I still spent most of my time on the floor, with the goal of meeting people and learning more about the industry. But this year, I was thinking less about ways to report on the show or the equipment. What I was focused on — and will continue to think about moving forward — is how to continue to provide the readers of *Cleaner* with good, useful content.

I want *Cleaner* to be a valuable resource for you, a magazine that stays out of the recycling bin because something spoke to you and you may want to go back to it.

I met some people at the show who I know will be good resources in the future, helping answer any questions I may have about the work in the field, how certain equipment and training can open doors to new revenue streams, and connecting me with expert sources for articles.

I have already met so many wonderful, helpful and knowledgeable people in my short time as editor, and it's my goal to continue to work on growing those relationships — both for my own education and to better serve our readers.

With that in mind, I'd love to hear from you also. I am always interested in meeting the people we serve, hearing your stories and learning about your business.

My purpose here is to bring you inspiring stories, new equipment information and helpful business tips. Let me know what you'd like to see on these pages. If you're struggling with something or have any specific questions or topics you'd like to see us address, feel free to email me at editor@cleaner.com. Your feedback is always welcome.

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

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INDUSTRY WISDOM

Successful Cleaners Offer Advice

Applying another person's experiences to your own is a great way to learn. This online exclusive takes a look back at the contractors who were profiled in the magazine in 2018 and some of the best pieces of advice they shared. Read their stories and see if it sparks any ideas on how you can improve your own business. >>cleaner.com/featured



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MAKING HER MARK

A master plumber with multiple business degrees takes a different approach to developing her company

By Ken Wysocky // Photography by Michael McLoone

Jessie Cannizzaro is an outlier in the plumbing world. First, she's a woman in a heavily male-dominated trade. In addition, she's technically a businesswoman first and a plumber second.

Cannizzaro earned an undergraduate degree in business and a Master of Business Administration before she ever wielded a monkey wrench professionally.

Moreover, the co-owner of Milestone Plumbing in suburban Milwaukee, is also an instructor in a plumbing-apprenticeship program offered at a local community college, where she's quietly spreading a message to young would-be plumbers: Four-year college degrees aren't the only ticket to successful careers.

Initially, Cannizzaro — the daughter of retired plumber Tom Cannizzaro — harbored zero aspirations to join the trade she now embraces so enthusiastically. And for someone who spent most of her life with no desire to follow in her father's footsteps, Cannizzaro has done well — and does it her own way.

Since she established Milestone Plumbing in 2011 in the basement and garage of her home in Wauwatosa, the company — which she co-owns with her husband, Adam Curtis — has grown to 12 employees and eight service vehicles. Furthermore, gross income rose approximately 55 percent from 2014 to 2017. And in an everything-comes-full-circle moment in 2013, she moved the business, which focuses on service and repairs and some remodeling projects, into the location once used by her father's company.

PERSONAL VICTORY

Cannizzaro's success story underscores the value of a business-minded approach to plumbing, especially when combined with an emphasis on customer satisfaction and investments in productivity-enhancing equipment and vehicles. It also reflects a personal victory of sorts — a rebuttal to everyone who ever told her a woman can't be a plumber. And that surprisingly enough included her father, she says.

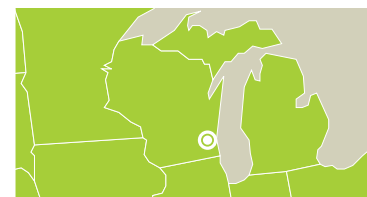
« Master Plumber Jessie Cannizzaro, owner of Milestone Plumbing, started her plumbing business in 2011 in the basement and garage of her house.

» Kevin Poppie of Milestone Plumbing uses a rotary-powered snake to clean a possible clog in a bathroom for a commercial customer in Glendale, Wisconsin.

"I love to do what people say can't be done," says Cannizzaro, a master plumber, explaining her motivation. "Even my dad told me the world isn't ready for a woman plumber. I think he did it more to protect me because people can be very harsh and cruel.

"But he's very proud of me, even though he fought me on it and told me I was making a big mistake," she continues. "Now he proudly wears Milestone T-shirts and a Milestone wool winter hat."

Cannizzaro says many people ask her why she didn't just take over her father's business. The answer lies in a dynamic that's probably familiar to many children that work in family-run businesses: Differing



Milestone Plumbing

LOCATION: Wauwatosa, Wisconsin

OWNERS: Jessie Cannizzaro and Adam Curtis (minority owner)

FOUNDED: 2011

EMPLOYEES: 12

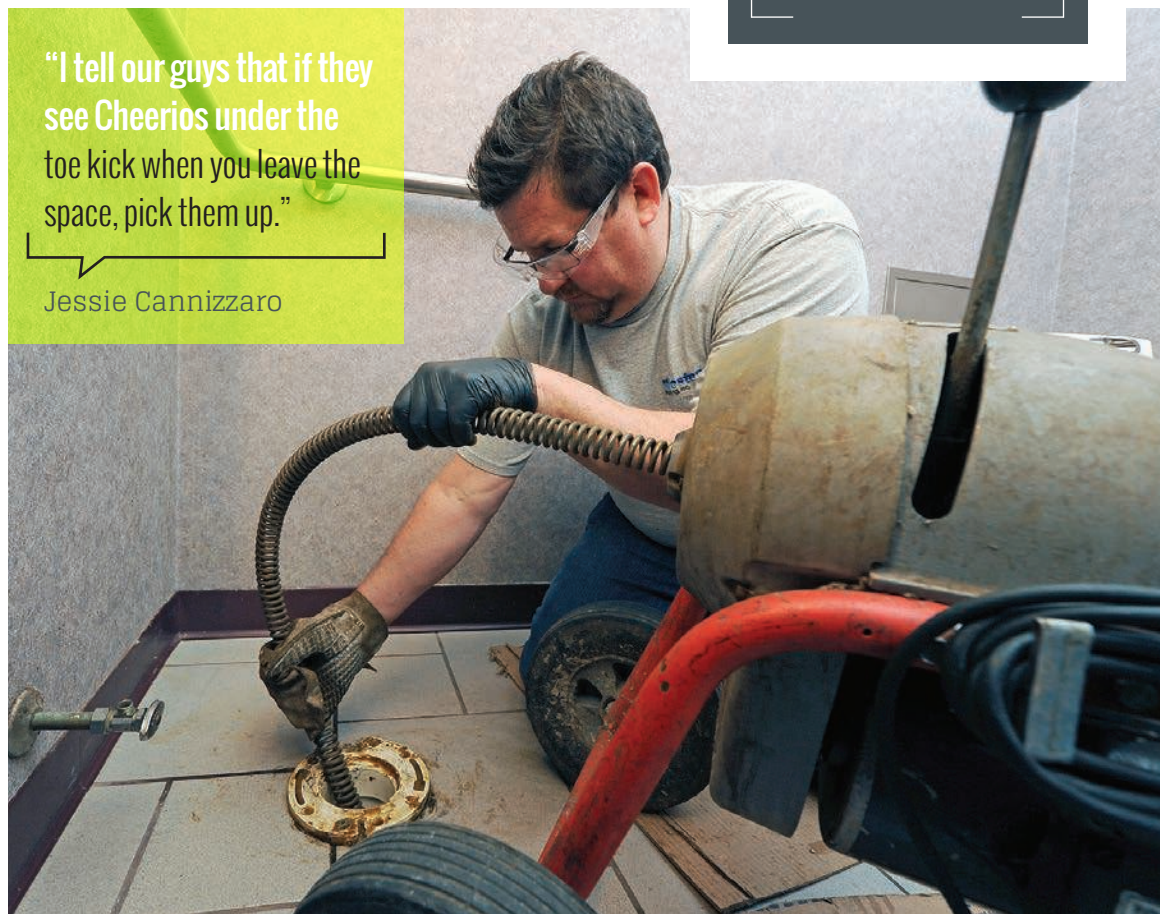
SERVICES: Service, repair and remodeling, drain cleaning

SERVICE AREA: Greater Milwaukee area

WEBSITE: www.milestoneplumbinginc.com

"I tell our guys that if they see Cheerios under the toe kick when you leave the space, pick them up."

Jessie Cannizzaro



business philosophies. “We didn’t see eye to eye about certain things, so it quickly became apparent that if I wanted to build a business, I’d have to start from scratch,” Cannizzaro says. “I wanted to be more than just a one-man-with-a-van business.”

EARLY EXPOSURE

As one would expect, Cannizzaro got her first taste of plumbing as a child. As she puts it, she grew up around plumbing, but wasn’t at all interested in it. “On some days, I had no choice — I was told, ‘You’re going with Dad today,’” she recalls. “And if it was a pretty big project and I did a good job, he’d take me to Toys R Us and let me pick out a Nintendo game as a reward. I didn’t see the value of it (as a career) until I was much older.”

Things changed when Cannizzaro was about 22 years old. While she was attending the University of Wisconsin-Milwaukee for her undergraduate degree and working full time for a local restaurant, her father suffered a stroke.

“I stopped working to help him out while still going to school,” she says. “I worked for a full year before I realized I truly enjoyed it — that I wasn’t just doing it to give him a hand. So I started my apprenticeship with him and moved to another company during my second year, where I finished my apprenticeship.”

“Even my dad told me the world isn’t ready for a woman plumber.
**I think he did it more to protect me
because people can be very harsh and cruel.”**

Jessie Cannizzaro

While attending University of Wisconsin-Milwaukee to earn her MBA (which she received in 2008), Cannizzaro got the itch to run her own business. So she wrote up a business plan during 2009 and 2010, then established Milestone Plumbing in 2011. She received financial assistance from the Wisconsin Women’s Business Initiative Corp., a microlender for entrepreneurs who can’t qualify for traditional business loans from banks, she says.

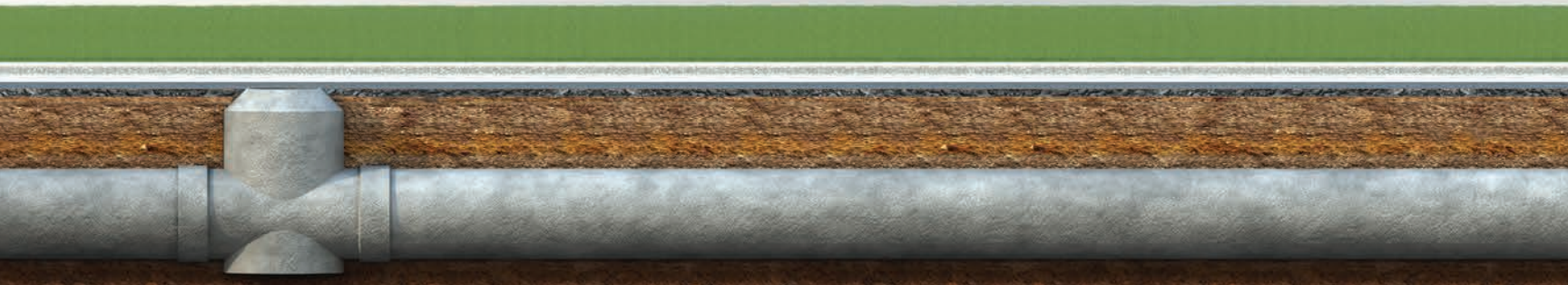
To write the business plan, she took advantage of local free resources, such as the Entrepreneurial Training Program offered by the Wisconsin Small Business Development Center at University of Wisconsin-Milwaukee.

How valuable have the business degrees been to her business? While noting they’re not a necessity to run a plumbing outfit, Cannizzaro says they’ve helped her approach the business with a different mindset than some plumbers.

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“When I meet with a consultant or an accountant and they tell me they want me to do something a certain way, I understand why,” she explains. “For example, job costing is a very tedious process, but I see how valuable it is because small mistakes over the course of, say, five years can result in losing a significant amount of money.

“So figuring out what our actual costs are versus what we quoted for a remodeling project, for example, can be a great learning experience for quoting the next job,” she adds. “That’s often the difference between finishing in the red or in the black.”

PUTTING CUSTOMERS FIRST

Providing great service for customers also plays a key role in the company’s success. Some of it is very elementary: showing up on time and calling customers back when they leave messages. Technicians wear shoe covers, use tarps and leave job

» Master Plumber Adam Langridge of Milestone Plumbing sweats a copper fitting while replacing a laundry faucet.



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sites cleaner than when they arrived. “I tell our guys that if they see Cheerios under the toe kick when you leave the space, pick them up,” she says.

But customer service also comes in other forms, such as investing in good vehicles and equipment. Milestone Plumbing owns eight service vehicles: a Chevrolet Express 1500 van, two Ford E-250 Econoline vans and five newer Ford Transits.

Cannizzaro says the company switched to Transits because they offer more headroom for technicians, as well as items such as water heaters, which can be stowed upright. That leaves extra floor space for important items such as drain cleaning machines that otherwise might have to be left behind, requiring a trip back to the shop if they’re needed on short notice. That extra trip, in turn, provides a lower level of customer service, she says.

The Transits are outfitted with Masterack storage systems installed by Ultimate Truck & Car Accessories. All the trucks feature similar rack configurations so technicians can easily work efficiently out of any truck if necessary. The Transits also include a convenient four-drawer unit from American Van Equipment that’s installed across the cargo area, behind the cockpit bulkhead. They provide extra storage space that’s compact and easy to access; technicians just open the side sliding door and pull out the long drawers, Cannizzaro says.

