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2020  
CONTRACTOR  
CAPABILITIES 18

Valdez Holmes  
Crew leader  
Thompson Industrial Services

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Thompson Industrial Services crew leader Valdez Holmes is in full protective gear as he begins to hydrovac an area at an industrial plant near Sumter, South Carolina. The company offers industrial cleaning and vacuum excavation throughout the Gulf Coast and Southeastern U.S. (Photography by Lucas Brown)

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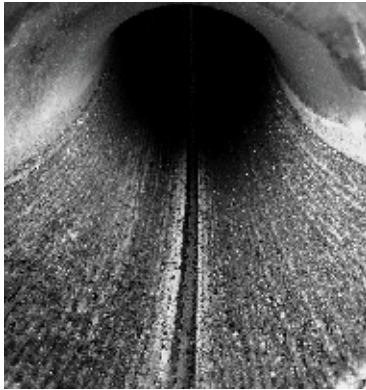
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IF A COMPANY ISN'T TRYING SOMETHING NEW EVERY NOW AND THEN, **HOW WILL THEY CONTINUE TO GROW?** ISN'T THAT THE GOAL OF MANY OF YOUR COMPANIES OUT THERE — GROWTH AND MORE REVENUE?

## Telling All Stories

**SMALL AND LARGE COMPANIES HAVE TIPS OTHERS CAN LEARN FROM. WHY NOT SHARE THEM?**

BY CORY DELLENBACH, EDITOR

**W**e've written about companies of all different sizes in *Dig Different* magazine, from small operations with two or three employees, all the way up to large companies with more than a hundred employees.

Each company has a story to share, whether it's lessons learned, how the company is diversifying or how it has grown. There is always something to take away from the stories.

In this issue and the November/December issue, we're profiling some large companies. It's always interesting to hear how they started off as a small operation and grew enormously over the years. They have some great tips that other companies — of all sizes — can take away.

### SAFETY COMES FIRST

In this issue, we're highlighting Thompson Industrial Services, based in Sumter, South Carolina. This industrial cleaning and vacuum excavation contractor has about 1,000 employees and serves the Gulf Coast and Southeast U.S. region.

You'll be impressed as you read about its extensive safety program. The program didn't start overnight and it is hard work to do, but it pays off. As of May this year, the company hasn't had any recordable or lost-time injuries, even as total employee hours worked increased.

As Dean Kuhlman, who is the director of safety and quality for the company, says, "That's a crazy statistic in our industry."

It is a crazy statistic, but it's a great one to share. The story talks about how the company uses its safety program, what the different aspects of the program are and what it means to the customers they work for.

### GOING WEST

In our November/December issue, we'll move from the East Coast to West Coast and profile California's Nor-Cal Pipeline Services. It's an interesting story of how a company started off small but quickly grew into a large company.

Nor-Cal offers not only vacuum excavation services, but also sewer inspection and CIPP work. The company also has a strong focus on safety.

By reading both of these profiles, you'll start to see what truly makes a company succeed and how you can incorporate that into your own business, especially if you are one of many who are just launching this year or in the near future.

### TRY NEW THINGS

Neither of these companies — even when they were starting out — were shy about trying new technologies or new ways of doing things. That is what makes a company grow: trying something new and learning from it, even if it fails at first.

If a company isn't trying something new every now and then, how will they continue to grow? Isn't that the goal of many of your companies out there — growth and more revenue? It's time to try new things then. Start by flipping through the pages of *Dig Different*, reading what other contractors are doing and using some variation of those ideas.

### WHY NOT SHARE YOUR STORY?

I'm sure you have something you could share with the industry — perhaps tips on ways to do jobs, starting a safety program or managing staff — why not share that with others? I'd love to hear your ideas. You can email me at [editor@digdifferent.com](mailto:editor@digdifferent.com) or call me at 715-350-8436.

Enjoy this issue!

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Published nine times yearly by COLE Publishing, Inc.  
1720 Maple Lake Dam Rd., P.O. Box 220, Three Lakes, WI 54562

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Outside of U.S. or Canada call 715-546-3346  
Mon.-Fri., 7:30 a.m.-5 p.m. CST

Website: [digdifferent.com](http://digdifferent.com) / Email: [info@digdifferent.com](mailto:info@digdifferent.com) / Fax: 715-546-3786

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**CONTROLLED CIRCULATION:** 20,000 copies, nine times yearly.

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## TEAMWORK

### How Leaders Can Improve Workplace Communication

There are many problems that can be solved simply through better communication. It translates into more productivity and fewer tasks slipping through the cracks, and prevents morale-killing resentment from festering among team members. This online exclusive covers some guidelines to keep in mind if you feel like your company's communication isn't as strong as it could be.

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## TOUGH TIMES

### Marketing Your Business in Times of Uncertainty

The pandemic may have you considering whether it's wise to maintain your current marketing investment. While it's certainly something worth evaluating, be leery about completely eliminating your marketing budget. Regular contributors Carter Harkins and Taylor Hill explain more in this online exclusive.

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## OVERHEARD ONLINE

**"EMPLOYEES WHO LEAVE USUALLY AREN'T THE NEGATIVE ONES, SO THE IRONY IS THAT BY NOT ACTING ON THE PROBLEM, YOU END UP KEEPING ONLY THE COMPLAINERS AND WHINERS."**

*How to Handle Toxic Employees*  
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## LABOR ISSUES

### Focused on Encouraging a Workforce Youth Movement

North American Pipeline Services of Freehold, New Jersey, was featured in the July issue. In this online exclusive, read more about the ways that owner Tom Mullen is trying to help address industry labor shortage problems and attract younger workers, both through the operations of his own company and his work with a large regional trade association.

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# Publicity Brings Benefits for Your Company

**CONSISTENTLY HIGHLIGHT YOUR COMPANY'S EXPERTISE, AND WATCH YOUR REPUTATION GROW AND MORE CUSTOMERS COME ON BOARD**

BY RUSSELL TRAHAN

**T**here is an old proverb that goes, "Give a person a fish, and you feed them for a day. Teach a person to fish, and you feed them for a lifetime." The same can be said about publicity. If you do publicity once, you'll only get business for a day. However, if you do publicity with frequency and repetition, you'll build a business that will feed you for a lifetime.

The advice and benefits of seeking publicity go for any type of business, from a major corporation to a mom and pop local company — say your utility construction company. Your goal is to position yourself as an expert in the industry and to highlight your professionalism in the field.

Continuing with the fishing metaphors, here is some advice to get you on the way to your first monster publicity catch:

**Know what you're fishing for; know who your target market is:** First, you have to decide what you're fishing for; then you go where they are. If you're fishing for trout, you may go to a lake. If you're fishing for salmon, you head to a river. And if you're fishing for mahimahi, you would gas up the boat for some deep-sea fishing. The same is true for your target market. Once you decide who your target market is, you go where they are. If you want name recognition in front of business decision-makers, go to trade, industry or business association publications. If you want the attention of homeowners, go to a local newspaper real estate section or a home improvement blog. Every market has media outlets you can tap into. Know who your target market is and where they're located and you'll get a bite every time.

**Have the right lures; position your expertise:** In a lake, you would want a bobber and lures to attract a fish's attention. In a river or stream, you might want to use a fly-fishing pole. On the ocean, you'd want to be fully strapped in with a strong line and reel. The same is true for positioning your expertise in a way the reader wants to see it. You may think that since *Entrepreneur*, *Fast Company* and *Bloomberg BusinessWeek* are all business publications, you can send the same press release to all of them. But consider their core reader: *Entrepreneur* says who they are in the title; *Fast Company* attracts the reader who wants new, now, next; and *Bloomberg BusinessWeek* is the old steady blue-chip business person. If you tailor your press release to the reader of the publication you want to get into, you'll have them jumping out of the water for you.

**Use the right bait on your hook; use the right content in your hook:** Whether you use a worm, eggs or chum depends on the fish you want to catch.

The same is true for the content you use to hook the media's attention. If you don't get the media's attention, your target market will never see your content so you have to present your content in the right way. Many people make the mistake of presenting themselves as the story. The media cares about what you can do for their reader. Who you are and why they should listen to you comes second. Press releases should not be advertorial or self-promotional; they should be educational, informational and content driven. Lead with your unique expertise that can help a homeowner, for instance. Offer the media additional information on a story they're already running and they'll be itching to take the bait.



**Tell a fish story; use your publicity:** Every fisher has a whopper of a story about the one that got away, but just as many have trophies mounted on their walls to prove their skills. The same is true with your publicity: You've got to tell a good tale about it, or otherwise you might as well cut bait and walk away. Start an In the Media page on your website. Nothing impresses a potential client more

than knowing the media considers you the go-to source for information on your expertise. Use the publicity you receive in your social media as well. If you're a business-to-business company, you would want to focus on LinkedIn, or if you're business-to-consumer company, you could use Facebook, Pinterest, Instagram or others.

## GET TO WORK

If you're hoping to build business name recognition, increase market awareness or boost sales, you first need to drop your line into the water. Wading into the media doesn't have to be a scary situation. Knowing who you want to hook and having the right bait in your tackle box will land you publicity without much of a struggle. Regardless of whether you're standing on the banks, using a rowboat or in a trawler, it's about positioning your content in front of your target market in a format they want to hear. Then just sit back and reel them in. You'll have a net full of media placements to use in your marketing for a lifetime.

## ABOUT THE AUTHOR

Russell Trahan is president of PR/PR Public Relations and author of *Sell Yourself Without Saying a Word*. For more information, visit [www.prpr.net](http://www.prpr.net). ▼



# SAFETY MATTERS

**PREVENTING SERIOUS INJURIES IS A TOP PRIORITY AT THIS  
SOUTH CAROLINA-BASED INDUSTRIAL-CLEANING COMPANY**

STORY: KEN WYSOCKY PHOTOS: LUCAS BROWN

On any given day, between 800 and 900 employees at Thompson Industrial Services fan out from 22 strategically located facilities, along with more than 100 wet- and dry-vacuum trucks, more than 80 hydro blasters, hundreds of service vehicles and an array of specialized cleaning equipment.

Their destinations: Dozens and dozens of oil and gas refineries, petrochemical companies, pulp and paper mills, power plants, steel mills and other industrial facilities located throughout Gulf Coast and Southeast states.

