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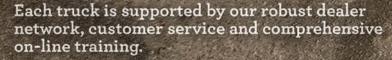




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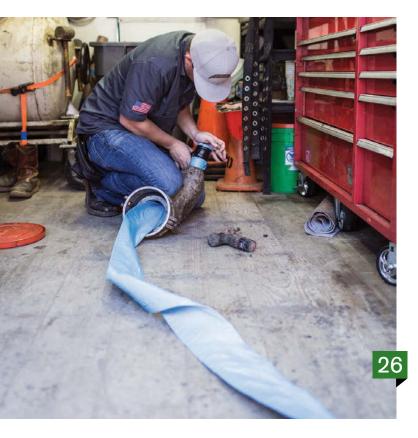
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Pacific Drain Service founder and president Lane Post established his business in San Diego County, California, in 1975. His sons, Kevin and Casey, are now co-owners of the business, which has continued to grow through the addition of pipe rehabilitation and plumbing services. (Photography by Collin Chappelle)





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A Different Take on Health Care

Your jobs are critical to the health and safety of your communities

By Luke Laggis

like the notion that people who work with wastewater are essentially health care professionals. It frames this industry in a context that gives it the importance it deserves.

Dr. Adrianus Vlugman, the senior advisor on water, sanitation and environmental health at the World Health Organization, gave a presentation at the 2015 Water & Wastewater Equipment, Treatment & Transport Show at the Indiana Convention Center in Indianapolis Feb. 26. He spoke to attendees on the transfer of communicable disease in water and wastewater. According to Vlugman, employees who directly handle water and wastewater need to take the same safety precautions as those working in hospitals.

"All people working in water and wastewater sanitation are primary health care workers," he says. "It's right in the word itself. 'Sanitas' is the

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I think that's an important thing for the people of this industry to keep in mind, that you serve a primary role in maintaining the health of your communities and should carry yourselves accordingly.

You are constantly putting yourselves in harm's way — confined spaces, trench work, toxic gases, pathogen-laced materials — so that others can be safe. It's a role that rivals any in terms of importance.

Everyone in this industry is plenty familiar with the phrase out of sight, out of mind. People don't think about the infrastructure beneath their feet until there's a problem. And if they don't think about the infrastructure, they definitely don't think about the people who maintain it.

You're not a group of people relegated to working in the filthiest possible environment; you are professionals charged with maintaining the health of the environment and population. You are constantly putting yourselves in harm's way — confined spaces, trench work, toxic gases, pathogen-laced materials — so that others can be safe. It's a role that rivals any in terms of importance.

But what about your health and safety? Who's looking out for that? Working with wastewater poses legitimate threats, and you need to take steps to protect yourself.

This month's Tech Perspective focuses on a system for cleaning and disinfecting your cleaning equipment that leaves wastewater — and all the harms it carries — in the sewers where it belongs, keeping everything above ground safe for handling.

The Vanguard System connects to a jetting truck's water tank and a 5-gallon antibacterial cleaning concentrate tank. The system is operated by a control box that combines water from the truck's tank with the cleaning solution. It also includes a handgun attachment that can be used to disinfect the surrounding area or other equipment that comes into contact with sewage.

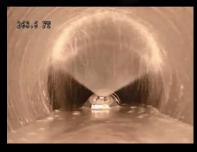
Independent laboratory testing on the system showed that it reduced bacterial counts by up to 98 percent.

That's a significant reduction in the chances of you getting sick from your work, which means you'll be able to continue to do your part in keeping your customers safe and healthy. They might not realize that's what you're doing, but that doesn't make it any less important.

You're cleaners, but more than that, you're protectors, guardians of a system that provides the foundation for healthy communities. And that should be celebrated.

Enjoy this month's issue. c





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EROSION CONTROL

Establishing Proper Vegetative Cover

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can be pretty damaging to the human body. "

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WAR ON FOG

Fighting an Age-Old Battle

Fats, oils and grease continue to plague sewer systems across the country by reducing capacity and clogging lines. There is no single solution for every FOG problem, but there are a variety of weapons you can use to fight the battle in your system. >>cleaner.com/featured



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ervice is a top priority for North American Construction, which has made its name by providing 24/7 emergency response, working on tight schedules, meeting deadlines and overseeing highly sensitive environmental issues.

Kent Ferguson founded the company after running his own engineering firm for eight years. He eventually determined the construction end of the business would be more profitable.

"We had worked with 24 counties in Indiana," Ferguson says. "This was our target base for the new venture, but our client base expanded exponentially. Our first project was with Rock Island Refining Corporation, now Marathon Petroleum Company. We were there to demolish 15-foot-deep pylon footings that had been in place since the original construction of a building in 1945. These had to be removed so they could do other work in the area."

The client base began to grow and now includes numerous Fortune 500 companies across Indiana. The company's menu of services also expanded as it added the proper equipment and experienced technicians to tackle new projects.

"From the Rock Island demolition job, we developed the tank cleaning and sludge removal as we expanded into vacuum trucks and began doing almost all of their maintenance," Ferguson says. "We began working on well abandonment projects in various remediation sites."