Technicians generally use Milwaukee Tool hand and power tools, along with some made by RIDGID. Other pieces of equipment include one RIDGID SeeSnake pipeline inspection camera; four ladder racks made by Topper Mfg.; electronic deadbolt systems made by Cargolock; two K-1500 drain machines, seven K-45 drum machines and two K-50 drain machines, all made by RIDGID; three RIDGID pipe-threading machines; a Makita U.S.A. HM1810 concrete breaker; a K300 Husqvarna Construction Products concrete wet-saw; and a Milwaukee Tool SDS-Max demolition hammer.

HIRING AS A TEAM

Success also requires building a good team of employees. “This is a very team-oriented company,” Cannizzaro says. “We wouldn’t be where we are without being team-oriented and without great employees.” As such, hiring people who will thrive in a team environment is critical.

To accomplish this, Cannizzaro uses an unconventional group approach to interviewing job candidates. “I learned from a business consultant

“I want this company to outlast me, with employees that uphold the same values we started it with.”

Jessie Cannizzaro

that group interviews allow you to see different things, like how applicants interact with their fellow applicants,” she explains. “It helps us spot people who want to work and will go the extra mile for our customers, as well as understand our values.”

Here’s how it works: After narrowing applicants down to a reasonably sized group, Cannizzaro, Curtis, Penny Cox (general manager), Kevin Poppie (service manager) and Alex Roloff (first-year apprentice) participate in about a one-hour-long presentation



Kevin Poppie of Milestone Plumbing uses a RIDGID camera system to look for possible clogs or broken pipes in a bathroom.

Teaching a trade

Over the years, Jessie Cannizzaro has observed a concerning trend: High school students shun the trades and instead go into deep debt to attend four-year colleges — and earn degrees that lead to low-paying jobs. As a result, plumbing firms and other trade-related businesses can't find enough qualified employees, which hampers their ability to grow even in a thriving economy.

No longer content to stand on the sidelines, the owner of Milestone Plumbing in suburban Milwaukee, Wisconsin, decided to do her part: Teach plumbing-apprenticeship classes sponsored by the Associated Builders and Contractors of Wisconsin and held at the Waukesha County Technical College. She teaches one four-hour class a week each semester, instructing a total of 36 students.

Patrick O'Neill, a former plumber and the lead plumbing instructor at Waukesha County Technical College, asked Cannizzaro to join the teaching staff because of her unique skill set, which combines plumbing skills with business acumen. Her female perspective is a valuable bonus, he adds, noting that women make up only an estimated 2 percent of all the plumbers nationwide.

"Instructors don't normally come from the business sector," O'Neill explains. "They're usually journeymen — hands-on guys. So putting someone like her in front of apprentices gives them a

unique opportunity to be taught by someone who's a rarity in our trade — a female plumber with business degrees. No one I know can hold a candle to what she has on the wall (in terms of diplomas and credentials). And she not only has those degrees, she can back them up, too. Her knowledge of the whole scope of plumbing is rock solid."

Isn't teaching a big time-commitment for a small-business owner who already works megahours? "Yes," she admits. "But I truly believe we need to do something different and break the stereotypes people have of the trades. We need to go into high schools and tell students how great the trades are and that they should consider them as a career.

"Guidance counselors and parents need to stop presenting the trades only as an alternative for kids who can't cut college," she adds. "They need to realize that guys like our apprentices (at Milestone Plumbing) get paid while they're being trained on the job, which is better than graduating from college with massive debt and a low-paying job."

Moreover, more than 300 people expressed interest in the apprenticeship program, but there aren't enough teachers to handle that many students. So Cannizzaro felt she had to step up to the plate.



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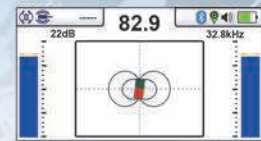
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⤴ Jessie Cannizzaro (second from right) struck out on her own to start Milestone Plumbing but today she has a staff of 11 people and a shop located in Wauwatosa, Wisconsin.

about the company and its values, culture and mission. “The whole team takes part in the process so that one person doesn’t do all the talking,” Cannizzaro says.

Then the candidates must participate in a group discussion. The topic is a magazine article the candidates receive ahead of time; it talks about business values and going the extra mile for customers.

“We ask them questions about the article and talk about the three big takeaways in it,” she explains. “It breaks the traditional one-on-one interview process — gives us a snapshot of who this person is and whether they’ll work well as a team. Maybe they have an attitude and don’t play well with others. Or maybe they didn’t read the article and are totally unprepared.”

Candidates aren’t told any of the details about the interview, just that they must attend a “company introduction.” Why no advance notice? “They have to be able to handle pressure,” Cannizzaro says. “They’re going to have to keep cool when something goes wrong and a homeowner is right there. Some people say what we do is mean, but I say it’s just (simulating) the real world.”

ALONG FOR THE RIDE

After the group presentation/interview, which typically takes anywhere from one to 1 1/2 hours, the candidates do individual, two- to four-hour ride-alongs with veteran technicians who later provide the management team with feedback. “It’s a big commitment for us (to hire someone) because we pay for their apprenticeships,” she says, explaining the reason for the intense interview process. “They have to serve one year as a pre-apprentice, and if they do a good job, they get to go into the five-year apprenticeship program.”

There’s one final step: After the management team compares notes, they pick the finalists, who later attend individual interviews — this time just with Cannizzaro and Cox.

The group interviews offer another advantage in that they save time; it’s quicker to interview, say, seven people in a group setting than to do seven individual interviews. Are the results any better than a traditional interview process? If they are, they’re hard to quantify, Cannizzaro reports.

“But what I do know is that they understand how serious the opportunity is,” she says. “And sometimes applicants who get turned away will reapply or applicants will send us a card or an email telling us that they really want the job. While I can’t quantify it, we believe this system creates stronger buy-in. They realize they’re buying into a career, not just a job.”

Cannizzaro also points out that Milestone Plumbing enjoys low employee turnover; out of four apprentices, none have left the company. She also strives to promote from within. A good example is Poppie, a journeyman plumber whom she recently promoted to service manager. Ironically, Poppie trained Cannizzaro during her apprenticeship at another company.

“We’ve flip-flopped a little bit,” she says with a laugh. “He’s one of the most knowledgeable plumbers I’ve ever worked with, and he understands my vision and where we want to go. He’s my right-hand man and is helping us take the company further.”

QUALITY CONTROL

Cannizzaro also is proud of the impact the business has on her employees’ lives. “I look at each of our apprentices and the paths they’re on; they’re going to make good money and have great lives and great careers,” she says. “And Milestone will be a big part of that.”

Looking ahead, Cannizzaro says her goal is continued growth, but in a measured and deliberate fashion. That will enable the company to stay true to its motto: “Quality conscious, customer

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focused, every job, every day.” One of her long-term goals — having employees eventually run the company after she retires — hinges on fulfilling that motto. “I want this company to outlast me, with employees that uphold the same values we started it with,” she says.

Slow, measured growth will help her achieve that goal. “If you try to force growing too fast, you start to give up the culture of our company’s values and job quality decreases. The work is out there — we can always find more work. But maintaining the quality of work will always be more important than the number of employees we have or how many trucks we run.

“We’re all very proud of what we’ve been able to build,” Cannizzaro says. “I recently got introduced to a homeowner by a general contractor who said, ‘This is my plumber.’ That’s what we want to hear. We don’t want to be just the lowest-bid contractor. It’s all about relationships, and that’s what we strive to build.” c

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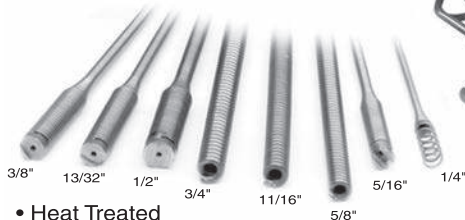
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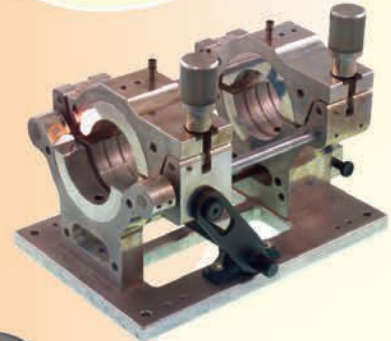


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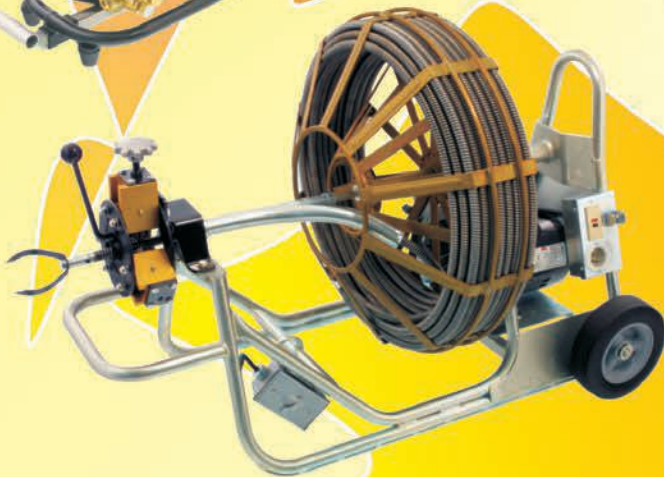
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Finding the Cure

A small footprint and low impact makes LED curing a versatile new method in CIPP

By Jared Raney

CIPP technology is taking its next evolutionary step with the introduction of LED-cured liners.

LED curing has many of the advantages found with UV curing, plus the additional benefit of a single light head. This allows the systems to cure in pipes as small as 4 inches and gives it the ability to cure through tight bends.

Unlike hot-water or steam curing, LED systems don't require large equipment and can perform indoors with minimal disruption.

» The compact light head makes LED systems like the Bluelight lining system, shown here, incredibly versatile.

» Bluelight uses a resin that only reacts to a light range of 450 nanometers, which makes it a very stable resin and allows for the extended storage and working times.

Using a specific light-reactive resin, wet-out liners are stable enough for storage and extended working times.

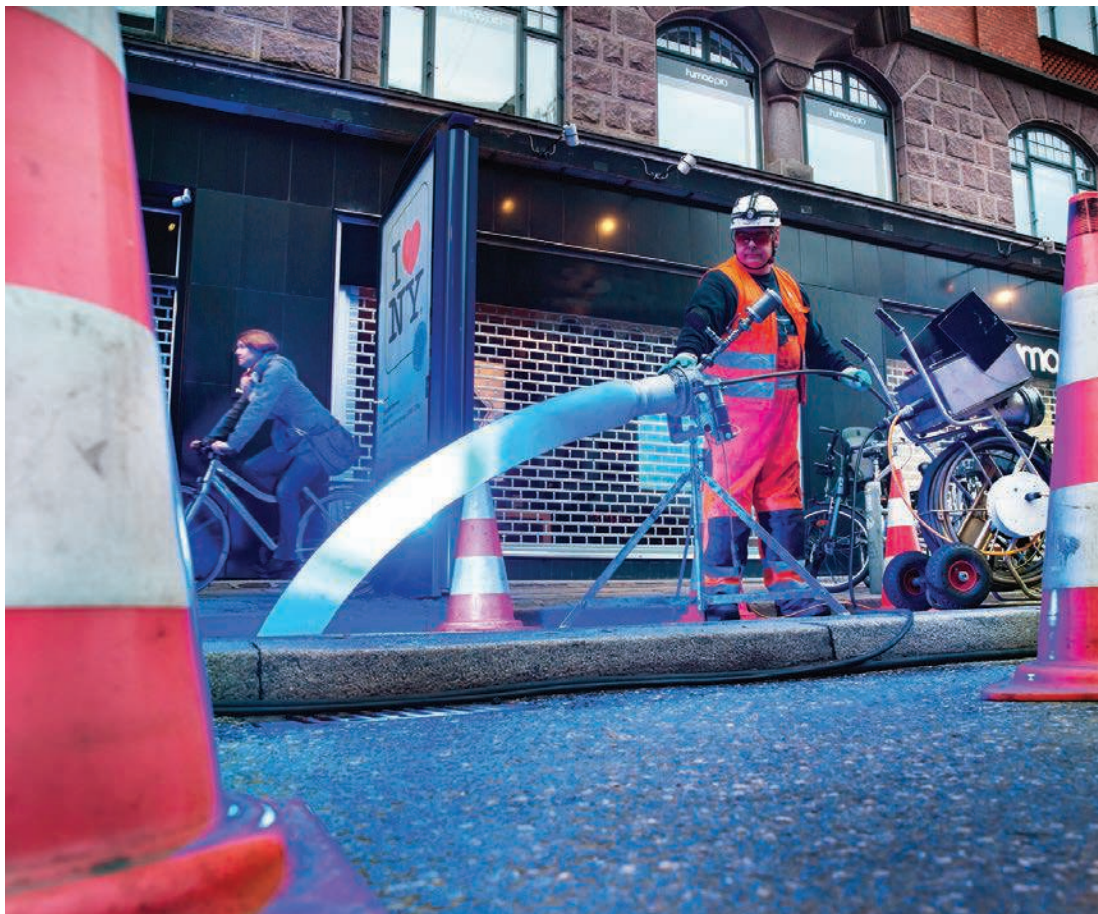
"This technology is the next step in innovation for lateral lining, and CIP in general," says Matt Gabrielse, product manager for HammerHead Trenchless, which recently became the U.S. distributor for Bluelight LED-curing systems. "It's going to become the new standard, we believe, for CIPP."