And as this large group of technicians and equipment heads out to clean evaporators, heat exchangers, storage tanks, reactors, pipelines, pits, vessels and everything in between — and perform air excavation and hydroexcavation work too — one thing is always top of mind: employee safety.

“Our business model is built on selling the value of our safety programs, plus the training we provide for our employees and the quality of our equipment,” says Josh Chambers, CEO of the company, headquartered in Sumter, South Carolina. “All these things combine to create better productivity and significantly less safety risks.

“We differentiate our company from competitors by our safety culture and diverse service offerings, plus investments in equipment that does things faster, cleaner and safer,” he adds. “And we’ve been in our core markets for a long time, so we know our customers’ facilities well, which in turn reduces the overall management burden for our clients.”

Each of the company’s 22 divisions operate as independent business units. About 90% of the approximate 1,000 employees at the company work in the field at cus-







**"THE MOST FUN I HAVE IS GETTING ADDITIONAL WORK AND PUTTING MORE PEOPLE TO WORK. GROWTH IS A BLAST."**

Josh Chambers

tomers' facilities, traveling to 60 or 70 different job sites each day and visiting roughly 700 plants and complexes annually. The privately held company is primarily owned by founder Greg Thompson and a private-equity investment fund, Chambers says.

About 95% of the revenue generated at the company's facilities is recurring. This underscores how performing quality work and establishing a culture of employee safety helps build business relationships that keep generating repeat business, Chambers notes.

#### **SAFETY IS NO ACCIDENT**

Through May of this year, the company has posted a sterling safety record, with no recordable or lost-time injuries — even as total employee hours worked increased. "That's a crazy statistic in our industry," says

Dean Kuhlman, director of safety and quality. "It's all a result of the automated technology, policies and training we've put together."

More specifically, the company in early 2019 began to sharpen its emphasis on safety by rolling out a program aimed squarely at preventing serious injuries and fatalities. This multipronged safety strategy reduced the company's total incident rate to 0.48 as of early June, compared to 1.0 in 2019, he says. (A total incident rate measures the number of recordable work-related injuries per 100 full-time employees over a year.)

Many safety programs focus on preventing small incidents that could lead to more serious accidents. But the company flip-flopped that approach by focusing more on the factors that lead to serious injuries. "If you prevent those from happening, the smaller things work themselves out," he says.

"It takes time," Kuhlman adds. "We didn't start to see results until the fourth quarter of last year. But that momentum propelled us into 2020, giving us the best start on safety in company history. The program has been a complete game-changer."

Thompson Industrial Services superintendent Albertus Hampton (left) and operator Maurice Smith discuss the work and safety plan prior to starting a job. The company, based in Sumter, South Carolina, has about 1,000 employees and services the Gulf Coast and Southeast U.S.





The team at Thompson Industrial Services includes, from left, crew leader Zeno McConnell, operator Theo Wells, superintendent Albertus Hampton and crew leader Valdez Holmes.

After a supervisor goes through the safety checklist and takes a photo of the job setup, that information is sent to a next-level supervisor. Why? “One, it ensures a job is set up safely,” Kuhlman explains. “Two, it gathers data for what’s being cleaned and how we’re cleaning it.

“Gathering all this data helps us know what kind of equipment to purchase by division, instead of taking a one-size-fits-all approach across the entire company,” he continues. “It enables us to dive deeper into each division and provide them with the specific automated equipment and training for what they need.



From left, Chris Mitchum, general manager; Darick Bryant, regional manager; and Jarrod Duffey, site manager, connect hose for a longer reach on an industrial job site.

The program consists of five tiers — or layers of protection — that start with personal protective gear, followed by advanced training and safety policies and procedures.

The third layer features a safety-observation approach in which front-line employees use an internally developed dashboard app called SafetyNet to audit their jobs ahead of time to make sure all protective measures are in place. Predictive Solutions, an occupational-safety software developer, created the platform that helps the company collect the data, he says.

Company employees compile more than 35,000 real-time safety observations annually that help identify the highest risk factors for serious injuries and fatalities. These observations then help safety officials develop a customized safety plan for each job, using as many of the five layers as possible, he says.

“We’re very data driven,” Kuhlman says. “We use data from the observation program to develop our current policies and improve policies and training programs. Ultimately, we empower our front-line employees to take safety personally every day through observations and stop-work procedures.”

## CHECKLIST OF PROTOCOLS

Before a hydroblasting job, for example, a supervisor uses the app to call up the dashboard, which provides a checklist of the protocols for the task at hand.

## Thompson Industrial Services LLC

Sumter, South Carolina

**OWNERS:** Founder Greg Thompson and a large private-equity investment fund

**FOUNDED:** 1986

**EMPLOYEES:** About 1,000

**SERVICES:** Industrial cleaning, vacuum excavation

**SERVICE AREA:** Gulf Coast and Southeast U.S.

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

“It’s the difference between a large university trying to teach everyone everything and smaller institutions with smaller classes that can provide students with exactly the kind of training and knowledge they need,” he adds. “That’s important because the work in Louisville (Kentucky) is much different than what’s done in Sumter, for example.”

During the last three years, more than 750 employees have entered in excess of 110,000 safety observations into the SafetyNet database. Those observations include more than 2.5 million findings, defined as safety measures that were either met or missing. Out of those, 200,000 unsafe findings were mitigated, Kuhlman says.

## PUSH FOR AUTOMATION

The fourth layer focuses on replacing manually operated machines with automated equipment that removes employees from hazardous situations. Automating the company’s hydroblasting equipment is a top priority because of the dangers inherent with operating machines that generate anywhere from 10,000 to 40,000 or even 60,000 psi. The company owns hydro blasters made by Jetstream of Houston, Gardner Denver, NLB and Hammelmann.

“I’m pushing hard to automate 100% of our hydro blasters — get our guys off the guns,” Chambers says. “This keeps people out of the water blast line, and you can actually perform work at a faster clip. And the work that’s done is more consistent, too.



“We’re really pushing the envelope in this area,” he adds. “In fact, many customers now require automated equipment. It’s an expensive game to get into, but with a footprint like ours, we can leverage that equipment across all our divisions to help pay for it faster.”

The last layer centers on physically removing or replacing on-the-job hazards. For example, the company might be called in to clean “green liquor” (a byproduct of the papermaking process) from a dissolving tank in a paper mill. Instead of doing it manually, workers use an automated cleaning tool, which eliminates hazards such as manual waterblasting, exposure to chemicals, confined-space entry and heat exhaustion, Kuhlman says.

Furthermore, the company takes a bottom-up approach to safety governance. This allows safety committees at each of the 22 divisions to provide constant feedback to regional committees as well as an overarching corporate committee, Kuhlman says.

“The corporate safety committee puts policies, programs and procedures in place,” he explains. “But we also need feedback from the front-line leaders

— the boots on the ground. Some companies push policy only from the top and expect employees to buy into that.

“But we’ve found that our front-line leaders know and understand the business better than anybody, so we need their feedback about what works well and what doesn’t work well.”

## HUMBLE BEGINNINGS

The company owns about 120 vacuums trucks made by Guzzler (a subsidiary of Federal Signal), Cusco Fabricators (Wastequip) and Presvac Systems.

In addition, the company runs about 500 service vehicles, ranging from semitractors to pickup trucks; roughly 23 trailer-mounted water jettors made by Jetstream; pipeline inspection cameras made by Aries Industries; dry-ice blasting equipment manufactured by Cold Jet; and sponge-media abrasive blasting technology from Sponge-Jet.

Both the geographic scope of the company, as well as its multimillion-dollar fleet of equipment, vehicles and machinery are a far cry from the company’s



The crew utilizes a Guzzler hydrovac at an industrial plant near Sumter, South Carolina.

## Thinking outside the box: Innovation helps resolve customers’ challenges

Developing innovative solutions that help solve customers’ problems has been a key growth factor at Thompson Industrial Services, based in Sumter, South Carolina.

As an example, consider the role the company played three years ago during the construction of a multibillion-dollar liquified natural gas plant in Texas. The project went sideways when officials discovered that roughly 10 miles of pipe was lined internally with a paintlike coating, rendering all of it unusable, says Josh Chambers, CEO.

Cleaning the pipes was complicated by the fact that many of them were preassembled in sections with bends and turns and couldn’t be taken apart because of time constraints, he explains.

“They tried hydroblasting the pipes, but that didn’t work,” he says. “So they called us and asked if we could do anything.”

Turns out the company could. Engineers developed a unique solution by combining sponge-blasting technology from Sponge-Jet with robotic crawlers. After a successful demonstration, the propane company asked for 100 workers on the job as quickly as possible, he says.

“We developed a plan around how to apply this technology,” Chambers says. “We used robots that crawled through the pipes and pulled hoses that sprayed the abrasive sponge media. Then we vacuumed the debris inside the pipes.

“We did a job they were afraid would take a couple of years in just three months,” he continues. “We looked at the problem, customized an innovative solution, mobilized the manpower and saved a ton of time and money for the customer. They were dead in the water, but we got them moving again.”

Another example centers on combined cycle and cogeneration power plants, which use the heated exhaust from natural gas-powered gas turbines to produce steam. That steam then powers more turbines that generate even more electricity.

The only problem? Converting the waste heat into steam requires heat-recovery steam generators, or HRSG, that are difficult to clean because of the way they’re configured, Chambers says.

To solve the problem, the company licensed and applied technology from PowerPlus Cleaning Systems to develop an automated system that uses pulsation shock waves to deep-clean the finned tubes in the boilers, he explains.

The process, which the company calls EPIC, also saves customers money. For example, a recent project at a major Southeast utility resulted in a payback of just 41 days, based on full production, Chambers notes.

“The power plants use far less gas in the units because the heat transfer in the HRSGs is so much more efficient after they’re cleaned,” he says. “This technology application will keep us in power markets for a long time and at the end of three years could be a significant business segment for us.”





Dean Kuhlman, director of safety and quality, reviews safety procedures with staff.

