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NOVEMBER 2015

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Ted Berry Company President Matt Timberlake on a job site in Saco, Maine. Timberlake has been in the industry his whole life and is the third generation of his family to lead the business his grandfather founded. (Photography by Jessica Woodcock)





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Growing Up In the Business

Evolution of technology and services is paralleled by industry professionals

By Luke Laggis

he sewer and drain cleaning industry has grown up in many ways over the past couple decades, and the technology that supports the services you provide has grown and matured along with it.

Matt Timberlake and the Ted Berry Company, profiled in this issue of *Cleaner*, have followed a similar arc.

The company, founded in 1972 by Timberlake's grandfather, Ted Berry, and his father, Jim, originally sold and serviced agricultural equipment, pumps and industrial equipment.

During the '80s it morphed into a service company that flushed municipal sewer lines, handled pumping and bypasses, and started to take on industrial services for paper mills. Eventually, the company purchased its first vacuum truck.



The company's fleet has since grown to seven combination jet/vac trucks — learn more about maintaining these trucks in this month's Tech Perspective — and Timberlake has grown right along with it. He was in the shop from the time he could walk and now serves as company president.

I like that about this industry. There are a lot of people who grew up in it and are moving their family businesses forward. The industry is filled with people who've seen the impressive evolution in technology and services and who have evolved with it.

The image of the industry has grown up, too. This month's Better Business column takes a look at body art in the workplace. The level of professionalism among sewer and drain cleaners has without question grown in leaps and bounds, and how your technicians present themselves to customers has a big impact on your business.

Tattoos and piercings say nothing about a person's character or their ability to do quality work. I have a few tattoos and my ears are pierced, so I'm certainly not pointing fingers, but to many of your customers they do say something about your level of professionalism. Regardless of where you stand on the issue, as a business owner, that's something you need to take into account.

What are your thoughts on the matter? Is a skilled technician with a full sleeve of ink any less valuable to your company than someone who doesn't have a mark on them that wasn't there when they were born?

We recently relaunched our *Cleaner* Forum at Cleaner.com so you can voice your opinions on issues like this. It's a platform for you and your peers to discuss the issues that matter to you. It's also a way for us to engage each other, to discuss the stories in *Cleaner* as well as your problems and successes in the field.

It's going to take a little while to build up a robust library of questions and in-depth discussion, but we want this forum to be a resource for you. Just like our content is aimed at bringing you new perspectives and insights, the forum is a place for you to connect with your peers and get their thoughts and perspectives on the issues you're facing. It could be anything from tricks for maintaining your jetter, to technical insight for planning a pipe bursting job, or tips for boosting your profitability.

You'll find the recent *Cleaner Forum* posts right on the *Cleaner* home page. Create a user name and join the discussion, or find the answer to your own question.

Visit the site, and enjoy this month's issue. **c**





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NOZZLE KNOWLEDGE Understanding Nozzles and How They Work

Having the right nozzles is a key step to cleaning a sewer or drainline efficiently. There should be no guessing when selecting a nozzle for cleaning operations. Learn how to take the guesswork out of your next service call. >>cleaner.com/featured

HUMAN RESOURCES Hire the Right People

Experience isn't the only — or even most important — factor in building a strong staff. Hiring the right technician is as crucial as having a solid business plan, buying the right equipment and knowing how to treat your customers. Bottom line: You can't succeed if you if you don't have good people. >>cleaner.com/featured



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reasonable efforts to ensure the safety and physical well-being of their employees, but maintaining high standards of safety becomes even more important — and even more challenging — when you have employees working in the field. **J**

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SIGNS of SUCCESS

PROFESSIONALISM AND GOOD PROMOTION PROPEL YOUNG CONTRACTOR TO THE TOP OF THE HEAP IN POPULAR WASHINGTON STATE TOURIST REGION

he power of good promotion quickly became apparent to Ron Smiley, co-owner of Allied Plumbing & Pumps in Chelan, Washington, when he invested in a strategically located building and put up his company sign in 2013.

While ordering Chinese food at a local restaurant, 25-yearold Smiley, wearing a new company uniform, was approached by a stranger who exclaimed that he noticed a new plumbing company in town and congratulated Smiley on the building and the sign.

The business first opened in 2009 when Smiley rented a storage facility, took out a business license and began offering plumbing services. But it wasn't until four years later, after Smiley took a brief hiatus from the business so his



Allied Plumbing & Pumps co-owner Ron Smiley (left) works with Korey Kase to measure and cut a new length of pipe for a pipe bursting job.

wife could attend college in Spokane, that the new building and prominent signage began drawing potential customers' attention.

During the hiatus Smiley worked as a plumber for a large firm, finalized his journeyman license and honed his skills, knowing he would return to his startup operation in Chelan and eventually to nearby Wenatchee.

The rebirth, so to speak, included inviting his brother, Zack, to become a partner.

IT'S IN THE NAME

Smiley had always envisioned his shop as a 24/7 full-service provider. He opted away from calling the company Smiley's Plumbing or Lake Chelan Plumbing in favor of Allied because he felt it was more encompassing and created a better perception. He had the vision from the inception.

Although he started with the most basic of services, it wasn't until the re-emergence of Allied that he and his brother expanded into CCTV, drain cleaning, jetting and pipe bursting in addition to traditional plumbing.

By mid-2015, the company was running seven service vans each with approximately \$8,000 in inventory. There are now six technicians and three office staff, and Allied has quickly become a premier service provider in Chelan and nearby Wenatchee.

When a service call comes in, the company's ServiceTitan software system helps determine which truck is best suited to go on that call. All technicians have expertise across disciplines, but Smiley says they triage the calls coming in to decide which individual they want to respond.

AROUND THE LAKE

Chelan and Wenatchee are situated on Lake Chelan, a 52-mile-long lake in the middle of the state. Total population of the two towns is a little over 45,000 permanent residents, but there is an influx of vacation homeowners during the summer and everything gets busier.

While Allied Plumbing & Pumps was on hiatus in the lake area and Smiley was in Spokane, he was doing more than just working in the field. He was also observing and learning many of the finer points of customer relations, advertising and new technology.

"While working in Spokane I was introduced to pipe bursting. The firm I worked for would occasionally sub out one of those jobs," Smiley says. "I was

Allied Plumbing & Pumps owners Zack (left) and Ron Smiley.

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ALLIED PLUMBING & PUMPS, CHELAN AND WENATCHEE,

WASHINGTON

OWNERS: Ron and Zack Smiley OPENED: 2009

SERVICES: Plumbing, drain cleaning, CCTV, jetting, backflow, pipe bursting

EMPLOYEES: 9

ASSOCIATIONS: PHCC (Plumbing Heating Cooling Contractors)



ABOVE: Ron Smiley (left) and Korey Kase pull the slack out of the cable before hooking up the hydraulic pipe bursting head to pull in a new wastewater line.

BELOW: A HammerHead PortaBurst PB30 sits in the receiving pit ready to pull a new pipe through the existing sewer lateral.



wowed by it - so impressed. I had a chance to talk with the owner of the system. I realized the benefits to the customer, particularly in our area, and for the profit potential."

Smiley elected to include pipe bursting in his "rebirth." He initially subbed out those jobs but was soon in a position to buy his own HammerHead system. Pipe bursting has become a major contributor to the bottom line for Allied, representing 25 percent of revenue. Drain cleaning and jetting make up about 35 percent and the rest is plumbing. About half the work is residential.

Systems in the company's service area include a wide variety of pipe including clay, Orangeburg, concrete and cast iron as well as PVC, and Allied works on all of it.

"While working in Spokane I was introduced to pipe bursting. The firm I worked for would occasionally sub out one of those jobs. I was wowed by it - so impressed." Ron Smiley

Root impaction in the sewer systems is a common problem, and many of the issues with replacement are brought about because of the historical nature of the area. The approximately 16 small cities around the lake, most with sewer systems, don't always allow open-dig pipe replacement, which means pipe bursting is playing a significant role

by providing a viable alternative for properties protected by strict dictates to preserve older structures.

Another unique aspect of the lake is that some communities are not readily accessible by road. To serve these areas, Allied loads its equipment onto a customized pontoon boat and hits the water.

Because of these challenges, homeowners faced with a need for sewer repair or replacement often turn to pipe bursting because it is acceptable to the municipalities and limits disruption.



The crew at Allied Plumbing & Pumps includes (from left) Blanca Lehman, Cindy Smiley, Andrea Skube, Korey Kase, Kevin Britton, Paul Dahlstrom, Jadens Miley, Tyler Allen, and owners Zack Smiley and Ron Smiley.

Smiley notes that there will always be some situations where an open dig will be called for and approved — for example, where there are negative grade issues or an old system with a lot of sags in the pipe but no historical restrictions.

Smiley says homeowners initially have no awareness of the process, but when they learn that their problem can be solved without digging up the yard or driveway they want to know more. "This is a solution that sells itself," he says.

Since Allied is the only company in the area offering pipe bursting, municipalities often refer distraught homeowners to the company. Other area plumbing and drain companies also call on Allied to provide pipe bursting for their customers.

"In some situations a job will be more suited for a CIPP replacement, and when that occurs we will bring in a subcontractor," Smiley says. "But having these various options for a customer has brought a lot of attention to the company. Most often pipe bursting is the most suitable method in the area." He estimates that one out of 16 jobs would be a candidate for CIPP.

Allied has put a lot of effort into promoting all of its services, but particularly pipe bursting. In 2015 they launched a significant advertising push for that process in a commercial being shown on stadium billboards and movie theater screens.

THE MENU GROWS

During his time in Spokane, Smiley saw the advantages of having a trailer jetter and he added that to his wish list.

"I looked at the franchise operations in Spokane and saw they would have several trailer jetters," Smiley says. "I also saw and experienced that using a more powerful jetter was a much better way to clear a line. I figured the big companies had that equipment for a reason."

In 2014 he was finally in position to purchase a larger jetter and chose a Spartan Ultimate Warrior



ALLIED PLUMBING IMPROVES SERVICE WITH SOFTWARE

Success depends on more than good equipment and up-to-date technology. It starts with the handling of the initial call and performance of the office staff, and continues with the action of the on-site technician in the introduction to the client, to his or her explaining costs and options, to having the needed parts and sticking to the job until it is complete.

Ron Smiley, co-owner of Allied Plumbing & Pumps in Chelan, Washington, manages many of these aspects of the job with ServiceTitan software.

Prior to utilizing ServiceTitan, Smiley says he was doing things kind of "old school." ServiceTitan tracks work orders, marketing campaigns, employee performance and all contacts with customers. It also allows Smiley to keep an eye on everything.

The program provides a report card system on the performance of each employee, which allows Smiley to make important evaluations, oversight and adjustments where necessary.

As the company is a 24/7 operation, it was important to Smiley that telephone calls be always answered promptly, information taken and immediately forwarded so they can respond in a timely and professional manner. He engaged an answering machine service that has filled that bill nicely.

"If someone has water on their floor, that person calling does not want to be told to leave a name and number. We always take those calls and are ready to roll to solve the problem."

Smiley says the software and the answering service help ensure that customers are treated properly.

"Even the most basic steps to present a professional image are important," Smiley says. "Such as having a clean rig and a clean uniform, and wearing booties as opposed to slipping off shoes — handing the customer a business card and referring to a flat rate price book at the beginning of the call. Having a parts runner (someone on staff to handle these jobs) with the company so the service technician can stay there on the job."

Hydro-Jet (4,000 psi at 18 gpm). It has become an important asset for the business.

In addition to the jetter, Smiley also knew the benefits of having a reliable camera system, and that was at the top of the list when he reopened his shop. "That was a day-one purchase." He has a Spartan 200 camera and a NaviTrack locator from RIDGID.

The pipe bursting systems are HammerHead HDD pipe pullers with a variety of heads. He also added directional boring equipment from Pow-r Mole.

His fleet includes a variety of Ford and Chevrolet vans and trucks, along with a Bobcat E-35 compact excavator and a 22-foot custom-made pontoon boat.

STRETCHING THE BORDERS

Allied operates out of a 3,000-square-foot building on a 1-acre lot in



Ron Smiley operates the company's mini-backhoe on a pipe bursting project. The pipe bursting equipment runs off the backhoe's hydraulics.

Chelan. They have office and warehouse space, and as noted a prominent company sign.

When the Smiley brothers contemplated expanding into Wenatchee, they considered a billboard on a major thoroughfare. When reviewing that cost, it was decided it made more sense to buy a building along that route and put up another sign on the building. The exposure has been beneficial and the cost not that much greater than the billboard.

They opened a 3,400-square-foot building on the main route into town, and they are specifically promoting pipe bursting in this region.

Smiley is a firm believer that having a building in view of the public is a superior method of advertising and building name recognition.

BUILDING THE TEAM

Finding technicians is a universal issue and a significant challenge for Smiley. Despite advertising for technicians throughout the area and into Spokane, the response is often disappointing.

"We currently have a woman who is getting her plumbing license, and we will be pleased to have her on our team. Since we have a large population of Hispanics in the area, we are also fortunate to have a bilingual technician.

"For potential employees we will offer a two-week training experience and have a candidate riding with one of our technicians before agreeing to a commitment to hire."

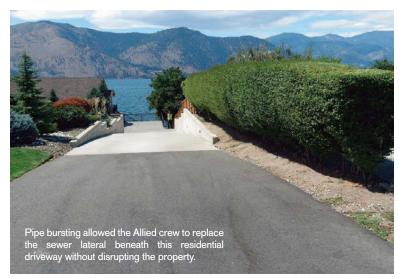
He says they invest heavily in safety training, and technicians are all fully licensed and trained for confined-space entry. They also have licensed

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TO DESTRUCT



"In some situations a job will be more suited for a CIPP replacement, and when that occurs we will bring in a subcontractor. But having these various options for a customer has brought a lot of attention to the company. Most often pipe bursting is the most suitable method in the area." Ron Smiley divers for any work that is required on the lake itself. Some homes draw lake water for domestic and potable use, and the company services the submersible pumps that are on the lakebed, following all regulations carefully.

Smiley considers himself very fortunate to be in this business. He has family members who have successfully operated plumbing companies in other regions of the country, which has been an inspiration for the young entrepreneur. Still, he says having his own experiences and forming his own path has been extremely rewarding as the business continues to grow.

He is particularly grateful for

the guidance he has received since joining PHCC (Plumbing Heating Cooling Contractors) and the networking opportunities he has shared with other contractors out of his immediate area who have been in the industry for many years.

"It was like having someone take you under his wing," Smiley says. "Those people have been willing to offer suggestions, insight and counsel every step of the way — very helpful for our efforts. I give the organization a lot of credit for the position we have attained here in our area." **c**

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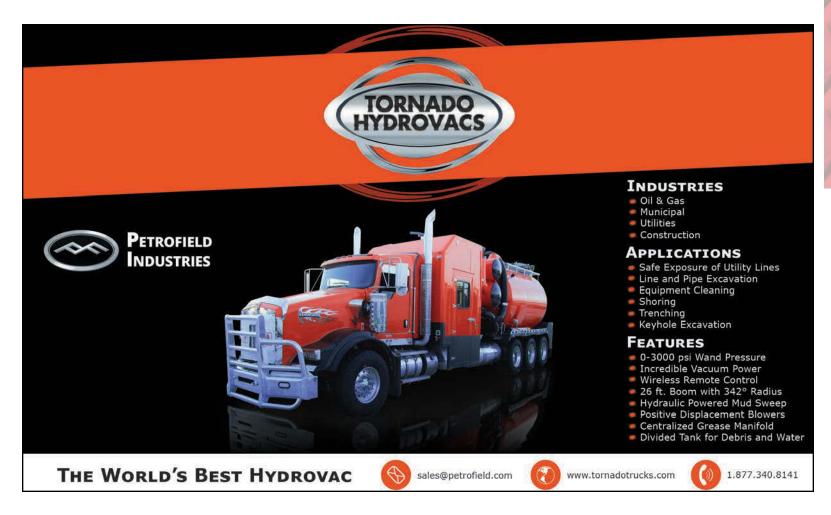
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Reinstatement Made Simple

Robotic Trydent 80 pipe cutter easily opens laterals in small-diameter piping

By Craig Mandli

elining small pipelines can be an efficient solution for the rehabilitation of plumbing systems. However, opening the lateral connections on those pipelines can sometimes be difficult, especially in hard-to-reach areas with limited access.

The completely robotic Trydent 80 small-pipe cutting system from TRY TEK Machine Works solves that issue. The unit garnered plenty of attention among representatives from several industries at the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show.

"We believe that the small-pipe and relining market is still emerging," says Troy Miller, a senior engineer with TRY TEK and the designer of the Trydent 80. "We're convinced that this product can meet the needs of that market."

The unit reinstates interior or exterior relined pipes from 3 to 6 inches in diameter. Operators can access pipe systems through clean-out ports or rooftop vent pipes in buildings where tenants are present or utility operations that cannot be disturbed. It can be used to reinstate an entire vertical waste pipe from a single access point as its small, powerful cutting head can maneuver around 90- and 45-degree elbows and navigate multiple bends and turns. Its reach extends up to 100 feet, and its narrow 23-inch width enables easy access through doorways and easy transport on rough or difficult-toreach terrain. It can be used to reinstate lateral pipes connected to the sewer or utility main at ground or basement level.

"The system was designed with versatility in mind," Miller says. "We believe that it's a fit across a lot of different markets, including several that we really haven't explored a great deal."

It has a powerful hydraulic cutting head and clamping mechanism, dual video outputs that permit digital recording, and an onboard color camera with self-cleaning lens connected to a weather-resistant, sunlight-readable video monitor. Water-powered hydraulics eliminate the potential for environmental hazards. An optional tripod carries the weight of the hose during vertical reinstatement. It has simple and quick setup and operation, and operates with either 120 or 240 volt, and 50 or 60 Hz electric service.

"Half of the battle when you are reinstating small pipelines is getting the unit into the proper position to cut," Miller says. "Then you need to have enough power to make the cut. This unit provides that."

While the portability and efficiency of the unit makes it a fit for all smallpipe systems, the option to reinstate lateral connections from a single access point inside a building sets it apart, according to Miller.

"The idea of relining a vertical stack in a building has actually kept contractors from bidding on jobs because of the difficulty reinstating it after," he says. "That's the type of problem this unit was made for."