Tried and tested in the European market for about eight years, LED-curing technology is now making its leap across the pond.

"We've seen quite a bit of activity there. Europe is typically a few years ahead of us domestically," Gabrielse says.

LED systems cannot currently be used for potable waterlines, but Gabrielse says Per Aarsleff, owner of Bluelight Technology, and HammerHead Trenchless plan to further develop the system for more diverse applications.

"This system itself is designed for the lateral CIP market, so sanitary sewers, storm sewers and other gravity-fed pipes are all great applications for this product," he says.





“UV light trains are usually very long and cumbersome, whereas this LED light head is small and compact and can work really well for the lateral market.”

Matt Gabrielse

whereas this LED light head is small and compact and can work really well for the lateral market.”

The Bluelight system uses a touch-screen control panel to manage the mostly automated process. A monitoring program will send the operator alerts if issues occur in the pipe.

“The system is similar in size to a pushrod camera system,” says

James Stern, director of Bluelight’s U.K. distributor, PBF Drainage Services. “Due to the nature of lining, there are always inherent risks during the installation process. Because the entire Bluelight process is monitored by using an internal camera system, any defects can be seen prior to curing, and these can be rectified before any problems arise.”

Because resins for LED curing are not heat- or ambient-cured and only react to light, liners are typically wet-out in advance away from the job site. Doing so in a controlled facility limits environmental and site impact.

“With this sort of technology, you have a small footprint,” Gabrielse says. “You’re not dealing with water, so that alone is a huge benefit. You don’t have a heavy water boiler or steam unit to tote around, and you don’t need an area to dispose of the water when you’re done curing.

“When you’re using a hot-water boiler or steam machine, much of the equipment is required to be outdoors because of the exhaust and fumes it creates,” he says. “This process can be done completely inside.”

The noise of the air compressor can cause minor disruptions in close quarters, but it is negligible in comparison to alternative methods.

“The actual curing process itself is much faster than when you compare it to traditional hot-water or steam methods,” Gabrielse says. “It depends on the length of pipe, but LED-curing technology can be up to five times faster than conventional curing methods.”

Both the faster curing and pre-wet capabilities make this system much less stressful on operators.

“When you compare the LED technology to all of those other options, as soon as you mix the resin and put it in the liner, the clock is ticking. So you have a certain amount of time to get that liner from wet-out to actually getting it in the pipe and curing,” Gabrielse says. “It can’t just sit for an extended period. With LED technology, you don’t have that issue. It allows the contractor or customer to avoid mistakes by not battling the clock.”

↗ The Bluelight lining system.

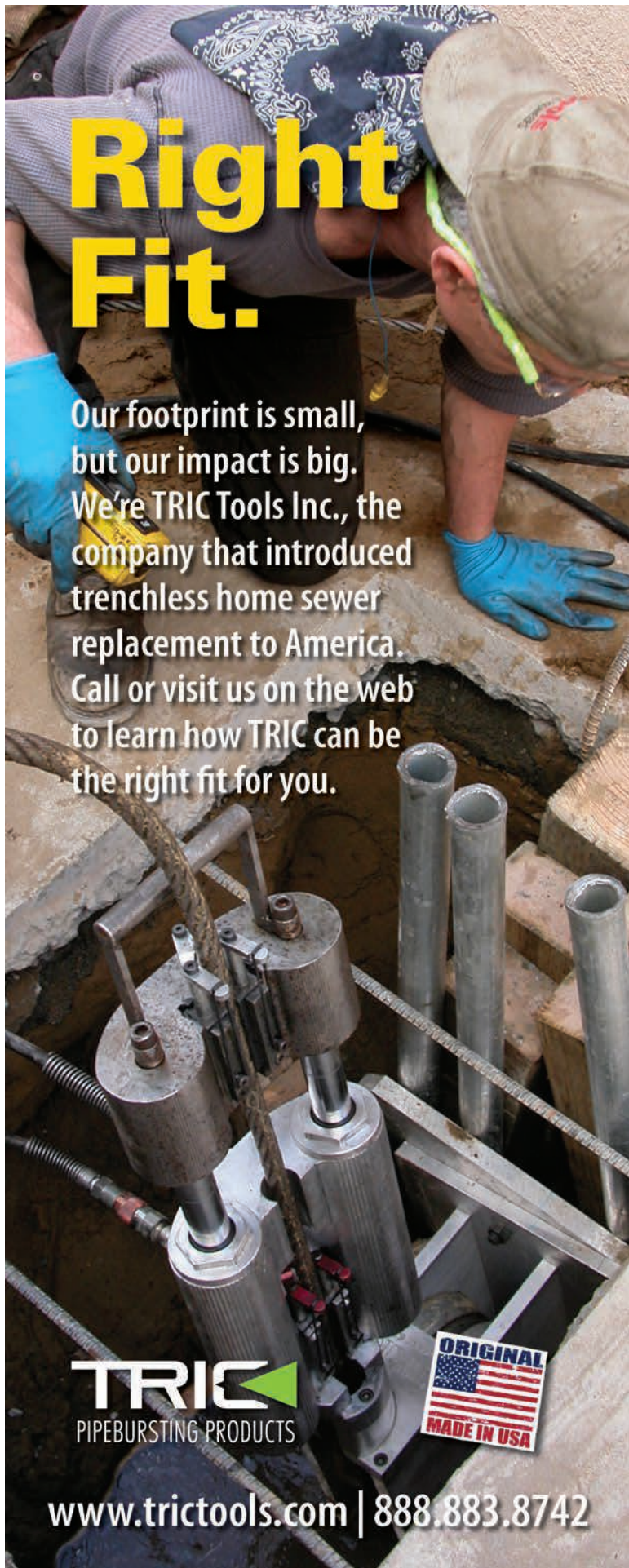
HOW IT WORKS

All that’s required to run LED systems like Bluelight is the light train, power supply and module, control unit, air supply, and inversion drum. Bluelight, like LED UV curing systems, utilizes an inversion method to install the liners, and airflow used to cool the light head also serves to maintain pressure on the liner as it cures. However, Bluelight uses a resin that only reacts to a light range of 450 nanometers, which makes it a very stable resin and allows for the extended storage and working times.

The compact light head, unlike the segmented train of a UV system, makes LED systems incredibly versatile. They can be used with a variety of liners, including glass fiber or felt, and provide the ability to navigate 90-degree bends, and they can even work through changing pipe diameters.

“The light head we use is much more compact than a UV light would be,” Gabrielse says. “UV light trains are usually very long and cumbersome,





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With something as complex as CIPP, there may never be a perfect solution that can fit every situation, but LED-curing systems provide contractors with an adaptable option that is certain to become a staple of the industry, especially in challenging small-diameter laterals.

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A Different **DIRECTION**

Ken-way Excavating found a niche to fill with pipe bursting and plans to evolve wherever opportunity leads

By David Steinkraus // Photography by Mark Hirsch

The three partners who bought Ken-way Excavating were looking for a niche to fill and found their specialty in pipe bursting.

Getting the job done underground saves on fuel consumption over using traditional excavation, extending the work season in their frosty territory around Cedar Rapids, Iowa, and making customers happy by limiting the mess left behind by trench work.

Charlie Fisher, who owns Ken-way Excavating with brothers Dan and Pat Zamastil, saw the technology as popular in other parts of the country and wanted to bring its advantages to Iowa.

“I came home to Iowa from Denver, and there were sewer companies doing it there on a daily basis,” he says. Although he had not seen the technique used for septic system installations, he realized that the pipe between a home and a tank was no different than the lateral from a home to a sewer collection main. And the idea can be extended to include pipes that carry water or natural gas.

Two months into the partners’ ownership of Ken-way Excavating in March 2010, they purchased pipe bursting equipment, and it is often employed in the up to 30 systems they install annually.

BURSTING OUT

Currently Ken-way Excavating uses pipe bursting equipment from Hammer-Head Trenchless. For replacing 4-inch pipe, they have a PB30. Technicians join HDPE SDR17 replacement pipes



Ken-way Excavating

LOCATION: Cedar Rapids, Iowa

OWNERS: Charlie Fisher, Dan and Pat Zamastil

FOUNDED: 1966

EMPLOYEES: 16

SERVICES: Site analysis, percolation testing, excavating, septic replacements, new septic installations, septic repairs, hydroexcavation, commercial development underground utilities, utility installations in industrial plants

SERVICE AREA: Eastern Iowa

ASSOCIATIONS: Iowa Onsite Waste Water Association, Land Improvement Contractors Association, NASSCO, International Pipe Bursting Association

WEBSITE: www.kenwayex.com



⤴ Mitch Fountain checks the end of a section of HDPE SDR17 pipe before joining it to another section with the Connectra Fusion Technologies system.



DIY for more control

Charlie Fisher and his partners at Ken-way Excavating like to keep everything in-house for more control and efficiency. The same idea is in play when it comes to the company's use of technology. There is QuickBooks for general accounting and tracking costs, but beyond that, Fisher likes to create his own custom templates.

"We use a lot of Excel spreadsheets, from estimating to a lot of our different forms that we've created in-house," Fisher says. "When I'm creating a daily job sheet for our guys, I know what I want it to accomplish. They can easily take it and use it, and I get exactly the information I need."

The same goes for bid proposals. He can open his spreadsheet template and modify it as needed, perhaps with a different layout or with items specific to that job.

Technicians use paper copies of spreadsheets and fill in information by hand, whether it's a count of loads hauled or the amount of material used. Each sheet is coded by job.

"All the job sheets are customized. We have some only for guys driving dump trucks. Others are for guys doing hydroexcavating, jetting and cleaning. And there's another set for the technicians installing onsite systems," Fisher says.

At any time, he or his partners can bring up any job on his computer and see all the various costs for it. There are also separate codes for each type of service, such as commercial work or hydroexcavation.

"At any time, I can pull a cost report and see how much we're making or losing on septic work specifically. If I want to go further, I can break it down by job."

using a system from Connectra Fusion Technologies. "We can burst plastic, cast iron, ductile iron and transite pipe," Fisher says.

Not every job is perfect for bursting. Replacing pipe of one diameter with new pipe of the same diameter — in other words, 4-inch with 4-inch — is typically less challenging. When the replacement is a larger diameter, the volume of soil displaced may become an issue, Fisher says.

"In denser soils, there may be a problem bursting a 6-inch clay main to upsize it to a 10-inch," Fisher says.

Sandy material is easier to displace than glacial tills, but hard-packed sand could also pose a challenge. Problems come from the usual arrangement on job sites where other utilities are often located near wastewater pipes. It's those other pipes that may be affected by displaced soil. It doesn't always happen, but it is a situation you have to think of and be prepared for, Fisher says.

« Tucker Schroeder, Zach Covington, Derek Vesely and Mitch Fountain excavate a receiving pit to replace a residential lateral line.

» Kyle Jacobson carries a 4-inch HammerHead Quick Grip Burst Head attached to a new HDPE pipe to the launch pit.



Other preparation is required for bursting. Every line is televised before and after the job. A pipe with an offset joint or a pipe that is collapsed can be replaced. A pipe with a long sag or belly is not a candidate for replacement because the lack of proper bedding will create a belly in the new pipe, just as it did in the old one. After the work is done, Ken-way Excavating televises the line again to ensure the job has been done properly.

CREATING SOLUTIONS

Where it can be used, bursting is much better than digging a trench, Fisher says.

“Why would you have an open trench 60 feet long when you can have two pits? You can prep two pits safely, and you’re not dragging a trench box along. For a pipe replacement, bursting takes about the same amount of time, but it is much less dangerous for the men. Buying bursting equipment increases your costs, but that is offset by the reduced risk and by fuel cost because you don’t burn as much as you do when digging,” he says.

Customers are happier, too, because their property damage is less. In one situation, there was a run of several hundred feet from a house to its septic tank. The yard contained several trees, and the owners didn’t want the roots damaged by digging. Pipe bursting did the job and left only a couple of pits for restoration instead of a long trench.

Pipe bursting is also good in tight situations where an excavator arm cannot swing, even a mini-excavator. In one case, a home had a large, second-story deck. Instead of removing the deck, Ken-way Excavating technicians set up the pipe bursting gear in the basement and replaced the pipe from there to the septic tank.

Using pipe bursting extends Ken-way Excavating’s working year as well because there is less frozen soil to dig. The company’s hydroexcavator helps, too.

JETTER MEETS CABLE MACHINE... END OF STORY

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» Zach Covington (left) and Derek Vesely excavate a pit for a pipe bursting job using a GapVax MC1510 Series combination jet/vac unit.



“We had a project on a cold December day last winter. The work site was too tight for an excavator. We brought in the hydroexcavator and hydraulic shoring. In four hours, the crew cut a pit, and we were ready to set the pipe bursting equipment,” Fisher says.