## **"WE DIFFERENTIATE OUR COMPANY FROM COMPETITORS BY OUR SAFETY CULTURE AND DIVERSE SERVICE OFFERINGS, PLUS INVESTMENTS IN EQUIPMENT THAT DOES THINGS FASTER, CLEANER AND SAFER."**

Josh Chambers

humble origins. Thompson started the company in 1986 with just a used power washer and a \$1,000 loan from his mother. His first project was a cleaning and painting job at a stadium in Columbia, South Carolina, Chambers says.

About three years later, Thompson had generated enough business to buy a new hydro blaster and a used vacuum truck. Most of the growth stemmed from word-of-mouth referrals — especially within companies that owned multiple facilities, he says.

"Greg kept investing in the business and eventually opened a second division," Chambers says. "Then he started to hire additional people to help him expand and scale the business."

Most of the growth was organic for the first decade or so, but that changed when Thompson began acquiring small complementary businesses in states such as Tennessee, Kentucky and Louisiana. He also expanded into construction; he now serves as the CEO of that arm of the company, while Chambers heads up the industrial-cleaning sector.

### **SUCCESS FACTORS**

What are the chief keys to the company's success besides the emphasis on employee safety? Customer diversity; high barriers to market entry by competitors, due to the major capital costs associated with industrial-cleaning equipment; and service diversity, reflected in the company's focus on so-called life cycle services, Chambers says.

"We're unique among multisite competitors in that so many of our clients are diversified," he says. "Most of our larger competitors rely on a single industry for their core services, such as refineries or petrochemical plants."

As for life cycle services, Thompson Industrial Services prides itself on being a single-source provider of everything a customer might need, from the construction and precommissioning phase of an industrial plant to daily on-site services and periodic maintenance shutdowns to decommissioning facilities, he explains.

Looking ahead, Chambers says he expects the company to continue to grow, both by attracting new clients and selling more services to existing customers. "We'll continue to push into refinery and petrochemical markets along the Gulf Coast because we already have a strong foothold in those markets," he says.

In addition, the company will also consider acquisitions of or partnerships with companies that either provide similar services in areas in which Thomp-



Josh Chambers, president and CEO

son Industrial Services doesn't already serve or that provide services that augment its existing services, he says.

"We will continue to push for growth, but we're also going to be thoughtful about the way we grow," Chambers explains. "We'll also continue to make our company an even safer place to work by automating where ever we can."

"But the most fun I have is getting additional work and putting more people to work," he concludes. "Growth is a blast." ▼

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# A Higher Level of Training

## SIMULATED, FUNDAMENTALS-FOCUSED INSTRUCTION HELPS HORIZONTAL DIRECTIONAL DRILLING OPERATORS WORK SAFELY AND EFFECTIVELY

BY TIM DOBBINS

**T**he evolution of horizontal directional drilling can be traced back to the early 1970s when 600 feet of steel pipe was installed under the Pajaro River in California. A lot has changed since then.

Continuous advancements in technology like GPS tracking and magnetic steering has taken the art of directional drilling to new levels. With a maze of underground utilities and other hazards to deal with, a lot can go wrong on the job site when a project is not conducted properly. And, of course, you want to minimize downtime for that expensive equipment. But as is the case with every piece of equipment, the drills are only as effective as the people operating them.

Ensuring that you and your team are keeping up with the advancements and changes can seem daunting, but there are companies offering specialized HDD training.

Professional equipment training from manufacturers and dealers isn't a new concept, so developing standardized HDD training was not overlooked.

"As the size of the market continued to grow and the different types of uses for this equipment continued to grow, we quickly saw we needed to have a higher level of training for our HDD products," says Greg Wolfe, director of customer care for Ditch Witch.

According to Wolfe, HDD operations require different training because the unique machines require operators to think differently than when using equipment they are more familiar with.

**"ONE OF THE HARDEST THINGS YOU HAVE TO TEACH IS TO THINK THREE-DIMENSIONAL. MOST OF US SEE TWO DIMENSIONS; WE DON'T ALWAYS SEE WHAT'S BENEATH THE GROUND."**

Greg Wolfe

"It's not like jumping on an excavator or trencher; it's a little bit different. One of the hardest things you have to teach is to think three-dimensional," Wolfe says. "Most of us see two dimensions; we don't always see what's beneath the ground."

Dan Vroom, sales and industrial training manager for Vermeer, also believes that the more frequent personnel changes in today's industry are another reason that having standardized training is so important.



PHOTO COURTESY OF VERMEER

Vermeer officials conduct training on horizontal directional drilling operations, including the use of freshwater tanks.

"As quick turnarounds happen and people are leaving, coming in and swapping positions, we're finding that the guy who was the locator is now on the drill," Vroom says. "Now people are hitting more utilities because they are making the decisions from the drill instead of the locator."

### TRAINING OPTIONS

Whether you are a first-time driller or seasoned veteran looking to brush up on changes in regulations and equipment, using a professional HDD training platform can help equip you with the knowledge to perform on the job site.

"We offer multiple certified training modules online, and they are all free," Wolfe says. "They all start with best practices, and that covers job site safety."

The next Ditch Witch training module, called operational overview, covers the basic operational functions and terminology for HDD equipment operation. This section is great for beginners who have yet to sit on and operate a drill. "The next four modules — drilling fluids, HDD guidance, drill pipe and HDD tooling — make up how successful an operator or, more important, a drill on a job site is going to be," Wolfe says.



Training also includes use of locating equipment to track where the drill is digging.



When in-person training isn't available, manufacturers such as Ditch Witch have the ability to virtually train contractors. They can either be done using conventional screens and controls or a 3D experience.

Ditch Witch offers these training modules online, but it also takes training a step further at a regional level using members of their dealer program. "You can go to Minnesota, or California, or Florida, and you're going to experience different soil conditions," Wolfe says. "By putting this program together, we are able to deliver consistency of training. We truly believe in training at point of purchase in the region of use."

By educating users in a local environment, not only are they getting trained in relatable ground conditions, but they are also involved with the local support staff they can use moving forward.

After the classroom portion, they go into a hands-on, simulation atmosphere. All of the Ditch Witch dealers in North America have virtual reality simulators that allow the operator to experience a variety of different digging sites and applications.

"The beautiful thing with the VR simulator is that if they make a mistake — let's say they hit a utility — in the real world that shuts down a lot of things. With the VR simulator, we can hit reset and send them back to the beginning and start all over," Wolfe says.

This platform provides a safe way for trainees to get a sort of hands-on experience without jeopardizing real

equipment, utilities and the safety of other people. Vermeer also saw the benefits of VR simulation training and will be adding that to their existing training program in the near future.

"We have two courses here at Vermeer that are certified," Vroom says. "One is a one-week course (HDD Circuit I) where you send two people. One person is focused on locating and planning, and the other partner focuses on the drilling, mud mixing, that sort of stuff."

They also offer a course called HDD Circuit II where a single attendee spends two weeks learning all the roles of drilling instead of splitting the hours with a team member.

Both courses begin in the classroom before spending several days doing hands-on training as a driller and locator. A range of topics are covered including drill site safety, soils, drilling fluids, setback calculations, bore planning, rod bend capabilities, calibration and steering commands. The final day of each course gives attendees a chance to test out and prove what they have learned.

Vroom also mentions the importance of safety training throughout operational training. "We like to start out talking about job site accident stories so when they go out for the first time, they have a little bit of reserve and respect."

Another Vermeer offering, the HDD Fundamentals Program, allows dealers to deliver the same content and training at a regional level, limiting travel for attendees and allowing operators to learn in their local ground conditions.

"The content we have created shouldn't be a secret," Vroom says, "so we're making that available to our dealer networks as well. We have the ground; we have the equipment to do hands-on training at the factories; and we have the trainers." He also pointed out that the training truly does focus on the fundamentals, and by doing so, the content learned can be applied no matter what equipment brand the operator is using.

## END GOALS

Though parts of these training options may follow different platforms, the end goals are universal: prepare people to safely and effectively execute HDD drilling jobs, no matter where they are and what they are operating.

According to Wolfe, one of the most important things to remember from training is safety. "Safety comes first. Job site safety is No. 1. When you forget, that's when you get in trouble."

For Vroom, it's confidence: "Confidence in the fundamentals. When they're not second-guessing themselves and they're not listening to someone else who doesn't know the training they've been through, that's the key." ▼



A contractor is taught by a Ditch Witch staff member how to operate a horizontal directional drill.



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# Maximize Your Hydroexcavation Uptime With Cat Pumps

**T**he high-pressure water pump is critical to hydroexcavating, jetting and hydroblasting equipment that needs to perform in a wide range of environments. That's why operators working in the heat of Texas or the cold of Alberta rely on Cat Pumps to provide long-lasting, reliable products wherever they are used.

Equipment builders and system users stake their reputations on system performance. Lost time, production and customer satisfaction cannot be recovered. This is one reason why Cat Pumps is a leading pump and custom-built power unit provider in the industry. With more than 50 years of high-pressure pump manufacturing, Cat Pumps has built a solid reputation.

## CAT PUMPS ADVANTAGE

Equipment manufacturers and operators want to feel confident in their equipment's performance, and Cat Pumps prioritizes high productivity with minimal downtime, fewer repairs and reduced maintenance costs, according to company officials.

The company offers an extensive product line to match exacting system requirements. With a flow range from 0.13 to 240 gpm and pressure capabilities up to 10,000 psi, Cat Pumps has solutions ranging from small portable electric jetters to large truck-mounted units. Those include direct drive, hollow-shaft pumps (motor or engine driven), engine-driven gearbox, hydraulic or engine-driven solid-shaft pumps, belt drive, standard pulley and clutch.

When quality counts, Cat Pumps is the go-to choice for high-pressure water pumps and systems. Down to the last detail, the company's products are designed to keep your equipment running longer.