ESTABLISHED: 1967

SERVICES: Emergency response, demolition, dewatering,

earthwork, environmental, hydroblasting, industrial cleaning, steel building sales and erection,

environmental consulting

CUSTOMER BASE: Fortune 500 corporations (55 percent), private

sector (35 percent), municipalities (10 percent)

EMPLOYEES: 12

WEBSITE: www.northamericanco.com

TOUGH STUFF

Ferguson says the company has faced some challenging situations, both in terms of objectives and timelines.

"Some schedules are much tighter than others," he says. "With any type of turnaround, which is often a giant job where they have shut a facility down, it can be pretty dynamic getting it all up and running from stem to stern again. But it is the same old story. Time is money. Any time the equipment is down is costly. Our job is to save our client millions of dollars lost in downtime. We want to do this as safely and quickly as possible."

Emergency calls are usually of a different nature. Ferguson says they might get a call from a school district reporting a waterline out. His team will respond immediately and use hydroexcavation equipment to expose



ABOVE: North American Construction senior project manager Kevin Webb guides a vacuum hose while excavating to find a septic finger at a dump site.

BELOW: Webb checks the hose connection on his vac truck at the job site.



the line for repair or replacement. When the job is complete, they backfill and pour more concrete if needed.

North American generally serves as the prime contractor, working with a client's engineer as needed. Because the company is so well equipped, it does not subcontract.

"Things seem to work much better if you are in control and are the prime contractor," Ferguson says. "This way you can set your schedule accordingly."

The company works with a small number of well-trained technicians.

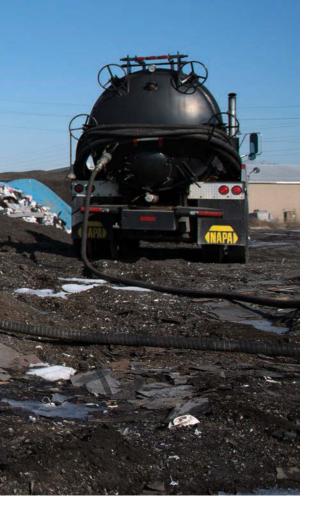
"We have two-, three- and sometimes four-man crews," Ferguson says. "And we are able to deal with multiple projects at a time. Although we once had a satellite office, we find it better to work from our Indianapolis base. Our workers are sometimes away from home for short periods of time, but that is rare as we work primarily in Indiana."

"Things seem to work much better if you are in control and are the prime contractor. This way you can set your schedule accordingly."

Kent Ferguson

When hiring, Ferguson says he first looks at an applicant's background. "If someone has worked for several companies, I would have concerns," he says. "I know most people in the area and can always follow up for references. We want a person to be safety minded and to pass our very difficult drug program."

Ferguson describes company culture as very family-oriented and says his door is always open. Because of the company's challenging work, he puts



"Any time the equipment is down is costly. Our job is to save our client millions of dollars lost in downtime. We want to do this as safely and quickly as possible."

Kent Ferguson

a considerable amount of trust in his employees to go out and get the job done for North American and their clients

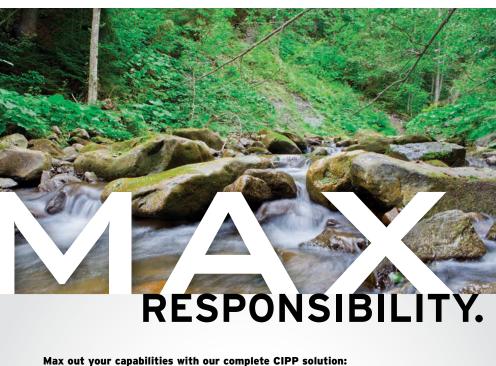
Leaders on staff include Lonnie Hoskins and Kevin Webb, who have both been with Ferguson for many years. Hoskins has a wealth of emergency response and demolition training and is currently senior project leader. Webb is senior project manager, and brings experience from the refinery business.

PROPER DISPOSAL

North American Construction has taken on a wide scope of projects, everything from trenching and installing pipe systems to tank cleaning, dredging and waste disposal. They have done on-site bioremediation, and of course various emergency spill response projects.

One very memorable job in 2003 had to do with the Kokomo Gas & Fuel Company's 387-foot-tall gas holder in Kokomo, Indiana. The 22-sided structure had to be imploded, and because the tank held very flammable oil, North American was contracted to thoroughly clean it. Crews emptied the tank's contents — 18,000 gallons of sealant oil — and provided proper disposal and recycling.

The cleaning process was extremely complicated because of the tank's size and design. The tank, which was built in 1954, could hold 12 million cubic feet, but it became obsolete in the 1970s due to new technology.



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PROTECTING THE **CUSTOMER**

Meeting environmental requirements and properly disposing of materials is critical for many of North American Construction's projects. The company sets itself apart by having an inhouse environmental director. Dee Snively, who has been in that position since 1993, has a master's in environmental science and is a Certified Hazardous Material Manager.

"Rarely does a company have the expertise we have," Snively says. "This gives us a unique competitive advantage, because we can do so many different things in various industries. We can be in a refinery or doing sewer work. Our people are cross-trained, and most of this involves some aspect of the environmental element. You need a point person who understands those regulations and how they impact the job. For North American to have a position on staff is key when you are looking at a set of specs. They hand me the specs and I look through them for what I need to worry about with the environmental concerns and for health and safety matters."