“Even without the hydroexcavator, we work through the winter every year. If it’s 10 degrees F and rising, we’re going to go out and work. On days when the high is in the single digits, we cannot justify sending the guys out. In that kind of weather machines break and nothing goes right. Still, during the coldest January or February, we typically take only a few days off,” he says.

“We can assign a job to the right person, and we trust one another. We look on one another as brothers rather than partners.”

Charlie Fisher

EQUIPMENT ROTATION

Except for a Yanmar excavator, all the equipment that Ken-way Excavating operates is from Caterpillar. Their largest excavator is a 330F, and the smallest is a 303.5. In addition, the company has six Mack dump trucks (most carrying Henderson Products dump bodies) and a hydroexcavator from GapVax on a Peterbilt chassis.

Choosing Cat was easy, and part of the decision depended on the local dealer, Fisher says.

“When we bought the company, we created relationships with our equipment suppliers. In the last six years, we made a lot of changes, and our Cat dealer took care of us. Whenever there’s a problem we can’t solve, all we have to do is pick up the phone, and it gets handled,” he says.

Plus, the resale market for Cat equipment is always strong, he says.

Ken-way Excavating rotates equipment based on its records. Everything about each machine is tracked, whether it’s routine maintenance or a major repair. Each machine carries a number, and the partners can call up the record of a specific machine and see how much money has been spent on it over time.

Given experience with machines and their needs, this has led to a practice of trading some machines in every few years and others hardly ever. For example, bulldozers are built tough, Fisher says. Maintenance costs are minimal, and they’re expensive to buy, so Ken-way Excavating holds on to its dozers as long as possible. Skid loaders are a different story. They’re traded out at 2,500 to 3,000 hours because the company’s records show maintenance costs increase dramatically after that point.

TAKING CARE OF BUSINESS

Co-owner Dan Zamastil oversees the shop and the company's equipment. If something breaks, the company's workers know they need to call Dan. Much of the maintenance is done in-house, even a job like rebuilding a bulldozer. If a transmission goes out in one of the trucks, Dan makes the call to have an outside shop fix it. His brother, Pat, runs operations and scheduling. Fisher handles the administrative work, estimating and looking at contracts.

"What this does is take a load off everyone's shoulders," Fisher says. "You don't have one person trying to make decisions on everything. We can assign a job to the right person, and we trust one another. We look on one another as brothers rather than partners."

Building a good company also means building up a good workforce. Ken-way Excavating doesn't necessarily look for people with long experience in the industry. They seek a person who will mesh with the team and is willing to learn, because the right person can be taught the skills he or she needs to do a job.

"When we bought the company and began expanding it, we had to replace much of the staff and add to it," Fisher says. "We now have a great group of guys. Many of them have been with us for a long time, and we have every intention of keeping them for a long time."

» Kyle Jacobson (left) and Tucker Schroeder carry the PB30 pipe bursting machine (HammerHead Trenchless) to the pit on a job site.



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“What it comes down to is you have to be ready to evolve with the opportunities that come before you.”

Charlie Fisher

Obviously competitive pay is a factor in employee retention, he says. On top of that, the company offers a health insurance program, a retirement program with company matching and the potential for annual bonuses. Every year, the company conducts performance reviews with each employee. Workers are complimented on their improvements, and they have a chance to look at where they stand in the company and where they want to go.

The company helps out if an employee wants to gain more skills. For example, if a technician wants to become a licensed plumber, Ken-way Excavating will pick up the tuition cost for local classes. “We’re only as good as our team is, so paying tuition is an investment to us,” Fisher says.

Ken-way Excavating is already a recognized brand with a good reputation. The company’s best marketing is its equipment, which is kept clean and looking new. Another factor is the company’s relationships with local plumbers. They refer business, as do Ken-way Excavating’s previous customers.

Education is something Ken-way Excavating also offers. Large real-estate companies in eastern Iowa have invited Ken-way Excavating to give 15-minute presentations for employees. For example, a presentation may cover how septic tanks work or what real-estate brokers should look for in an existing system — age, type of system,

» Owners Charlie Fisher, Dan Zamastil and Pat Zamastil are shown on the job with the company’s GapVax MC1510 Series combination jet/vac unit mounted on a Peterbilt truck.

pipe materials and so on — that may positively or negatively affect a buyer or seller.

In 2015, Ken-way Excavating booked a venue and invited representatives of area engineering firms and municipalities to learn the basics of pipe bursting. Aside from their own people, Ken-way Excavating brought in a representative from HammerHead Trenchless and from a pipe manufacturer. One of the engineering firms in attendance subsequently hired Ken-way Excavating for a large sewer replacement job, but the knowledge passed on at the workshop benefitted more than just Ken-way Excavating.

BUSINESS EVOLUTION

The three partners grew up on the same street in the same town.

“We’ve been around the industry since we were kids, through family members, high school, college and after college,” Fisher says.

The previous owner of Ken-way Excavating was a family friend, and when he was ready to leave the business, he approached Fisher and the Zamastils about buying it. They looked at the numbers, put together a plan and settled the deal with a few phone calls. It was a good company in a niche market, and they decided they could build on that.

“It was a family septic, sewer and water business. We’ve just taken it to a much larger scale,” Fisher says.

They also brought many functions in-house. Rather than hiring trucks when needed, they bought the equipment so their schedules were not dependent on a subcontractor.

“We have expanded quite a bit, but we don’t depend only on growth. Our goal is growth and strength — being stronger within the niches we have developed so far,” Fisher says. That means emphasizing services such as hydroexcavation or pipe bursting that most excavation companies don’t perform for themselves.

“We don’t desire to get more dozers and excavators. Right now, if we get a call of a main pipe break, we can handle the job with our existing excavators and camera truck. If we identified a need for three more hydroexcavators in our area, that’s where we would rather grow,” Fisher says.

But every year is different, and next year, the partners may take Ken-way Excavating in another direction.

“What it comes down to,” Fisher says, “is you have to be ready to evolve with the opportunities that come before you.”

c

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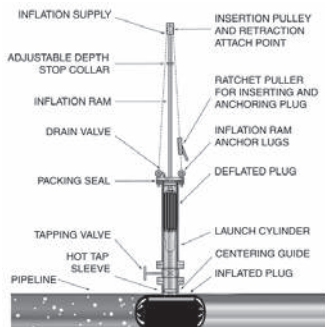
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Beating Winter's Chill

Pennsylvania contractor uses steam-generating machine to thaw out frozen pipes

By Ken Wysocky

When Gary Sprague first saw the Arctic Blaster more than a decade ago, he was intrigued by the premise behind it: Using pressurized steam to thaw frozen pipes. After technicians tried out the machine, the general manager at Koberlein Environmental Services in Honesdale, Pennsylvania, was more than intrigued.

In fact, Koberlein Environmental Services now owns five Arctic Blasters, a testament to their pipe-thawing ability. The company — which does everything from cleaning drain and sewer lines to pumping septic tanks and grease traps in northeastern Pennsylvania and southwestern New York — still uses water jetters and cable drain machines to clear frozen pipes. But the Arctic Blasters remain as a preferred option in certain applications, he says.

“We saw one at a trade show in 2002 and wanted to give it a try,” recalls Sprague, who’s been with Koberlein Environmental Services since 1985. “Before that, we only used a sewer roter or a water jetter, but they weren’t always effective.”

“After we bought it, it took a little bit to understand exactly where and how to use it,” he says. “But we were impressed. Now it’s one of our main tools for thawing frozen lines. We’ve found that it’s an excellent tool for providing great service in the communities we serve — helps out homeowners who are in bad situations.”

Technicians at the company, which employs about 50 people and was established in 1960, use the Arctic Blaster to clean 2-, 3-, 4- and 6-inch-diameter pipelines, but mostly 3- and 4-inch sewer, water and septic system lines. One of the main benefits: The Arctic Blaster doesn’t use highly pressurized water to carve through ice the way a water jetter does. That enables employees to use it in places where it’s not a good idea to disperse hundreds of gallons of water.



➤ Gary Sprague, general manager at Koberlein Environmental Services, and Gene Mohrmann, operations manager, use an Arctic Blaster to thaw out a 4-inch drainline at a business in Honesdale, Pennsylvania.

“If you have to work in a basement with a water jetter, for example, you’d be dumping a lot of water on the floor,” Sprague says. “This is a much cleaner way to thaw pipes.”

The Arctic Blaster weighs about 70 pounds and measures 16 inches long by 7 inches wide and 11 inches tall. It’s basically a water-boiling unit that uses a lit propane torch to heat water. (The propane torch and tank must be bought separately.)

To use it, operators must first fill the unit with about 2 gallons of water; that’s enough to produce about 15 minutes of steam. Then they need to attach one

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“We’ve found that it’s an excellent tool for providing great service in the communities we serve - helps out homeowners who are in bad situations.”

Gary Sprague

of the two single-braid hydraulic hoses that come with the device: a 3/8-inch-diameter hose designed for thawing larger-diameter pipes and a 1/4-inch-diameter hose for smaller-diameter pipes. Both hoses include a quick-coupler connection and are rated for up to 3,000 psi.

Next, operators light the torch and place it inside the unit’s so-called fire tube on the rear of the machine. When steam comes out of the end of the hose, the device is ready to go to work. It generally takes about five to eight minutes to heat the water to the point that it creates steam.

To start thawing, a technician inserts the hose into the frozen pipe. But be careful — the hose emits scalding-hot steam. For safety, the unit features a 16 psi pressure cap atop the water tank portion, similar to those found atop car radiators.

It’s hard to estimate how fast the Arctic Blaster can thaw out a pipeline because of variables involved, such as the length of the blockage and the diameter of the pipe. But a demonstration video on the Arctic Blaster website shows the unit thawing a 4-foot-

section of completely frozen, 3/4-inch-diameter copper pipe in about two minutes. The same video shows the unit thawing a 4-foot-long section of completely frozen, 4-inch-diameter PVC pipe in about 10 minutes.

In any case, the unit’s ability to thaw out long sections of pipe isn’t in question, Sprague says, noting that on one particular job he thawed out 80 feet of an intermittently frozen pipeline. “It took a while, but the machine opened it up,” he says. “The hose moves forward in small increments, so try not to be in a hurry. Even if you think it’s not doing what you want it to do, over time, it will thaw out the line.”

The Arctic Blaster is easy to use so the learning curve for operating it is short. Moreover, while the thought of working with a lit propane torch might concern some contractors, Sprague says he’s never felt unsafe operating one. Operators just need to use common sense, he says.

Overall, the Arctic Blasters have proven to be a valuable asset to the company and have provided a good return on investment, Sprague says. “We wouldn’t keep buying them if they weren’t getting the job done and providing a good service for our customers.” **c**

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Make a Case for PPE

Explaining when and why workers need to wear personal protective equipment encourages compliance

By Jared Raney

It's easy to make a list of personal protective equipment for your workers — less simple is determining where and when that PPE is required.

For example, when people think of hard hats, it often conjures images of city high-rises and overhead dangers like crane work. In reality, just about every piece of equipment with moving parts has the potential for concussive trauma, and hard hats should be worn whenever and wherever that equipment is used.

Educating workers is important in this respect because people will always be more likely to don appropriate gear when they understand the danger.

“When we talk PPE, most people think: It’s a hat I put on or it’s something I put in my ear,” says Dan Vroom, customer training lead for Vermeer. “But they need to understand that it’s because a drill rod could come out or this thing can swing down and hit somebody. Then they realize, ‘Oh, that’s why I should wear it. OK,



now I will.’ It’s that awareness that will cause things to change.

Vroom tells of a specialist who was conducting a training demo when an improperly latched strong-arm swiveled out.

“That arm came down and hit the specialist on the hard hat and just laid him out cold in front of 12 people,” Vroom says. “If he hadn’t had the hard hat on, the story would have been completely different. Just because there’s not stuff up high like a crane, doesn’t mean there’s not a lot of moving parts that can cause issues.”

BETTER SAFE THAN SORRY

The same goes for many other forms of PPE — the best way to ensure their use is by educating workers on the potential hazards.