TRY TEK decided to debut the Trydent 80 at the WWETT Show because it, Miller says, "gives us the most bang for our buck."



Troy Miller, left, a senior engineer with TRY TEK and the designer of the Trydent 80 smallpipe cutting system, explains the operation of the unit to attendees at the 2015 WWETT Show. The portable robotic unit performs reinstatement of interior and exterior relined pipes from 3 to 6 inches in diameter. (Photo by Craig Mandli)

"This is the show we were really aiming for rolling this out, and the timing fell nicely into place," he says. "Not only do we talk to a lot of plumbers at this show, but also municipalities, general contractors and utility service companies. All those have a place for the Trydent 80. No one else has what this offers in one package." **717/428-1477; www.trytek.com. c**



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The Color of Money

Eye-catching paint jobs do more than attract new customers – they contribute directly to a Colorado drain cleaner's bottom line

By Ken Wysocky

n a saturated market filled with dozens of plumbing and drain cleaning companies, Larry Wieker knew the service trucks owned by his company, B & L Plumbing Inc., had to stand out from the crowd in Colorado Springs, Colorado. And his vivid-purple-colored vehicles do just that, looking as conspicuous as a technician in a clown suit — but the business advantages they offer are no joke.

"There are about 500 plumbing companies in Colorado Springs alone, including one-man shops, and about 60 or 70 that do just service work," says Wieker, who picked the color purple for four of his newer Isuzu, cab-over-style box trucks — a nod to his days growing up in Minnesota as a Vikings fan. Jenkins Diesel Power Inc. in Springfield, Missouri, built the vehicles, which it markets as fully customizable plumbers' super trucks. "So we decided to start branding ourselves with purple trucks. People definitely notice them we get comments all the time about our 'big, purple trucks.' They definitely separate us from all the white service trucks.

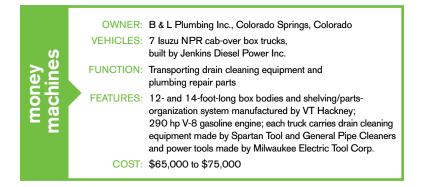
"People see our purple trucks running around town and say that's

why they called," adds Wieker, who believes in the value of good marketing campaigns; his company spends about \$100,000 a year on television, print and direct-mail advertising. "It's pretty cool to hear people talk about the equipment you have. Most everyone in this town has little vans or has converted U-Haul trucks into plumbing trucks.

"We decided that having goodlooking trucks was a must," he concludes. "If your trucks look good, people will figure you do good work. All our guys wear uniforms, too. So we stand out by doing things like that."

Thanks to the cab-over design, the trucks are also agile enough to easily handle driving and parking. "They are great to work with. ... They turn on a dime," he says.

But marketing and maneuverability aren't the only reasons the company invests about \$65,000 to \$75,000 per vehicle, says Wieker, a master plumber who started his business in 1996. He also wanted to increase the productivity of his seven service technicians (the company also employs 16 plumbers who do new construction work). And the seven Isuzu trucks (model years 2010 through 2014), outfitted with 12- and 14-foot box bodies made by VT Hackney, proved to be the right vehicles for achieving that goal.





The B&L Plumbing vans feature VT Hackney bodies with customizable storage options and plenty of space for tools and inventory. Each of B&L's vans now carries about \$10,000 worth of plumbing parts, which saves plumbers from making trips to the supply house.

"We started doing service work full time in 2010, when the region's new housing market came to a stop," Wieker recalls. "So we needed to diversify our business by doing service work. I was attracted by the overall interior layout inside the box, featuring lots of aluminum trays and bins. We can

customize them — move things where we want to put them. For example, we wanted shelving arranged so we could store water heaters toward the back of our truck and put our drain cleaning equipment closer to the back, so there's less moving it around and less strain on our technicians."

What little service work the company did before 2010 was done with smaller trucks with less storage capacity. As a result, technicians spent too much time making supply house runs during service calls because the trucks couldn't carry a large inventory of repair parts. "We now carry about \$10,000 worth of plumbing parts," Wieker notes. "Even if we get an emergency call at 1 a.m., we have the capability to fix just about anything."

Each truck also carries hand-held, medium and large drain cleaning machines made by General Pipe Cleaners (a division of General Wire Spring Co.) and a power drill and Sawzall made by Milwaukee Electric Tool Corp. The company also relies on drain cleaning machines and pipeline inspection camera systems made by Spartan Tool, as well as four inspection cameras made by General Pipe Cleaners.

Thanks to the additional storage capacity for tools and repair parts, Wieker estimates that the trucks have made his company 8 to 10 percent more profitable by saving time and reducing fuel and labor costs associated with repeated supply house runs. That capability is especially important because B & L Plumbing serves customers throughout the state, with roughly 25 percent of them living in remote rural areas, he points out.

"Even closer to home, if you're driving 35 miles out to a job, then driving 35 miles back to a supply house, then 35 more miles out and back ... well, in that time, we're now already finished with a job and moving on to the next one," Wieker says. "I've never put a pencil and paper to it, but all I know is it saves us a lot of time and money. We probably do 440 to 460 service calls a month, and if we were doing more back-and-forth driving, that number probably would decrease to roughly 300 calls a month. That's a pretty big drop."

Overall, Wieker says he can't say enough good things about the durable Isuzus and how they help his company foster a strong brand identity. "These trucks changed our business." **c**





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TED BERRY COMPANY BUILDS AN IMPRESSIVE ARRAY OF UNDERGROUND SERVICE CAPABILITIES TO SUPPORT NEW ENGLAND'S AGING INFRASTRUCTURE

Ted Berry Company's Eric Gemelli lowers rods to the HammerHead HB100 static pipe bursting unit in the pit.

BY PAUL NICOLAUS

PHOTOGRAPHY BY JESSICA WOODCOCK

AS MATT TIMBERLAKE, PRESIDENT OF TED BERRY COMPANY, REFLECTS BACK ON HIS INVOLVEMENT IN THIS FAMILY-OWNED AND -OPERATED BUSINESS, HE HIGHLIGHTS A TURNING POINT THAT ALTERED HIS WHOLE OUTLOOK AND HELPED STEER THE BUSINESS IN NEW DIRECTIONS.

In his early 20s at the time, Timberlake followed up after taking on a Sunday emergency call and unplugging the sewer for a water and sewer district. When he asked the superintendent if there was anything else he could do to help, he was thanked for a quality job and told of intentions to hire another company to inspect the pipe.

Intrigued, Timberlake asked if he had the capability to handle that type of job, would the superintendent consider hiring Ted Berry Company. "He said they'd love to," he recalls. "A year later I went back to him and we started to inspect the pipe, and a year after that I was inspecting pipe for him again. It was all cracked and damaged and needed repair."

Out of curiosity, Timberlake asked that same individual what he intended to do following the video inspection. The plan was to reach out to another company in order to reline the pipe.

It was a lightbulb moment. "We need to be able to bring solutions back to them and give them that whole package, and there's where my love affair with trenchless technologies started," Timberlake says.

Fast forward to today. Timberlake estimates that trenchless currently makes up about 30 percent of the business. And as it has become a core service offering for Ted Berry Company, he also noticed a larger evolution taking place industrywide.

Fifteen years ago trenchless was kind of viewed as a niche service that would typically be utilized only in places where you couldn't dig, he explains. Now the industry seems to be moving toward the practice of using trenchless whenever possible and only digging when that isn't an option.

"I think that kind of shift has already happened overseas, and I think we're going to continue to see that type of transition in North America," he says. "As systems continue to age, as population and need and demand continues to change, we're finding that utility owners, utility operators and design consultants are becoming more and more willing to look at the true costs of traditional excavation and the true benefits of trenchless construction."

DIVERSE CAPABILITIES

Founded in 1972, Ted Berry Company provides services to both municipal and industrial clients throughout New England — primarily in Maine, New Hampshire, Massachusetts and Vermont.

It operates a number of service groups that provide municipal utility



Larry Houle (right) and Billy Timberlake lower an Aries Badger transporter and camera into a manhole to inspect a brick sewer main.



services, industrial cleaning services, trenchless pipe rehabilitation and pipe inspection. The service line is built around buried infrastructure and being able to handle cleaning, inspection and assessment all the way through rehabilitation and replacement.

The work extends into a diverse array of jobs that range from potholing for a natural gas company that is directionally drilling under a water distribution main, to vacuuming grit out of a headworks chamber at a wastewater treatment plant.

The customers are wide-ranging as well. Ted Berry Company works at some of the largest pulp and paper mills in the country, for example, but is just as likely to handle a job for a small municipal utility owner.



Andy Bryant (right) attaches an extension tube to the vacuum boom on a Vactor 2116 as the crew prepares to clean a 48-inch stormwater outfall pipe.

Timberlake was recently in a customer's waste treatment plant with a flow rate of only 35 gallons per minute, and he has also handled work in plants with a flow rate of over 100 million gallons per day. This dynamic, he says, is both challenging and enjoyable. "It's very, very diverse," he says, "but I think it keeps us sharp because we treat our small customers like they're big customers, and we treat our big customers like they're big customers."

It's fun to be able to bring that type of experience down to a midsize utility, he adds, recalling a recent conversation with a utility dealing with a 24-inch interceptor pipe. To that customer, the pipe seemed huge and way outside their comfort zone, but Timberlake brought in a crew that had just finished working on a bypass on a 120-inch brick sewer with 45 million gallons a day running through it.

"We have these beautiful big, red trucks. But nobody cares about our trucks. What they really care about is what we can do with them and how we can do that in a way that oftentimes solves challenges they didn't even know they had." Matt Timberlake

"We were kind of bringing the major league team down to play a minor league game, but that midsize or small job is no less important than the big one because in the eye of the customer that's the most important job they have," he says.

Ted Berry Company's real value to customers, he explains, is in how they take highly skilled, highly trained workers and allow them to solve a variety of challenges. "When I was younger I thought our equipment and our trucks defined us. We have these beautiful big, red trucks," he says. "But nobody cares about our trucks. What they really care about is what we can do with them and how we can do that in a way that oftentimes solves challenges they didn't even know they had."





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Larry Houle swings a sledge hammer to free a stubborn manhole lid prior to a sewer main inspection in Lewiston, Maine.

BUSINESS EVOLUTION

Now that Timberlake has assumed the role of company president, he says it's humbling to look back on the history of a company that has grown, evolved and adapted to such an extent over the years. Founded by his grandfather, Ted Berry, Timberlake's father, Jim, was also right there from the get-go as the company sold and serviced agricultural equipment, pumps and industrial equipment throughout the '70s.

During the '80s, it morphed into a service company that flushed municipal sewer lines, handled pumping and bypasses, and started to take on industrial services for paper mills. Jim began buying the company from Ted in the late '80s and also purchased the company's first vacuum truck.

"I got hooked early, and once I saw the opportunity and the potential inside of the industry, I fell in love with it and I have been ever since."

Matt Timberlake

From that first vacuum truck, the value was immediately apparent. Today the company owns seven combination jet/vac trucks — five Vactors, a Guzzler Classic and another Super Products machine.

"Back in the late 1980s when my father went to Ted and said, 'I need \$150,000 to buy a vacuum truck,' Ted looked at him like he was partially crazy," Timberlake says. But it was a good investment, and to this day the family has held onto the loan agreement that allowed for that key purchase. It even includes a cosignature by Timberlake's grandmother, an elementary school teacher at the time.

As Timberlake grew up, he joined right in and spent his formative years as a part of the family business. "From the time that I could walk I was in the CONTINUED >>>

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Mike Cram and Dave Bilodea set up for a confined-space entry at a manhole along the path of a pipe bursting project.

shop," he recalls. "I was in the shop when I was 5 years old washing trucks, and at 10 years old I was rebuilding pumps."

When he graduated from high school in the early '90s, Timberlake wasn't entirely convinced he wanted to stick around. "At 18 you kind of think you know it all, and you don't have a real sense of what's right in front of you," he says.

"We are sitting on top of some of the oldest sewer and water infrastructure in the country. The pilgrims didn't land far from here." Matt Timberlake

But when he witnessed a vacuum excavation for the first time he was dazzled, plain and simple. "It was amazing to me to see how you could do something a different way," he says. "It really piqued my interest, and at that point I wanted to learn everything I could."

Over the next few years he began to see just how interesting the business really is. "I got hooked early, and once I saw the opportunity and the potential inside of the industry, I fell in love with it and I have been ever since."

THE VERSATILITY TO VACUUM ANYTHING

Ted Berry Company President Matt Timberlake is a firm believer that no single piece of equipment will make or break you and that everything depends upon people and their ability and commitment. Even so, he does acknowledge that the company's 2008 Vactor 2115 combination sewer cleaner/hydroexcavator is something special.

It rises to the top among an impressive list of company-owned equipment that includes seven vacuum trucks (five Vactor combo units, one Guzzler Classic and one Super Products), five mainline CCTV trucks (four Aries and one CUES), about 50 service trucks, a fleet of about 20 large-diameter hydraulic pumps ranging from 6 to 12 inches, two pipe bursting teams that are set up with static and pneumatic equipment ranging in size from 2 to 36 inches, and a Reline America UV CIPP system.

Although this is just one of many vacuum trucks owned by the company, it is versatile enough to allow multiple revenue streams to be generated by just one crew. The truck is a 15-cubic-yard combination Vactor with typical jetting configuration of 100 gpm at 2,500 psi with a multi-flow system. It also has a PD blower with an 8-inch Vactor suction boom.

A full hydroexcavation package is installed to add additional capabilities to the truck. The auxiliary highpressure pump, high-pressure reel and boiler – coupled with standard Vactor features – make this truck a critical component in a diverse fleet of service equipment, according to Timberlake.

"It's kind of the Cadillac option," he says. "It's got all the bells and whistles. Without that we can't inspect pipe, and without that we can't rehab pipe. It is kind of the foundation: The company is really built around it."

The truck is used on a combination of large-diameter sewer flushing projects and vacuum excavation projects for power utilities, natural gas distribution companies and general contractors installing new gas lines. Beyond that, it's put to use when water and wastewater utilities call Ted Berry Company in for digging around broken or damaged mains during emergencies.

From there, Timberlake's father gave him plenty of opportunities to grow and develop, designating the day-to-day operations to his son when he was in his mid-20s. "I saw it as an opportunity to grow more into industrial services," Timberlake says, "and that's when we started to bring on our trenchless services."

FORWARD-THINKING

Now as he leads Ted Berry Company into the future, Timberlake recognizes the opportunity that awaits right beneath his feet as he predicts that storm drain rehabilitation in the northeast is going to present a huge opportunity for the company moving forward.

"We are sitting on top of some of the oldest sewer and water infrastructure $$_{\rm CONTINUED}>>$$





in the country," he says. "The pilgrims didn't land far from here."

He also looks forward to continuing to introduce new methods and technologies to his customers, wowing them in the same way he was when he saw vacuum excavation for the very first time. Although they've been pipe bursting for 15 years now, when a utility owner unfamiliar with the process sees that put into action there's a level of amazement that is a treat to observe.

Recently tasked with bursting a 1,000-foot-long 10-inch water main and installing new HDPE pipe, Ted Berry Company examined the conditions, performed a full risk analysis and ultimately took it on. They showed up and by 7 p.m. they had 1,000 feet of new 12-inch water main in the ground through a crosscountry wetland.

The look on the customer's face and the excitement in his eyes said it all, Timberlake notes. **c**

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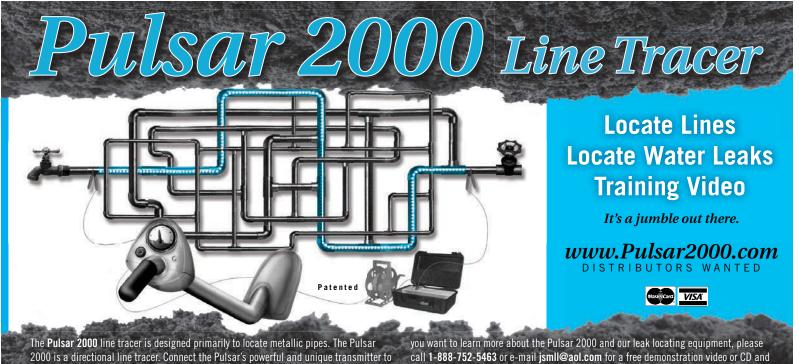
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Demystify Your Marketing

Get a clear view of what's working, and quit wasting time and money on things that aren't

By Erik Gunn

hether you're starting up a brand-new business or you've been at it for years, you probably already have the skills of your trade and the tools you need.

But how good are you, really, at advertising and marketing what you do?

Yes, some people seem born with the knack for selling and promoting themselves. Maybe that's what makes advertising and marketing seem like one of those "black box" parts of a business. There's no shortage of advice out there, but putting it to effective use and figuring out whether it really makes a difference in your business results can stymie even the smartest among us.

THE BIG PICTURE

First of all, let go of any notion that "advertising and marketing" are just an isolated specialty in your business. They really start with your everyday appearance and actions.

"Marketing is not just about buying ads or setting up a trade show booth, it's a part of every aspect of your business," says Tatsuya Nakagawa, vice president for marketing and strategy at Castagra Products Inc. "Make sure your trucks are clean and your service staff is professional and courteous."

That's just the start, though. Every business has a brand, says David T. Scott, chief marketing officer at Lifefyre, a global marketing cloud technology company, and author of *The New Rules of Lead Generation*. In essence, sales and marketing is about owning, controlling and projecting your business brand to customers and potential customers.

"Take a day to think about your brand, your company's values and what you stand for," says Scott. Then make sure that how *you* see yourself and your business lines up with how *your customers* see them. And once you've got your arms around that, make sure that your advertising and marketing is always consistent with your brand.

Strengthening your brand means giving quality service to the customers you already have. "It's cheaper to retain an existing customer than to acquire a new one," Scott observes.

And that doesn't stop at what you think of your business. "Your business may be the best in the world at septic pumping," says Ben Scandlen, of The Way Company, an online marketing network. "But if your billing is off or your customer service is poor, it won't matter."

By now you might begin to see why it can sometimes be hard to isolate your marketing's "true cost." Yet if you can't always measure the marketing benefits of good service, you can't ignore it either. Customers who like your work will talk you up with their friends and give you advertising you never paid for — and with a value that's priceless.