Snively relies on detailed records to review past experiences, which has been advantageous in challenging situations.

"Typically our client will determine where we take material for disposal," Snively says. "While there might be a landfill facility 20 minutes away from a specific site, they might not have approval to accept the material, and we may have to travel as much as an hour and a half further. As I say, all based on what the client wants. If, on the other hand, we have control of that aspect of the project and our client wants us to broker the waste, then we obviously do our own due diligence for the facilities that we go into.

"For me, it is always making sure we have all the proper documentation that the waste streams are characterized appropriately for where they are going."

Field time for Snively depends on the job. For instance, the company recently finished a large demolition project where she was needed frequently in the field for safety and health inspections. She sometimes goes on training runs for workers or just goes out to monitor activities.

"In my position, I need to be looking out for the interests of our client, and the interest of North American Construction."

"We had to clean every nook and cranny of the tank where the oil could be hiding," Ferguson says. "It was a huge tank that could be seen for miles."

When it comes to disposal, Environmental Director Dee Snively has set up generic profiles for hydrocarbon contaminated sludges, contact water, septic, grease trap contents and other material. If it does not fit into those profiles, she will collect a sample of the material and analyze it to confirm the waste characterization and find alternative waste disposal options.

"We just finished a project not too long ago where the material was supposed to be clean fill concrete but it was hydrocarbon contaminated. My job is to stop the project and change the order to get it redirected to go to the appropriate facility. Obviously contaminated hydrocarbon concrete cannot go into a lake, for example."



North American Construction senior project manager Kevin Webb on the job site.

HOME BASE

North American operates on a 6-acre site with a 10,000-square-foot facility, which includes plenty of space to keep all the company's equipment indoors and ready to go.

The company's stable of water blasters, a key component in most cleaning operations, comes from NLB. Crews rely on a 2004 20,000 psi NLB 2012D with an assortment of specialized nozzles, including the StoneAge Barracuda and NLB Spin-Nozzle. The unit has a convertible pump with a quick-change, in-line fluid end design with fewer parts for increased operating efficiency and simpler maintenance. It uses a simple conversion kit to operate at pressures from 6,000 to 40,000 psi. North American sets it for 20,000 psi and uses a variety of nozzles, depending on the job.

North American crews also use four 10,000 psi NLB 1012D machines. They draw additional cleaning power from a trailer-mounted Jetstream Jet Rodder and a 1996 Schmidt Accustrip 12SB ARMEX blaster.



Hydroexcavation is another essential aspect of the company's work. The firm uses a 1996 Guzzler with a 15-cubic-yard debris tank, and a 1992 Vactor 2045 wet/dry vac truck with a 20-yard debris tank.

The company employs an in-house mechanic and checks all high-pressure lines before starting a project.

"We do annual Hazwoper training that goes into working in hazardous waste sites and emergency response. We don't put anyone on a gun without going through a tremendous amount of training, watching, assisting, being at the job site."

Kent Ferguson

HIGH BAR FOR SAFETY

When people in the field work with high-pressure water blasting equipment, safety has to be top priority.

Technicians attend several classes upon joining the company, as well as various follow-up programs that keep them on their toes.

A new hire goes through 10 hours of OSHA training along with a company orientation program that covers lockout/tagout, confined-space entry and electrical safety. Additionally, each new hire must take a behavior-based training class that reinforces safety issues.

Company policy includes constant reminders that employees must take care of one another on the jobs. When an employee observes what could be a life-threatening situation, he learns to take a step back and tell a co-worker, "I want you to come home tonight."

"That is the kind of reaction we want our workers to encourage," Ferguson says.

"We do annual Hazwoper training that goes into working in hazardous waste sites and emergency response," he says. "We don't put anyone on a gun without going through a tremendous amount of training, watching,

assisting, being at the job site. This is very expensive for our company as we don't charge our customer for the time of a trainee — or shadow person — on the site."

Ferguson says new hires spend more than six months learning the rigors of work, the importance of communication, how to act as an attendant for confined-space entry and more before working with equipment such as hydroblasters and Vactor trucks. This is physically demanding work and can be dangerous if not fully understood by the technician.

"We are always confident that our workers know the conditions they are dealing with," Ferguson says. "We can be confident they have been thoroughly trained and are thoroughly skilled in what they are doing." c





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MEETING THE **VIARKET** NEEDS

SAN DIEGO COUNTY DRAIN CLEANING COMPANY RESPONDS TO MARKET DEMAND BY EXPANDING SERVICES AND OPENING PLUMBING SHOP

plumbing contractors for years when he and his staff realized the situation was more than lopsided. In 1975, Post established his drain cleaning business, taking care of residential and small commercial clients. When there was a need for a plumber, he referred the customer to a network of plumbing contractors. In return, those professionals sent their drain work to Pacific Drain Service. Too often, the business exchange generated a four-to-one or greater referral rate with Post's company on the short side. The management team soon realized it was time to include plumbing on their growing menu of services.

acific Drain Service founder and president Lane Post had been working in conjunction with local

It made sense since the company's loyal customer base had been requesting plumbing services for years.

Post was not averse to branching out in other directions when opportunities presented themselves. His son, Kevin, joined the firm in 1995, and his younger son, Casey, came on board in 2001. Post had been a drain cleaner for 27 years, but the business had to expand in order to support three families. At that time there were nine on the staff, and they were doing up to 70 drain jobs per day.