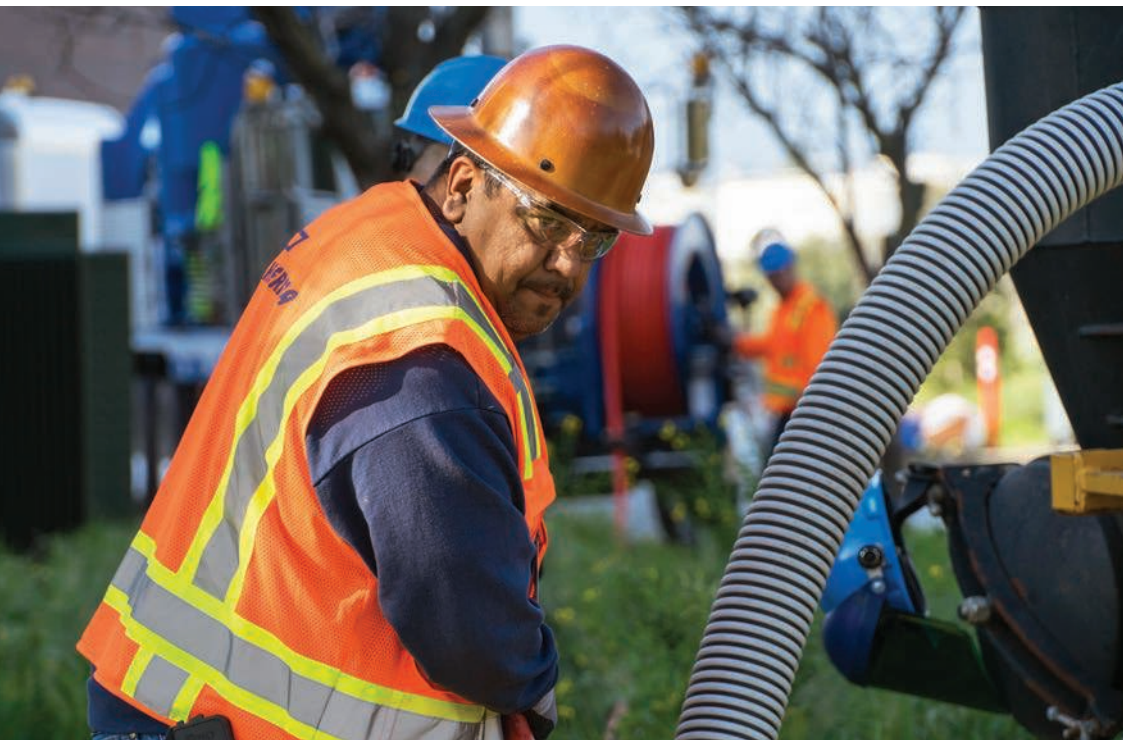
Safety glasses, or goggles, are another PPE item frequently overlooked. Even around the shop, during maintenance operations, eye protection isn’t something to forget.

“Every joint gets sprayed with grease, and if those aren’t adjusted right, grease can shoot back at the operator,” Vroom says.

Especially in drilling operations, small things can have damaging effects.

“Anytime you’re on a drill site, you should have ear plugs,” Vroom says. “Being on the rig without ear protection means long-term damage to your hearing.”

« Educating workers on all potential hazards should be part of safety training. Knowing why they should wear PPE even when there are no obviously visible hazards encourages buy-in.





« Wearing all required PPE gear – and making sure it is functioning properly – is especially important for all confined-space entry work.

And even when equipment isn't in use, it's important that workers don't let their guards down.

"If you're picking drill rods up, or any tooling on the ground, with carbide welded to it, those carbide pieces can rip your hands open," Vroom says. "It's all little stuff like that, where you think there are no sharp edges, and it's just everywhere."

Vroom admits that mandating glove use can be a delicate topic, because when a contractor is running the functions of the drill on joysticks, it's nice to not have gloves.

There is a balance all workers must find between being comfortable enough in the job duties to perform efficiently while also staying safe. In the case of gloves, instead of abandoning them completely, a thinner type of glove could do both.

"If you're picking drill rods up, or any tooling on the ground, with carbide welded to it, those carbide pieces can rip your hands open."

Dan Vroom

At a minimum, when dealing with waste and hazardous materials, including while mixing drilling fluids, latex gloves should be utilized.

HOW TO BE SURE

The most difficult aspect of PPE, especially in the excavation industry, is that work sites can vary widely from day to day, meaning requirements vary as well.

Beyond the obvious PPE items like hard hats, earplugs and gloves, there are also air-quality considerations — using air testers and wearing respirators or face masks when necessary. Asbestos and silica are increasing concerns as aging infrastructure fails and replacements become more common.

The most common OSHA violations over the past several years have fallen under respiratory protection standards. Having trained employees who can analyze each job site is really the only way to ensure your workers' safety.

Developing an internal safety program is also a must for contractors in today's world, even those with only a few employees. Some companies consider safety violations by employees to be a fireable offense, and though that isn't always necessary, it is important for employees to feel comfortable and to be encouraged to call out potential safety issues.

"I do see companies taking more ownership of the safety side," Vroom says. "Anytime it's their fault, there's liability and costs to fix the damage, workers' compensation and time off work. Employers don't like that, so I feel they are doing more diligence on the safety side; but a lot of them don't have the programs in place to enforce it yet." **c**

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It's All About the People

Seven steps to turn employee potential into performance

By Brad Wolff

Imagine on Monday that you discover that your meticulous, rule-following accountant and creative, eccentric marketing person have switched positions. How's this likely to work out? In truth, some variation of this misalignment is common in most organizations.

The Waybeloe Potential Corp. was operating at the break-even point for the past five years. The CEO Harvey Waybeloe was frustrated. Another CEO told him about an employee-alignment process that was delivering amazing results for other companies. Out of desperation, he decided to try it. Within two years, profits increased from breakeven to \$3.2 million. The fix? Putting the right people in the right positions.

Most business leaders say that 80 percent of the work is done by only 20 percent of the workforce. This 20 percent are the top performers. They usually produce three to four times more than the others. The main reason is due to job alignment rather than attitude or drive. Here's evidence: It's common for top performers to be moved or promoted and then become poor performers. Likewise, many poor performers become top performers when moved to appropriate roles. Bottom line: Everyone can be a top or poor performer depending on how well the work aligns with his or her innate characteristics.

How do you deliberately create an organization where people's work is aligned with their innate characteristics and abilities? Here's an overview of a proven process.

Shift your mindset from focusing on skills, experience and education to innate characteristics first.

It's common for people who are "great on paper" to get hired and become poor performers. In that same vein, many top performers started off lacking in the "required" skills experience and education. When people's work aligns with their innate characteristics, they

can utilize their natural abilities and unleash their passion for their work. Also, even the best training and management will not turn poorly aligned employees into top performers.

Select the right assessment tool.

Many organizations use personality assessments in the hope of gaining more objective information about people to set them up for success. However, the results are usually disappointing due to four inherent pitfalls:

1. What you think of as personality is mostly surface-level, observable behaviors — not what's underneath, driving these behaviors. The drivers of behavior are more accurate, predictive and stable.
2. Assessment-takers usually provide different answers based on which of the following they consider: how they actually see themselves, how they believe others see them and how they want to see themselves.
3. Assessment-takers use a specific context or situation to answer the questions. For example, answers to questions related to "extroversion" (sociability and talkativeness) may vary depending on context differences: small vs. large groups, familiar vs. unfamiliar people, level of interest in the topic of conversation, etc.
4. If an assessment is used for a job application, the applicant often has an opinion on what traits the employer is looking for and skews the answers accordingly.

A better option is to select an assessment that delves beneath the personality into what is more core or innate with people. This eliminates the biases of personality assessments and provides more valid and reliable data.

Establish trust with employees.

Inform the employees about the company's commitment to align their work with their natural gifts. Don't hide things or surprise people. People want to do work they're good at and enjoy.

Develop an understanding of the innate characteristics being measured.

Before you can align people's innate characteristics with their work, it's essential to understand what these characteristics mean. In other words, how each one impacts the way people think and behave. Now, you have the basis to identify which characteristics are needed for different types of positions within your organization.

Bottom line:

Everyone can be a top or poor performer depending on how well the work aligns with his or her innate characteristics.

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Develop clarity on the job duty breakdown.

It's important to know what people will do on a day-to-day basis in each job. The hiring team (direct manager and others with a major stake in position success) meet to gain clarity on the percentage of time spent performing each job responsibility. Group together duties that are very similar in nature (family of duties). Estimate the percentage of time spent working on each job duty family.

Determine which innate characteristics are critical and where they need to measure.

The hiring team determines which innate characteristic is critical for each job duty family. They also agree on the desired range for each characteristic. For example, on a 1-10 scale, the range for creative thinking should be between 7 and 9. Now you can develop an optimal range for each critical characteristic.

Administer assessment and align employees with job functions.

Assess both current employees and potential new hires and compare to the desired ranges. Take the appropriate action based on how strong the level of alignment is. Top performers almost always fit into desired ranges for each critical innate characteristic.

If this is not the case, you need to adjust your desired ranges based on the data. When current employees don't align with their jobs, evaluate other positions within the company that do align well. Openly discuss available options with employees who are

misaligned. Develop a plan to shift roles or tweak job descriptions when this is feasible. Frequently, there are other employees who'd be thrilled to trade positions or some duties that better match with their own innate characteristics.

For applicants applying to open positions, only interview the people who align well with the desired innate characteristics. When you interview people who don't align, you may be tempted to discount the assessment results. This rarely ends well.

In the end, the most important job of management is to maximize the ROI of its workforce. As management expert Peter Drucker says, "The task of a manager is to make people's strengths effective and their weaknesses irrelevant."

The most important thing you can ever do as a leader is to put people in a position to excel rather than just get by, or fail. How are you doing in your most important task? **c**

ABOUT THE AUTHOR

Brad Wolff specializes in workforce and personal optimization. He's a speaker and author of *People Problems? How to Create People Solutions for a Competitive Advantage*. As the managing partner for Atlanta-based PeopleMax, Wolff specializes in helping companies maximize the potential and results of their people to make more money with less stress. For more information on Wolff, visit www.peoplemaximizers.com.



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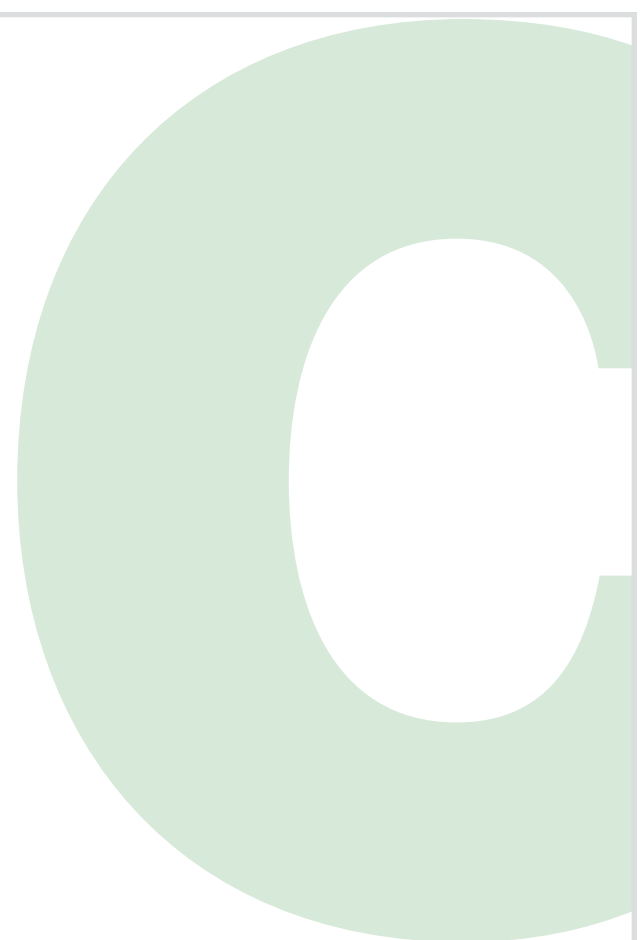
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Erik Gunn

Know When to Collect

Even if you're years away from retirement, it's wise to keep tabs on your government retirement benefit and adjust plans accordingly

By Erik Gunn

Whether retirement is just around the corner or decades over the horizon, it's never too soon to start planning ahead.

The choices you'll face can seem endless — everything from where you'd like to live to how you'd like to spend those years when you don't have to come to work anymore. But one decision you'll have to make could prove especially tricky: when to start collecting Social Security.

If you're tempted to skip the rest of this column because your own retirement is 20, 30 or more years in the future — hold that thought.

This decision is going to sound deceptively unremarkable, one you might be tempted to brush off as no big deal. But don't be fooled. No matter your age, that decision has important implications for you here and now. And what you do now can help you make a much better choice when those golden years arrive.

So the answer about when to start collecting Social Security benefits may seem obvious — “Well, when I retire!” Yes, for some people, that really might be the best answer. But it's important to understand all your options and what those options mean if you're in your 20s or 30s instead of your 50s or 60s.

TIMING IS KEY

The first thing you need to know is how much you will get each month from Social Security — depending on when you start taking it. We still casually refer to 65 as retirement age. But for Social Security, that hasn't been true for a while. For people born between 1943 and 1954, the federal government's so-called Social Security full retirement age — the age at which people qualify for their full Social Security monthly payment — is 66 years old.

If you were born between 1955 and 1959, your Social Security

full retirement age creeps up year by year in two-month increments: 66 and 2 months if born in 1955, 66 and 4 months if born in 1956, and so on. And if you were born in 1960 or afterward, the Social Security full retirement age is 67.

You can start taking Social Security sooner, starting at 62, but your monthly amount could be reduced by up to 30 percent depending on your birth year. (You can learn more here: www.ssa.gov/planners/retire/agereduction.html.)

But that's not all. If you delay taking Social Security past your “full retirement age,” you can actually get more each month. The longer you delay, up until you turn 70, the more you can get.

Suppose you were born in 1956. You'd qualify for “full retirement benefits” in 2022. But if you can delay taking Social Security until 2026, you'd get almost 30 percent more every month. (For details, look here: www.ssa.gov/planners/retire/delayret.html.)

If you took the cash at the full retirement age and simply invested it, could you actually count on a consistent 8 percent return each year? If you're lucky, maybe. By delaying, however, you're effectively adding about 8 percent every year to your monthly benefit.