TALKING - AND LISTENING - TO CUSTOMERS

When it comes to measuring the cost and value, think big picture. "The true value of marketing depends on what sort of marketing you are investing in," says Scandlen. "If you invest in marketing that has value for the customer, then the true long-term returns will be significant."

Scott recommends that with the growing power of consumer review sites like Angie's List and Yelp, you must "own your brand on the Internet." That means engaging with customers directly on review sites, praising good reviews when you get them and targeting special offers to draw in new customers who are turning to those sites to look for the services you provide.

Scandlen advocates "customer experience improvements" through instruments such as customer surveys. Don't just let survey information stay locked up in a desk drawer or on your hard drive, though — follow through with it, following up on complaints.

And be willing to really listen to customers. That's part of inbound marketing — or, as Scandlen describes it, "a conversation you have with your prospects to help them make their decision." That won't always win you a customer in the short term. "Sometimes the best decision may be another solution," he says. But you'll also earn the prospect's future consideration.

If you're using traditional media, such as business newsletters delivered to an email address or posted on a Facebook page, don't just toot your horn. "Make sure the information you share is useful and not self-serving," Scott says.

Content marketing like this is a high-priority investment, Scandlen adds. "Content marketing done correctly underpins all of your other efforts and improves your offering to your customer."

FOCUS

Besides *what* you communicate, there's also the question of to whom you communicate it.

Marc Prosser of Fit Small Business says targeted marketing is far more effective and economical, especially for the type of small, owner-operator business that a cleaner represents.

Reach out to prospects who don't already have a relationship with a business in your line of work. "People who moved to a new house are unlikely to have an established relationship with a local plumber or septic contractor," Prosser points out.

Master the techniques that raise your profile when people search the Internet for the services you offer. Send a mailing to newly occupied addresses, or if your target market is businesses, "you can check out new member lists at local chambers of commerce and reach out to those businesses."



MEASURING

And how do you figure out the value and the cost of what you're doing? You can't measure the cost or benefit of making sure your crews show up on time and treat customers with respect, or the benefit of visibility. But

with good marketing and advertising, as Nakagawa points out, "customers and prospects can find you even if you are busy supervising a job or buried in paperwork."

But you don't want to simply throw money at the problem. Effective marketing doesn't require big budgets, Nakagawa says. "Do small trials and see what works for you. Once you find an effective approach, build on it and don't get distracted by the next new and exciting marketing tactic."

Still, there are metrics you can gather. Three that Scott of Lifefyre finds most valuable are measuring the customer acquisition cost, average contract/sale value and return-on-marketing investment.

The cost of a particular advertising channel will vary widely by the source of your traffic, notes Jan Roos, who consults for local businesses on effective Internet advertising. Roos recommends starting with a \$1,000-per-channel investment — and look for fast results. "The best channels can turn around customers in days to weeks," she says.

She recommends programs like Google Adwords that bring your business up when the prospective customer does a search: "You can get in front of customers at the exact moment they need something like a drain cleaning plumber instead of throwing up a billboard and hoping they remember your number."

To really understand the cost and value you're getting, you'll have to invest in systems that track your calls and email from customers. With that you know "where customers are coming from and can use this to determine which sources of advertising are bringing the most bang for your buck," says Roos. (That works with offline advertising too, she adds.) Without good tracking "you're flying blind."

Roos says lead-generation specialists can help you generate business more efficiently from your online advertising. And while free channels may have some value, don't count on them to directly generate business. If Facebook or Twitter suck five hours a week out of your time that you would otherwise be able to bill \$100 an hour for, "you're out \$2,000 a month for that channel," Roos points out. "You might be better off throwing a \$1,000 budget on paid advertising that is guaranteed to get an audience." One final word: Don't treat marketing and advertising as an afterthought or a sometime thing.

"Consistency is the key," Nakagawa says. "Doing marketing and advertising once or only when things are slow will not help your cause." **c**

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Practical Training for Confined Spaces

Irwin's Safety aims to bring a higher level of safety to those who regularly deal with confined-space entry

By Kyle Rogers

ractice makes perfect. That adage can be applied to the safety training philosophy of Irwin's Safety. After all, the Calgary, Albertabased safety services provider doesn't just provide its clients education. It — as much as possible — puts clients in the middle of real-life scenarios they might encounter on the job. That way, should they have the unfortunate experience of finding themselves in the midst of a job site emergency, they at least have some practice to fall back on. And in the oil and gas industry where job site dangers abound, that practice can mean the difference between life and death.

"I think what really helps is when you're able to teach people in a classroom about being safe, and then actually practice that in a place that feels very similar to where they work," says Kyle Irwin, president of Irwin's Safety.

The company's industrial plant simulator built into its main facility in Calgary is one of the primary ways it delivers that more immersive safety training to clients. Irwin's Safety also has locations in Peace River and High Level, Alberta, and Kelowna, British Columbia, and uses mobile simulators that can be taken to clients for on-site training. Another aspect of the company's approach

each client.

facility."

industry.

space fatalities.

EDUCATING CLIENTS

is tailoring safety course material for

"There are so many different processes and hazards out there," Irwin says. "We are really trying to set ourselves apart from other safety providers by being specific to the needs of that customer and that

The Alberta oilpatch has been a logical area to target for Irwin's Safety as the company has grown since startup in 2009. Not just because of the proximity of the company's home base in Calgary, but also because of the safety needs of the oil and gas

In talking to prospective gas and oil customers, Irwin says one common issue he encounters is lack of training in confined-space rescue. Irwin says the danger of substandard rescue training extends to the rescuers themselves, as they account for the majority of confined-

"People have been falsely told

they're trained in a rescue situation

and it's very dangerous because 60

percent of all the fatalities in confined

spaces are to the rescuers," Irwin



CLOCKWISE:

50

- A student crawls through the confined-space simulator used by Irwin's Safety in Calgary, Alberta.

- A rescue is simulated at the Calgary facility. Irwin's Safety also has three other locations and mobile simulators that it uses to bring safety training to clients.

- A view from inside the confined-space simulator.

Cleaner • November 2015

says, citing statistics from the Canadian Centre for Occupational Health and Safety.

Irwin says people are often looking for one-day courses, and he has to explain that his company isn't in the business of offering that kind of quick and ineffective rescue training.

"In all fairness, the people in charge aren't specialists in rescue either and it's not that they don't want their people trained to a certain level," Irwin says. "We just have to educate them."

Last year, Irwin's Safety covered the topic of misconceptions about confined-space entry and rescue in a blog post on its website: http://www.irwinsafety. com/blog/misconception-confined-space-entry-and-basic-rescue.

TWOFOLD APPROACH

In order to provide that higher level of safety training, the approach of Irwin's Safety is twofold: coursework tailored for each customer's needs and practical knowledge acquired through simulation of emergency incidents. Each of the company's four locations has a simulator, though the Calgary site has the most extensive one emulating an actual industrial plant environment.

"We had a large-format print done of a power facility we've worked in and installed it on all the walls in there, so when you go in you actually feel like you're at a plant," Irwin says. "We installed plant lighting as well as emergency lights and horns. We have a programmable logic controller that runs it, an Allen-Bradley PLC (Rockwell Automation), which is very similar to what you would have in a lot of oil and gas facilities."

From a classroom, the instructor and class participants can view an emergency scenario being performed by other class participants via night vision cameras.

"The instructor can control everything from the classroom," Irwin says. "Smoke machines come on. The emergency lights come on. The horns start to go off. So you're starting to put stress on them in a controlled environment to see how they would react in an emergency situation."

A variety of different safety scenarios can be simulated, from a benzene or H2S release to a fire, a fall from heights, or any type of medical emergency.

"The instructor can walk the other classmates through what is happening, and then when the other people come out of the simulator, they can all talk about it and even pull up the recording of it and relive it: This is what you did, let's back this up and see what should have happened. Or, let's see what you did right and what areas could be improved."

Even away from the main office in Calgary, simulation is a key part of the company's safety training offerings.

"Each facility has a different setup, but it's our goal to have a simulator at each facility very similar to the one we have in Calgary," Irwin says. "We also can — if we're doing a high-angle or confined-space scenario — take them down to the fire department and use that type of tower. We also have mobile simulators to take to customers in which we can still do confinedspace training."



A trainee wears breathing equipment while being exposed to hydrogen sulfide in a simulated workspace. The training helps to protect individuals from exposure and explains how to deal with emergencies involving H2S.

The second part of the company's approach is moving beyond standard safety education materials and customizing them to fit each individual customer.

"We don't just have a standard course. We make it specific to the customer," Irwin says. "We talk to the customer prior to training and say, 'Hey, what is an emergency you guys have had in the last year?' and we tailor the classroom work around that. That's why we're really targeting the larger oil and gas companies with quite a few employees, because it takes a significant investment on our end to make some changes and revisions to our courses for each customer. But we really think that's the best and most effective way to do quality training." **C**





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Employees are a reflection of your company, so be aware of the image you're reflecting

By Judy Kneiszel

hen I was a kid, the only person I could name who had a tattoo was Popeye the Sailor Man. Back then, tattoos were mostly reserved for "sailor men" and they usually depicted anchors or sometimes hearts that featured "Mother" or "Edna" or some other woman's name. Anyone else with a tattoo was a bit suspect. Biker gang members had tattoos. Business people did not.

Fast-forward to 2012 when Harris Interactive research reported that one in five American adults surveyed said they had a tattoo. I assume that number is even higher in 2015. Also, about 7 percent of American adults polled by Harris in 2012 said they had a piercing somewhere on their body other than their earlobes, and 4 percent reported a facial piercing not on the ear. This makes piercings less popular than tattoos, but you could still find yourself sitting across the desk reviewing the job application of someone with a nose ring or eyebrow spike.

Do you care? Would it affect your hiring decision? All things being equal, would you hire someone with no visible tattoos or piercings over someone who could be on the cover of *Inked* magazine or set off an airport metal detector with their face?

IS IT DISCRIMINATION?

While it's legal to turn someone down for a job because they have tattoos or piercings, it's not legal to use piercings or tattoos as a reason to terminate an employee. I guess people who write laws assume you noticed that viper tattoo on your employee's forehead before you extended the job offer.

Employees are a reflection of a company. On one hand, hiring an employee with visible tattoos, piercings or both shows your company values an individual's uniqueness. Not prohibiting these things may even help you attract some talented workers and retain them because they feel valued for who they are.

How you feel about it may depend on how frequently your employees deal with customers face to face and how accepting people in your part of the world are of body art. If 90 percent of your business is serving construction sites and rock concerts, there's a chance no one will notice or care if your technicians are full of tats and metal. But you don't want people in a senior living complex complaining about the "scary" people servicing their apartments if that kind of work is your company's bread and butter.

In case you were wondering, those Harris pollsters also asked what people thought about tattoos. In that same survey, 24 percent of the respondents said they think people with tattoos are more likely to do something most people would consider deviant and 74 percent didn't think tattoos made a difference.

Maybe you're fine with any and all tattoos and piercings. Maybe you're personally OK with some piercings and ink, but think too much could make

customers uncomfortable. Maybe you don't want anyone with any visible body art representing your company ... ever. It's up to you to decide.

RELIGIOUS CONSIDERATIONS

There is some gray area when it comes to religious body art. According to Title VII of the Civil Rights Act, employers with 15 or more employees "must reasonably accommodate employees' sincerely held religious practices unless doing so would impose an undue hardship on the employer."

If an employee vaguely implies that her tattoo is spiritual, you are probably within your rights to ask her to cover it. If a tattoo or piercing is part of a seriously held religious belief or practice, an exception to a no visible tattoos policy should probably be made to avoid the appearance of religious discrimination. Clarify that this one exception does not nullify the rule for everyone else.

JOB SAFETY CONCERNS

With piercings, there may be more than just aesthetic reasons to prohibit exposing them on the job. The Occupational Safety and Health Administration (OSHA) recommends those who work with machinery that has moving parts avoid wearing any jewelry on the job because it could get caught in machinery. Consider what your employees will be doing on the job and if piercings could be a hazard. In the sewer and drain cleaning industry, someone with a fresh piercing or tattoo should keep it covered to avoid bacterial contamination when cabling or jetting lines.

HAVE A WRITTEN POLICY

Many companies have what are known as "appearance policies" that go beyond a dress code to address tattoos, piercings and extreme styles like purple, spiky hair. Wal-Mart has a policy of prohibiting facial piercings and requiring employees to cover offensive tattoos. Starbucks recently changed its policy, which had required customer-facing employees to cover tattoos, to now allow visible tattoos anywhere but on the face.

All employees should be required to read and sign the appearance policy. Consider your employees and your customers when writing it and make it as restrictive as you believe necessary to avoid employee appearance negatively affecting your business. It's best to have a policy in place before there's an issue rather than creating a policy in response to an employee getting a tattoo or piercing.

Keep in mind that both men and women have tattoos and piercings, so make your policy gender neutral to avoid the appearance of sexual discrimination. If you permit a female employee to have a nose ring, you have to allow a male employee to have a nose ring. If a man can show his bicep tat,





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a woman shouldn't be required to cover the butterfly on her ankle. And if your policy requires offensive tattoos be covered, clarify your definition of offensive.

You can differentiate between employees who work in public or interact with customers and those who don't, but beyond that any appearance policy must be consistently applied. Be upfront about it with job applicants. If a job seeker isn't willing to remove their ear gauges, cover their tats or otherwise comply with the policy and you're unwilling to change it for all, maybe they are not the best person for the job. That's sad of course, because Popeye was always strong to the "finich," and what company couldn't use a guy like him around?

In all likelihood, an inked-up job applicant may say, "I yam what I yam," like Popeye, but requiring long-sleeved uniform shirts might be a workable compromise if he needs the job and you need his abilities. **c**



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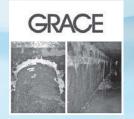
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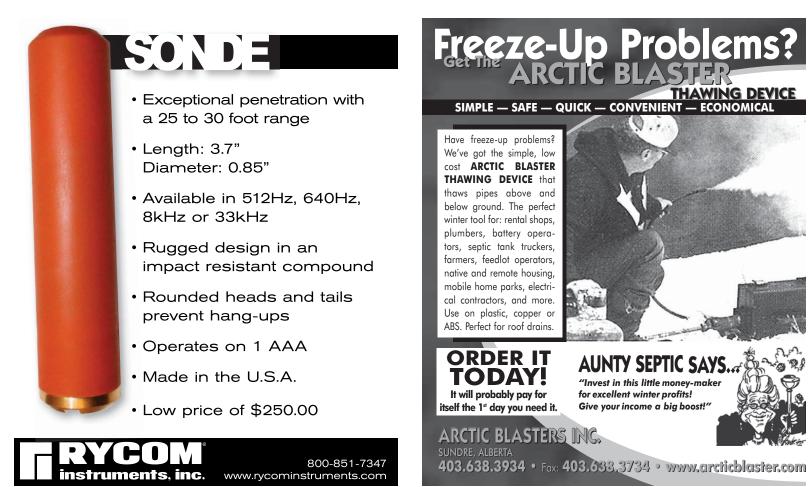


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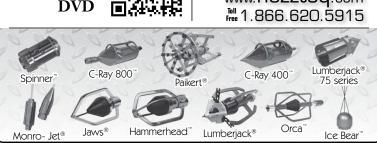
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Keep Up the Suction

Proper maintenance on blowers, filter bags can ensure problem-free operation of your hydroexcavator

By Kyle Rogers

ith their ability to dig more safely and efficiently, hydroexcavators are a popular tool of the trade. Of course, they can only be effective if the various components are working properly.

Imagine being on the job and your machine starts to lose suction. The tendency may be to crank the machine up to a higher rpm, says Gary Poborsky, founder and owner of GapVax. But that won't do much good and will only burn more fuel. The culprit in this case could be dirty filter bags.

"It's just like a shop vac you use around the house," Poborsky says. "You can tell when the filter starts to get blocked. You can tell you're losing suction on the end of the hose. You take that filter out, clean it and put it back in, and it makes a big difference. It's the same thing with a hydroexcavator. You're going to lose performance (with dirty filter bags)."

There are many components to a hydroexcavator, but filter bags — along with blowers — are extremely important since they are tied directly to the machine's vacuuming ability. Without those components working at an optimum level, you're not taking full advantage of the benefits of hydroexcavation. levels and changing out that oil at regular intervals. Keeping up on that basic maintenance practice could lead to tens of thousands of operating hours on the hydroexcavator without major problems.

"We have many customers way in excess of 20,000 hours and some of them 40,000 hours whose blowers still function and perform excellent," Poborsky says.

Vac-Con national service manager Mike Selby has seen the same.

"We have a contractor that does hydroexcavation along with combination sewer cleaning, and the unit has over 30,000 hours on it," he says. "It really depends on what the contractor's equipment replacement cycle is, but it's not uncommon to see anywhere from eight to 12 years of solid operation."

The recommended interval for changing out blower oil can vary among equipment manufacturers and also depends on how the machine is being used.

CONTINUED >>

BLOWER MAINTENANCE

In terms of preventive maintenance, a hydroexcavator blower should require nothing more than checking oil



Proper maintenance of you hydroexcavator is critical. If your machine starts to lose suction, don't crank up the rpm, check the filter bags. Blowers shouldn't need anything more than checking and changing the oil at regular intervals.





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"It depends on how severely they're operating the unit, and then it also depends on the operating temperature. So what we recommend is to follow the manufacturer's guidelines," Selby says. "As a general rule of thumb, what we recommend is basically 250 hours."

Poborsky says a maintenance schedule accompanies every GapVax machine sold. Those recommendations include checking blower oil levels prior to each job to ensure there's enough oil for operation and changing it every 800 hours when using mineral oil or every 1,600 hours when using synthetic oil. GapVax recommends that the initial oil change occur after the first 200 hours.

Another blower-related preventive maintenance item is regularly greasing the drive shaft if that's what drives the blower, as is the case with GapVax hydroexcavators. Poborsky says that should be done weekly.

Such practices could mean a reliable machine over the long term as GapVax's suggested maintenance intervals were all devised with extreme working conditions in mind, Poborsky says.

"Our hydroexcavators are not only a hydroexcavator but also an industrial truck, so they can be used in steel mills and cement plants and power plants. They get used in the worst conditions there are out there," he says. "The conditions we were keeping in mind were running the trucks hard, around the clock, 24/7."