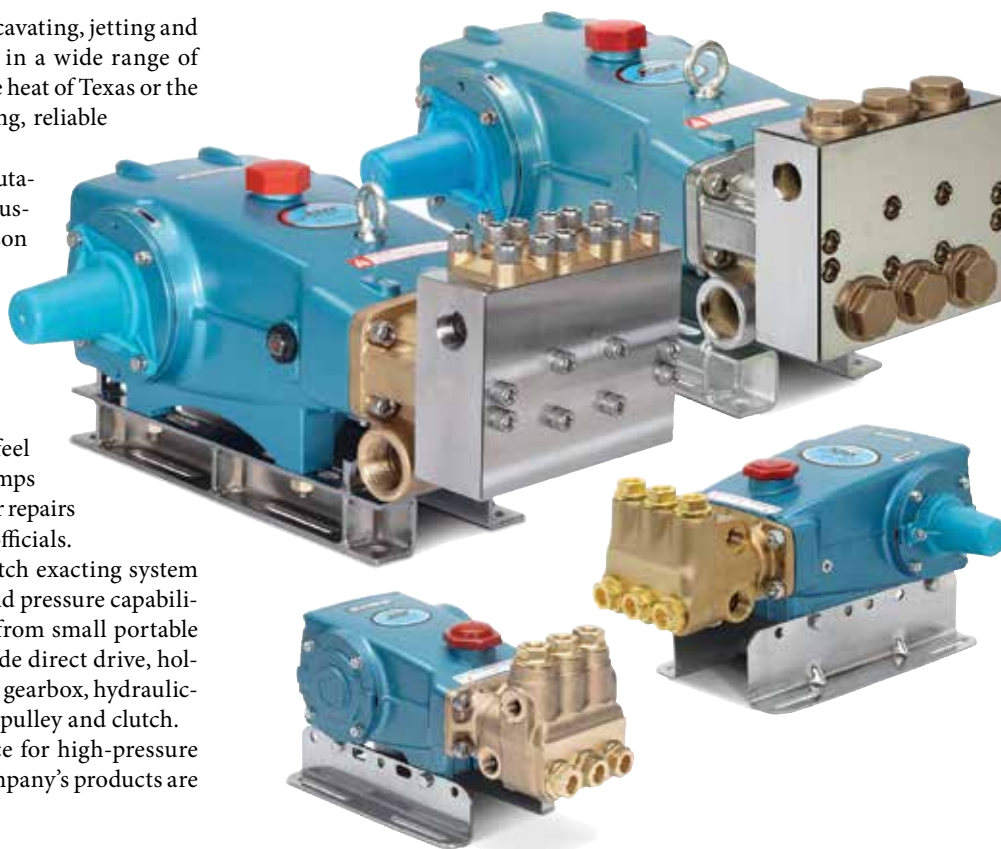
## MEETING RIGOROUS DEMANDS

Cat Pumps manufactures and supplies high-end industrial triplex high-pressure plunger and piston pumps and related products. With a reputation of being a premier pump supplier, the family-owned Minneapolis company designs pumps that meet the rigorous requirements of markets like high-pressure cleaning, hydroexcavation, heavy-equipment washdown and seawater reverse osmosis desalination.

From initial design to materials and manufacturing, dedication to quality and service has been the foundation of the Cat Pumps philosophy since its founding more than 50 years ago. "The company was started out of necessity to develop a new pump design that was dependable, efficient and long lasting,"

says Scott Bruggeman, vice president of sales and marketing. "We've adhered to those ideals, and today Cat Pumps products are in use in thousands of applications around the globe."

Performance capabilities include a flow up to 240 gpm and pressure up to 10,000 psi; the company's product line boasts more than 1,000 pump models. There's an industry-leading staff on hand to assist with inquiries into everything from troubleshooting to custom system design, and Cat Pumps has a 99.7% order fill rate with 95% of orders shipping within 24 hours, according to Bruggeman.



**Cat Pumps** embraces a zero-defects manufacturing philosophy with its products produced in ISO 9001-registered facilities. A distribution channel that covers the globe and sales and support operations in the U.S., United Kingdom, Belgium and Germany ensure Cat Pumps products and representatives are available everywhere high-pressure water and other fluids are at work.

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# How All Terrain Technology Helps in Rock Drilling

The game changed 25 years ago for the horizontal directional drilling industry with the introduction of a dual-pipe, rock drilling package. This All Terrain technology means operators have an option outside of powering the drill bit primarily with drilling fluid using a mud motor.

Mud motors are still a common tool found in the HDD industry. They take drilling fluids that are pumped downhole, through the drill string at high volumes, and into a rotor and stator, and they transfer that into mechanical power that drives the rotary bit on a mud motor. Mud motors are high-fluid volume downhole tools that can produce high drilling fluid pressures downhole and increase the possibility of inadvertent returns.

"Inadvertent returns happen when the drilling takes the path of least resistance to the surface, does not follow the designated path of the bore and makes its way through to the surface in unwanted areas," says Jeff Davis, Ditch Witch's HDD product manager. "Mud motors can often send much more fluid downhole than what is actually needed on the job."

For example, a bore that requires 20 gpm of mud flow to efficiently flush the bore of cuttings could end up using an additional 180 gpm of fluid to run the mud motor. And, as the drill units become larger or the ground harder, mud motors can send as much as 10 times more mud downhole than what is needed to clean the borehole, according to Davis.

The additional drilling fluid results from inefficiencies of creating mechanical power. To accumulate enough energy for the drill bit, mud often flows over a 15- to 30-foot power section. "On average, only 50% of the power generated makes it downhole. In comparison, 95% or more of the HDD unit's inner drive power is successfully transferred downhole using All Terrain systems," Davis says.

## ABOUT ALL TERRAIN TECHNOLOGY

A switch from powering the bit with drilling fluid to All Terrain technology helps operators minimize how much fluid is pumped downhole. All Terrain systems provide a way to use the HDD unit's power more efficiently for driving the drill bit.

This is possible because of the dual-pipe technology offered by All Terrain systems. With an inner drive shaft that reaches back to the HDD unit, these motors physically control exactly how much horsepower is sent to the bit.

By reducing operator reliance on drilling fluid, All Terrain technology is an efficient power option. This direct connection to an HDD unit also reduces the overall size of an All Terrain system. Instead of a long power section, All Terrain systems are between 3 and 5 feet long. And by placing the electronic locating package in the middle of that system, the shorter length puts the package 1 to 2 feet behind the bit.



"Locators are then able to more accurately track the location of the drill bit's cutting face, instead of predicting where the bit could be when the electronics package is embedded behind a mud motor's 15-foot power section," Davis says.

A small footprint is becoming a common requirement on HDD job sites. All Terrain technology generally provides a smaller job site footprint than mud motor-driven job sites, partially due to having to use less fluid. Large volumes of fluid usage on the job site comes with larger tanks and larger reclamation systems with a mud motor, according to Davis.

All Terrain technology is one of those technological advances that has the potential to generate a huge impact. The dual-pipe system lets operators control how much fluid is used on varying job sites. And, by keeping drilling fluid to a minimum, HDD crews can decrease the risk of inadvertent returns and stay efficient and profitable on any job site.



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Ditch Witch invented the underground utility construction industry, and today it designs, manufactures and markets the most complete line of directional drills, drill pipe, HDD tooling, vacuum excavators, trenchers, chain, teeth and sprockets, stand-on skid steers and vibratory plows. Handcrafted in the U.S., its products are supported by the Ditch Witch dealer network with more than 175 locations worldwide.

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# Custom-Built GapVax Hydroexcavators Are Ready for Any Digging Job

**G**apVax hydroexcavators are multipurpose systems for virtually every wet-dry vacuum project imaginable. Constructed of 1/4-inch ASTM A572 Grade 50 steel, the company's HV56 has a 15-cubic-yard debris body and water tanks from 350 to 1,200 gallons.

Specs include a positive displacement blower rated at 5,250 cfm with 28 inch Hg. GapVax's patented filtration design includes five cyclones, which prolongs the life of the filter bags and eliminates the costly threat of material entering the vacuum pump. The tailgate is fully opening, field adjustable and also has four fail-safe, individually adjustable locks that ensure a complete seal.

Optional equipment includes a cold-weather recirculation package, sludge pump, auger unloading system, body pressurization system, remote pendants, wireless remotes and more.

Whether you're excavating, locating utilities, digging potholes, tunneling, slot trenching, conveying dry gravel and sand, or doing general cleanup, the GapVax can handle any of your vacuum needs.

Low maintenance, ease of operation and overall design have established GapVax units as an industry leader. They're also custom-designed to meet the needs of the customer. A complete list of standard features, as well as optional equipment, can be found online at [www.gapvax.com](http://www.gapvax.com).

## COMPANY HISTORY

In 1977, disaster struck the small city of Johnstown, Pennsylvania. A massive flood disabled the once thriving steel town, prompting Gary A. Poborsky to purchase a used 1,000-gallon septic pumper and help his neighbors and community get back on their feet. It was out of this unfortunate event that GAP Pollution & Environmental Control was born.

As GAP continued to grow, Poborsky decided to address the equipment issues they were facing in the field. In 1989, GapVax was started with the mission to design and build high-quality industrial vacuum equipment. Armed with more than 20 years of direct service industry experience and the passion to improve the products used by the workers at the end of the hose, GapVax vacuum trucks today are renowned for high-efficiency filtration, low maintenance and durability. GapVax's diverse line of products has earned it a reputation of delivering reliable service in the toughest work environments.



GapVax currently spans 15 acres to include 250,000 square feet of manufacturing space at the former U.S. Steel site in Johnstown. "We pride ourselves on keeping manufacturing jobs in Pennsylvania and employ 120 people and counting," says a company spokesperson. "Our second location, GapVax Gulf Coast, opened in 2014 and sits on 5 acres with a 7,800-square-foot facility for sales, service and parts. Mitchel Halbardier is the operations manager for our Deer Park, Texas, office."

Across the U.S. and Canada, GapVax has five regional sales managers and 15 dealers to meet the needs of its customers. GapVax has a full selection of parts and accessories, not just for your GapVax unit, but for other brands as well.

"Our Gulf Coast office also has parts on hand," says the spokesperson. "Scott Bair, our parts manager has been a part of the GapVax family for 30 years. His knowledge is second to none."



**GapVax** is a manufacturer of industrial vacuum trucks and sewer trucks. The company offers a full line of accessories, hoses and replacement parts. GapVax units are custom-built by the operator, for the operator. **888-442-7829 | [inquiry@gapvax.com](mailto:inquiry@gapvax.com) | [www.gapvax.com](http://www.gapvax.com)**



# Vacuum in Tight Spaces With Elastec's Trailer-Mounted PACS System

**T**he Elastec PACS municipal vacuum trailers are durable, easy-to-use vacuum trailer systems designed for municipal use. Easy to tow and maneuver in congested workspaces, these rugged vacuum systems are purpose-built to clean up oil, liquids, solids and sludge.