“It's about as close to a guarantee as you can get,” says Kyle Tetting, director of research for Landaas & Co., a Milwaukee investment management firm.

The same advantages for delaying taking Social Security, and penalties for taking it early, affect spousal benefits, he points out.

GET GOOD ADVICE

So given a strong incentive to delay, why do some people choose not to, or even give up more by starting Social Security early?

“A lot of people are concerned they're not going to maximize what they can take out,” Tetting says. Some may fear Social Security benefits will be cut in the future. Others might worry that they won't actually live long enough to benefit from the higher payment they'd get by delaying.

But people are also living longer. As you get older, the real-dollar value of your monthly benefit will erode over time. By starting later and maximizing your monthly benefit, you can protect against that erosion.

Of course, every individual's situation is different. There may be reasons you need to take benefits sooner. Be sure to work with a financial advisor who knows your specific circumstances and can guide you accordingly.

Another important source of information is the Social Security Administration itself. SSA employees can give you a lot of information about how much you'll get under various scenarios that you can use to help determine your best course of action.

What they won't do is advise you on the best strategy for your circumstances. "So that means you've got to talk to friends or a colleague about who they know who might be an expert in that area," Tetting says. "That's especially important for those individuals who might have more difficult situations." That may be a spouse without an employment record or perhaps a divorce in their past, which might create an opportunity to build benefits through a former spouse.

"All of those are situations that are a little bit more nuanced than just, 'Hey you should wait until age 70 to claim.'"

"If you consider Social Security payments to be part of your retirement income strategy, you don't just **decide at 65, 'Oh, I'm going to claim,' because you'll have no idea what you're owed.**"

Kyle Tetting

START EARLY

By now you can probably see why it's important to have other resources besides Social Security when you retire. For instance, if you have a solid stash in your 401(k) or individual retirement account, you might still be able to retire at 65 or 66 while delaying taking your Social Security benefits. (Of course, it can work the other way, too. If you are retiring in the middle of a down stock market and your investments have taken a beating, you may decide to apply for Social Security sooner while your private accounts recover. Again, this is a time to seek professional advice.)

"The challenge here is that 70 percent of workers say they plan to work until 65, but the median retirement age really is about 63," Tetting says. That means that, for a couple of years, people are at risk for not having an income when they thought they would still be drawing a salary.

"You almost always have to draw down from savings that you weren't planning on drawing down from, or you're forced into this situation when you take Social Security earlier than you planned to."

And that's why it's never too soon to think about when you want to take Social Security and to plan for those situations.

"The key for younger workers is that planning for retirement is best done early," Tetting says. "And if you consider Social Security payments to be part of your retirement income strategy, you don't just decide at 65, 'Oh, I'm going to claim,' because you'll have no idea what you're owed."

Tetting routinely urges his younger clients to get in the habit of checking their work record with the SSA's website to make sure they're properly being credited for their earnings. "Ultimately their payments are going to be based on what's been reported," he says. "Mistakes are made — not all the time, but often enough — and it's going to be more difficult to correct at age 65 than it was back at age 35 when you first noticed a mistake."

If at all possible, workers need to understand as early as possible "that Social Security is not going to be the only source of retirement income for them," he adds. "If they wait until age 55 or 60 to figure that out, it's too late to save." c

ABOUT THE AUTHOR

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

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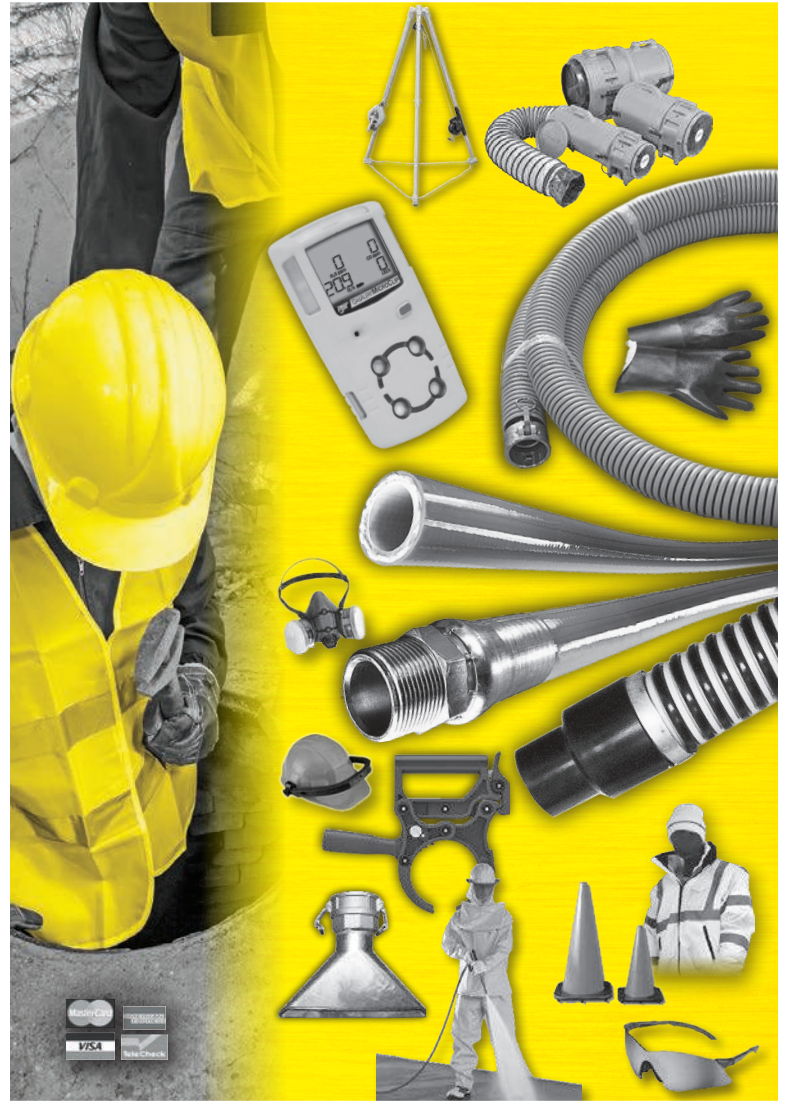
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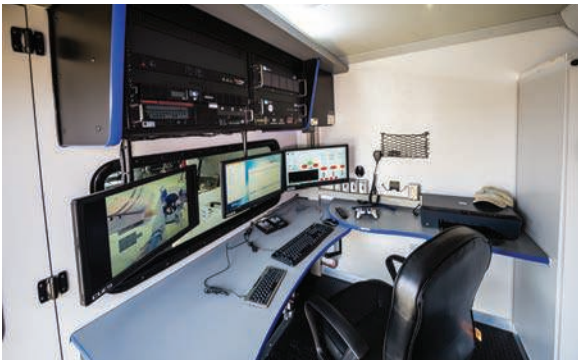
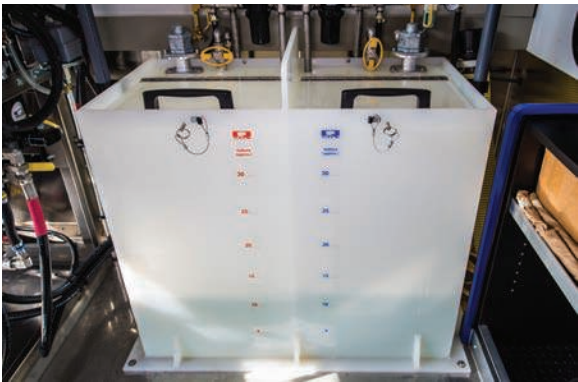
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By Craig Mandli



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3 / DITCH WITCH HX30

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4 / DYNABLAST CAB420FLS-12V

The Dynablast CAB420FLS-12V hydrovac water heater produces 420,000 Btus with an output temperature of 175 degrees F at 5 gpm to work in colder climates and for improved digging in clay-filled areas. It is designed to fit most municipal hydrovac trucks with its 24-by-24-inch footprint. It is ETL certified, providing improved heat transfer between the Schedule 80 pipe and water. It comes with two service access panels and two momentary override controls, which improve serviceability. The cabinet is designed with a reversible door for a variety of truck configurations and uses 14-gauge steel with polyester UV-protected, powder-coated paint with an aluminum discharge cap and stainless steel hardware. 905-867-4642; www.dynablast.ca.

5 / EASY KLEEN PRESSURE SYSTEMS WILDCAT HEATERS

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

6 / GAPVAX HV33

Designed to safely transport water and debris in urban areas, the GapVax HV33 is shorter, smaller and more compact than its predecessor. It is 30 feet long overall on a medium-duty chassis and includes a 600-gallon water tank, 6-cubic-yard debris body, a 14-to 17-foot 6-inch boom in 8 or 6 inches, 4,000 cfm power and an inverted, full-opening tailgate. 888-442-7829; www.gapvax.com.

7 / HYDRA-FLEX RIPSAW

The Ripsaw rotating turbo nozzle from Hydra-Flex blasts a 0-degree water stream at up to 3,200 psi while rotating at a high speed to provide an 18-degree cone of coverage. Its cone-shaped flow pattern is ideal for potholing applications. The heavy-duty, high-impact nozzles are constructed with stainless steel housings and tungsten carbide wear surfaces to withstand harsh environments and provide long life. Repair kits are available for extended life and lower operating costs. Select from traditional coating (blue) or upgrade to the heavy-duty coating (green), a formulation designed for use in extreme environments. Greater impingement allows users to complete jobs faster or use a smaller nozzle size while getting the same impact as nozzles with higher flow rates. 952-808-3640; www.hydrflexinc.com.



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12

8 / KAISER PREMIER CV SERIES

The CV Series hydrovac from Kaiser Premier has all critical components centralized and housed in an insulated, heated aluminum van body. The RB-DV series of rotary three-lobe positive displacement blowers can operate at high vacuum levels thanks to a device that injects atmospheric air. RB-DV series blowers can reach vacuum levels of up to 93 percent on a deadhead and 27 inches Hg without the need to inject water or use an upstream heat exchanger. Its hydraulically assisted off-load method eliminates overhead conflict concerns when off-loading by avoiding the need to raise the tank. Rather than using gravity alone, it applies its mechanical advantage to quickly off-load compacted tank debris. To release hot high-pressure water, the vehicle can be equipped with a 700,000 Btu boiler. The transfer case is specifically designed for vacuum excavation trucks requiring a highly configurable and easily serviceable gearbox. 970-542-1975; www.kaiserpremier.com.

9 / NOZZTEQ MONRO-JET

The MONRO-JET hydroexcavation nozzle from NozzTeq combines the power of a solid-stream pencil jet with the large coverage of a fan jet, according to the maker. An orbital design increases performance at a lower gallons-per-minute rate and pressures as high as 36,250 psi, allowing the operator to move faster when hydroexcavating, surface cleaning or cleaning sewer lines. It can be used for other types of surface cleaning such as concrete, steel, castings and large surface areas including line removal from runways. It can be modified for internal cleaning of sewers and pipes of all types. 866-620-5915; www.nozzteq.com.

10 / RAMVAC BY SEWER EQUIPMENT HX-12

The HX-12 hydroexcavator from Ramvac by Sewer Equipment has a 12-yard debris tank and a temperature-controlled environmental chamber that contains the entire water system,

including water tanks. A directional discharge system allows the operator to off-load debris back into the excavation site when finished, without the mess of dumping the tank. This system also allows operators to blow any obstructions out of the dig hose. It includes a long-range wireless remote, NEMA 4 electrical system, a 900,000 Btu water boiler and a three-stage cyclonic filtration system. The standard 4,400 cfm blower delivers fuel economy. It is available with a RamAir air excavation system touting a 185 cfm at 150 psi air compressor for when the operator can't risk adding water to the problem area. 877-735-4640; www.ram-vac.com.

11 / RIVAL HYDROVAC T10

The T10 from Rival Hydrovac is a larger version of the initial Rival T7 unit, which has become a suitable choice for many urban contractors who are aware of the trending weight restrictions and realize the need to bring these trucks into compliance when driving on roads to disposal sites. It operates in the same manner as the T7, as it is fully hydraulic, eliminating the need for a transfer case, and aside from engaging one PTO, the entire truck is operated from the remote and rear panel. This unit features the same "pressure off" feature as the smaller units and has essentially the same controls. 403-550-7997; www.rivalhydrovac.com.