"I wanted to secure the future for all of our people," Post says. "Over the years in the business we would see problems, often minor, that needed to be fixed — a need for someone to dig down a few feet and make a repair. It wasn't always easy to find the right company to call on for our customer. I saw that as an opportunity for us. We needed to do more."

A NEW COURSE

Post took the first important step toward expansion in 2002 by creating a new division, Arrow Pipeline Repair. He acquired his C-36 plumbing license and Class A General Engineering Contractor license, which allowed the company to move into underground utility work, including jetting and pipe rehabilitation.

"We came to believe that we were where the market wanted us to be. We saw more and more opportunities that we just could not pass up. We hired a pipeline foreman who had experience. It just seemed like natural growth for us."

Lane Post

The collections systems in Pacific's service area were built primarily with cast iron, clay and Orangeburg pipe. They have their share of roots, offsets, corrosion and bellies.

Many of the neighborhoods are composed of housing tracts with as many as 200 homes that are basically identical in terms of water and sewer lines, which are the responsibility of the property owner. So for repair and maintenance, the resident or small-business owner foots the bill all the way out to the sewer connection in the

PHOTOGRAPHY BY COLLIN CHAPPELLE

middle of the street. Pipe bursting and relining have become the trend over dig-and-replace jobs.

Post notes that his company is the only San Diego operator that holds the C-36 and active Class A license, which gives them far greater capacity than the average plumber or contractor to handle this type of work.

With so much capability, Arrow Pipeline is also serving many of the smaller municipalities for emergency repairs, such as water main and sewer line breaks, and removing blockages. They can take care of concrete, rebar, roots, tar and protruding laterals, and can also handle reinstatement.

"Our goal in the industry is to be the go-to professional," Post says.

PUTTING IT ALL TOGETHER

Over the next few years, the company continued to expand, adding new people and equipment despite the down economy. Emergency work became a focus.

"We came to believe that we were where the market wanted us to be," Post says. "We saw more and more opportunities that we just could not pass up. We hired a pipeline foreman who had experience. It just seemed like natural growth for us."

By 2008, Post had engaged Tom Holland as a consultant in marketing and business development and hired Roy Gallegos as general manager. His sons took on vice president posts.

In 2012, the new venture became Pacific Drain & Plumbing. Starting with one service van and one plumber, the division grew to nine service and repair vans within 18 months, traversing a 50-mile radius with more than 20 cities and small towns and a combined population of approximately 1 million.

The company's nine journeyman plumbers handle all plumbing-related service, and drain cleaning is the responsibility of a separate group of seven

drain technicians. In addition, Arrow Pipeline has another 14 vehicles serving their diverse clientele.

"This turned out to be a fantastic opportunity for our company," Post says. "Because of our reputation in the industry we were able to find qualified technicians who wanted to be a part of our venture. We looked for personality as well as experience in our plumbers. We went to the local supply houses and

"We like to refer to employees as business partners — associates. We want them to have an allegiance to the company and the customer."

Tom Holland

began asking about people who would fit our profile. One name kept coming up, and eventually we were able to secure an interview with that individual, and we were so impressed we put an offer on the table that very day. This guy, Dave Angelou, who goes by the moniker 'Boston Dave,' has become our lead plumber, and we give him credit as being extremely valuable in the growth of our plumbing division. He knew and was in contact with other plumbers, and as word got out, we had qualified people knocking on our door."

Post credits Holland for his wisdom in realizing their best potential plumbing customers would come from their existing client list. These were people who had been requesting their services for years.

"They knew us and liked us," Holland says. "We had the key to finding plumbers who could represent the company and solve the problems. We like to refer to employees as business partners — associates. We want them to have an allegiance to the company and the customer.





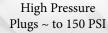
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Arrow Pipeline Repair – with several divisions providing drain cleaning, relining, pipe bursting, jetting, CCTV inspection, lateral cutting, sewer and septic, SLC (service lateral connection) dig and replace – made the wise decision to include plumbing. The result has proven to be an astounding success and put the company in a dominant position in a major market.

"All those years when I was providing drain service to my customers, they couldn't understand why I would call in a plumber to fix the faucet or install a water heater," says Lane Post, president of the San Diego County-based company. "I was constantly explaining, 'Gosh, we don't do that. I'm not a plumber.' So we kept giving that business away.

"Adding plumbing has been a fantastic opportunity and we have seen this phenomenal growth."

Post is particularly proud that the company has grown from nine employees in 2001 to 48 by mid-2014. He says that they have a policy that all field technicians and plumbers are familiar with all the equipment and processes utilized in all departments. This has proven helpful in better serving the client but also in promoting the company and the many facets they are equipped to address.

He says that over the years, he often considered adding plumbing before finally taking the leap. "I never imagined this would happen to this degree," says Post, who adds he is not a plumber but still a drain cleaner. "Now I know I am in the market that wanted me. The opportunity was there all the time."

"We did not do mailings. We turned to social media, added a website and kept it enhanced. We encouraged clients to put up a comment on Yelp. This was a tremendous asset. This site is not just for restaurant reviews, but plumbing companies and other service-oriented providers. This became a powerful source of outreach for us."