Elastec trailer-mounted vacuum systems are designed to go where large vacuum trucks can't and for jobs where vacuum trucks are not cost-effective. Certain areas, like dense urban streets or small rural access roads, aren't always accessible by larger vacuum trucks. The Elastec PACS is a suitable system for these scenarios.

## OPERATOR SAFETY

These units were designed with worker safety in mind. The center-mounted controls enable operation from both sides of the unit to keep workers away from traffic. The optional boom arm and water jetter allow for potholing and hydroexcavation jobs.

Considerable time can be saved by using hydroexcavation while inspecting lines with minimal ground disturbance. Uncovering buried utilities with the PACS system can save money while avoiding the logistics of using heavy equipment. It also keeps private property intact.

## TRAILER SPECS

Two models of the PACS municipal vacuum trailer are currently available: the PACS 920 and the PACS 2000. The PACS 920 features a 74 hp diesel engine, 920 cfm at 15-inches Hg suction and a 4-inch-diameter hose.

The PACS 2000 features a 118 hp diesel engine, 1,866 cfm at 16-inches Hg suction and a 6-inch-diameter hose. Both systems have a 1,000-gallon tank capacity, 200-gallon freshwater tanks and a power-wash system with 5 gpm at 3,000 psi.

The full PACS vacuum trailer line boasts nine standard models, as well as the ability to custom-build a system to suit your needs. The most common scenarios for using PACS include mines, nonhazardous tank cleaning, road spills (ATEX unit), power stations, loading bays, hydroexcavation, remediation, oil spill response, general cleaning, utilities, airports, railroads and animal farms.



A line of options and accessories are available, which include transfer pumps and oil skimmers that can be operated with the PACS auxiliary hydraulic circuit, rear doors available in two sizes, multiple engine and vacuum pump combinations, dry particulate filters, water injection collars and other details to build a customized system for your project.



**Elastec** has more than 75 years of combined manufacturing experience and has locations in Carmi and Fairfield, Illinois, along with American Marine in Cocoa, Florida. The company designs, develops and distributes environmental products such as oil spill response equipment, floating containment booms and barriers, and portable incinerators. Elastec revolutionized oil spill recovery technology with the invention of the drum skimmer in 1990. Since then, the company has developed a broad portfolio of environmental cleanup products, including oil skimmers, oil booms, boom reels, Hydro-Fire Boom, American Fireboom, BoomVane, work boats, SmartAsh, MediBurn, Drug Terminator incinerators, turbidity curtains, Brute Boom, PACS vacuum trailers, heavy-duty portable vacuums and trash/debris devices to keep our world clean.

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PACS 2000 Shown



# PACS VACUUM SYSTEMS

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# Improved Time on the Job, Decreased Tooling Costs With Evolution Drilling Tools

It's no secret that drilling tools can become damaged when they're not stabilized in the hole and rotate eccentrically — a problem that is especially noticeable with the small-diameter pipe and heavy tools used in horizontal directional drilling.

This eccentric rotation causes some areas of the tool to do a whole lot of work, and other areas to not do any work at all, which decreases your rate of penetration. This problem gets worse as the diameter of the tool increases, because the weight of the tool works against you as the tool rotates.

With PDC tools, when you get just a few cutters doing all the work, combined with the weight of the tool, you end up with damaged tools — many times damaged beyond repair. This is why you see a lot of rusty, used up PDC hole openers laying around repair shops.

## STABILIZER RING

Evolution Drilling Tools are stabilized with the company's Cross Guard stabilizer ring. This keeps the tool centered in the hole, drilling efficiently while avoiding costly damage. When the company's hole openers are used in conjunction with its Pre-Ream near-bit stabilizer in front of the hole opener, the result is a stable assembly that drills quickly and avoids damage.

## MODULAR DESIGN

Even with stabilization, damage is sometimes inevitable. Evolution hole openers are a modular design, and blades can be removed and replaced with new blades if necessary. This generally saves money compared to purchasing a brand-new tool.

In addition, Evolution Drilling Tools has a proprietary repair method for its tools, allowing PDC cutters to be installed back where they should be, even if the pockets that the cutters sit in are totally worn away, according to the company spokesperson.



**Evolution Drilling Tools** is based out of Quanah, Texas, and Ogden Utah, and specializes in developing tooling for oil and gas, mining, HDD and general drilling applications.  
**940-704-5732 | [info@evolutiondrillingtools.com](mailto:info@evolutiondrillingtools.com)**  
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# 9 OUT OF 10 GIRLFRIENDS AGREE... **A RING ADDS STABILITY.**

## HDD HAS EVOLVED.

When a PDC tool is not properly stabilized, it tends to rotate eccentrically. This causes a few of the PDC cutters to do almost all of the work, while other PDC cutters on the tool pretty much just hang out and watch.

Our proprietary Cross Guard™ stabilizer ring keeps our tools centralized and stabilized in the hole, preventing the poor performance and costly damage that you've been forced to accept with other PDC tools for HDD applications.



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## Highly Flexible Boomer Hose by Kuriyama Promises Long Life

**K**uriyama recently introduced The Boomer, Alfagomma T704HA Series, industrial sewer vacuum hose that offers a unique degree of flexibility while still maintaining high abrasion resistance. The secret to its durability is its 1/4-inch-thick, red gum rubber inner liner and UV-resistant, corrugated outer cover. The abrasion-resistant tube is especially designed for wet or dry applications where severe abrasion is a factor.

### DURABILITY AND FLEXIBILITY

Shaun Munsch from American Vactor Services in Crystal Lake, Illinois, was one of the first to try the hose, using sections on his upper and lower booms since August 2019.

"I'm impressed with the hose and its performance," Munsch says. "I've given it a real workout. Just last week I was working in a sand pit, sucking pure sand for five straight days. The red gum rubber tube didn't even show any wear. You guys are going to put yourselves out of business with this hose: It lasts so long."

In addition to its abrasion-resistant liner, The Boomer's flexibility also contributes to its long service life. Hoses used in the upper boom tube position on vac trucks are subjected to extreme amounts of flexing, bending up to 90 degrees. This bending puts additional stress on hoses, potentially causing the liners to tear or separate. The Boomer's flexibility allows it to rotate at these extreme angles without fear of damage.

### SIZES AND SPECS

The hose is popular for vac truck service, along with use as a drill cutting suction hose in mobile drilling rigs. It has a service temperature range of minus 40 degrees F (minus 40 degrees C) to 212 degrees F (100 degrees C) and a steel helical wire, which can be grounded for static safety. It's available in size 2-, 3-, 4-, 5-, 6-, 8- and 10-inch inside diameter. All sizes are rated to full vacuum, and it offers a pounds-per-square-inch safety factor of 3:1 in most sizes.



**Kuriyama of America Inc.** is part of Kuriyama Holdings Corp. and first opened its doors in 1968. Located in Schaumburg, Illinois, the company develops and markets a complete line of thermoplastic hose and accessories. Today, the Kuriyama of America group of companies includes eight subsidiaries and six distribution centers, as well as numerous distributors, providing a complete line of thermoplastic, rubber and metal hose products and accessories, including couplings and fittings, for use in industrial and commercial applications.  
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# Feature-Rich RAMVAC Vacuum Excavators Prioritize Easy Operation and Maintenance

**W**ith large capacity and great features, the RAMVAC HX hydroexcavator provides powerful vacuum and high-pressure water in a conventionally sized vacuum excavator.

RAMVAC's full-size hydroexcavator offers debris body sizes from 9 to 15 cubic yards, while the mid-size truck delivers big vacuum power in a compact footprint with 3- and 6-cubic-yard debris body offerings.

## HYDROEXCAVATOR FEATURES

On average, RAMVAC trucks offer an approximately 36-inch-shorter footprint and a payload capacity 2,500 pounds greater than similar trucks. The 8-inch vacuum system features a 4,400-5,400 cfm and 18- to 28-inch blower capacity, providing all the vacuum power needed for any horizontal directional drilling application.

The water system includes a 1,300-gallon water tank, 10 gpm at 2,500 psi water pump and 400,000 Btu water heater, all located inside an 80,000 Btu heated enclosure.

The directional discharge system allows operators the ability to offload debris back into a container or back into the excavation site when a job is done — without the mess of dumping your tank. This system also features a reversible blower, allowing operators to blow any obstructions out of the dig hose while still staying in full operation.

Other features include a long-range wireless remote, NEMA 4 electrical system, 800,000 Btu water boiler, three-stage cyclonic filtration system, vacuum enhancer, hydrostatic blower drives and a 10-micron final filter. RAMVAC's Dig Deep boom carries powerful airflow while providing its operator with the ability to dig 10 feet below grade.

## AX AIR EXCAVATOR

RAMVAC also offers its AX air excavator, which is mounted on a Class 6 chassis, making the AX a non-CDL vehicle. Due to its single-engine design, operators can excavate with both air and water, effectively requiring only one truck.

Additionally, all AX water systems are contained within a single heated enclosure for cold-weather application. This truck also provides the ability to pothole using a 4-inch port or perform major excavating using a 6-inch port.

RAMVAC offers a variety of blower capacities, including 18- or 27-inch Hg, 1,400 or 3,000 cfm. Standard payload capacities for the AX truck is 5,000 to 12,000 pounds. Its hydraulic rear door allows operators to dump spoils quickly and easily.

With such a powerful vacuum, the AX allows you to customize your blower to achieve the results you need in any application. The AX series also comes standard with RAMVAC's Dig Deep boom. From tool storage to operation controls, this air excavation truck is designed to make overall operation and maintenance simple.



## OPERATION AND MAINTENANCE

RAMVAC equipment, like all Sewer Equipment products, are easy to operate and maintain. All major functions and maintenance points are accessed from ground level for increased operator safety.

Additionally, 12-volt electrical controls and manual hand valves allow for maintenance to be simple and any required troubleshooting to be done in the field. Due to the simple design, replacement parts are readily available at any standard hardware store and computer troubleshooting isn't required due to the use of standard electrical relays.