12 / SOIL SURGEON HYDROEXCAVATING TOOL

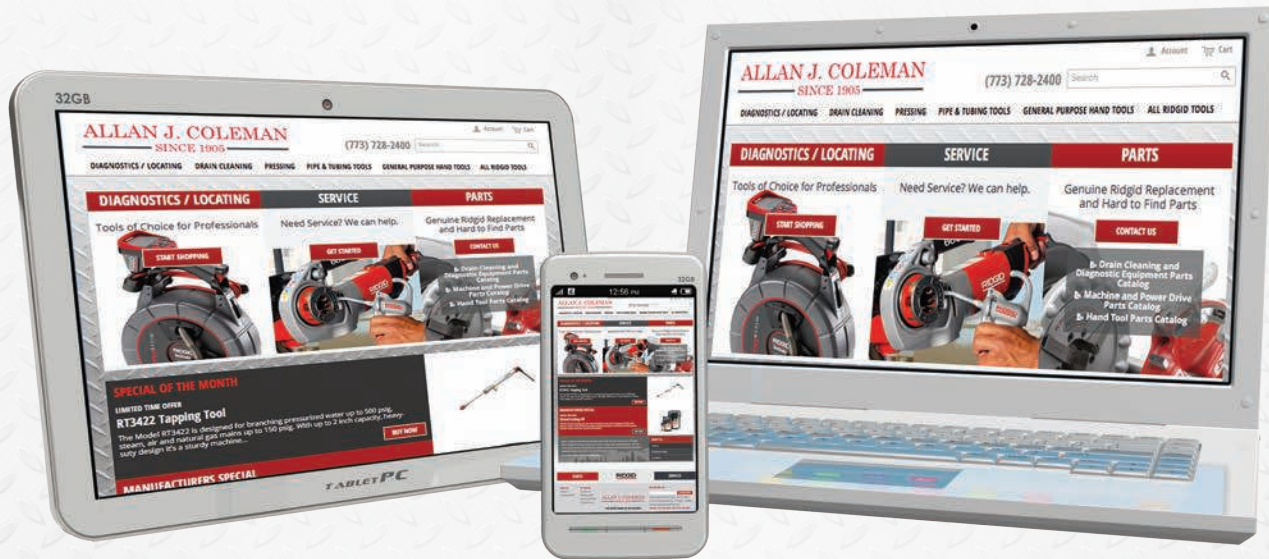
The Soil Surgeon hydroexcavating tool fits any sewer combination truck equipped with a telescoping 6- or 8-inch boom. The tool has a 1-inch water connection. The operator controls water pressure and power through truck controls. It has a 6-foot Tuff Tube with handles to guide the unit down for potholing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

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13 / SUPER PRODUCTS MUD DOG 1200

The **Mud Dog 1200** 12-yard-debris-capacity hydroexcavator from **Super Products** has a rear-mounted boom capable of a 19- to 27-foot reach, 335-degree rotation, 45-degree upward and 25-degree downward pivot. This range of boom motion allows crews to achieve greater work area access and deeper digging without halting production to reposition the trunk. Easy-to-use ejector plate unloading technology provides fast, thorough and safe debris removal, according to the maker. A tilt-unloading feature ensures liquids in the debris tank are cleared efficiently, even when unloading in an up-slope/nose-down position. Options include the Acculevel load-sensor system for precise debris tank level measurement. 800-837-9711; www.superproductsllc.com.

14 / SUPERVAC HERCULES XL

At 37 feet long, the **Hercules XL** from **Supervac** is suitable for applications where weight is not as much of a concern. It can carry 18 cubic yards of debris, and it has available a payload capacity of 25,000 pounds. The 3,600-gallon debris tank is mounted as close as possible to the truck's cab. Its 3,800 cfm, 27-inches Hg blower is more compact than its predecessors and mounted directly over the truck's second axle. In addition, more equipment, including its 30-ton hydraulic dump hoist and 400,000 Btu boiler are compactly situated near the cab to allow for more even weight distribution. The unit's 185 cfm air excavation compressor, Webasto diesel fuel heater, 3,000 psi high-pressure water pump, controls, aluminum toolboxes and six 250-gallon (1,500-gallon total capacity) plastic water tanks are evenly distributed along the sides of the unit, adding to the even weight distribution. 866-839-5702; www.supervac.co.

15 / TORNADO GLOBAL HYDROVACS F4 ECOLITE

The **F4 ECOLITE** from **Tornado Global Hydrovacs** has a 12-cubic-yard mud tank and holds 1,550 gallons of freshwater. The

unit is more than 7,000 pounds lighter than the company's older models and offers more than double the payload. The boom has a 342-degree rotation and a 26-foot reach. The smaller **F3 ECOLITE** is a 10-cubic-yard, 1,250-gallon tandem-axle unit that also more than doubles older payload capacities. It features an 8-inch boom and a 3,800 cfm blower. 715-441-7157; www.tornadotrucks.com.

16 / VAC-CON X-CAVATOR

The **X-Cavator** from **Vac-Con** is designed to be powerful, durable and easy to operate. It features a hydrostatic drive using the chassis engine for vacuum, creating a more efficient system that eliminates the need for power takeoff, clutch and gearbox operation. It is available with water systems up to 4,000 psi and a mobile, wireless remote-control system controlling chassis engine revolutions per minute, boom, automatic vacuum breaker, dump controls and hydraulic door locks from up to a half-mile away. The boom rotates 270 degrees. 904-284-4200; www.vac-con.com.

17 / VACALL ALLEXCAVATE

Vacall AllExcavate hydroexcavators include AllSmartFlow smart controls that help to conserve water during high-performance jet/vac digging around utilities and waterlines or cleaning frac tanks and vessels. Single-engine efficiency helps conserve fuel and reduce emissions. It has a high-pressure water system with rheostat control to vary water volume and capacity output. A heated compartment protects the water system components against freezing. Its water tanks are made of high-quality aluminum for extra strength. Large, galvanized steel debris tanks are also available. A single control is used to open, close and lock the tailgate. It has double-cyclone filtration with a simplified design to reduce maintenance, extend performance and increase working life. Its rear-mounted boom front-loads debris. It is available with a cold-weather package. 800-382-8302; www.vacall.com.

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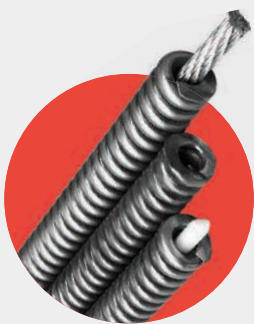
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19



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21

18 / VACTOR PARADIGM

The **ParaDIGm** vacuum excavator from **Vactor** is designed for utility, municipal and contractor customers involved in the installation, maintenance and repair of underground water, sewer, gas, electric and telecommunications lines. This compact, multiuse truck can dig holes with water or air; vacuum, contain and dispose of drill mud; power pneumatic, hydraulic or electrical tools; and provide transport and storage of replacement parts, equipment and tools. The truck's Park-n-Dig design minimizes the time between arriving on the job site and excavation, including the ability to dig up to 6 feet in depth without additional pipe and hose. Its air compressor powers utility tools such as jackhammers and tampers that may be used on the job. The truck offers substantial storage space for these tools, including a long-handle toolbox. It can also tow up to 20,000 pounds. 800-627-3171; www.vactor.com.

19 / VECTOR TECHNOLOGIES MUDSLINGER

The **Mudslinger** line of compact trailer-mounted hydroexcavation vacuums from **Vac-Con**, in cooperation with **Vector Technologies**, uses a 66.8 hp Kubota diesel engine with a 1,200 cfm at 16 inches Hg positive displacement blower and comes with a 535- or 845-gallon debris tank with 55-degree hydraulic dump hoist and a hydraulic door. The water system is 4 gpm at 4,000 psi with 50 inches of 3/8-inch hose and comes with a 225- or 325-gallon HDPE water tank. A 9-foot boom with 24 inches of hydraulic extension, hydraulic up/down and 270 degrees of manual rotation is also available. It is mounted on a heavy-duty welded tube steel trailer. 800-832-4010; www.vector-vacuums.com.

20 / WESTECH VAC SYSTEMS WOLF

The **Wolf** noncode hydrovac truck from **Westech Vac Systems** is suitable for oil and gas customers working in extreme conditions. The debris body is positioned on the optimal spot of the chassis

to ensure the payload is proportionately distributed across all axles simultaneously, maximizing legal payload for customers and improving operational efficiency. The side-mounted water tanks reduce the weight by more than 40 percent, lowering the overall cost of the truck. The 1,500-gallon capacity ensures ample water storage for large or remote jobs. A top-mounted, no-touch water fill system is easily accessible from the passenger side of the vehicle. The debris body is lifted using a telescoping, dual-acting hydraulic cylinder capable of 36,000 pounds of force. When fully extended, the debris body exceeds a 45-degree dump angle for fast and efficient off-loading. To help the off-loading process, a heavy-duty, hydraulically powered tank vibrator is mounted to the belly of the debris body. 780-955-3030; www.westechvac.com.

PIPE BURSTING TOOLS

21 / POW-R MOLE SALES PD-33M

The **PD-33M** pipe bursting machine from **Pow-R Mole Sales** is designed to replace existing underground pipes 2 to 6 inches in diameter. Its nonslip, cylinder-activated jaws prevent cable damage while providing 60,000 pounds of pulling force. It offers a cost-effective alternative to open-cut excavation, reducing customer disruption and increasing company profits. The process replaces the existing pipe with a fused HDPE pipe, which eliminates all joints, and allows the operator to pull through bends such as 45-degree fittings. This system is modular and can be easily disassembled and reassembled for manhole and basement applications. With a compact design and very small footprint of only 20 by 20 inches, this unit can be used in tight locations. 800-344-6653; www.powrmole.com.



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22 / SPARTAN TOOL UNDERTAKER

With 30 tons of lateral pulling force, the UnderTaker pipe bursting system from Spartan Tool employs a hydraulically powered cylinder that pulls a bursting head through the existing line while simultaneously replacing it with seamless, high-flow, code-approved HDPE pipe. With a small hole at each end of the run, the user can pull pipe from the building to the main, accommodate bends in the pipe, increase diameter and lay new line at a rate of up to 5 feet per minute. The system allows replacement of 2- to 6-inch pipe with up to three 45-degree bends in the pipe. It can also upsize from 4- to 6-inch pipes. When assembled, the unit weighs 210 pounds, but it disassembles into four separate components for easy transport, with no part weighing more than 70 pounds. 800-435-3866; www.spartantool.com. c

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Pipe Bursting Methods and Projects

By Craig Mandli

MUNICIPALITY REPLACES WATER MAIN WITHOUT CLOSING MAJOR STREET

PROBLEM / A 2,690-foot run of 8- and 10-inch cast iron water main beneath Kingston, Ontario's Princess Street required one- and two-step upsized replacement with 12-inch PVC pipe. The run lay in backfill over rock 5 to 8 feet beneath a traffic lane that ran alongside a strip mall, the Ontario Government Building and the Kingston Centre shopping mall.

SOLUTION / Utilities Kingston contracted Gordon Barr Ltd. to replace 2,215 feet of the run using pipe bursting. Entry pits were 30 to 50 feet in length. Machine pits for the HammerHead Trenchless HB125 bursting unit, its operator and a helper inside a trench box were approximately 20 by 8 feet. Designed for use on pipe 6 to 20 inches in diameter, the HB125 pulling machine uses heat-treated alloy pull rod with API-style joints that handle the machine's 113-ton pulling force capability through long payouts in encrusted pipe and sweeping bends. Brief water interruptions occurred only while switching over to a temporary water supply and while switching back to the new main. Shutdowns were coordinated in advance with businesses, with some performed during nighttime hours.

RESULT / Matt Glass, engineering technologist for Utilities Kingston, says the pipe bursting method is ideal for use when water main improvement is the sole purpose of the construction activity. Utilities Kingston completed the project in nine weeks, from groundbreaking to completed restoration, accommodating a high traffic volume with minimal disruption to community activities. 800-331-6653; www.hammerheadtrenchless.com. **c**



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SPOTLIGHT

Sewer cleaning power packed in efficient design

By Craig Mandli

When it comes to municipal work, efficiency is the name of the game. Typically there is a set amount of funding available for each job, and being able to accomplish the task just under or substantially under that number can mean the difference between breaking even and turning a profit.

With budget-consciousness and profitability in mind, Vacall recently introduced the AllJet truck-mounted jetter, designed by Gradall Industries to provide municipalities and contractors with a highly efficient, easy-to-operate sewer cleaning machine.

With standard Vacall “Green That Works” advantages, the AllJet uses a fuel-saving single-engine PTO design, a 1,600-gallon UV-resistant polyethylene water tank and an AllSmartFlow CANbus control system. AllSmartFlow controls, protected inside a weather-resistant cabinet, help optimize operating efficiency with controls for water pump speed and pressure, hose reel adjustment, chassis engine and more. New operators can quickly learn to operate the powerful jetting action, while precision monitoring can make sure the AllJet is delivering optimum on-the-job performance. Over the road and around the work site, a full enclosure protects the AllSmartFlow control panel, eliminating the chance of damage to joysticks and levers that stick out on some other machines.

The hydraulically powered triplex plunger water pump is capable of 87 gpm at 2,000 psi, enough power to effectively jet blockages in sewer lines and routinely maintain flow, with other power options available. The hose reel telescopes out 54 inches from a retracted position and swivels 200 degrees, locking into position for productive working angles while properly directing the 600-foot, 1-inch-diameter jetting hose.

The water tank is constructed with UV-resistant black polypropylene and internally baffled with a filling system that runs through the tank, eliminating external plumbing. Operator-friendly features include four locking aluminum tool storage cabinets, a rearview camera, three roll-up doors, a washdown system and a number of options including LED lighting packages, an extendable rear canopy and a 13,650 Btu/h heater and insulation package to warm the rear compartment, protecting pumps, hoses and plumbing from freezing, which enables year-round use in cold climates.

Designed for simplified operation to speed up emergency response to sewer line blockages, the AllJet chassis engine also operates the powerful jetting function, reducing fuel costs, emissions and maintenance associated with two-engine sewer cleaners. 800-382-8302; www.vacall.com.