FILTER BAG REPLACEMENT

Filter bags serve as a last line of defense to protect the blower from all the debris being sucked up during operation, so they are designed to get dirty. Thus, the maintenance required on filter bags is pretty straightforward: They will need to be replaced from time to time.

Poborsky recommends replacing filter bags annually or every 1,500 to 2,000 operating hours. That interval takes into account the cyclones on GapVax machines that remove most of the moisture and debris from the airstream before it even reaches the filter bags and blower.

RUNNING A RESTRICTION TEST

Selby says putting a specific interval on filter bag replacement is difficult though because it's largely dependent on the machine's application.

"In hydroexcavation, the whole idea is to use the water that is on board

Exhaust is something that hydroexcavator operators should always keep an eye on. Not only is material in the exhaust a sign of a problem occurring elsewhere on the machine, noticing it immediately can reduce the amount of damage done to the blower.

- or the hydro portion - to break up and liquefy the ground enough so that you have adequate separation in the tank," he says.

But more material will remain in the airstream, reach the filter bags and clog them more quickly in a dry application. That's why the best way to determine exactly when it's time to replace filter bags is running a restriction test, Selby says. Turn on the machine, pull free air through it without vacuuming any material, and look at the reading in inches of mercury on the vacuum gauge.

"A majority of machines out there will be 18 inches all the way up to 28 inches. So, as a rule of thumb, if you're pulling free air and it's over half of what the rating of the unit is, then the bags need to be cleaned," Selby says.

A restriction test is a good way to identify possible problems even if the airflow in a machine is designed in a way that doesn't require filter bags.

"I always go back to the reading on that vacuum gauge," Selby says. "If there is a restriction, whether it being filters in the airstream or something else in the piping going to the blower, you're going to see elevated mercury levels."

A restriction test doesn't need to be a daily maintenance item though. Poborsky says if a sudden problem arises involving the filter bags, it will be noticeable in the machine's operation.

"With the filter bags, there's really nothing that needs to be checked over on a daily basis," he says. "With contractors on the industrial side who get into some hot material, there could be a situation where a bag breaks or is destroyed. But you would know. It would start blowing dust through the exhaust. Those are the two signs filter bags should be replaced: High restriction and any dust coming out the exhaust."

WATCH THE EXHAUST

Selby says the exhaust is something that hydroexcavator operators should always keep an eye on, whether vacuum is being generated via positive displacement or a centrifugal compressor. Not only is material in the exhaust a sign of a problem occurring elsewhere on the machine, noticing it immediately can reduce the amount of damage done to the blower.

"If there is material coming out of that exhaust, that means you're running material through the blower, which is thus causing damage to the blower," Selby says. "A centrifugal compressor is much more forgiving on carryover particulate because it doesn't rely on clearance to generate vacuum (compared to a positive displacement machine). But regardless of what generator it is, if you start pulling material you're going to cause wear. That's really it." C

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					Max Operating				
Company	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Pressure (PSI)	Weight	# of Avail. Front Jets	# of Avail. Rear Jets	Hose Size/ Connecting Thread
Advanced Infrastructure	Radial - Standard Cleaning	Small line cleaning, powerful lateral cleaner	2" - 6"	7 to 20	1,500 - 4,000	4 oz.	1	6	1/2"
Technologies 3055 Kashiwa St., Torrance, CA 90505	Grenade	Stable cleaner for sewer mains with debris, aggressive thrust action	6" - 24"	50 to 100	1,500 - 3,000	7 lbs.		10	3/4",1", 1-1/4"
800-992-0222 • 310-534-4000 (f) 310-534-4020 www.advancedworld.com	Phantom Grenade	Lightweight alloy construction allows for wider jet angle = more power to the pipe wall	8" - 24"	50-100	1,500 - 3,000	5 lbs.		8	3/4" - 1"
sales@advancedworld.com	Chisel Blockage Nozzle	The standard in blockage clearing	2" - 24"	7 to 100	1,500 - 4,000	2 oz.	4	6	3/8" - 1/2" - 3/4" - 1, 1-1/1
SEE AD ON PAGE 12	Aquadrill	Great blockage clearing with extra large front jet that "warbles" randomly	2" - 18"	11 to 80	1,500	2 oz.	1	6	1/2" - 3/4" - 1"
	Torpedo Pulling Nozzle	The pulling champion nozzle, for long runs, hills	2" - 24"	14 to 80	1,500	2 oz.		8	1/2" - 3/4" - 1"
	Fluke, bottom cleaner	Superior silt & debris removal in an economical package	6" - 36"	16 to 100	1,500	17 lbs.		10	1/2" - 3/4" - 1"
	Bulldozer, sediment & debris	The ultimate bottom cleaner, features swivel connection and roll cage	12 " and Up	50 to 100	1,500 - 3,000	15 lbs 82 lbs.			
	Spider 60 & 80 chain cutter	When jets alone cannot clear your roots chains	6" - 12"	50 to 100	1,500 - 3,000	18 oz.		6	3/4" & 1"
All Jetting Technologies, Inc.	1/4" - 28 UNF Sapphire Nozzles and Plugs	Ultra High Pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
2740 Martin Downs Blvd., Ste. 318, Palm City, FL 34990	3/8" - 24 UNF Sapphire Nozzles and Plugs	Ultra High Pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
772-286-1218 ● (f) 772-286-0069 www.alljetting.com ● info@alljetting.com	7/16" - 20 UNF Sapphire Nozzles and Plugs	Ultra High Pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
SEE AD ON PAGE 92	Long Stem Sapphire, 60° seating angle	Ultra High Pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
A	M10 x 1.5 thread - 5MM Hex Key	Ultra High Pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
All Jetting Technologies, Inc.	5/16" Hex with 3/8" - 24 UNF	Ultra High Pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
Amazing Machinery, Inc.	Spin-Jet	Flushing/Cleaning	2" - 24"	2 to 80	500 - 4,000	1.2 oz to 8.6 oz		6	1/8" - 1/4" - 3/8" - 1/2" - 3/4"
3807 Old Tasso Rd., Cleveland, TN 37312 800-504-7435 • 423-790-1600 (f) 800-504-7436 www.amazingmachinery.com sales@amazingmachinery.com SEE AD ON PAGE 43	Deicer/Degreaser	Removing Ice & Grease	2" - 24"	2 to 80	500 - 4,000	0.9 oz to 5.6 oz	3	6	1/8" - 1/4" - 3/8" - 1/2" - 3/4"
Arthur Products Co.	Cnt-r-KUT™ Elite Kit	Roots and Other Blockages	2" - 12"	4 to 80	2,000 - 10,000	varies	Cust Spec	Cust. Spec	3/8" - 1/2"
1140 Industrial Pky., Medina, OH 44256	Cnt-r-KUT [™] Elite Mini Kit	Roots and Other Blockages in tight spaces	2" - 12"	4 to 80	2,000 - 10,000	varies		Cust. Spec	3/8" - 1/2"
800-322-0510 ● 330-725-4905 (f) 330-722-2698	Cnt-r-KUT [™] Basic Kit	Deicing/Degreasing, Penetration, Flushing	2" - 12"		2,000 - 10,000	varies		Cust. Spec	3/8" - 1/2"
www.arthurproducts.com	Cnt-r-KUT [™] Basic Mini Kit	Roots and Other Blockages	2" - 12"		2,000 - 10,000	varies		Cust. Spec	3/8" - 1/2"
apc@apclsq.com	Cnt-r-KUT [™] Tow Hook	Pulling and towing Applications	2" - 12"	2.5 to 80	1,200 - 15,000	varies	Cust. Spec	Cust. Spec	3/8" - 1/2"
SEE AD ON PAGE 91	Cnt-r-KUT™ Tow Hook Mini	Pulling and towing Applications	2" - 12"	2.5 to 80	1,200 - 15,000	varies	Cust. Spec	Cust. Spec	3/8" - 1/2"
	Mini-Mole	Special tapered thread for use in small tube cleaning on rigid lance	.200" - 1"	1.7 to 20	1,200 - 10,000	varies	Cust. Spec	Cust. Spec	Special tapered thread
	Rodder Jets	General tube cleaning for use on Rigid Lance	.250" - 1"	1.7 to 40	1,200 - 15,000	varies	Cust. Spec	Cust. Spec	Various male thread sizes
	Cnt-r-KUT [™] Centering Device	Flexible elastomer for nozzle centering - for your existing nozzles	1" - 24"	1.7 to 80	1,200 - 10,000	varies			3/8" - 1/2"
	Mega-Thruster PX Revolver	Full 360° rotation for cleaning & polishing; designed for long runs	1" - 24"	1.7 to 80	1,200 - 10,000	varies	4	3	3/8" - 1/2"
Chempure Products Corp. P0 Box 740, Bolivar, 0H 44612 800-288-7873 • 330-874-4300 (f) 330-874-4448 www.rootrat.net • Iloyd@chempure.com	Root Rat	Root & Enc	2" - 30"	4 to 150		.5 lbs 5 lbs.		~	
SEE AD ON PAGE 85									

SEWER NOZZLE COMPANY DIRECTORY 2015

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight		# of Avail. Rear Jets	Hose Size/ Connecting Thread
Envirosight 111 Canfield Ave., Unit B3, Randolph, NJ 07869 866-936-8476 • 973-252-6700 (f) 973-252-1176 www.envirosight.com office@envirosight.com SEE AD ON PAGE 5 Ecorrisight	JetScan	HD video nozzle for jetter trucks and trailers	6" - 30"	40 to 80	2,000 - 3,000	16.3 lbs.		6	3/4" or 1"
Enz USA Inc.	Bulldog Antiblast	Anti-Toilet Blowing in Residential	8" - 24"	55 to 80	1,500 - 1,800	17 lbs.	6		1" - 11/4 "
1585 Beverly Ct., Unit 115, Aurora, IL 60502	Bulldog	Cleaning grease, roots, deposits, etc.	8" - 24"	50 to 120	2,000 - 2,900	17 lbs.	7	6	1" - 1 1/4 "
877-369-8721 • 630-692-7880	Rotodrill	Cleaning blocked pipes, frozen pipes, heavy debris	2" - 14"	13 to 80	2,000 - 4,000	.25 lbs. to 1.5 lbs.	1	6	1/2" - 1"
(f) 630-692-7885 www.enzusainc.com	Grenade	Flushing heavy debris	6" - 12"	40 to 80	2,000 - 3,600	11 lbs.		10	1"
sales@enzusainc.com	Chisel 60.100L	Pentrating clogs, root masses, frozen pipes	6" - 16"	50 to 80	2,000 - 3,600	6 lbs.	4	6	1"
SEE AD ON PAGE 28	10.125TR Chain Scraper	Root removal, hard grease, hard deposits	5" - 12"	14 to 80	2,000 - 3,600	6 lbs.		6	1"
	10.200R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	8" - 16"	50 to 80	2,000 - 3,600	78 lbs.		6	1"
enz Ѡ usa inc.	10.400R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	16" - 32"	80 to 120	2,000 - 3,600	105 lbs.		6	1"
	14.200 Milling Cutter	Removal of concrete & mineral deposits	8"	80 to 120	2,000 - 2,200	178 lbs.		6	1" - 1 1/4 "
	Bulldozer 50.100G	Flushing debris from larger pipe	16" - 40"	40 to 80	2,000 - 3,600	57 lbs.	1	8	1"
General Pipe Cleaners	Chisel Point Nozzle	Penetrating, breaking up debris	4" - 10"	12	2,500	4 oz.	4	6	1/2"
1101 Thompson Ave.,	Traction Nozzle	Sand and mud removal	4" - 10"	12	2,500	8 oz.		16	1/2"
McKees Rocks, PA 15136	Cleaning Nozzle	Maintenance Cleaning	4" - 10"	12	2,500	12 oz.		8	1/2"
800-245-6200 • 412-771-6300 www.drainbrain.com	Spring Leader Nozzle	Guiding hose around tight bends	2" - 10"	1.5 to 8	1,500 - 3,000	4 oz.		3 to 4	1/8" - 1/4" - 3/8"
info@drainbrain.com	Downhead Nozzle	Dropping down T's	2" - 4"	1.5 to 4	1,500 - 3,000	2 oz.		3	1/8"
SEE AD ON PAGE 2	Chain Saw Nozzle	Cutting roots	4" - 10"	4 to 12	2,500 - 3,000	2 lbs.		2 to 4	3/8" and 1/2"
JEE AD ON FAGE 2	Rotary Nozzle	Scour pipe walls clean	2" - 10"	1.5 to 12	1,500 - 3,000	2 oz. to 10 oz.		2 to 4	1/8" - 1/4" - 3/8" - 1/2"
Jetstream	15K Orbi-Jet	Surface Cleaning	N/A	25	15,000	N/A	4		1/2" NPT Female
of Houston	15K Straight Tip	Surface Cleaning	N/A	51.7	15,000	N/A	1		1/4" NPT Male
5905 Thomas Rd., Houston, TX 77041	15K Fan Tip	Surface Cleaning	N/A	51.7	15,000	N/A	1		1/4" NPT Male
800-231-8192 • 832-590-1300 (f) 832-590-1304	15K Rotomag	Pipe Cleaning	>3"	50	15,000	N/A	2	2	3/4" NPT Male
www.waterblast.com	15K Tube Spinner w/Nozzle	Tube Cleaning	>.5"	50	15,000	N/A	Various	Various	Various
sales@waterblast.com	15K Compact Nozzle	Tube Cleaning	>.5"	36.2	15,000	N/A	Various	Various	Various
SEE ADS ON PAGES 15, 65	15K Evaporator Nozzle	Tube Cleaning	>.5"	36.2	15,000	N/A	Various	Various	Various
	15K Abrasive Nozzle	Surface Cleaning	N/A	8	15,000	N/A	Various	Various	3/8" NPT Female
	20K Orbi-Jet	Surface Cleaning	N/A	7.5	20,000	N/A	4		9/16" MP Female
	20K Straight Tip	Surface Cleaning	N/A	20.7	20,000	N/A	1		Gun Nozzle Holder
	20K Fan Tip	Surface Cleaning	N/A	20.7	20,000	N/A	1		Gun Nozzle Holder
	20K Rotomag	Pipe Cleaning	>3"	55.3	20,000	N/A	2	2	3/4" MP Female
	20K Pineapple	Pipe Cleaning	>3"	7.6	20,000	N/A	4	6	3/4" MP Female
	20K Tube Spinner w/Nozzle	Tube Cleaning	>.5"	14.6	20,000	N/A	2	2	Various
	20K Compact Nozzle	Tube Cleaning	>.5"	41.8	20,000	N/A	Various	Various	Various
	20K Evaporator Nozzle	Tube Cleaning	>.5"	41.8	20,000	N/A	Various	Various	Various
	20K Abrasive Nozzle	Surface Cleaning	N/A	4.8	20,000	N/A	Various	Various	9/16" MP Female
	40K Tornado Nozzle	Surface Cleaning	N/A	8.2	40,000	N/A	3 to 4		9/16" Button Seal
	40K UHPE Nozzles	Tube Cleaning	>.5"	7.8	40,000	N/A	Various	Various	Various



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SEWER NOZZLE COMPANY DIRECTORY 2015