RAMVAC regularly takes feedback from end users and operators and makes it a point to engineer both safety and convenience into its equipment, according to a company spokesperson.



**RAMVAC Vacuum Excavators** is manufactured by Sewer Equipment, a leading manufacturer of vacuum excavation and sewer cleaning equipment with a 75-year history. RAMVAC offers a complete lineup of hydroexcavators, air excavators, industrial air movers and catch basin trailers.

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# EXCAVATE WITH AIR AND **NO MERCY.**

The RAMVAC AX combines powerful vacuum, a single engine design, compact footprint and non-CDL requirements, making it truly unique in the marketplace. Designed with all major operation and maintenance points accessible from ground level, operators can work both efficiently and safely. The AX offers the ability to pothole through a 4" port or conduct major excavating through a 6" port, meeting the demand of any applications.

- Blower capacities of 18" or 27" Hg, up to 3000 CFM
  - Standard payload capacities up to 12,000 pounds
  - Dig Deep Boom allows for digging 10 feet below grade



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# Break Down the Barrier of Entry With Rock Rental's Affordable Vacuum Excavators

**T**he cost of new equipment is a barrier to entry for many contractors. That's something Rock Rental understands, as it offers a full fleet of rental and used equipment at affordable prices, available immediately.

To ensure the equipment will fit your application, Rock Rental provides demonstrations of equipment prior to purchase.

## HYDROEXCAVATION EQUIPMENT

In order to meet the needs of its customers, Rock Rental offers a variety of vacuum excavator brands with different optional content. With both air excavators and hydroexcavators available, the application choice is your decision.

With hydroexcavator debris body sizes ranging from 3 to 15 cubic yards and vacuum systems from 4,400 to 5,400 cfm at 18 to 28 inches Hg, the company has the power on hand to meet your specific needs.

Most hydroexcavators in the fleet offer 1,300 gallons of onboard water, and all water systems are contained within an 80,000 Btu heated enclosure to eliminate freezing. Optional content includes long-range wireless remote controls system, vacuum enhancer, hydrostatic blower drives, an upgraded 800,000 Btu water heater and directional discharge system. This system features a reversible blower, allowing operators to blow obstructions out of the vacuum hose while still staying fully operational.

Operators also have the ability to offload debris into a container or back into the excavation site when the job is done. Many offer a Dig Deep boom for digging 10 feet below grade, NEMA 4 electrical system, hydrostatic blower drives and 10-micron final filter.

## AIR EXCAVATORS

Rock Rental carries both CDL and non-CDL air excavators to meet the needs of any contractor. With vacuum power from 1,400 to 3,000 cfm at 18 to 28 inches Hg, the company's air excavation trucks also carry onboard water, should your application call for it.

Standard payload capacities range from 5,000 to 12,000 pounds, and a hydraulic-powered rear door allows operators to offload debris with ease. Rock Rental offers different hose sizes for different applications, including 4-inch systems available for potholing and 6-inch systems available for contractors doing major excavation.



## NATIONWIDE SERVICE AND SUPPORT

Prior to delivery, every piece of equipment is thoroughly inspected and serviced by a team of certified mechanics to ensure machine reliability and safety. Factory-trained service technicians are available to perform maintenance or repairs on site at your location or at one of Rock Rental's certified service centers across the U.S.

Whether you need a short-term rental, a lease program or rent-to-purchase using a tiered-equity buyout, Rock Rental aims to meet each customer's individual financial needs. Rock Rental works with multiple nationally recognized finance institutions to find financing solutions quickly and get you into the equipment you need at a price you can afford.

Maintaining the nation's underground infrastructure is of key importance, not just in these uncertain times, but for future generations as well. This ever-present need for continuous repair and maintenance of underground utilities is why the demand for vacuum excavation services continues to rise. Contractor advantages often come in the form of work quality and service pricing, which is tied to the effectiveness of their equipment.



**Rock Rental**, a Sewer Equipment company, is a trusted nationwide dealer of preowned and rental equipment. With a large fleet of sewer cleaning and vacuum excavation equipment and nationwide service facilities, Rock Rental is dedicated to providing affordable solutions for municipal and contractor needs.

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# The New Normal: Shifting Routines and Social Distancing

**P**ublic works employees are among our unsung heroes during the COVID-19 global crisis. Let's give a nod to the workers in orange vests who manage our electrical, water and sewer, roads and other services that are critical to maintaining our quality of life.

With social distancing requirements, it's anything but business as usual for these crews as they adjust to the pandemic. These departments are pivoting and coming up with new plans to get the work done by leveraging a positive consequence of stay-at-home directives: less traffic.

## UTILITY WORKER SAFETY

It turns out there are a lot of roadway-related jobs where cars get in the way including pothole filling, accessing water and sewer manholes and traffic signal maintenance. These are just a few of the jobs that require a little more effort and attention to worker safety. The goal of keeping motor vehicles separate from work crews just got a bit easier.

Common practices include arranging night shifts and other nonpeak times to lessen the impact on our commutes. Setting up work zones with orange cones and flaggers is another common approach. Right now, fewer cars equal less disruption for drivers and workers.

## SOCIAL DISTANCING

Any work activity taking place now, of course, happens in accordance with local guidelines and adherence to the Centers for Disease Control and Prevention's social distancing and other directives. Here's some of the adjustments we're hearing about:

- Staggering individual start times so everyone's not showing up to the shop at the same time.
- Dispatching crews in separate vehicles, oftentimes coming directly from their own doorstep and meeting at the job site.
- Ongoing regimens of disinfecting common areas like tool cages and equipment sheds.



- Hand-washing stations (as seen near portable restrooms at outdoor events) located near the entrance to buildings and garages.

## COMMUNICATION TOOLS

When the work requires partnering up and coordinating together, teams are finding that the use of communication headsets to enable normal conversations helps minimize safety concerns. Even when environmental noise is high, you can easily converse by simply speaking as you would in a normal conversation.

There's no need to yell or get someone's attention by getting too close. Also, if you're pulling personnel from other departments to backfill a position or two, headsets allow for quick questions and feedback between a veteran and someone who's not as familiar with the work.

Creative planning and a solid effort to comply with CDC guidelines and safety regulations is allowing public works teams to stay on track and safe on the job.

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Communicate safely at social distance to move projects forward, avoid work stoppages, and effectively train new employees.





## Safe Digging Made Easy With TRUVAC's HXX Vacuum Excavator

**P**roviding maximum versatility and safe digging has never been easier with the HXX vacuum excavator. Part of the TRUVAC line by Vactor, the HXX is a full-sized titan resulting from years of research, testing and customer input. It is capable of handling all your mid-sized and full-sized excavation needs.

The HXX prioritizes adaptability, as it features two debris body sizes and numerous axle configurations. Vacuum system choices include a wide range of types, flow and vacuum ratings. Air excavation and hydroexcavation offer options for all conditions, while the truck features multiple storage choices for a variety of applications.

### FEATURES AND SPECS

With proven performance, rugged construction and maximum payloads, this truck is capable of delivering job site productivity. In addition to its primary duties, the TRUVAC HXX can power jackhammers, tampers or other tools, and it's powerful enough to tow mini-excavators, drills for horizontal directional drilling or job supply trailers.

The truck features an 8-inch boom, extendable or telescopic to a 22-foot reach and has 320 degrees of rotation. There are multiple chassis options and two debris body choice: a 50-degree tilting 12- or 15-cubic-yard debris body. Its vacuum system has positive displacement blower options rated at 18-inches Hg and 4,970 cfm; 28-inches Hg and 5,200 cfm; or 28-inches Hg and 6,176 cfm. It's also available with a two-stage centrifugal compressor. The truck's water system handles either 10 or 20 gpm with a 3,000 psi water pump running DigRight technology.

### TRAINING OPPORTUNITIES

You have better things to do than worry about your vacuum excavator. Still, you probably wonder: Will it break down? What happens if it does? Who do I call? You don't need to ask those questions with TRUVAC.

TRUVAC excavators are built to last and stay on the job long after the others have thrown in the white flag. However, if something happens, TRUVAC has

you covered — and that all starts with better excavator training. The company offers comprehensive hands-on operations, maintenance and service training programs for its unique products. Visit [www.truvac.com/training](http://www.truvac.com/training) for details and training registration.

### USED EQUIPMENT WEBSITE

Whether you're buying new or used, the TRUVAC HXX is ready to take on any mid- or full-sized excavation job. For those seeking used equipment, Federal Signal Environmental Solutions Group recently announced the launch of [www.vactorused.com](http://www.vactorused.com). The website is the official platform for factory-authorized Vactor and TRUVAC dealers to showcase quality used equipment.

Environmental Solutions Group's dealers are ready to welcome an increasingly engaged buying audience to its virtual used-equipment website. Site visitors can browse inventory and connect directly with their local dealer to make inquiries and offers on vacuum excavators, industrial vacuum loaders, combination sewer cleaners, catch basin cleaners and more to come. As the demand for contactless transactions increases, the [www.vactorused.com](http://www.vactorused.com) platform will see continued enhancements to deliver an optimized buying experience from trusted dealers across North America.



**Vactor Mfg. Inc.** manufactures the Vactor brand of sewer and catch basin cleaners, the Guzzler brand of industrial vacuum loaders and the TRUVAC brand of vacuum excavators, featuring innovative technology and customizable designs. Based in Streator, Illinois, Vactor has authorized dealers and service centers across North America.

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## Bald Eagle Pellet Offers Absorption, Solidification and Stabilization

**T**he Bald Eagle Pellet staff understands the absorption, solidification and stabilization needs of the hydroexcavation, directional drilling and wastewater management industries. They deliver all of their absorption products in a professional and time-sensitive manner to your job sites throughout the U.S.

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Bald Eagle Pellet's absorption, solidification and stabilization pellets are suitable to use for hydrovac slurry and horizontal directional drilling cuttings. Adding the company's pellets to your wet hydroexcavation spoils or slurry will eliminate the threat of runoff or leaching into waterways, turning wet waste into dry waste, according to the company.

The absorption pellets activate on contact, allowing waste material to solidify quickly. It can then be left on site or transported off site as a solid waste.

Bald Eagle Pellet offers a super-absorbent polymer with an absorption ratio of more than 30:1. This material instantly activates on contact with any amount of water. Polymer is offered in a pure granular form or it is premixed with pellets.