Holland says they also did a database/customer analysis that was helpful as they expanded into plumbing. They wanted to gain a better understanding of their customer base and marketplace. With 60 percent residential and 40 percent commercial, including property management and apartment complexes, it was important to understand their particular region and possibilities for outreach.

INVENTORY AT HAND

The plumbing division operates with a fleet of nine 12-foot box vans. Each van carries from \$20,000 to \$30,000 of equipment and inventory, which allows technicians to handle many home emergencies and general repairs without running to a supply house. This includes a full complement of drain cleaning equipment, for which there are frequent calls.

Drain cleaning tools include trailer jetters from US Jetting (4,000 psi/18 gpm) and Harben (4,000 psi/18 gpm) and one truck-mounted unit from Harben (4,000 psi/14 gpm). Cable machines are from Spartan Tool and Gorlitz Sewer & Drain.

On the rehabilitation side, the company uses HammerHead pipe bursting equipment, along with several other distributors for relining materials. High-speed robotic cutting and reinstatement cutters are from Innovative Sewer Technologies, including the PC 150 and PC 200.

The company is headquartered in Vista, California, where they have a 10,000-square-foot office and warehouse facility. The plumbing division has paired up with a national supplier and has inventory on a consignment basis to draw from at home base.

Gallegos estimates the value of the consigned inventory, which is primarily for plumbing, at a six-digit figure. The plumbing division's sales represent a multimillion dollar figure, and double-digit growth is projected.

CONTINUED >>



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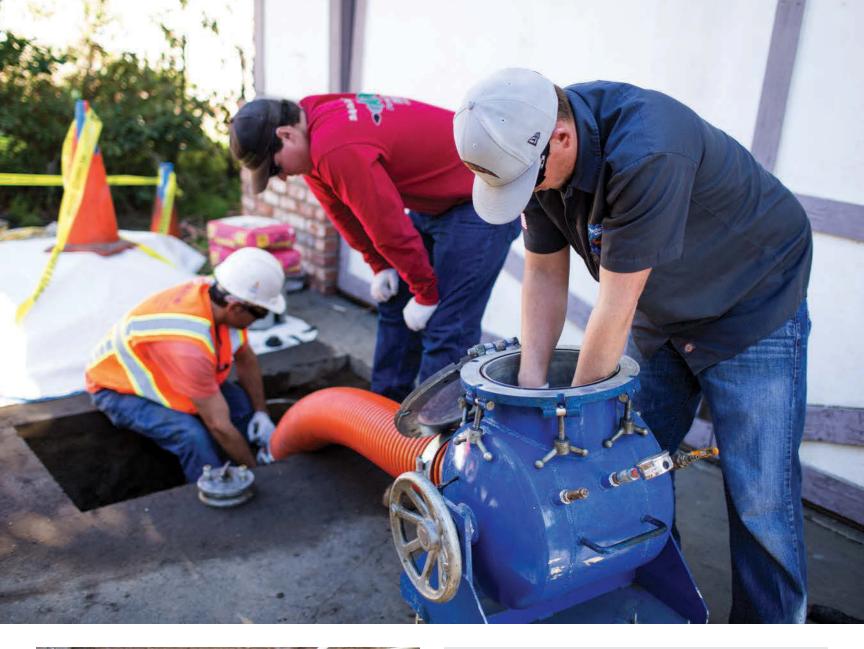




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ABOVE: Alex Hernandez (left) and Tyler McNeil (center) feed the new liner into the host pipe through a driveway access point with the help of supervisor Chad Gaines.

LEFT: A view of the upstream and downstream inversion heads at rest while the liner cures in each of the pipes.

Having these materials at hand has been an asset for Pacific Drain & Plumbing, as they have the inventory available without the initial investment. Service technicians are responsible for the equipment on their service vans and for maintaining an inventory track.

At their weekly meetings, they stress to plumbers the importance of their role in maintaining their equipment and the responsibility they are given. And even more importantly, that the customer is always king.

"We want them to be personable, but to also educate the customer," Gallegos says. "We are not there to sell, but to serve. We want and need those good reviews on social media.

"We also stress safety at every opportunity."

TIMING AND COMMUNICATION

The plumbing division has been driven by good communication through social media and through Angelou's efforts to get the word out and represent the team in the field.

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"He is the guy who comes to us and says, 'I need more plumbers. I need another service van," Post says. "This is the way it has been for us in this division. The plumbing opportunities have been sitting there just waiting for the taking."

Post believes his years in the industry have been extremely helpful in guiding the company's growth, but he also finds himself at a bit of a crossroads.

"I believed it was important to listen to the 'young turks' — my sons, Roy Gallegos and of course Tom Holland. I saw that I had taken things about as far as I was capable of, and needed help both with the technical side and with the social media — the Internet and computer. I'm old school, but I wanted fresh ideas. I didn't want to come across as having all this experience and not needing additional eyes on what we were going to be doing.

"Our bottom line has increased tenfold in 10 years," he says.

"I'm old school, but I wanted fresh ideas. I didn't want to come across as having all this experience and not needing additional eyes on what we were going to be doing."