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight		# of Avail. Rear Jets	Hose Size/ Connecting Thread
MyTana	Cornering	Navigating Elbows	1 1/2" - 8"+	2 to 8	1,500 - 3,000	< 8 oz.	1	3	1/8" - 1/4" - 3/8" - 1/2"
Mfg. Co. Inc.	Pentrating Thrust	Paper Products	1 1/2" - 8"+	2 to 8	1,500 - 3,000	< 8 0Z.	1	3	1/8" - 1/4" - 3/8" - 1/2"
746 Selby Ave., St. Paul, MN 55104	Blind Thrust	Pulling Power	1 1/2" - 8"+	2 to 8	1,500 - 3,000	< 8 0Z.		4	1/8" - 1/4" - 3/8" - 1/2"
800-328-8170 • 651-222-1738 (f) 651-222-1739	Monster Flush	Pulling & Cleaning	1 1/2" - 8"+	2 to 8	1,500 - 3,000	< 8 0Z.	1	6	1/8" - 1/4" - 3/8" - 1/2"
www.mytana.com	General	Cleaning	1 1/2" - 8"+	2 to 8	1,500 - 3,000	< 8 0Z.		6	1/8" - 1/4" - 3/8" - 1/2"
jdonaldson@mytana.com	Degreasing/Delcing	Grease & Frozen Lines	1 1/2" - 8"+	2 to 8	1,500 - 3,000	< 8 0Z.	3	6	1/8" - 1/4" - 3/8" - 1/2"
SEE AD ON PAGE 29	Rotating	Cleaning	1 1/2" - 8"+		1,200 - 4,000	< 8 0Z.		2	1/4" - 3/8" - 1/2"
	Drop Head	Touch Corners Commercial	1 1/2" - 4"	2 to 2	1,500	< 8 oz.		3	1/8" - 1/4"
	Jetter Leader	Navigating	3" - 8"	4 to 12	3,000	< 8 oz.		4	3/8"
NLB Corp.	Typhoon™ 10	Tube Cleaning	5/8" - 3/4"	9 to 20	15,000 - 40,000	2 oz 4 oz.	4 to 5		varies inches
29830 Beck Rd., Wixom, MI 48393	Typhoon™ 20	Pipe & Tube Cleaning	6" - 10"	20	24,000	2 oz.	4 to 5		3/4" - 24"
248-624-5555 • (f) 248-624-0908 www.nlbcorp.com	TS-1	Tube Cleaning	1/2"		10,000 - 15,000		1 to 4	6	1/16" NPT
nlbmktg@nlbusa.com	TS-1-20K	Tube Cleaning	1/2"	4 to 10	20,000		1 to 4	2 to 6	1/4" UFN
	TS-1-40K	Tube and Pipe Cleaning	1/2"	4.75 to 8	40,000		1 to 2	2 to 3	1/4-28" UNF
SEE ADS ON PAGES 72, 92	RLM	Pipe and Tube Cleaning	1/2" - 1 1/2"	5 to 18	10,000 - 20,000		1 to 4	3 to 6	varies
NozzTeq [®] Inc.	BL Swiper™ (Med)	Reduce blown toilets and safe in lined pipes	8" - 18"	15 to 250	400 - 4,000	3 lbs.		4	1/2" - 3/4" - 1" - 1 1/4"
1497 Main St. #354,	HAMMERHEAD™	High performance sewer cleaning or storm water cleaning	6" - 12"	5 to 80	400 - 4,000	4 lbs.		4	1/2" - 3/4" - 1"
Dunedin, FL 34698	Multi-Global Nozzle™	Sewer and pipe cleaning for penetration	2" and Up	4 to 170	400 - 4,000	2 lbs.	4	6-Jan	1/2" - 3/4" - 1" - 1 1/4"
866-620-5915 • 603-413-6583 (f) 603-413-6744	JAWS™	High performance sewer and pipe cleaning heavy debris	6" - 30"	30 to 265	400 - 4,000	7 lbs.		5	1/2" - 3/4" - 1" - 1 1/4"
www.nozzteq.com info@nozzteq.com	IceBear Penetrating Nozzle™	Sewer and pipe cleaning penetrating nozzle	1" and Up	4 to 170	400 - 4,000	1 - 3 lbs.	3		1/4" - 1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
SEE AD ON PAGE 60	C-RAY 200™	Bottom cleaning for sewer and pipe	12" - 36"	30 to 265	400 - 4,000	22 lbs.	1	6	1/2"
SEEAD ONT AGE OF	C-RAY 400™	Bottom cleaning for sewer and pipe	15" and Up	40 to 350	400 - 4,000	42 lbs.	1	8	3/4" - 1" - 1 1/4" - 1 1/2"
	BL Swiper [™] (large)	Ventura effect type nozzle to clean with water in the line and sucks the water down	15" and Up	40 to 265	400 - 4,000	13 lbs.		39	
	Spinner Nozzles (No rebuilds)	Grease and other obstructions	4" and Up	14 to 350	400 - 4,000	3 - 15 lbs.	2		1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
	Goblin Grease Eater™	Grease nozzle sewer lines or storm lines	6" and Up	40 to 350	400 - 4,000	12 lbs.	1	10	3/4" - 1" - 1 1/4" - 1 1/2"
	NATAB	Penetration with sewer and pipe cleaning	4" - 12"	5 to 50	400 - 4,000	3 lbs.	1	4	1/2" - 3/4"
	BL Swiper™ (Small)	Helps reduce blown toilets with 1/2" and 3/4" units	4" - 12"	10 to 80	400 - 4,000	2 lbs.		4	1/2" - 3/4"
	MONRO-JET™	Hydro-Excavation	2" - 8"	3 to 20	2,000 - 36,000	2 lbs.	1		1/2"
	ORCA™	Two truck operation at either end of the pipe	15" - 60"	40 to 350	400 - 4,000	15 lbs.		8	3/4" - 1" - 1 1/4" - 1 1/2"
	Missile Nozzle	Heavy duty cleaning with optional front jet	6" - 36"	40 to 265	400 - 4,000	10 lbs.	4	6	3/4" - 1" - 1 1/4" - 1 1/2"
	Golden Nozzle	Recycled water use with our same tube system technology	6" - 36"	40 to 265	400 - 4,000	6 lbs.	1	6	3/4" - 1" - 1 1/4" - 1 1/2"
	C-RAY 800™	Dual truck operation for double the flow for large pipes	36" - 96"	120 to 350	400 - 4,000	50 lbs.		8	3/4" - 1" - 1 1/4" - 1 1/2"
RIDCID 400 Clark St, Elyria, OH 44035 800-769-7743 • 440-323-5581 (f) 440-329-4862 www.ridgid.com ridgidinfo@emerson.com SEE AD ON PAGE 9	Root Ranger RR3000	Roots	4" - 8"	4.5 to 5.5	3,000 - 4,000	1.4 lbs.		1	1/4" NPT Female
Spartan Tool	Warthog	Roots, Grease, General Cleaning	2" - 18"	12 to 35	2,000 - 4,000	1 - 5 lbs.	1	4	3/8" - 1/2"
1506 W Division St., Mendota, IL 61342 800-435-3866 ● 815-537-7411 ● (f)	Sandshoe	Sand, dirt and rocks	4" - 18"	12 to 18	2,000 - 4,000	7 lbs.		4	3/8" - 1/2"
888-876-2371	Rotating	Scrubbing pipe walls	2" - 12"	4 to 18	2,000 - 4,000	1 - 3 lbs.		3	1/4" - 3/16" - 3/8" - 1/2"
www.spartantool.com	Q Nozzle	Downhill jetting	4" - 12"	12 to 18	2,000 - 4,000	1 - 2 lbs.	3	4	3/8" - 1/2"
customerservice@spartantool.com	Rocket Nozzle	Long distance jetting	4" - 12"	12 to 18	2,000 - 4,000	2 lbs.	1	4	3/8" - 1/2"
SEE AD ON PAGE 100	Closed Nozzle	Standard jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb.		4	3/8" - 1/2"
	Open Nozzle	Standard jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb.	1	4	3/8" - 1/2"
SPARTAN	Brass Ball	Stainless steel hose jetting	2" - 8"	4 to 18	2,000 - 4,000	1 lb.		4	3/16"

SEWER NOZZLE COMPANY DIRECTORY 2015

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight		# of Avail. Rear Jets	Hose Size/ Connecting Thread
Stone Bro. Inc.	Warthog WGR Magnum	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	13 lbs.	1	4	1"
StoneAge, Inc. 466 Skylane Dr., Durango, CO 81303	Warthog WG-1	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	10 lbs.	1	4	1"
866-795-1586 • 970-259-2869	Warthog WGP-1	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	10 lbs.	1	4	1"
www.sewernozzles.com bill.shires@stoneagetools.com	Warthog WHP	Sewer jetting	6" - 18"	15 to 50	1,500 - 4,000	4 lbs.	1	2	1/2" - 3/4"
	Warthog WH	Sewer jetting	6" - 18"	10 to 45	1,500 - 8,000	4 lbs.	1	2	1/2" - 3/4"
SEE AD ON PAGE 4	Warthog WS - 1/2	Sewer jetting	4" - 8"	8 to 20	1,500 - 5,000	3 lbs.	1	2	1/2"
	Warthog WT - 3/8	Sewer jetting	3" - 6"	5 to 12	1,500 - 5,000	1 lb.	1	2	3/8"
	Warthog WV - 1/4	Sewer jetting	2" - 4"	3 to 8	2,000 - 5,000	1 lb.	1	2	1/4"
	Warthog WD 1-1/4	Sewer jetting	8" - 36"	80 to 120	1,500 - 5,000	11 lbs.	1	6	1-1/4"
US Jetting, LLC	RDP (Rapid Power Delivery)	General all purpose cleaning nozzle	3"-18"	10-36	10,000	1 lb	1-4	6	3/8" - 1"
850 McFarland Pkwy., Alpharetta, GA 30004	RPD Chisel and Egg Style	Forward push when working down stream with the flow	2"-18"	10-65	5,000	1-3 lbs	1-4	6-12	3/8'-1"
800-538-8464 • 770-740-9917	Standard Drain Jet	De Icing or hard blockage penetration	3"-8"	6-18	5,000	6oz	1	6	1/2"
(f) 770-740-0297	Ball Jets	Used in damaged pipes with offset joints	1"-8"	4-25	5,000	6 oz-1lb	1	3-6	1/8" - 1/2"
SEE AD ON PAGE 59	Dragon Jet	Large diameter storm drain culvert cleaning	10" - 48"	18-80	4,000	50 lbs	0	4	1/2" - 1"
	Water Lubcricated Rotary Nozzle	Grease and Root Removal	4"-12"	10-25	10,000	3 lbs	1	2	
	Controlled Rotation Nozzle	Grease, roots and hard scale	4"-18"	6-80	8,000	5-20lbs	1	2-4	
	Monro Oribital Drain Nozzle	Cutting obstacles out of pipes	4"-12"	10-30	10,000	5lbs	1	3	
	Vac Pump	Venturi vac pump		10-25	3,000	40lbs			
USB -	Flying Nozzle - 3D	Hilly difficult terrain; Silt, Sand & Large Debris Removal	4" - 24"	13 to 120	2,000 - 4,000	1/2/5/12 lbs.		6/8	1/2" - 3/4" - 1" - 1 1/4"
Sewer Equipment	Cleaning Nozzle - 3D	General Cleaning of Sand, Silt, Mud & Grease	4" - 15"	13 to 80	2,000 - 4,000	1/2/5/7.5 lbs.	1	7/9/9/11	1/2" - 3/4" - 1"
Corporation 1700 Enterprise Way, Ste. 116,	Pipe Wolf	Total obstructions & Blockages caused by Roots, Grease & Organic Solid Material	4" - 24"	15 to 120	2,000 - 4,000	2.2/5.8/12.8 lbs.	3	6	1/2" - 3/4" - 1" - 1 1/4"
Marietta, GA 30067 866-408-2814 ● 770-984-8880	Primus Nozzle	Grease, Scale, Crusts & Roots	4" - 24"	15 to 120	2,000 - 4,000	2.5/7/8/19.4 lbs.	5/6	3/4/2006	1/2" - 3/4" - 1" - 1 1/4"
(f) 770-984-2802	Superior Penetrator Nozzle - 3D	Pipe lines w/off-sets, drop joints, voids, etc.	6" - 15"	30 to 120	2,000 - 3,000	9.8 lbs.	1	8	3/4" - 1" - 1 1/4"
www.usbsec.com info@usbsec.com	Dredger Nozzle	Removal of heavy solids, silt, sand & sludge at the bottom of pipe	12" - 96"	40 to 120	2,000 - 3,000	22/40/56/59 lbs.		6/8/10/14	3/4" - 1" - 1 1/4"
SEE AD ON PAGE 42	Antiblaster Nozzle - 3D	Shallow sewer lines, Sewer lines close to homes	6" - 12"	30 to 80	2,000 - 3,000	4 lbs.	1	8	3/4" to 1"
·////	Ultimate Chisel Nozzle	Total obstructions, blockages & pipe deformations	6" - 24"	50 to 120	2,000 - 3,000	5.2 lbs.	4	6	1/2" - 3/4" - 1" - 1 1/4"
	Grand Slam - 3D	General Sewer Cleaning	6" - 15"	50 to 120	2,000 - 3,000	12 lbs.		8	3/4" - 1" - 1 1/4"
USB - SEC	Super Slam - 3D	General Cleaning in large sewer/storm lines	10" - 40"	50 to 120	2,000 - 3,000	15 lbs.		12	3/4" - 1" - 1 1/4"
VADO	Super Sewer Squad Kit	Penetration, Flushing, Deicing, Degreaser, Polishing	1" - 24"	1.7 to 80	1,200 - 10,000	varies	Cust Snec	Cust. Spec	1/8" - 1"
VARCO 7489 Mason King Ct.,	Elite 6 Pack Nozzle Kit	Penetration, Flushing, Deicing, Degreaser, Polishing	1" - 24"		1,200 - 10,000	varies		Cust. Spec	1/8" - 1"
Manassas, VA 20109	Evaporator (EV)	Deicer, degreaser	1" - 24"		1,200 - 10,000	varies		Cust. Spec	1/8" - 1"
866-872-1224 • 703-334-5980 (f) 703-334-5979	Impactor (LT)	Heavily fouled pipes	1" - 24"		1,200 - 10,000	varies		Cust.Spec	1/8" - 3/4"
www.varcopumper.com	PX Revolver	Full 360° rotation for cleaning & polishing	1" - 24"		1,200 - 10,000	varies	Optional	Cust. Spec	1/8" - 3/4"
ron@varcopumper.com	Round Nose (Button)	General Cleaning/Cornering	1" - 24"		1,200 - 10,000	varies		Cust. Spec	1/16" -1"
SEE AD ON PAGE 54	Round Nose Hex	Penetration or Flushing	1" - 24"		1,200 - 10,000	varies		Cust. Spec	1/8" - 1"
	B Style	Pentration or Deicing, Degreaser	1" - 24"		1,200 - 10,000	varies		Cust. Spec	1/8" - 3/4"
	Arrino Faathla	Drain Classing & Flucking	0" 10"	7 to 90	4.000	0 oz - 0 0 lbo	1	G	1// ¹¹ 0/0 ¹¹ 1/0 ¹¹ 0// ¹¹
Water Cannon Inc. 4044 W Lake Mary Blvd.,	Arzino - Eggstyle	Drain Cleaning & Flushing	2" - 10"	7 to 80	4,000	2 oz 3.3 lbs.	1	6	1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4"
Units 104-424, Lake Mary, FL 32746 800-333-9274 (f) 888-928-9274 www.watercannon.com sales@watercannon.com SEE ADS ON PAGES 92, 98	Aqua-Noz	Drain Cleaning	1" - 24"	2 to 80	1,200 - 15,000	.05 lbs55 lbs.	3	6	1/4" - 3/8" - 1/2"
								-	

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SEVIER NOZZIE DISTRIBUTORS DIRECTORY 2015

	COMPANY	NOZZLE LINES
SEE ADS PAGES 25, 53	Allan J. Coleman 5725 N Ravenswood Ave., Chicago, IL 60660 773-728-2400 • (f) 773-728-2499 info@allanjcoleman.com • www.allanjcoleman.com	Aqua Mole, StoneAge Warthog
SEE AD PAGE 43	Amazing Machinery, Inc. 2160 S Lee Hwy, Cleveland, TN 37311 800-504-7435 • 423-472-2527 • (f) 800-504-7436 www.amazingmachinery.com • sales@amazingmachinery.com	Arthur Products, Suttner, MTM Hydro, J.E. Adams
SEE AD PAGE 48	Draincables Direct 1703 Toll Gate Dr., Maumee, OH 43537 800-421-4580 • (f) 800-752-8524 www.draincables.com • sales@draincables.com	Aqua Mole
	Dultmeier Sales 13808 Industrial Rd., Omaha, NE 68137 800-228-9666 ● 402-333-1444 ● (f) 402-333-5546 www.dultmeier.com ● dultmeier@dultmeier.com	Arthur Products, Suttner, Spraying Systems, Mosmatic, UDOR
SEE ADS PAGES 15, 65	Jetstream of Houston 5905 Thomas Rd., Houston, TX 77041 800-231-8192 • 832-590-1300 • (f) 832-590-1304 www.waterblast.com • sales@waterblast.com	StoneAge
SEE AD PAGE 54	Jetter Depot 745 Atlanta Rd., Ste. 207, Cumming, GA 30040 (f) 678-807-2944 sales@jetterdepot.com • www.jetterdepot.com	Nuova Contec
SEE AD PAGE 92	MTech 7401 First Pl., Cleveland, OH 44146 800-362-0240/440-646-0996 • (f) 440-646-9953 www.mtechcompany.com • sales@mtechcompany.com	Warthog, Phantom Grenade, Advanced Workhorse, StoneAge, UEMSI, Spider Root Cutter
SEE AD PAGE 57	PrimeLine Products, Inc. 309 Altamonte Commerce Blvd., Blvd. 1518, Altamonte Springs, FL 32714 877-409-7888 • 407-772-8131 • (f) 407-786-8131 www.primelineproducts.com • andy@primelineproducts.net	NozzTeq
SEE AD PAGE 100	Spartan Tool 1506 W Division St., Mendota, IL 61342 800-435-3866 • 815-537-7411 • (f) 888-876-2371 www.spartantool.com • customerservice@spartantool.com	StoneAge Warthog
SEE ADS PAGES 87, 90	The Cable Center 8318 Olive Blvd., St. Louis, MO 63132 800-257-7209 • 314-993-3099 • (f) 314-432-8024 www.thecablecenterinc.com • thecablecenter@gmail.com	General Wire Spring, RIDGID, StoneAge
SEE ADS ON PAGES 92, 98	Water Cannon Inc. 4300 W Lake Mary Blvd. Units 101–424, Lake Mary, FL 32746 800–333–9274 ● (f) 888–928–9274 www.watercannon.com ● sales@watercannon.com	Canin, Carnia, Fara, Isonzo, Raat, Natisone, Piave, Rotor Spin, Tremol, Turbo Avian, MTM Hydro
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Education Day Sessions

Wednesday, February 17, 2016

NAWT

National Association of Wastewater Technicians Rooms 234-236

8 a.m.	Basics of Septic System Control Panels
9:30 a.m.	Using Septic Control Panels to Troubleshoot Systems
11 a.m.	Inspectina Concrete Sewaae Tanks
1:30 p.m.	An Exercise in Septic System Troubleshooting
3 p.m.	The Basics of Inspecting Drip Systems
4:30 p.m.	NAWT Ask the Experts Panel Discussion

SSPMA

Sump and Sewage Pump Manufacturers Association Rooms 133-135

Understanding Pumps and Common Pumping Issues
Evaluation and Installation of Backup Pump Systems
Best Installation Practices for Trouble-Free Pump Controls
Troubleshooting Pumps, Panels and Switches
with Digital Multimeters
Sizing Guidelines for Sump, Sewage and Grinder Pumps
SSPMA Ask the Experts Panel Discussion

Business Strategies Rooms 140-142

8 a.m.	How Much Should I Charge?
9:30 a.m.	Business Game Changers: Top 5 Secret Strategies
	for Massive Growth in Your Service Business
11 a.m.	The Un-Business Plan — Making Your Business
	Less Complicated But More Profitable
1:30 p.m.	How to Use Superior Customer Service to Increase Sales
3 p.m.	Reward the Right Stuff: Finding, Training and
-	Keeping Great Team Members
4:30 p.m.	Is Your Business Prepared for a Crisis?