Bald Eagle Pellet's absorption, solidification and stabilization pellets aim to help your company become more environmentally responsible while saving your customers time and money.

From left,  
Sarah Dean,  
Mari Jo Reese,  
Dave Reese,  
Hunter Reese,  
Carrie Reese and  
Aaron Reese.



**Bald Eagle Pellet Co.** and **Center Hardwood LLC** are family-owned and -operated businesses with five generations of experience in the forest products and absorbent industries. Their main office, mills and warehouses are located in Tyrone, Pennsylvania, and have delivery options and production throughout the U.S. Bald Eagle Pellet Co. and Center Hardwood LLC are ready and able to meet your absorption, solidification and stabilization needs.  
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## How to Choose the Right Air Compressor

**M**any times choosing the right method of air compression is just as important as choosing the capacity (cfm) and pressure (psi). Think about it like this: Do you need continuous air like that used by jackhammers, piercing tools or any air tool running for longer than 20 minutes at a time, or do you need intermittent air like impact wrenches, drills or other short-duration tools?

"If you need continuous air, then you need a rotary screw-type compressor. If you need intermittent air, then you want a piston-type compressor," says Chuck Hamilton, director of marketing for BOSS Industries.

### WHAT'S THE DIFFERENCE?

A rotary screw compressor is air on-demand, meaning you have immediate, continuous air that can run for hours or even days. The bonus is that there's no air reservoir needed. This design uses two rotating lobes that are in an oil-flooded system. The oil serves primarily three functions: It seals the tolerances between the lobes to create compression, helps lubricate the bearings on the rotors, and transfers the heat from compression to the cooler.

Meanwhile, a piston-type compressor (reciprocating compressor), uses the piston and rings to build pressure and fills an air reservoir. This requires a short pressure build time to fill the appropriate size air reservoir, but is ideal for on/off, short air-usage applications.

### WHAT'S NEXT?

You need to define what cfm you need by what tools you will be using. "We recommend sizing your compressor to the rated specifications for your tools to ensure the life span and investment in your air tools," says Hamilton. "Choosing the right type and size of an air compressor is just as important as choosing the right tool for the job."

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**BOSS Industries LLC** was founded in 1988 and is a leader in PTO-driven rotary screw compressors, engine-driven rotary screw compressors and hydraulically driven rotary screw compressors. The company also has a wide selection of rotary screw air ends for OEM applications and also offers a range of piston air compressors. The company's compressors are ideal for the utility truck and service truck industry. BOSS Industries is located in La Porte, Indiana, and operates across the world through its distributor network.

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# Custom Truck One Source Provides One-Stop Vac Truck Solution

**P**ositioning itself as a one-stop shop for every step of the vac truck industry, Custom Truck One Source has seen a growth of 130% in the past three years. As problem-solvers for customers with a large variety of ready truck inventory, Custom Truck can create bespoke solutions based on customer need in real time.

Custom Truck offers used trucks, a national rental fleet of 4,500 units, short-term rental options, leasing, limited production options, a 24/7 call-in customer service line, 24/7 mobile roadside assistance and more than 100 experienced salespeople.

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With 26 sites around the country, Custom Truck can quickly build your next truck. Offering solutions for safer and more efficient excavation, Custom Truck is a single-source option for coded and noncoded vac needs. The company also partners with premium national and regional suppliers to offer a coast-to-coast equipment solution.



**Custom Truck One Source** is an international builder and supplier of custom work trucks based out of Kansas City, Missouri. Initially started by six siblings, the company continues to run on family-driven principles and service for its customers.

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## How Vanair's Air Excavation Can Help You Comply With Municipal Code

**T**here are times a construction project goal is best achieved through air excavation. Municipal codes are major considerations, notes Nikesh Bakshi, OEM sales manager for Vanair, a primary supplier of air compressors for OEMs.

"When you use hydroexcavation, sometimes what you dig out is not allowed to be dumped back in. You have to bring in clean dirt," he says. "With air excavation, many times, whatever dry dirt you collect can be reused for compaction. That's a big deal in an area far away from where you can get clean dirt or if you have to go a long distance to dump contaminated dirt."

Regional water availability, water restrictions and electrical lines on site are other considerations.

### UNDERDECK KITS AVAILABLE

To help accomplish job site objectives and minimize downtime, Vanair supplies a range of ready-to-go underdeck kits, providing up to 300 cfm and 250 psi for most trucks. Retrofit systems for older hydro-excavators are also available.

The underdeck systems provide air power without claiming space above the truck frame or using the hitch.

Dual pressure systems are useful in situations necessitating jackhammer use or breaking up frozen ground before air excavation.

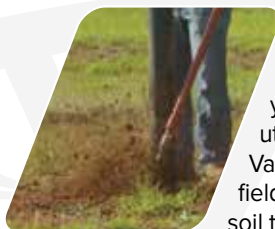
Vanair's engineering team's innovations — driven by end-user requests — include its FailSafe dual-sensor redundancy system for increased productivity. Meanwhile, the ThermalGuard weather protection kit preheats oil for the air system, a bonus for operators in cold Canadian and northern U.S. climates who can work immediately upon arrival to the job site.

With regular maintenance, Vanair offers a lifetime warranty on the system's main air end component.



## Vanair® puts the AIR in excavation

For over 40 years, Vanair has been working with customers in developing cutting-edge air excavation technology



Air excavation provides clean, dry digging when potholing. This advantage allows you to reuse the dry spoils for re-compaction, increasing your productivity, and decreasing your operating costs. Air is nonconductive with underground utilities and eliminates the muddy spoils of hydro excavation.

Vanair's air compressor kits provide you with flexibility in the field to get the job done effectively and efficiently, no matter the soil type.

Vanair's durable, field-proven, space-saving systems are engineered and manufactured in the USA with a lifetime warranty. Our ready-to-go systems are available up to 300 CFM and 250 PSI and can be retrofitted on most existing hydro excavation systems. Contact us for custom kits.



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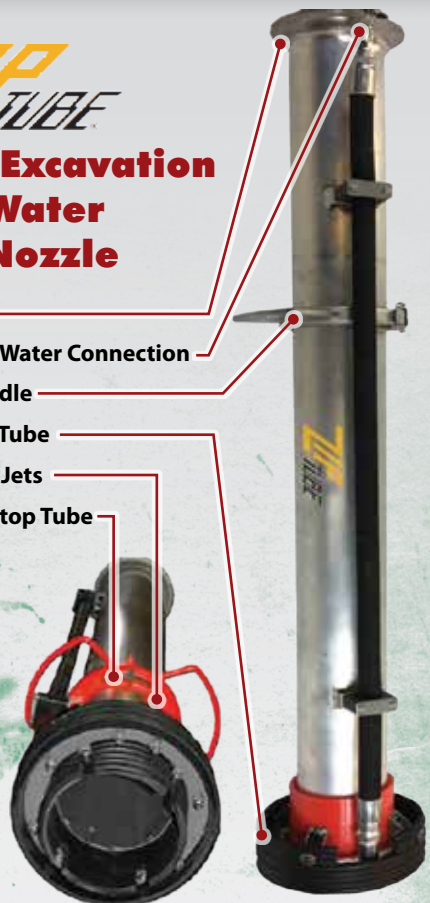
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## Zip Tube Designed With Durability in Mind

**M**ilwaukee Rubber Products Inc. has announced it is now distributing the Zip Tube — a new hydroexcavation suction/water erosion nozzle engineered with a rugged build to withstand harsh environments.

The Zip Tube is built with a 0.100-inch wall, 6- or 8-inch Tuff Tube, and is equipped with an external stainless steel water ring containing 10 (6-inch) or 12 (8-inch) stainless steel replaceable jets that pulverize soil with water pressure. Soil is then removed by vacuum suction through the tube.

It's available with a Vactor style 6- or 8-inch flange, and Super Products Bandlock or Aquatech connection options.

### ENGINEERED FOR SAFETY

Features of the Zip Tube include an adjustable handle with a rubber bump stop inside the water ring. The bump stop protrudes forward to help safeguard the water ring jets against abrasion from rocks, debris and underground services.

There's also a rubber safety tube attached to the exterior of the water ring that helps control the spray of water and eroded material that can splatter during the hydroexcavation process.



**Milwaukee Rubber Products Inc.** has been in business more than 65 years and is based out of Menomonee Falls, Wisconsin. The company stocks and distributes hoses, couplings, valves, pumps, vacuum accessories and safety equipment. It also custom builds rubber parts to exact specification for its clients.

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# The Lightweight Rival Hydrovac T7 Is Made for Urban Settings

**T**he Rival Hydrovac T7 is a lightweight, cost-effective, mid-sized hydrovac unit that is engineered to work primarily in urban settings. The Rival has become a popular choice for contractors who need not only high production in populated areas, but also to travel to disposal sites while loaded with debris within legislated road limits.

## RIVAL T7 FEATURES

The Rival T7 includes a 7-cubic-yard debris body, along with 800 gallons of freshwater storage. The Rival can pressure loads into other vessels, vehicles or tanks in minutes with its hoist and “pressure off” offloading capabilities.

A RaptorLock dump door system allows the door to hold a seal under vacuum or pressure without the use of manual wing nuts. A Robuschi Robox enclosed blower system ensures quiet operation, with 2,650 cfm and full vacuum.

Other features include a 12-volt boiler system, 14 gpm water system and full winterization ability. A full-rotation, 6-inch boom is extendable to 20 feet.

An Aarcomm remote system controls the Rival’s boom, water and vacuum, and it displays real-time truck weight. A full safety package includes a safety railing atop the truck, engineered D-ring tie-offs and boom cradle sensors to prevent driving with the boom deployed.

The Rival has a Western Star tandem chassis with Cummins power, Allison automatic transmission and full locking differentials.



**Rival Hydrovac** develops trucks designed to address size and weight challenges in the hydrovac industry, allowing contractors and municipalities to fill the debris body with most materials and scale the truck legally. 403-550-7997 | [www.rivalhydrovac.com](http://www.rivalhydrovac.com)

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## TOUGHEST WEAR PROTECTION, PERIOD.