Lane Post

Post finds the growth on the plumbing side to be very satisfying. "Look what we've done in such a short period of time. I have always felt there were opportunities out there, and this proves that you have to move forward when the time seems right. Still, you must do things wisely. I like to think that the past 40 years in business have not been in vain, and that we've built a strong name that is recognized in the region. That we stand for honesty and

good service and ethical treatment of customers. It all comes together and is apparent in the rapid growth of the plumbing division. It was not something we had to sell. It was like a fast passenger train coming out of the terminal. We honestly had trouble keeping up with the demand from our customer base."

Holland describes his view in terms of opportunity for growth, which he claims never stops.

"This company has been and will continue to be involved in mergers and acquisitions," he says. "Arrow Pipeline has over the last several years acquired several related companies that have experienced problems, but their addition for us has complemented the Arrow Pipeline position. So in terms of looking at where things are going to occur, we want to be ahead of the curve when we are looking at investing in another company." c



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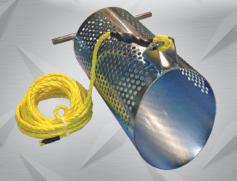
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Success **Under Pressure**

When speed and efficiency matter most, hydroblasting machines help Wisconsin contractor deliver results for customers

By Ken Wysocky

he stakes are high every time a crew from Hydroblasters Inc. steps into a papermaking plant to clean large evaporators during a planned maintenance shutdown. But they handle the pressure easily with a Series 225 Model 305 hydroblaster made by NLB Corp.

"During outages, plants are usually down for seven to 10 days," says Rod Marquette, who co-owns the Wisconsin Rapids, Wisconsin-based company with his wife, Jennifer. "Typically we're the first ones in there, and all the other contractors are waiting for us to finish because they can't do their jobs until we finish cleaning. It can get pretty intense. But we get the job done, which is why some customers have been with us for more than 15 years."

Since the company was founded in 1994, Hydroblasters has grown to 25 full-time employees (up to 45 during summers) and built up a large fleet of equipment to handle customers from around the state. The company owns nine high-pressure hydroblasters, mostly made by NLB and Jetstream of Houston (a subsidiary of Federal Signal Corp.). In addition, it runs a Vac-Con combination vacuum truck and seven industrial vacuum trucks made by Vac-Con, GapVax Inc., Super Products and Guzzler Manufacturing (a subsidiary of Federal Signal Corp.).

Hydroblasters primarily serves customers in the papermaking industry, but also caters to food-processing and power-utility clients. Crews clean everything from boilers, evaporators and stock tanks to pipelines and pulp washers. Sometimes they're called in to use a hydroblaster to cut through LEFT: Hydroblasters Inc. relies on the Series 225 Model 305 hydroblaster from NLB Corp. to clean large evaporators and other equipment in paper mills and industrial plants.

BELOW: Gary Shoenfeld uses the Model 305 to cut jammed logs out of a chipper at a paper mill in Wisconsin Rapids, Wisconsin.



OWNER: Hydroblasters Inc., Wisconsin Rapids, Wisconsin

EQUIPMENT: Series 225 Model 305 hydroblaster,

made by NLB Corp.

FUNCTION: High-pressure industrial cleaning,

primarily paper-mill evaporators

FEATURES: Stainless steel plunger pump (10 to 50 gpm at 8,000 to 40,000 psi),

300 hp Cummins diesel engine

COST: About \$90,000

thick logs that periodically jam chipping machines at paper mills. But the majority of the work centers on cleaning evaporators, and the Model 305 is the company's unit of choice to handle these tough jobs, Marquette says.

Here's a quick primer on evaporators, which paper mills employ to heat up and recycle a chemical solution that's used to make paper pulp. The evaporators separate water from the solution and render both the solution (known as

black liquor) and the resulting water reusable in the papermaking process; that, in turn, reduces the amount of freshwater required to make paper.

Cleaning evaporators is no easy task. A large paper mill might have as many as 15 evaporators, each one filled with roughly 800 1-inch-diameter, 50-foot-long metal tubes. Eventually, the tubes start to clog with hardened black liquor, which decreases

Ryan Aelig uses an NLB Series 225 Model 305 hydroblaster to clean a pulp washer at a paper mill in Wisconsin.

the evaporator's efficiency. That's when Hydroblasters crews come in, and it's not unusual for them to encounter evaporators with 50 to 80 percent of the tubes clogged, Marquette notes.

"They're probably the hardest thing we clean," he explains. "In fact, we often pick up new customers because it's hard to find contractors that can get the evaporators clean. I'd say they're about an eight on a [difficulty] scale of one to 10 – and I've seen some 10s along the way, too.

"But we've done it for so long that it's not that difficult for us," he continues. "Some of our customers are amazed at how fast we can clean evaporators.

We've cleaned some units in six hours that it took a previous contractor days to do."

How does the Model 305 work so well? Key factors are its 300 hp Cummins diesel engine and slow-running, stainless steel plunger pump, which can generate anywhere from 10 to 50 gpm at a range of 8,000 to 40,000 psi. Specially designed stainless steel nozzles with carbide tips, made by Advanced

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Pressure Systems, also play a critical role in knifing through the black liquor scale, which Marquette says is almost as hard as concrete.

"We can clean a tube in two to seven minutes," he notes. "We bought the Model 305 just to clean evaporators ... it provides the perfect amount of pressure and volume. We usually keep it at 10,000 to 20,000 psi, which is the sweet spot for this kind of work. Any more pressure and we lose the efficiency of volume to push the material out of the tubes, and any less pressure, we can't cut through the liquor scale."