Industry Safety Track Rooms 237-239

8 a.m.	Pre-Engineered Shoring Systems for Cross-Trench
	Utility Challenges
9:30 a.m.	Excavation Safety
11 a.m.	OSHA Confined Space, Air Monitoring and
	Fall Protection Explained

SSCSC

Southern Section Collection Systems Committee Rooms 231-233

8 a.m.	Positioning Yourself for Promotion and Succession Planning
9:30 a.m.	Step Up Your Game! Taking Current CCTV Inspection
	Technology to the Next Level
11 a.m.	Trailer Jetting — Getting the Most Out of Your Equipment

- Trailer Jetting Getting the Most Out of Your Equipment
- 1:30 p.m. Vacuuming: the Other Half of the Combination Unit
- Sewer System Maintenance Challenges and Solutions 3 p.m.
- 4:30 p.m. SSCSC Ask the Experts Panel Discussion

NOWRA

National Onsite Wastewater Recycling Association Rooms 240-242

8 a.m.	Introduction to Soils
9:30 a.m.	Onsite Septic System Loading Rates and Site Layout Making Infiltration Decisions – Understanding Soil Surface Design
11 a.m.	Making Infiltration Decisions —
	Understanding Soil Surface Design
1:30 p.m.	Soil Dispersal Comparison Introduction to the Elements of Onsite System
1:30 p.m. 3 p.m.	Introduction to the Elements of Onsite System
	Design and Regulations Onsite Septic System Hydraulics and Pump Design
4:30 p.m.	Onsite Septic System Hydraulics and Pump Design

Portable Sanitation Track Rooms 136-138

1:30 p.m.	Marketing Basics: How to Effectively and Efficiently Grow
	Your Portable Sanitation Sales
3 p.m.	Marketing Basics: How to Effectively and Efficiently Grow Your Portable Sanitation Sales Portable Sanitation Forum: Current and Future Critical Issues Affecting the Industry Discussion Trust — How to Build it and Use it to Grow Your Portable Sanitation Business
	Issues Affecting the Industry Discussion
4:30 p.m.	Trust — How to Build it and Use it to Grow Your
-	Portable Sanitation Business

NASSCO

National Association of Sewer Service Companies Rooms 130-132

8 a.m.	Cleaning Nozzle Technology
9:30 a.m.	Large vs. Small-Diameter Pipe Cleaning
11 a.m.	The Lower Lateral — The New Frontier in Sewer Rehab
1:30 p.m.	Chemical Grouting Technologies
3 p.m.	The Growth of the UV Cured CIPP Process
4:30 p.m.	NASSCO Ask the Experts Discussion Panel

Treatment Plant Operator Track Rooms 243-245

8 a.m.	Effective Strategies for Collections System Management
9:30 a.m.	Sustainable Innovation in Biosolids Management
11 a.m.	Pretreatment and Wastewater Lagoon Management
1:30 p.m.	Septage Collection and Treatment
3 p.m.	Large Scale FOG/Septage Receiving Station —
	Lantern Environmental Project Case History
4:30 p.m.	Progress in Electrochemical Water Treatment in Last Century

WITA-IMCA

Water Jet Technology Assoc. - Industrial Municipal Cleaning Assoc. Rooms 237-239

1:30 p.m.	Proper Industrial Truck Maintenance Can More Than
	Pay for Itself in Productivity and Safety
3 p.m.	Pay for Itself in Productivity and Safety Air Conveyance Through an Industrial Vacuum Truck
4:30 p.m.	Vacuum Excavation Applications and Opportunities

Women in Business Rooms 136-138

8 a.m.	Marketing to Women
9:30 a.m.	Women of Wastewater: Building a Community of Allies
11 a.m.	Women in Wastewater Roundtable

Vacuum Truck Equipment and Operation Training

presented by NAWT National Association of Wastewater Technicians

Rooms 109-110 8 a.m. - 5 p.m.

This day-long session will discuss in detail the equipment on vacuum trucks and how to operate them. Pumping terms will be covered, as will safety principles, materials often encountered on the job and government regulations.





WWETT Education Sessions

Thursday, February 18, 2016

Liquid Waste Treatment & Disposal

Rooms 130-132

8 a.m.	Analysis of Drainfield Failures and Restoration Methods
9:30 a.m.	Cash In on Community System Operations and
11 a.m.	Maintenance Ultra-Efficient Inspection Technique to Locate Leaks on Septic Systems

SSCSC Sewer & Drain Cleaning Course

Rooms 231-233

8 a.m. 10 a.m.

Hands-On Nozzle Technology Hands-On Jetter Hose Maintenance — Care and Repair

Sewer & Pipe Rehabilitation, **Relining & Repair**

Rooms 234-236

8 a.m.	Take Control of Inflow and Infiltration in Manholes
9:30 a.m.	When Things Go Wrong on a Lining Job
11 a.m.	Taking Small-Diameter Drain Lining Inside Infrastructure

Sewer & Drain Cleaning, **Inspection & Repair**

Rooms 133-135

8 a.m.	Using the Clean Water Act to Grow Profits
9:30 a.m.	Winning Trench Warfare — Finding Profitability
	in Sewer/Septic Work
11 a.m.	Your Best Shot at Sewer Success —
	How to Get the Most From Inspection Technology

Onsite Septic Installation, **Repair & Design**

Rooms 237-239

Overview of Application, Design, Installation
and Operation of Drip Dispersal Systems
Onsite System Pump Design Made Easy
The Onsite Wastewater Industry and Our Carbon Footprint

Treatment Plant Operator Rooms 243-245

Smart Water Technology in Theory and Practice 8 a.m. Dissolved Ozone in Municipal Collection, Treatment 9:30 a.m. and Disposal 11 a.m. Municipal Biological Waste Treatment

Business Strategies

Rooms 136-138

8 a.m.	How Self-Employed People Can Make More Money
9:30 a.m.	Growing Your Business in a Tough Economy
11 a.m.	Staying in Front of Your Customer

NOWRA Design Course

Rooms 240-242

8 a.m.	Mound and At-Grade Design
9:30 a.m.	Low-Pressure Pipe in Drainfield Distribution
11 a.m.	Subsurface Drip Irrigation

Municipal Sewer & Water

Rooms 140-142

8 a.m.	How to Recover Non-Revenue Water
9:30 a.m.	Phased Assessment Strategy for Sewers - Understanding
	Sewer Condition Quicker with Fewer Resources
11 a.m.	The Science of Pipe Cleaning — Flow and Pressure



Many states approve WWETT education sessions toward fulfilling required certified education units or professional development hours.

See wwettshow.com for a list of approved states and courses.



Friday, February 19, 2016

Liquid Waste Treatment & Disposal Rooms 130-132

8 a.m.	Fact vs. Fiction: The Top Ten Septic Myths
9:30 a.m.	Fact vs. Fiction: The Top Ten Septic Myths All About Facultative Bacteria
11 a.m.	Brown Grease Recovery From Grease Trap Waste: Science
	and Economics

Industry Safety Rooms 140-142

8 a.m.	Identifying and Managing Risk in a Septic or Sewer Business
	in a Septic or Sewer Business
9:30 a.m.	How Well Do You Know Your Cleaning Hose?
11 a.m.	Pathogen Exposures to Workers in the Onsite Industry

Business Strategies Rooms 240-242

8 a.m.	Creating a Data-Driven Strategic Marketing Plan
9:30 a.m.	What Every Sewer and Drain Contractor Needs to Know
	About Asset Protection, Tax Reduction and Estate

Municipal Sewer & Water Rooms 240-242

11 a.m. GIS: Empowering Water, Wastewater and Waste Removal Organizations

Sewer & Drain Cleaning, **Inspection & Repair** Rooms 133-135

8 a.m.	Advanced Pipe Bursting
9:30 a.m.	Low-Latency, High-Definition Video Over
	Advanced Pipe Bursting Low-Latency, High-Definition Video Over Coaxial Cable for Remote Inspection Plumbers vs. Technicians: The Slow Decline of the
11 a.m.	Plumbers vs. Technicians: The Slow Decline of the
	Tradesman

Municipal Sewer & Water Rooms 231-233

- 8 a.m. Using Acoustic Inspection to Prioritize Sewer Cleaning 9:30 a.m. Evaluation of Automatic Filters for Nozzle Protection in
- 11 a.m. Flow Monitoring – How to Make Your Program Successful

Treatment Plant Operator Rooms 243-245

8 a.m. Insights into Ozone Water Treatment Plants 9:30 a.m. Wastewater Microbiology 11 a.m. How to Ensure Gold is the Result - Choosing the Right Dewatering Equipment



Business Software & Technology Rooms 136-138

8 a.m.	Know the State of Your Business Using
	Business Charts and Reports
9:30 a.m.	Know the State of Your Business Using Business Charts and Reports Using Software to Save Time and Increase Profits Using Mobile Devices for Business
11 a.m.	Using Mobile Devices for Business

Sewer & Pipe Rehabilitation, **Relining & Repair** Rooms 234-236

8 a.m.	Buying Back Capacity
9:30 a.m.	Successful Reduction of 1&1 Using the Holistic
	Approach to Sewer Rehabilitation Large Scale Centrifugally Cast Concrete Pipe Culvert
11 a.m.	Large Scale Centrifugally Cast Concrete Pipe Culvert
	Rehab in CO Dept. of Transportation Region 1

COLE Publishing's Onsite Installer Course

Rooms 237-239 8 a.m. - 5 p.m.

This day-long session will walk professionals through an introduction to proper installation practices for the sustainable use of onsite treatment systems

Detailed session information available at: www.wwettshow.com





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PRODUCT FOCUS

Hydroexcavation and Industrial Jet/Vac Services, **Sewer Nozzles**

By Craig Mandli

Jet/vac combo units, high-powered and high-capacity vacuum trucks, hydroexcavation systems, portable jetters and cleaning nozzles make up the tool fleets for most drain cleaning businesses. Consider these products, along with root control and safety equipment, if you're looking to take on hydroexcavation jobs.

CLEANING NOZZLES

ENZ USA BULLDOG ANTIBLAST

The Bulldog Antiblast nozzle from Enz USA helps prevent backflow into toilets while jetting in residential areas. It reduces the water pressure through toilets and vent traps, reducing negative pressure arising ahead of the nozzle or excess



pressure following the nozzle if the installations are not correct or venting is not working properly. The low-maintenance unit provides streak-free, allaround cleaning. 888/369-8721; www.enzusainc.com.

GENERAL PIPE CLEANERS HIGH-PERFORMANCE NOZZLES

General Pipe Cleaners highperformance nozzles increase water jet performance. They incorporate fluid mechanics to significantly increase thrust, pulling power and cleaning



power without needing to increase water flow or pressure. The nozzles are custom-machined to redirect the water through efficient inner surface channels directed toward each orifice. The nozzles have replaceable threaded inserts at each orifice so when the nozzle wears, the technician only has to replace the inserts, not the whole nozzle. The penetrating Chisel Point nozzle with four forward jets and six back jets breaks up debris and hard grease deposits, and melts ice clogs. The Traction nozzle pulverizes sand and mud blockages with one forward jet and six back jets. The Cleaning nozzle has the thrust to pull the hose long distances with all eight jets to the rear. 800/245-6200; www.drainbrain.com.

HAMMELMANN CORP. PIPEMASTER

The Hammelmann Corp. Pipemaster is a manually operated, high-pressure hoserotating system. It is used to remove both soft and hard deposits from the insides of pipes and pipelines, including those with bends and vertical sections. A high-pressure supply hose line is fixed between the pump and the rotary



joint on the hose-rotating unit. A second hose is connected to the rotary joint and runs via the deployment unit into a protective hose to the positioning device at the work piece. The rotation of the second high-pressure hose around its longitudinal axis is affected by a chain drive from a pneumatic motor to the rotary joint. The rotation speed can be smoothly adjusted with throttle check valves. Actuating the control lever of the unit causes the hose to start rotating, which in turn produces the forward motion. The hose deployment unit is mounted on a sturdy base plate and comprises the height-adjustable control lever to deploy or retract the hose. 800/783-4935; www.hammelmann.com.

ID-TEC SR-SERIES

SR-SERIES precision jet cutting equipment from **ID-TEC** can be used with water pressures up to 29,000 psi for trenchless removal of FOG, stoppages, calcium, roots, plastics, cement and concrete in 7- to 40-inch pipelines. Water is pumped under high pressure through a steerable cutting nozzle at the front of the robot. The



remaining water blast is aimed at the blockage and cuts holes in it. The pressure inside these holes rises until it breaks the concrete loose. A color camera and high-power LEDs provide perfect vision during the operations. 503/504-8474; www.sewerrehabilitationseries.com.

PIPEHUNTER RED DAWG 10-JET

The Red Dawg 10-Jet, distributed by PipeHunter, has 10 rear-facing stainless steel replaceable inserts set up at two different angles. Tier 3 internals help to maximize cleaning potential for all water systems. Dualangled jets help focus on thrust and cleaning at the same time. It is offered in two sizes -2.3



and 3.5 inch. It can be set up for flows from 14 to 80 gpm for any jetter/combo machine. 800/373-1318; www.reddawgnozzles.com.

RAPIDVIEW IBAK NORTH AMERICA PHOBOS

The **PHOBOS** line of flushing nozzles from RapidView IBAK North America attach to IBAK pushrods to propel the camera up the line while cleaning. All nozzles can be used with IBAK LISY lateral launch systems or MiniLite



push cameras. They allow the technician to inspect the mainline, conduct lateral inspection and clean. The nozzles come in four different models. The PHOBOS 1 can be used for heavier cleaning jobs, supporting greater water pressure and a 30-degree jet angle. The PHOBOS 4 is capable of reversing direction and helping retrieve the camera around bends in the pipe. 800/656-4225; www.rapidview.com.

HYDROEXCAVATION EQUIPMENT

HYDRA-FLEX SWITCHBLADE

The Switchblade linear hydroexcavation nozzle from Hydra-Flex blasts a combination of up to four zero-degree straight water streams at up to 3,200 psi, forming a long, linear flow path for trenching applications. Individual, replaceable, color-coded nozzle tips allow the operator to



Hydra-Flex

change the water flow rate and spray pattern for each job and its soil conditions. Its optimized stream quality results in increased impingement, allowing the operator to cut through soil faster and use less water. They are constructed with stainless steel housings and tungsten carbide wear surfaces to withstand harsh environments and provide long life. A non-conductive urethane coating on the nozzle body protects the user and sensitive underground utilities. 952/808-3640; www.hydraflexinc.com.

SOIL SURGEON

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



STONEAGE HYDRO-X TOOLS

The Hydro-X line of hydroexcavation tools from StoneAge offers four options for accessing utilities and precisely excavating an area with high-pressure water. Tool configurations include a single hard-hitting jet head for accurate digging, a dual-jet head that divides a pump's power into a wider jet path, and a triple-jet pattern that delivers a wide swath for fastest material removal. The

60-inch single-jet lance provides extra reach for digging deep, focused holes. The tools use high-quality, long-lasting carbide nozzles and are capable of up to 5,000 psi and 12 gpm. 866/795-1586; www.stoneagetools.com.

WOMA CORPORATION ARP SERIES

ARP Series pumps from Woma Corporation cover a range up to 1,000 hp, delivering volumes up to 432 gpm and pressure ranges up to 5,800 psi. They have a compact design and incorporate an internal gear-reduction system with three different gear ratios to maximize speed and power



StoneAge

input for optimal pressure and flow output. They can be used in dirty water, have suction and discharge connections on either side, are available with either left- or right-side drive shaft, drive shaft placed on top or bottom, and pressurized gear-end lubrication systems via external crankshaft-driven oil pump. Plungers are high-grade ceramic and valves are large-bore and lowvelocity, with wear-resistant valve seats. Packing seals are long life and the pump design incorporates an internal plunger and gear-end cooling system. 800/258-5530; www.womacorp.com.

INDUSTRIAL VACUUM TRUCKS

GUZZLER MANUFACTURING NX

Built for cleanup and recovery of a wide range of materials, including solids, dry bulk powders, liquids, slurries and thick, heavy sludge, the NX industrial vacuum loader from **Guzzler Manufacturing** provides total



operator control over working speed. Its Robuschi blower delivers 5,435 cfm, with vacuum capabilities up to 28 inches. The large, injection-cooled blower allows the operator to load more material at a lower engine rpm, conserving fuel and reducing noise levels, eliminating the need for a sound shroud. It is rated at 88.9 dBA per SAE Test J1372. The cyclone and bag houses are configured together to maximize efficiency and reduce overall truck weight, without sacrificing loading capacity. An increased filter area, combined with offline cleaning, extends bag life while forcing carryover back to the debris tank. 800/627-3171; www.guzzler.com.

JET/VAC COMBO UNITS

DITCH WITCH FXT50

The Ditch Witch FXT50 truck vacuum excavator is available in a tandem rear-axle option designed to handle heavy spoils while towing a trailer, reducing overall job site equipment and fuel expenses. It includes both a receiver and pintle hitch



to meet the unique towing needs. It is a construction-grade machine built to withstand the demands of any cleanup or soft excavation application. By mounting directly to a truck's frame rails, the system can flex independently of the truck, promising stability. Customers can customize the truck with a variety of features such as tank sizes, wireless hydraulic booms and reverse flow. 580/336-4402: www.ditchwitch.com.

GAPVAX MC ADVANCED SERIES

The MC Advanced Series combination jet/vac from GapVax has display screens (one inside cab/one outside) to control hydraulics, blower and water pump operations with a complete complement of gauges. All body functions, boom and hose reel functions. vacuum break, throttle, area and safety



lighting are wirelessly controlled, while still maintaining proportional boom and hose reel control. The job card feature allows the operator to keep track of blower and water pump hours and logs time on each job. Specs include a 5- to 12-cubic-yard debris body and stainless steel water tank with the capacity of up to 2,000 gallons. Vacuum pump options range from 3,500 to 5,000 cfm with up to 27 inches Hg. The MC Series boom is an 8-foot front-mounted, telescopic design with dual lift cylinders, reaching 26 feet with a 270-degree rotation. 888/442-7829; www.gapvax.com.

FOREMOST 2000 HYDROVAC

The **2000 Hydrovac** system from **Foremost** is mounted on a tridem or quad-axle chassis. They have 2,000-gallon water tanks, 13-yard debris bodies and a 70-inch aluminum, heated, lit and insulated van body that provides ample storage room, a shelving unit and a microwave on the driver's side. It is available with either a



standard Robuschi RB-DV125 blower or optional Robuschi RB-DV145. The water system is composed of a CAT 3560 wash pump, 740,000 Btu boiler and full winterization features. The 26-foot rear-mounted extendable boom is controlled by a wireless Omnex controller, which also allows for control of the off-loading, vacuum, wash and vehicle rpm functions. This boom is stored on the rear fender with the dig tube attached for convenient digging to 18 feet of depth prior to adding any extension pipe. **403/295-5800; www.foremost.ca**.