## CONTRACTOR CAPABILITIES

### Reduce Wear on HDD Components With Kondex Laser Cladding

Long considered the standard for wear protection, hard-face welding carbides onto horizontal directional drilling components leaves room for improvement. Kondex laser cladding is aiming to be the gold standard of wear prevention. Its greater carbide density delivers a tough barrier against early wear and can be applied with surgical precision to the exact areas of need, according to company officials.



#### LASER CLADDING BENEFITS

Laser cladding has no heat-affected zone to maintain structural integrity. As shown in the microscope comparison image, the differences point to laser cladding as a suitable option. "But the true test is in its performance, and the Kondex flat bits, cobble bits, starter rods and collars consistently outlast traditional parts by two or three times," says a Kondex spokesperson.

## KONDEX

**Konex** is a manufacturer of cutting and wear-resistant components. Its products are currently in use on five continents. The company was established in 1974 in West Bend, Wisconsin. **920-269-4100 | [www.drilldefender.com](http://www.drilldefender.com)**

## THE LATEST: News

### Kleinfelder adds Doherty to its team

Dennis Doherty, P.E., joined Kleinfelder as a senior principal professional. Nationally recognized in trenchless technology, Doherty will provide technical expertise and drive advancement and integration of leading-edge trenchless technologies on oil and gas, utility, water and wastewater, and municipal infrastructure projects. He has 40 years' industry experience, with the last 30 years focusing primarily on the design, construction and management of underground infrastructure through the application of trenchless technologies, including



Dennis Doherty

pipe bursting, microtunneling, auger boring, pipe jacking, the pilot tube method and horizontal directional drilling.

### Sewer Equipment announces new dealers

Sewer Equipment announced its newest full-line dealers: Brown Equipment Co. in Indiana, Ohio and Kentucky and MSC Equipment in Virginia. Since 1968, Brown Equipment has been a knowledgeable resource for sales, parts and service in both the government and private sectors, focusing on street and sewer maintenance equipment. With a history dating back to 1934, the Municipal Sales Co., now MSC Equipment, operates a full-service center with in-stock parts and accessories in Oilville, Virginia. ▼

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## Vivax-Metrotech's vLoc3 Receiver Adds RTK GNSS Functionality

The vLoc3 RTK-Pro receiver by Vivax-Metrotech has added real-time kinematic global navigation satellite systems (RTK GNSS) accuracy to a utility locator.

Using the RTK-Pro internal cellular module with 4G LTE capabilities, the operator can connect to an NTRIP RTK caster that provides RTCM 3 corrections. By utilizing these corrections, the operator can collect utility location data along with the geographical location with survey-grade accuracy. All field data is sent to the cloud and retained in the receiver's onboard storage for review and exporting to external mapping programs.



### PRODUCT SPECS

The vLoc3 series receivers contain eight passive locate modes, fault-find mode and configurable frequencies from 98 Hz to 200 kHz. Visual and mechanical vibration alerts can also be configured by the user, providing warnings for shallow depth, overload, overhead cables and excessive swinging. Optional features include Tx-Link to operate the transmitter remotely.



**Vivax-Metrotech Corp.** is a worldwide leader in the manufacturing of buried utility locators and video inspection cameras.

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Locate Current: 13 mA  
Depth: 3 ft 2.13 in  
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## Happenings

### CALENDAR

**Oct. 5-9**

**Breakthroughs in Tunneling Short Course**, virtual. Visit [www.tunnelingshortcourse.com](http://www.tunnelingshortcourse.com).

**Oct. 5-9**

**Water Environment Federation Technical Exhibition and Conference (WEFTEC)**, virtual. Visit [www.weftec.org](http://www.weftec.org).

**Nov. 10, 12, 17 and 19**

**Pipeline Leadership Conference**, virtual. Visit [www.plconference.com](http://www.plconference.com).

**Jan. 24-29, 2021**

**Underground Contractors Association of Illinois Annual Convention**, Aruba Marriott Resort, Aruba. Visit [www.uca.org](http://www.uca.org).

**Jan. 26-28**

**Underground Construction Technology (UCT) International Conference & Exhibition**, Music City Center, Nashville, Tennessee. Visit [www.uctonline.com](http://www.uctonline.com).

Dig Different welcomes your contributions to our *Happenings* column. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements. We also invite your national, state or local associations and organizations to post notices, news items and learning opportunities. Send contributions to [editor@digdifferent.com](mailto:editor@digdifferent.com). ▼



# THE LATEST: Products



1



3



2



4



5

## 1. MB Crusher MB-S18 screening bucket

The MB-S18 screening bucket is the second-largest screener in MB Crusher's line of attachments. It is compatible with any brand excavator that has an operating weight between 44,100 and 77,200 pounds, and it can be used in various applications such as recycling, utility work, urban construction sites, quarries and mines. Interchangeable panels make it easy to generate material of the desired output size. The MB-S18 screening bucket is also a good fit on projects such as pipelines, where reusing previously excavated material eliminates the need to use supply trucks. 855-622-7874; [www.mbamerica.com](http://www.mbamerica.com)

## 2. Cat Pumps hydroexcavating pumps

More than 50 years of high-pressure pump manufacturing experience has earned Cat Pumps a reputation of producing high-quality, long-lasting pumps. With its dedication to zero-defect manufacturing, ease of service and availability of stock, Cat Pumps designs and builds high-pressure pumps and systems to suit the demanding environments of the hydroexcavation industry. Popular models include Model 56 with 5.5 gpm at 3,500 psi; Model 56HS with 8 gpm at 3,000 psi; Model 660 with 10 gpm at 3,000 psi; Model 3560 with 20 gpm at 4,000 psi or 25 gpm at 3,000 psi; and Model 3570 with 30 gpm at 3,000 psi. 763-780-5440; [www.catpumps.com](http://www.catpumps.com)

## 3. Sewer Equipment 800 Series IV truck jet

The 800 Series IV truck jet from Sewer Equipment offers several features designed for cold-weather applications. The rear door can close completely with the hose reel fully extended, providing maximum heat retention inside the environmental enclosure where water components are stored. A new feature gives up to 20 gpm of hot water to feed the washdown reel, lateral reel and jetting circuits during cold-weather operations. A lack of PTO engagement allows for wintertime recirculation of the water system

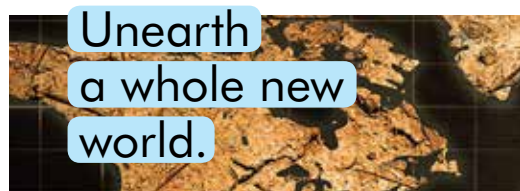
at highway speeds as a standard feature, saving the time otherwise spent blowing down the entire water system between job sites. The addition of a centralized water drain makes winterization easy, as there is only one drain to blow down, and a retractable canopy adds protection from the weather. 888-477-7611; [www.sewerequipment.com](http://www.sewerequipment.com)

## 4. Gradall fixed-thumb grapple attachments

Fixed-thumb grapple attachments from Gradall expand the capabilities of Gradall excavators in emergency applications after severe weather, as well as during routine job site cleanup and demolition. The fixed-thumb grapple is a primary attachment for Gradall Storm Recovery Series models — wheeled excavators designed to provide emergency response in the aftermath of hurricanes, tornadoes and other natural disasters. The grapple attachments can be used to reach out and remove brush, debris and tree limbs. The highway-speed model can be driven at 60 mph to address blocked roadways and provide access for other first responders. 800-445-4752; [www.gradall.com](http://www.gradall.com)

## 5. Mecalac MCR Series crawler-skid excavators

The newly updated MCR Series of crawler-skid excavators from Mecalac is comprised of three models: the 6MCR, 8MCR and 10MCR. The machine provides the swiftness of a skid-steer with the 360-degree rotation of an excavator for versatility and faster travel speeds. The machine features a hydrostatic transmission and drive motor strong enough to take on any job. A dedicated pump drives the motor, making travel speeds up to 6.2 mph possible, reducing time spent traveling across job sites and unnecessary downtime. The three-part arm can be tucked in, even with a full bucket, allowing for extra compactness and mobility without overbalancing the unit in the front, resulting in a zero-turn radius. 508-921-3076; [www.mecalac.com](http://www.mecalac.com) ▼



## This Issue's Feature:

### Nozzle's new movement offers greater results

BY CRAIG MANDLI

There are only so many ways to move water. But **Hydra-Flex** has developed a new one, at least in respect to the hydroexcavation nozzle market. It's the **Machete**.

By moving water in an oscillating motion, combined with a smaller spray angle, the Machete's direct stream provides a more forceful flow and impact. The nozzle provides the cutting power and penetration of a straight tip and the movement of a rotating tip. Whether it's trenching or cutting through compact soils, the Machete acts as a finishing tool for any job. By creating a crisp, straight edge while not undermining itself, the Machete provides a safer top surface environment.

"The concept of using an oscillating motion isn't a new idea, but it's the first time it's been applied to a hydroexcavation nozzle," says Mike Tonies, director of sales for Hydra-Flex. "We consider this the next evolution in hydroexcavating nozzles."

The Machete blasts a 0-degree water stream that oscillates at an optimal speed, creating a 15-degree wedge of powerful flow. This allows it to dig faster in the hardest and most compact soil types. By harnessing the power of a straight-tip nozzle while oscillating, it creates a suitable tool for trenching capabilities. This heavy-duty, high-impact nozzle is constructed of a stainless steel housing and tungsten carbide wear surface. Lab-validated to outlast other Hydra-Flex nozzles, the Machete can withstand harsh environments and provides a longer run than ceramic nozzles. It also comes with a replaceable nylon cover that allows for instant changeability while increasing the overall core nozzles' life cycle.

The unique oscillation design of the nozzle helps reduce undermining that may occur when using traditional rotating nozzles; this helps ensure the operator's safety. Continued use of the nonconductive cover on the nozzle body protects users and sensitive underground utilities. With a controlled oscillation that is faster than traditional nozzles, it allows the technician to save even more water.

"A lot of the hydroexcavation guys we work with are excited about the Machete," Tonies says. "A few who used it during our testing phase noted it moved differently than any nozzle they've ever used. Once they got used to it, though, they loved it."

952-808-3640; [www.hydraflexinc.com](http://www.hydraflexinc.com)

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