Marquette compliments the Model 305 for its durability, which is critical during plant shutdowns. In a typical evaporator cleaning project, the unit might run 24 hours a day for three or four days without stopping, operated by rotating crews. "It doesn't stop running until we're finished," he says. "We can't afford to have breakdowns. We'd probably lose a customer if we did have one."

Ease of maintenance and user-friendly features also make the Model 305 a crew favorite, Marquette says.

"Essentially, the Model 305 is the core of our company — the most essential piece of equipment we own," he points out. "It's a real workhorse that allows us to handle the challenge of plant [maintenance] outages.

"Life gets kind of boring for us when we're not in the middle of an outage," he quips. "Anyone can go in and do the day-to-day stuff. But we thrive on jobs where the pressure is on." c

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Depth Perception

A UV-cured lining system enables a New York contractor to rehabilitate a sanitary sewer 92 feet underground

By Scottie Dayton

ince 2011, spring rains in Kingston, New York, activated a sinkhole in Washington Avenue, 92 feet above the Tannery Brook Tunnel floor. High levels of fine, silty sediment rushing into the tunnel's 24-inch vitreous clay sanitary sewer caused operational difficulties at the wastewater treatment plant.

Ongoing repairs by the Department of Public Works failed to stem the problems. In July 2014, part of the avenue caved in, leaving a 75-by-30-by-10-foot-deep hole. Although the affected 190 feet of sewer had broken or missing sections, enough pipe remained to restore it.

Precision Industrial Maintenance of Schenectady, New York, won the bid. "The deep tunnel was a constant 53 degrees and wet from numerous 60 gpm leaks," says Mike App, project manager. "In those conditions, the best CIPP product with the fastest cure rate is the UV-cured SAERTEX fiberglass-reinforced plastic liner."

Once on site, everything they thought they knew about the job changed on the fly, as massive forces broke equipment and pushed the six workers to their limit.

WHAT GOES IN MUST COME OUT

The city closed off the two-block area, giving App's team unlimited access. He worked with Bill Verhayden, PIM's environmental health and safety manager, to plan daily procedures, while the crew organized homeowners' departures and arrivals.

Entry to the tunnel was a 36-inch-diameter shaft 90 feet deep. Upstream, the combined sewer separated 190 feet behind a 14-inch-thick concrete headwall 4 feet high. The 24-inch stormwater line passed above the wall, while only the top half of the sanitary sewer ran through the bottom of the wall. The other half was in the tunnel floor.

"Stormwater discharged to a creek 4,000 feet from our work area," says App. "We had phenomenal airflow."



ABOVE: Tim Nappi stands in the Tannery Brook Tunnel as the crew prepares to line the 24-inch sanitary sewer.

BELOW: A worker from Precision Industrial Maintenance in Schenectady, New York, is lowered down the 90-foot-deep access shaft. Thick foil was used to protect workers and hoses from hitting metal stubs that once supported ladder rungs. (Photos courtesy of Precision Industrial Maintenance)



PROJECT: Rehabilitate a sewer 90 feet underground; stop

sediment from reaching wastewater treatment plant

CUSTOMER:

City of Kingston, New York

CONTRACTOR:

Precision Industrial Maintenance,

Schenectady, New York

EQUIPMENT:

Lining system from SAERTEX

866/921-5186 www.saertex.com

RESULT: Sewer rehabilitated, sediment inflow eliminated



Members of the Kingston Department of Public Works (left) excavate to repair an 8-inch sewer that collapsed adjacent to the main sinkhole. The entry supervisor and attendant (right) from Precision Industrial Maintenance in Schenectady, New York, monitor a confined space entry.

Planning the order in which equipment went down and how to get it down was critical, for there was no room in the tunnel to jockey it about. The shaft also had to remain open enough to safely lower and retrieve workers past the hoses and metal stubs that once supported ladder rungs. Thick foil

> "Engineeringwise, everything about this project was massive, as were the forces on the rollers and braces. Jason used 1/2-inch Schedule A square steel stock, and it still bent or broke." Mike App

covered the stubs to protect men and equipment. In an emergency, the nearest confined space exits were 1,100 feet away at Elizabeth Street through a 24-inch manhole, or 3,000 feet in the opposite direction to a 36-inch sewer with a 30-inch manhole.

App hired Kilby & Gannon Construction of Albany, New York, to set up a 4-inch bypass system capable of handling 900,000 gpd. Once they established it, App's crew inserted a RapidView IBAK North America camera and cleaned the pipe with two quick passes from the jetter on a Vactor 2100 combination truck.

WEEK ONE

App special ordered 1,500 feet of 3/8-inch swage cable rated for 10 tons, but Jason Homrighaus fabricated most other components on site. "Engineeringwise, everything about this project was massive, as were the forces on the rollers and braces," says App. "Jason used 1/2-inch Schedule A square steel stock, and it still bent or broke." CONTINUED >>





ABOVE: After curing the 24-inch SAERTEX fiberglass-reinforced plastic liner, the ends were cut flush with the headwall and floor of the tunnel.