KEITH HUBER KNIGHT PD

The **Knight PD** air-mover from **Keith Huber** is capable of 6,100 cfm and incorporates deep vacuum with the ability to pressure off-load. The Huber Master Control allows the operator to switch



easily from wet to dry product with no downtime. Its wet/dry diverter valve filtration, deep-vacuum loading and high air conveyance are designed to help move sludges and dry product. **800/334-8237; www.keithhuber.com.**

MCLAUGHLIN MEGA VAC

The McLaughlin MEGA Vac 6-inch truck-mounted vacuum excavator gives utility contractors productive potholing. The flexible, modular design enables contractors to customize the 6-inch vac to suit their job site needs. It has spoil tank capacities ranging from 1,200 to 3,000 gallons and a standard option of 800 gallons of



freshwater. It has a 6-inch hose width with a 3,200 cfm blower at 18 inches Hg. It is powered by a 200 hp John Deere Tier 3 engine. Its three-stage cyclonic filtration system allows for wet and dry vacuum excavation, and the cam-over hydraulic rear door provides a 360-degree positive seal to keep fluids securely in the debris tank. **800/435-9661; www.mclaughlinunderground.com.**

PETROFIELD INDUSTRIES TORNADO HYDROVACS F4 SLOPE

The **Tornado Hydrovacs F4 Slope** hydroexcavator from **Petrofield Industries** holds 13 cubic yards of mud and more than 2,100 gallons of freshwater. It includes a water boiler and a 3,600 to 6,300 cfm positive displacement vacuum blower to pull spoils to the tank via a



boom. The boom has a 342-degree rotation and a 26-foot reach. All critical components are housed in an insulated and heated aluminum van body. Its mud sweep empties the tank without hoisting, which eliminates the dangers of dumping on uneven ground and around overhead power lines. 877/340-8141; www.tornadotrucks.com.

POLSTON APPLIED TECHNOLOGIES PAT 360-HD

The **PAT 360-HD** from **Polston Applied Technologies** is a multipurpose cleaning truck that uses the Polston Process and COMBINATION 3 technology (a combination of jetter, vacuum and downhole pump) to provide a complete,



stand-alone cleaning system for large-diameter lines, digesters, grit chambers, lift stations, water treatment plants, ponds, lagoons and other hard-to-clean environments. It uses four 8-inch hydraulic pumps (each pumping 2,500 gpm), enabling it to pump/separate sand and water at up to 10,000 gpm. It delivers up to 1,100 hp, providing the ability to remove submerged debris and handle low-viscosity fluids. It performs in surcharged conditions, allowing the facility to remain online. It has an extra-long hydraulic knuckleboom crane, with up to 49 feet of reach from the center and 180-degree rotation to access hard-to-reach places. **844/765-7866; www.polstonprocess.com**.

RAMVAC BY SEWER EQUIPMENT HX-3

The **HX-3** truck-mounted hydroexcavator from **Ramvac by Sewer Equipment** is the smallest model in the Ramvac truck family, offering a 3-cubic-yard debris body, 0 to 10 gpm at 2,500 psi water system all

in a temperature-controlled enclosure, a compact footprint, NEMA-rated electrical system, debris blow-off system and a fully hydraulic power train. 877/735-4640; www.ram-vac.com.

Ramvac

SUPER PRODUCTS CAMEL 1200

The **Camel 1200** is available with an optional hydro excavation package that includes cartridge filters, dig tubes and specially designed water lances. Coupled with powerful waterjetting and vacuum capability, utilizing these tools allows operators to safely and effectively expose utility lines, remove debris and clean out a variety of structures, dig in congested spaces, and perform many other hydroexcavating applications. A



9-yard version is also available. 800/837-9711; www.superproductsllc.com.

TRANSWAY SYSTEMS TERRA-VEX

The **Terra-Vex** all-season hydroexcavator from **Transway Systems** has a Robuschi RB-DV145 6,400 cfm blower, with an OMSI transfer case and insulated acoustical enclosure with walk-in storage. Water pressure is achieved by the hydraulically driven Giant LP600 water



pump, delivering 10 gpm at 6,000 psi. The 2,500-gallon debris tank has a hydraulically operated hoist and door locks with a full-open door. The 1,200-gallon HDPE water tank supplies a 420,000 Btu diesel-fired burner permitting operation in subzero temperatures. The water pump and water tank compartments are heated by one diesel-fired heater and one 12-volt engine coolant heater. The 26-foot hydraulically operated 8-inch suction boom has joystick control and wireless remote control. All parts are painted/ powder-coated off the unit, with a marine-grade plywood floor enclosure, three-camera backup system and digital water level display. **800/263-4508**; www.transwaysystems.com.

VAC-CON X-CAVATOR

The **X-Cavator** from **Vac-Con** has a hydrostatic drive that uses the chassis engine for the vacuum, eliminating the need for PTO, clutch and gearbox operation. Systems are available up to 4,000 psi. A wireless remote control system enables the operator to control chassis engine rpm, boom, automatic



vacuum breaker, dump controls and hydraulic door locks from remote areas up to a half mile away. The boom rotates up to 270 degrees. **855/336-2962**; **www.vac-con.com**.

VACALL ALLEXCAVATE

Vacall AllExcavate hydroexcavators have a step-in compartment to provide operators with warmth and protection from inclement weather on winter-weather digging sites or oil and gas exploration locations. The standard heated compartment is roomy, with enough space for an operator to change out of wet and



muddy clothing. The compartment has floor drainage, racks to hang dry clothing, heated cabinets for the hose reel and water pumps, and boilers that can heat water for more effective hydroexcavation in frozen ground. The unit uses high-pressure jetting action to loosen soil, rocks and clay, then strong vacuum (up to 27 inches Hg and 5,800 cfm) to remove the material and water slurry into a debris tank. **800/382-8302; www.vacall.com**.

VACTOR MANUFACTURING HXX HYDROEXCAVATOR

The HXX HydroExcavator from Vactor Manufacturing includes a Robuschi blower option rated for 6,176 cfm and 28 inches Hg. Its 3,000 psi variable water multi-flow pump with DigRight



technology allows the operator to select a maximum water pressure limit to prevent the pressure from exceeding site or industry requirements, preventing wear and tear on check valves, unloader valves and relief valves by avoiding bypassing water. The system has three default selectable pressure limitations based on industry best practices for digging around underground utilities – 1,500, 2,500 and 3,000 psi – with the option to deactivate. **800/627-3171;** www.vactor.com.

X-VAC X-6 HYDRO EXCAVATOR

The truck-mounted X-6 Hydro Excavator from X-Vac, A Product of Hi-Vac Corporation, has a 6-cubic-yard debris tank and can store 570 gallons of freshwater with an option for a capacity of 1,000 gallons. The adjustable triplex water pump exerts 0 to 3,000 psi and is set independently of the



blower speed. Vacuum systems range in size from 2,600 cfm at 27 inches Hg

vacuum to 3,400 cfm at 16 inches Hg of vacuum. Its 6-inch vacuum hose exposes any type or size of underground utility, especially in residential areas where space is tight and crews want to avoid blocking residential streets. **740/374-2306; www.x-vac.com**.

ROOT CONTROL EQUIPMENT

CHEMPURE ROOT RAT

Root Rat cutting nozzles from Chempure Products are used with jetters from 11 hp to large truck-mounted models. The cutters are made of hardened stainless steel and come with a toolbox with two interchangeable rotors — one with cables and the other with chains. The combination kit includes extra chain, cable and bearings. They need no repair or rebuilding other than bearing



replacement, which can be completed in less than two minutes for under \$10 in parts. **800/288-7873; www.rootrat.net.**

ELECTRIC EEL MODEL C

The **Model C** dual-cable sectional drain and sewer cleaner from **Electric Eel** runs up to 200 feet of 1 1/4inch self-feeding dual cable in 8- or 10-foot sections that require no handling when rotating. It spins cable at twice the rpm of a continuous cable machine for maximum cleaning power in 3- to 10-inch lines. Oneman operation means less time and labor expense. A heavy-duty 1/2 hp motor comes standard, with 3/4 and 1 hp motors available. The heavy-duty, fully adjustable



safety clutch keeps cable and tool breakage to a minimum and provides overload protection. Its fold-down handle allows for easy transportation, storage and use in crawl spaces. Its carry handle enables balance and easy transport. **800/833-1212; www.electriceel.com**.

ENVIROSIGHT JETSCAN MINI

Deployed in pipes 6 to 10 inches in diameter, the **JetScan Mini** video nozzle from **Envirosight** gives sewer cleaning crews visual feedback to select the proper tools, troubleshoot backups, identify buried safety hazards and document successful cleaning. It



captures HD video footage from underground pipes for offline tablet viewing. It records up to eight hours of 720p HD MPEG video to an onboard 32 GB SDHC memory card. The card is easily removed to view video on an iPad or other SDHC-compatible device. Twin high-output LED lamps ensure bright, vivid footage, and rechargeable lithium-ion batteries provide up to four hours of continuous operation. It is available as a complete system, or the standalone 6-inch nozzle can be purchased separately for use with the camera from an existing JetScan. **866/936-8476; www.envirosight.com**.

NOZZTEQ LUMBERJACK

The Lumberjack cutting nozzle from NozzTeq is a low-torque, high-speed cutter for use with high water pressures. It is effective at cutting roots and is commonly used to cut grease, tuberculation, protruding laterals and other buildups. Because it's low torque, it's unlikely to cut through host



pipes. The bearings are sealed, grease-lubricated, water-cooled and largely maintenance-free. The cutters rotate at a minimum speed of 10,000 rpm with flow rates from 10 to 250 gpm at varying pressures. They operate in pipes from 3 to 48 inches. All models clean with chain links, with optional cutting blades for severe blockages. All come with a propelling jet housing, with optional tow rings. 866/620-5915; www.nozzteq.com.

USB - SEWER EQUIPMENT CORPORATION TURBO CHAIN CUTTERS



Turbo Chain Cutters from USB - Sewer Equipment Corporation are made of tempered stainless steel with continuously adjustable guide skids. The chain retainer is driven by a

high-performance turbine to remove roots, grease and mineral deposits from 4- to 48-inch sewer lines. With an optimized 3-D hydromechanics design with ceramic nozzle inserts, the cutters use recycled or clean water. They can be used as barrel cutters with diamond bits for smooth removal of protruding laterals. Heavy mineral deposits can be removed with carbide bits attached to the specialized chain. 866/408-2814; www.usbsec.com.

SAFETY EQUIPMENT

CESTUSLINE HMD CUT-5

HMD Cut-5 gloves from Cestusline offer maximum Level 5 cut protection with dexterity. The fast-drying glove provides the needed protection from cut injuries. The double-dipped Nitrile palm offers both water- and oilresistant grip. The breathable glove material, with sandyfinished palm, offers flexibility for handling smaller objects while working on big tasks. Flexible TPR shields protect



the fingertips while allowing for maximum range of motion, with knuckles and metacarpals that bend with hand movement. They are CE rated 4543. 503/894-8549; www.cestusline.com.

SOUTHLAND TOOL SAFETY SHUTTER VACUUM NOZZLE

The Safety Shutter Vacuum Nozzle from Southland Tool puts the vacuum control into the hands of the operator at the end of the hose. It is designed to instantly release vacuum with the push of a lever. A detachable tripod design lets it stand on its own, granting hands-free operation. The shutter design allows the operator to regulate



airflow as needed. It is designed for 4- and 6-inch flex hose. 714/632-8198; www.southlandtool.com.

SVE PORTABLE ROADWAY SYSTEMS TRAKMAT

TRAKMAT ground protection cover mats from SVE Portable Roadway Systems are designed to move large vehicles over lawns, sidewalks and driveways without causing damage. The mats are easy to handle and provide longevity, strength and safety. The traction surface helps keep the mat in



place and prevents vehicle slippage. The lightweight mats with hand cutouts are easy to lift, load and unload. They can be used to build roadways with additional accessories like two- or four-way urethane connectors, and provide an easy access road to remote locations. 800/762-8267; www.trakmat.com.

TST SWEDEN AB HOSE PROTECTION/SHROUD

The Hose Protection/Shroud protective cover from TST Sweden AB protects the operator when water-blast guns are held near vital parts of the body or when hoses break, often near couplings and connections like on the gun. It provides effective protection and has been tested for 7,500 psi. An adjustable strap holds the protective covering securely in place. The covering is smooth and flexible. It is 2.6 feet long with a diameter of 1.6 inches and weight of 0.45 pounds. www.tst-sweden.com.



TRUCK/TRAILER JETTERS

AMAZING MACHINERY PERFORMANCE

The Performance line of trailer-mounted jetter/pressure washer combo units from Amazing Machinery is designed for easy trailering, and the large water supply tank allows technicians to jet anywhere. A rear-mounted 12-volt electric jetter hose reel and SS rear stack-mounted



manual pressure washer and garden hose reels provide ample hose space. They come standard with 300 feet of jetter hose, two nozzles and a complete set of washdown accessories. The triplex ceramic plunger pump provides pressures up to 4,000 psi and flow rates up to 15 gpm. 800/504-7435; www.amazingmachinery.com.

CAM SPRAY RCJ SKID-MOUNT JETTER

RCJ Series skid-mount jetters from Cam Spray are offered in flows and pressures of 8 gpm at 3,500 psi and 7 gpm at 4,000 psi, with a threeplunger industrial pump with pulse powered by a 688 cc Honda engine. Its 200 feet of jetter hose can be used to supply an optional 200DS4 portable reel cart available with 200 feet of 3/8inch jet hose. It comes with a 35-gallon buffer



water tank with float control, powder-coated heavy tube frame, washdown gun and a four-nozzle set. It easily mounts in the side door of a cargo van, on a truck bed or inside of a service truck. A root-cutting nozzle enables residential root cutting. 800/648-5011; www.camspray.com.

SPARTAN TOOL MODEL 740

The **Model 740** hybrid hydrojetter from **Spartan Tool** offers 4,000 psi of jetting power at a 12 gpm flow on a wide-track chassis towable by any vehicle. It is available in either a traditional gasoline-powered configuration or in a hybrid version that runs on liquid propane. The LP



version offers 4,000 psi of jetting power wherever needed, even inside food processing plants and other locations where air quality is a concern, including areas that experience ozone action days or other local emission restrictions. It comes with 350 feet of hose and a 40 hp electric-start engine. It is available in a skid-mounted version for installation into an existing van or trailer. **800/435-3866; www.spartantool.com**.

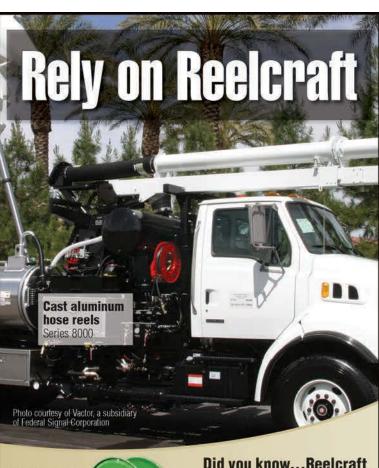
US JETTING 4018

The **4018** trailer jetter from **US Jetting** is available with a powder-coated or galvanized frame and aluminum components such as fenders, toolboxes, and antifreeze and fuel tanks. It has a True run-dry triplex plunger pump. This simple design makes for easy and minimal maintenance.



It has a redesigned HATZ Tier 4 Final four-cylinder diesel engine. **800/538-8464; www.usjetting.com. c**





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By Craig Mandli

Cutting system removes roots from clogged sewer line

PROBLEM

A camera inspection revealed that backups at a resi-

dence in the Hidden Valley neighborhood of La Jolla, California, were caused by heavy root intrusion in the line. Roots from nearby trees grew into the joints and cracks, blocking the flow of wastewater. The pipe ran 6 to 9 feet below hilly terrain from the home's clean-out in the yard and continued through the neighbor's yard to the main sewer line.

SOLUTION

Using the **Micro-Cutter**, **Nu Flow America** was able to clean more than 200 feet of 4-inch clay lateral line. The system rotates at approximately 2,000 rpm and will negotiate turns of 90 degrees in pipes down to 2 inches in diameter. It runs at 40 cfm and allows for multiple cutting heads to be attached.

RESULT

The roots were cleaned out using existing access points, without the need to dig up the customer's or the neighbor's property. Nu Flow America then installed a Nu Drain Pull-in-Place structural liner to prevent future root intrusion. **905/433-5510**; www.nuflowtechnologies.com.

Truck helps save Independence Day celebration

PROBLEM

In late June, when the Illinois River reached 24 feet about 6 feet over flood stage



— the City of Peoria, Illinois, had to work fast to keep the water from dampening its Independence Day celebration. "They needed to save the Fourth of July," says Chris Dillon, vice president of J.C. Dillon Inc., a local plumbing, heating and underground utility firm. "The river was originally supposed to crest at 24 feet, but it just kept raining and the river just kept rising."

SOLUTION

As the water rose, the city called on J.C. Dillon to help reinforce a sand barrier wall, as well as install plugs and caps on existing storm sewer drains in an effort to keep the flooding away from Peoria's riverfront, where tens of thousands of spectators gather annually for food, music and fireworks on Independence Day. The company used its **CAT CT660 Vocational Truck**, a hydrovac unit developed through a relationship between Caterpillar and **Premier**, to suck up the rising river water quickly enough to find the leaks in the wall and plug them.

RESULT

With its CAT unit, the staff at J.C. Dillon was able to keep the cresting waters at bay and the riverfront area stayed dry for the celebration. 970/542-1975; www.poequipment.com. c



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PRODUCT NEWS •

PRODUCT SPOTLIGHT

One-size-fits-all manhole liner forms freeze-resistant, watertight seal

By Ed Wodalski

The one-piece, cured-in-place manhole liner from Perma-Liner Industries is made to fit all manholes, including barrel sections, eccentric and concentric cones constructed of brick and mortar, precast or block.

Manhole chimneys, accessed through the manhole cover, can be rehabilitated without excavation. The one-piece, stretchable, absorbent textile liner is impregnated on site with a silicate-based, thermoset resin. Lowered into position, the liner is pressed against the existing structure using a pressurized installation bladder. Once cured, the liner can be trimmed flush with the manhole cover seat.

"The material comes in rolls, so once you calculate the depth of the manhole, you simply cut the material to fit your specific job length," says Morgan Trouard, Perma-Liner's director of marketing.