1 REELCRAFT INDUSTRIES' SERIES LG CORD REELS

Reelcraft Industries' lightweight and compact Series LG cord reels are constructed from a durable, impact-resistant composite material. Three new models have been added to the medium-duty line of cord reels with two new cord endings. The new power cord reel option features circuit breaker-protected, quad-grounded NEMA5-15 outlets with an LED power-on indicator light. The quad outlet reel is available with 65 feet of 12/3 cord or 75 feet of 14/3 cord. The new light cord reel option features a 1,300-lumen LED light with bright COB illumination, a grounded 12-amp outlet and an on/off switch on the handle. The LED reel model is supplied with 50 feet of 14/3 cord. All three new Series LG models are ETL listed. 800-444-3134; www.reelcraft.com.

2 COXREELS INDUSTRIAL-DUTY LED LIGHTS FOR PC13 MODEL

The new line of industrial-duty LED lights for the PC13 cord reels from COXREELS feature a variety of industrial-grade features and options, including a 50,000-hour rating, internal light diffusers and shatter-resistant polycarbonate lenses. The lights also have adjustable steel hooks for hands-free placement. The three versions — compact, a light with an additional power source and an industrial-duty, UL-listed option — are available to complement a variety of applications. 800-269-7335; www.coxreels.com.

3 MILWAUKEE TOOL M18 BRUSHLESS THREADED ROD CUTTER

The M18 Brushless Threaded Rod Cutter from Milwaukee Tool delivers clean, burr-free cuts for threading nuts on by hand. It also has the power to cut through 1/4-, 3/8- and 1/2-inch mild steel or 1/4- and 3/8-inch stainless steel threaded rod in seconds. The new tool features a design with a 1 1/2-inch built-in trim length and one-handed center grip for making uniform, controlled overhead cuts. Not only is the tool optimized for overhead cutting, but it can also be laid flat on its back for prefab cutting. A brushless motor and an M18 REDLITHIUM 2.0Ah battery deliver over 400 nut-ready cuts per charge, reducing the need to file the threaded rod before applying the nut. The die includes three different cutting sizes, which can be changed by rotating the dies. 800-729-3878; www.milwaukeetool.com. c

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Vac-Con announces new distribution agreement for HD video nozzle

Vac-Con announced that it has entered an agreement with Sewer Robotics to be the exclusive North American distributor of the C70 HD video cleaning nozzle. The nozzle is designed to jet pipelines ranging from 6 to 40 inches and is available through the Vac-Con dealer network.

Envirosight signs Jet Vac Equipment as sales partner

Envirosight announced it has partnered with Jet Vac Equipment to provide more extensive sales and service coverage across New Jersey and Delaware. Jet Vac Equipment will work in conjunction with Bruce Kosensky, longtime Envirosight New Jersey direct sales manager, to maintain continuity with existing accounts and develop new ones.

“We’ve watched what Envirosight has been able to accomplish here in New Jersey and in the broader sewer inspection market,” says Adam Emusov, vice president of sales at Jet Vac Equipment. “We’re excited to join the team and to be part of the next chapter of growth.”

Pipe Lining Supply offers Quik-Shot system exchange program

Pipe Lining Supply’s Quik-Shot lateral lining inversion unit now features an improved nozzle design that allows the CIPP lateral lining material to flow through with ease, using the venturi process. With the new design, Pipe Lining Supply now offers a retrofit exchange program to rework any nozzles from existing customers.

Perma-Liner Industries celebrates 20 years of manufacturing

Perma-Liner Industries is celebrating 20 years of manufacturing in the trenchless pipeline rehabilitation industry. Founded in 1999 by Jerry D’Hulster, the company was the first relining company to achieve NSF approval, which allowed for CIPP to be used on the plumbing side for plumbing code approvals. The business was acquired in 2013 by Triwater Holdings, a Chicago-based water company, and is now a Triwater’s Waterline Renewal Technologies division, which also includes the brands LMK Technologies and AP/M Permaform.

Super Products to build new vacuum trucks facility

Alamo Group announced that it has plans to build a new \$15 million facility for its Super Products vacuum trucks operation. The facility will be located in the Village of Mukwonago, Wisconsin, and will allow the company to consolidate and expand current production, which operates out of several facilities in the greater Milwaukee area. The plant is anticipated to commence operations in the first quarter of 2020.

The facility will allow Super Products to consolidate its manufacturing and customer support operations into a single, highly efficient location. It will also enable Super Products to bring in operations that are currently outsourced due to capacity limitations. The site also offers the potential to expand operations to meet future needs.

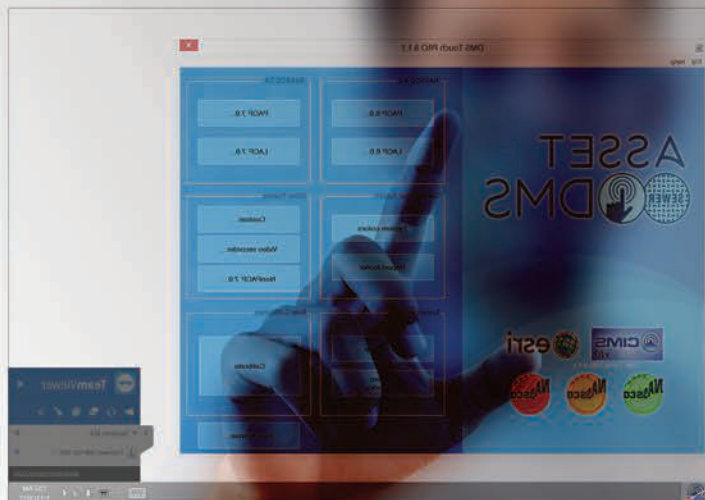
In 2018, Super Products opened two new rental locations in Savannah, Georgia, and Corpus Christi, Texas, and now operates eight rental locations in seven states. The additional capacity provided by the larger facility will allow Super Products to continue its growth in the coming years. **c**



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JET VACS

2011 Vac-Con V390LHA combination cleaning truck. Low miles, great condition. 1998 Vactor 2110-36PD ex-city owned, low miles See details of these units and CCTV inspection trucks at www.empireequip.com. Contact Craig at 714-639-8352. (CBM)

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1999 International 2554 Vac-Con V390LHA vacuum/jetter combination truck for sale. Automatic transmission, 3-stage fan, 9-yard debris tank. 93,153 miles, 7,985 hours. VIN: 1HTG-BADR2XH576033. Please call for more information. \$42,000

305-992-5649, FL C04



2006 Vactor 2115 combo jet-vac (Freightliner/350hp Caterpillar - overhauled in 2014). 80gpm/2,000psi pump (rebuilt 2013), 18" PD blower (rebuilt in 2014), 15-yard debris body, 1,800 gallons water. Cyclone separator replaced in 2015. Automatic transmission. Asking \$49,500

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1997 Ford Louisville, Cummins ISM 320hp with Allison 4560 HD transmission, excellent condition. 67,404 miles, 8,289 hours, with a Vactor 2110-P4, 9-yard debris and 1,000 gallons of water on a tandem axle truck. 66,000 GVWR rating. Vactor single-piston water pump, front rotating hose reel with 600' of 1" hose with reel rotation. 4-cylinder auxiliary diesel engine, single-stage fan, extendable front boom pump and PTO. 425 front tires, 12R22.5 H rating 10 hole, air-ride driver's seat, stationary passenger seat. Overall length 32' and 11'8" height. Two strobes and arrow board rear. Small city owned! \$49,500. Located in Denver, Colorado. Call Ernie at 800-672-6010. (C06)

2001 Vac-Con VPD42HA/1300 sewer-cleaning unit mounted on a Sterling LT9501 with 131395 miles. 380hp Cat C12 in-frame rebuild at 101115 miles. Fuller 10-speed manual transmission, 120gpm FMC Quintuplex water pump, recent reman 165hp Cummins 8.3 auxiliary engine, recent reman Roots/Dresser 827 blower, cold-weather recirculation, 16-cubic yard-debris tank, 1,300-gallon water tank, 30"x8" Aluminum telescoping boom tube (great for catch basins), 500' x 1-1/4" hose on articulating reel. \$40,000. Call Mark 708-475-7116, IL (CBM)



2001 Freightliner M112, Cummins ISM 320hp, Allison HD4560P automatic transmission, 60,000 GVWR. 32,976 miles and 8,510 hours. 20k front, 40k rear, air-ride driver's. 425 65R22 (L) rating front tires, 11R22.5 (G) rating rear tires. Interior brown, excellent condition. Vac-Con 9-yard dump, 1,300 gallons of poly water tanks. 4-cylinder diesel aux. engine with 3-stage fan. Triplex pump 50gpm at 3,000psi. 600' of 3/4" blue hose on a 800' reel, telescoping leg drop. Two strobes and one arrow board. Excellent condition. Located in Denver, Colorado. \$79,500

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Greg 562-690-2176 ext. 931, CA
greg.denning.us@gmail.com C04



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203-305-2154, CT C04

2011 US Jetting Model #USJ 4018-300 trailer jetter unit for sale. Very clean/white color unit. One owner since new, always stored inside heated building. 300-gallon water tank. 4,000psi @ 18gpm. Self-contained anti-freeze system with recovery/storage tank. Jump jet pulsation system. 4hp Hatz Silent Pack diesel 3-cyl. air-cooled engine. 7,000 lb. GVW single axel. Approx. 1,200 hours on unit. 1/2" hose with hydraulic power pull-out reel. Wireless remote. Two sets of wheels/tires. Serviced by Turner Technical Services. Asking \$29,500 OBO. Call Dan at 616-299-4047 or email Dan@allfloplumbing.com. Will text or email pictures upon request. (C04)

JETTERS-TRUCK

1999 International 4700 Rodder Truck: Vactor Ram Jet, T444E engine, automatic, 35,000 GVW, 1,000 Gallon. 155,000 miles, 20,300 hours. \$16,500. Call 970-309-3277 or email info@rangelandresources.com, Colorado. Photos @ https://tinyurl.com/y3n74c2u (C04)

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

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TRUCKS - MISC.



2005 Aries grout test/seal and televising truck. 2004 International 4400 Series 4x2 with 18' Morgan body. Est. mileage – 107,606. Turnkey grout truck with TV equipment, camera, and tractor. 12kW Martin industrial generator, serviced Nov 2018. Fair but serviceable condition. Price: Best offer. For more detail/pictures, please email:

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CUES CCTV-Grout-Laser camera truck on 2016 Dodge Ram 5500 Cummins diesel chassis. 16' cargo box. 10,000-watt quiet diesel Onan generator, 2 P&T LED cameras, transporter, rearview camera, 1,000' cable, grout system and chemical Cat pumping system. GraniteNet software. Laser profiler and measurement system. Purchased NEW 10/2016. 23,519 miles and 1,145 generator hours. ... \$265,000

863-984-8727, FL C04

Aries CCTV Inspection Truck: 2002 Ford E350, 5.4 Triton V8, 59,484 miles. Aries PCU, Dell operating system. New Onan commercial 7,000-watt generator. Pipe Tech pipeline inspection software, camera and transporter negotiable. Call for more information and more pictures. \$15,500. Mark 708-475-7116, IL (CBM)

2014 Envirosight Rover X long-range camera system. 1,600' fully automatic cable reel, DCX5000 desktop controller, RCX90 PTZ camera head, RX130 fully steerable six wheel crawler, and wireless remote. System was municipally-owned and in good condition. Entire system has been factory refurbished. Please Call Brian @ 303-898-9475 for pricing and further information. (C04)

2002 CUES CCTV inspection truck. Ford F550 SuperDuty, 7.3 diesel engine with 71k miles, 16' box. Onan 7.5 HDK diesel generator with 3k hours. CUES reel with approximately 1,000' of cable, CUES 1208 PCU. Call Mark for more information. \$45,000 OBO. 708-475-7116, Chicago area (CBM)

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

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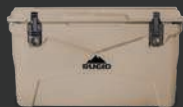
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CUES CCTV Inspection Truck: 2000 Freightliner MT45 walk-in, Cummins 5.9, 71,086 miles. CUES PCU, Dell operating system, truck-mounted CUES grouting system. Onan 10.0 GenSet diesel generator. Software, camera and transporter negotiable. Call for more information and more pictures. \$19,500. Mark 708-475-7116, IL (CBM)

Cobra mainline complete system with 1,000 ft. mainline cable and wheel sets for 8" to 24" lines. Installed in a 2000 GMC box truck, includes computer and PACP recording software. Call for pricing and pictures. Matt 618-566-3003 ext. 4 or email matt@midwestvacproducts.com (C04)

CUES Inspector General Camera, pipe inspection, cart mounted. Ultra Shorty 21 transporter, OZII camera, DVD recorder, track spacers plus extras. \$17,000. Email info@rangelandresources.com or call 970-309-3277, Colorado. Photos @ http://tinyurl.com/y4v6al2n (C04)

Insight Vision Portable I.R.I.S. Crawler Camera demo unit. Pan and tilt head, manual elevating head, 6"-24" pipe, 6", 8" and pneumatic tires. 10" LCD touchscreen. Windows-based operating system with 500GB solid state drive. \$20,000. For more information contact Adam at 314-550-4618 or www.mahoneyequipment.com. (C04)

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