Prior to installation, manholes must be cleaned using a pressure washer with a minimum of 5,000 psi at 5 gpm. Structures can also be cleaned using abrasive blasting. A grinder or sandblasting can be used to clean the castings. Large voids require the use of hydraulic cement. Smaller voids and missing mortar can go unpatched.

The liner, which can be installed by a team of two, cures in about two hours. Engineered to resist freeze-thaw cycles, the liner creates a watertight, corrosion-resistant seal that eliminates infiltration and inflow and can withstand hydrostatic pressures.

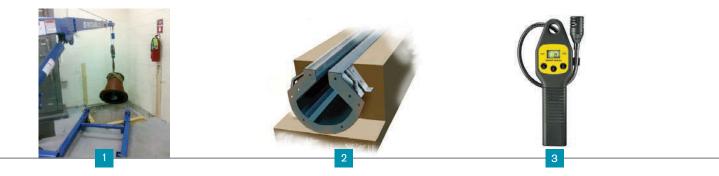




The polyester resin and catalyst have a six-month shelf life when stored in a cool, dry area away from direct sunlight. Resin is available in 5-gallon pails or 55-gallon drums.

"It's a turnkey system," Trouard says. "There's no need for any additional specialty equipment or tools." **866/336-2568; www.perma-liner.com**.





EZRIG PORTABLE CRANE

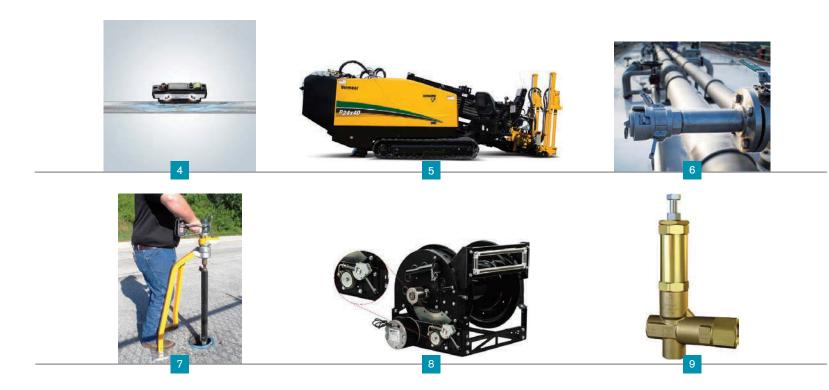
The portable crane from EzRig Crane is designed to lift heavy loads from unique positions and hard-to-get-at locations. It can lift or lower 2,400 pounds, has a vertical reach of 19 feet, delivers 130 feet of cable for lowering equipment three to four stories, and moves on 8-inch locking caster wheels. The mini-crane can go through 3-foot doors and fit in standard elevators. **844/395-4387; www.ezrigcrane.com**.

NORSTAR INDUSTRIES SHOP FLOOR DRAINAGE

Z The U-Drain shop floor drain from Norstar Industries is a singleslot, non-grated, pre-engineered drain designed to withstand heavy-traffic applications. The sloped, self-cleaning drain is available in 10-foot, 30-foot and 150-foot sections. Surface water passes through the 1-inch drain slot and into the pre-sloped trench that brings the water to the drain sump. The drain has a galvanized finish (stainless steel available) and connects to the rebar grid in new construction (retrofits possible). **855/746-8200; www.u-drain.ca**.

SENSIT COMBUSTIBLE-GAS LEAK DETECTOR

The HXG-2d combustible-gas leak detector from SENSIT Technologies is ATEX certified when used with approved batteries. The gas detector features a low-power, semiconductor sensor for measuring combustible gases in the ppm and percent LEL range. Ppm readings auto-range to percent LEL when the concentration exceeds 990 ppm (2 percent LEL methane). Optionally, readings can be set to a resolution of 0.1 percent LEL. **888/473-6748;** www.gasleaksensors.com.



KEYENCE CLAMP-ON FLOW MONITORING

The FD-Q Series of clamp-on flow sensors from Keyence Corp. of America are designed to detect and monitor flow from the outside of a pipe. The device can sense the flow of liquid (water, oils, chemicals) through metal or resin pipes from 1/4 to 2 inches in diameter. **888/539-3623**; www.keyence.com/usa.

VERMEER HORIZONTAL DIRECTIONAL DRILL

The D24x40 S3 horizontal directional drill from Vermeer features 28,000 pounds of thrust and pullback with 4,200 ft-lbs of rotational torque. The drill has an operator ear rating of 82.9 dBA, carriage speed of 240 fpm and rotational speed of 253 rpm. It is powered by a 125 hp, liquid-cooled, turbocharged diesel John Deere 4045 4.5-liter Tier 4 engine. **641/628-3141; www.vermeer.com**.

SMITH FLOW CONTROL COUPLING

O The Bajolock coupling from Smith Flow Control automatically catches any dangerous residual pressure and safely discharges it away from the worker. When no potentially harmful pressure exists, the coupling can be operated normally with a twist. Designed for use in transfer systems for pressure up to 145 psi, the coupling is manufactured according to the European Pressure Equipment Directive and CE approved. Made from 316L stainless steel for corrosion resistance, applications include oil and gas, petrochemical, and other pressurized pipelines. **859/578-2395; www.smithflowcontrol.com**.

US SAWS BATTERY-POWERED VALVE EXERCISER

The VEX400 battery-powered valve exerciser from US Saws features variable torque control ranging from 75 to 400 ft-lbs. Collapsible for storage and transportation, it can reach valves 8 to 108 inches underground. Accessories include post-indicator adapter and hydrant key. **860/668-2402**; **www.ussaws.com**.

COXREELS THREE-WAY BRAKE REEL

• The three-way, lever-actuated brake accessory for 1600 Series reels from COXREELS provides locked (full brake), drag (minimal brake) and free-spin (no brake) positioning during transport, unwinding or rewinding. **800/269-7335; www.coxreels.com**.

GENERAL PUMP HIGH-FLOW UNLOADER VALVE

The YU3723 high-flow unloader valve from General Pump is designed to handle flows up to 37 gpm and pressures up to 2,300 psi. **888/474-5487**; www.generalpump.com. c

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INDUSTRY NEWS

R.S. Technical names manager, partners with HammerHead

R.S. Technical Services named James "Jed" Dorough northeast regional sales manager. The company also partnered with HammerHead, a Charles Machine Works company, to offer trenchless pipe repair and rehabilitation solutions for gravity and pressure sewer, water and industrial pipe infrastructures.



Jed Dorough

Plastics Pipe Institute names directors

The Plastics Pipe Institute named Patrick Collings of Lane Enterprises chairman of the board of directors at its annual membership meeting. He will serve a two-year term. Other new board members include David Fink, vice chair; Michael Pluimer, advisory council chair; and Peter Zut, treasurer.



Patrick Collings, left, PPI chairman, and Tony Radoszewski, president.

Budget Attachments & Parts launches website

Budget Attachments & Parts launched a mobile friendly website, www.budgetap.com. The site features industry information and specifications on attachments and parts for skid-steers, forklifts, loaders, telehandlers, tractors and backhoes.

LMK trenchless clean-out system meets ASTM standard

The Vac-a-Tee trenchless clean-out system from LMK Technologies meets ASTM F3097-15 standard practice for installation of an outside sewer service clean-out using a small bore cleared by a vacuum excavator. The standard can be viewed at http://www.astm.org/standards/f3097.htm

Mr. Rooter Plumbing names president

Mr. Rooter Plumbing named Doyle James company president. He also serves as president of ProTradeNet, part of The Dwyer Group's vendor relations department. James succeeds Mary Kennedy Thompson, COO for The Dwyer Group. **C**



Doyle James



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Fully-equipped Long Island, NY cesspool cleaning company for sale. Established 50+ years serving Nassau & Suffolk Counties with excellent reputation and high-repeat customer base. 516-993-0446 (C11)

COMPUTER SOFTWARE

FreeServiceReminderSoftware.com. FreeServiceDispatchSoftware.com. FreeRouteManagementSoftware.com. (C11)

DRAIN/SEWER CLEANING EQUIPMENT

2004 Sterling Camel Hydrovac: Automatic, 10-wheeler, 46,651 miles. 80qpm, 400' of 1" hose, mid-mount reel, 1,500-gallon water, excavation wand. One owner. Sacramento, CA. \$60,000. Carroll 916-747-3819 (C11)

2009 Spartan 799 water jet with two controls. 18gpm with 4,000psi. 1,235 hours. 500 feet of 1/2" hose. Asking \$13,000. Call Jeff 815-228-9845. (C12)

2006 Sterling Camel Hydrovac: Automatic, 10-wheeler, 41,289 miles, 80apm, 600' of new 1" hose, new water tank, 1,500 gallons. Front reel, hose press, excavation wand. One owner. Sacramento, CA. \$135,000. Carroll 916-747-3819 (C11)

Used and rebuilt cable machines in stock: RIDGID K-7500, K-40, K-60, K-1500, Spartan #1064, #300, #100, Electric Eel model #C machines. The Cable Center: 800-257-7209. (CBM)

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New 3,200 U.S. gallon, carbon steel, DOT certified 407/412 vacuum tank: dump type with full open rear door and a Presvac PVB-750 vacuum-pressure pump installed on a 2015 Peterbilt 348 cab and chassis. (Stock #13587D-E) www.VacuumSalesInc. com, (888) VAC-UNIT (822-8648). (CBM)

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CRM

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JETTERS-TRUCK



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Mark 708-475-7100, IL CBM



1996 Vactor 2100 PD mounted on Mack chassis, 80gpm @ 2000psi, 15yd. debris body, 1,500 gallons water. Debris body flushout, hydraulic door locks, handgun washdown, continuous fill. New Cotta transfer case and pump. 174k miles, 10k hours.\$53,000

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2007 Vac-Con: Powerful Hibon PD blower, Sterling 2007 chassis model LT9501. 350hp, Allison automatic transmission, 10' x 8" aluminum telescoping boom with pendant control station, wireless remote control. 1,300-gallon water tank, Deutz aux. engine - 4,600 hours. 12-cubic-yard debris tank, winter recirculating system. Hydroexcavating package, hydraulic pipe rack (holds 3 pipes - curb side). Gone through and serviced by Vac-Con dealer. Equipment in good condition. 22,050 miles. \$159,000 **Call Fredrickson Supply**

616-949-2385, MI C12



2001 Vac-Con jet vac combo: CAT 3126 engine, Roots 824 PD blower, Allison automatic, 55,000 miles, 600 ft, 1" hose, 2.000psi @ 80qpm, 1.300-gallon water tanks, 12-vd. debris tank. Cummins 4BT rear engine, rear strobes, arrow board on rear. Debris body flush system. 8" telescoping boom. Truck engine overhauled summer of 2014 and newer PD installed fall of 2014. Excellent condition. \$80,000 OBO

Call Kyle 515-360-8582. IA kyle@accujetiowa.com C11



Priced to sell - 1999 Sterling Vactor Model 2110-36 PD, well maintained, 600 ft. of new 1" hose. Asking \$65,000 Call 800-330-3857, FL C11



2005 Vac-Con jet vac, CAT engine, auto, rebuilt FMC 65gpm/3,000psi pump, hydro excavation, 3-stage fan. \$60,000 OBO C12

Call 317-773-7996, IN

1991 Volvo Camel 200: Tandem axle. Great condition. Ready for work. \$25,000. Green Bay, WI. 920-655-7302 or 920-866-9109. (CBM)

2002 Sterling LT7501 Vac-Con Model V390LHA combination sewer cleaning truck: Freshly painted white. CAT 3126 - 275hp engine, 3-stage fan, 1,000-gallon water tanks, pump off option available. 10' telescopic boom. FMC water pump - 65qpm @ 3.000psi. Articulating hose reel with 600 feet of new 1" hose. 84,316 miles. Located in Orange, CA. \$79,900. Contact Craig: 714-639-8352. Additional details at www.empireequip.com (CBM)

1997 Vac-Con jet vac with 3-stage fan blower, 65gpm @ 2,000psi water pump. CAT auxiliary engine, front articulating hose reel, 11-yard debris tank, telescopic boom. Unit mounted on tandem-axle International chassis. Auto. transmission. 20,963 miles on chassis. Well maintained. Asking \$43,000. Contact Dave @ 262-951-8979 (C11)

1991 Ford-L8000 Vac-Con Automatic Jet Vac, 12-yard debris, 1,000-gallon tank with washdown gun. 60gpm. 500 ft. new 3/4" hose. Photo available upon request. \$15,000. Call Steve 203-855-1977 Connecticut (C11)

Ford L85 Vactor jet truck: New motor, 53,293 miles, 80 gpm, 1,000-gallon capacity. Good, clean truck. Contact k.coker17@gmail.com. (C12)

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Vac-Con V390LHA combination unit with Roots 827 blower, 1999 International Model 2554 cab and chassis. (Stock #3918C) www.VacuumSalesinc.com, (888) VAC-UNIT (822-8648). (CBM)

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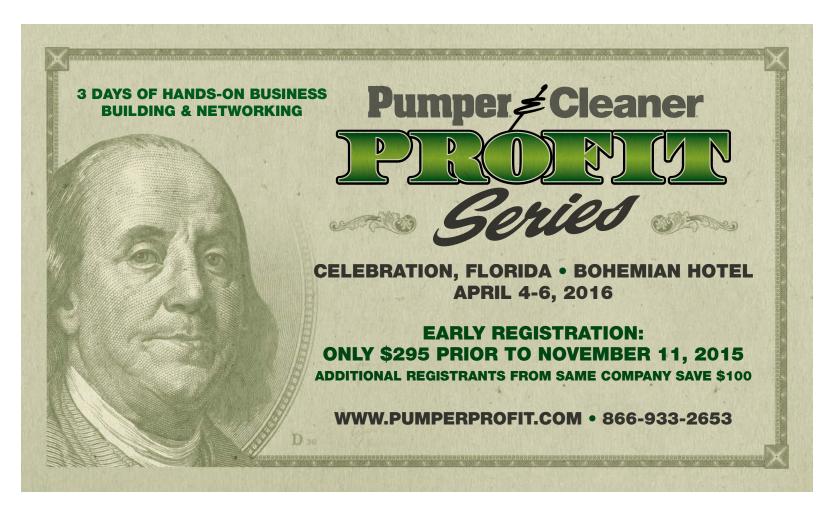
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Ritchie Yellow Jacket Recovery System & BULLET 7 cfm pump. The Cable Center: 800-257-7209. (CBM)

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TV INSPECTION

1998 Ford Box Van with V10 motor, 2004 Aries CCTV equipment w/air reel. POSM operating w/2 pan & tilt cameras, tractor, cutters. I also have equipment to outfit another van pcu, reel, controls, etc. All equipment in working order. Contact k.coker17@gmail.com (C12)



1999 CUES camera truck with new Cobra camera and crawler. Rebuilt 550 engine with less than 20,000 miles. Storm tractor. New computer, monitor and operating system. New paint. Truck runs great and is ready to work.

Call 267-249-3774, PA

C11



1999 Ford E450 Hi-Cube CUES TV truck Reduced!! \$25,000 OBO. If interested, please call for more info and photos. 904-284-2141, FL C11

USED Envirosight ROVVER System: Brand new RC90 camera. Cable reel (SN 360570) has new power supply, motor, clutch, cable (656') and winding rollers. 125 crawler (SN 0260768) has new top plate, side plates, axles and seals, plus new control board compatible with rear-view camera accessory (not included). CCU (SN 0160981) with new power card, new 56V card, new +/-26 card, and new card. Control pendant (SN 0492645) is compatible with RC90 camera and R225 crawler. \$27,500. Call 973-252-6700. (CBM)

PEARPOINT — Mainliner buying & selling used equipment. Canada & USA PEAR-POINT MAINLINE EQUIPMENT ONLY. Will buy complete Pearpoint trucks. Will buy your old system. Do you need parts? 399, 599 reels; 420, 448 tractors: 494 digital and zoom 420 light heads. Call 800-265-4298 or mainliner2075@hotmail.com (C04)

2004 Ford E250 TV Van: POSM computer, H&A, air compressor, beacons & arrow board. RST Omni III camera & tractor. New tractor motor. Mini camera reel with color camera. \$50,000. Carroll 916-747-3819 (C11) Cyclops TV inspection trailer: AC, records on DVD. Crawler for camera will need a new motor. Cyclops pipe inspection trailer includes: Panasonic PV4509 video recorder, Hitachi video color monitor, TV camera control unit CB301 transporter control PW151B video data generator TD820 Camera/Rover VN002. 409-880-5725 (C12)

NEED TRACTION? We make aftermarket more aggressive pads and chain assemblies for all chain-driven camera tractors. Custom, dependable, double-hole fabrication secured to high quality carbon steel chain, or just pads and rivets. Samples upon request. **Pipe Tool Specialties LLC:** 888-390-6794; Fax 888-390-6670; www.yourtractionpads.com or email pts4422@yahoo.com (C12)

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

VACUUM EQUIPMENT

2008 International 7400 6X4 2008 Vactor Vac-Con vacuum truck hydroexcavator jetter sewer rodder truck. 31,000 miles. Kept inside, tires have small chunk out of them. \$90,000. 302-228-5717 (C11)

WANTED

Wanted to Buy: Vactor 2100s and late model Guzzlers. Cash. 800-336-4369. (CBM)

WATERBLASTING

Gardner Denver T-375M: Bare Shaft pump. Gardner Denver T450M Bare Shaft pump. Gardner Denver TF-375M 21 gpm @ 10,000 psi. Gardner Denver TX-450HB 21gpm @ 20,000 PSI. Gardner Denver TF-450MB 52gpm @ 10,000 psi. NLB 10-200. 34 gpm @ 10,000 psi. HT-150S 25 gpm max 10,000 psi max, Shell Side Machine, Wheatley 165: 30 gpm @ 10,000 psi. Wheatley 165: 30 gpm @ 10,000 psi. Wheatley 125 with aluminum bronze fluid end. Boatman Ind. 713-641-6006. View @ www.boatmanind.com. (CBM)

WATER JETTING EQUIPMENT: We sell, repair and retrofit water blasters. Visit us at: www.waterjettingequipment.com or phone 714-259-7700. (CBM)

40,000 psi Sapphire Nozzles, UHP hoses & replacement parts. Excellent quality & prices. 772-286-1218, info@alljetting.com, www. alljetting.com. (CBM)





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