>>RIGHT: The 4-inch bypass hose runs through the 24-inch stormwater pipe above the headwall. The 24-inch lined sanitary sewer is at the bottom.

The 12 mil liner, weighing 4,500 pounds, would make two 90-degree turns and travel 1,100 feet during installation. "Friction was our biggest obstacle," says App. "Overcoming it required custom-made rollers with snatch blocks and screw jacks."

Homrighaus and Rob Chrysler used battery-operated hammer drills to install rollers at the bottom of the Tannery Brook shaft and the Elizabeth manhole. The extra-large adjustable roller for the top of the headwall centered the swage cable as it pulled in the liner, then workers would reposition it, enabling the UV cable to move through it during the cure.

Setup required 12-hour days with experienced confined-space personnel laboring in total darkness except for the 5 feet illuminated by their headlamps. Even simple tasks took an exceptional amount of time, and they lost all concept of it. No matter what clothing they wore, they were always soaked and cold.

"Debris clogged the bypass pumps and they couldn't keep up. With the liner plugging the outflow, 300,000 gallons of wastewater piled up behind the headwall."

Mike App

"Two of my best guys became badly disoriented and we had to get them out," says App. "By Friday, exhaustion was becoming a safety issue, so I sent everyone home early for the weekend."

WORST WEEK

On Monday, the long-range forecast predicted rain toward the end of the week. "If it began raining during the cure, things could turn nasty," says App. "Nevertheless, we couldn't move fast without putting someone in an unsafe situation."

The crew parked the 10-ton winch from a bucket machine over the Elizabeth manhole, then ran out all of the cable. Workers fed it down the shaft and around the designed roller at the bottom, then 1,000 feet through the storm sewer to the roller at the bottom of the Tannery Brook shaft and up to the surface.

Meanwhile, others prepared the liner in its UV-proof, waterproof sleeve. They positioned the leading edges of the liner inward, secured them with



ratchet straps to form a nose, and attached the cable when it arrived.

"Whenever a cable turns, it loses strength," says App. "The moment a roller bent and the cable hit something, the immense forces broke it." It happened three times. Each six- to eight-hour repair in a 3-foot-wide by 5.5-foot-high area required Homrighaus to stand hunched over and in kneedeep water as he spliced the broken wires with cable connections.

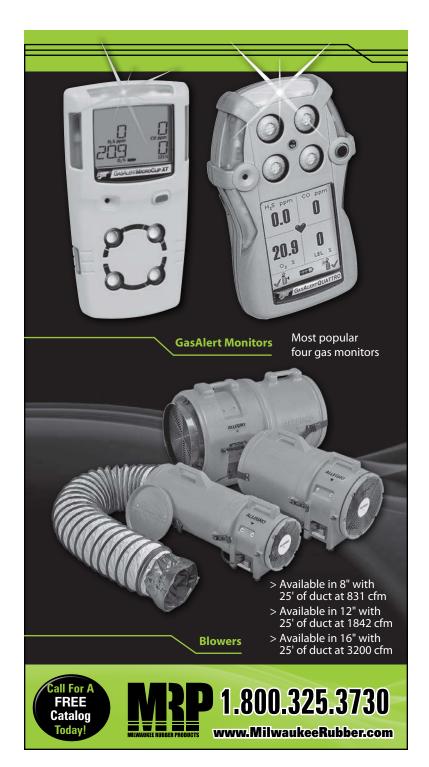
HEAVE HO!

To help relieve friction on the liner, the crew hoisted it down the shaft in 5-foot increments with a chain. After the winch took up the slack, they repeated the process.

The bypass system discharged into a 36-by-24-by-14-inch-deep hole leading to the sanitary sewer. Standing in the hole, Tim Nappi disconnected the cable when the liner arrived. A worker on the other side of the wall retrieved the cable, tied it to a rope, attached the other end to the camera and sent it up the sewer to Nappi. With the cable attached, he helped push the liner down the hole with each pull of the winch.

Inserting the liner took 12 1/2 hours. Then workers cut it to length, inserted steel packers (cans) on either end and secured them with ratchet straps to seal the liner. Using a 375 cfm air compressor, they inflated the liner at 20 psi, inserted the tag line and pulled back the Double Core 9-foot-long light train with eight 1,000-watt UV bulbs.

"Fore and aft cameras on the train enable us to inspect the liner as we pull the train to its head," App says. "When we finally turned on the lights, we had worked 48 hours straight."



SOGGY HOMESTRETCH

A computer controlled the speed of the light train - 6 to 9 inches per minute based on the liner's diameter and thickness. "The rain and the cure began at 1 a.m.," says App. "When we finished seven and a half hours later, more than an inch of rain had fallen. Debris clogged the bypass pumps and they couldn't keep up. With the liner plugging the outflow, 300,000 gallons of wastewater piled up behind the headwall."

Unable to retrieve their equipment and open the sewer, they went home and waited five days for flows to subside. "We left everything hooked up and hoped it would survive," App says. "It did."

Since PIM completed the two-and-a-half-week project, no sediment has reached the treatment plant. c



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See ad page 89	AMERICAN JETTER 6908 Pine Grove Rd., Knoxville, TN 37914 866-944-3569 • 423-472-2527 • (f) 423-472-2531 www.americanjetter.com • andy@americanjetter.com	V		50' - 500'	11/2" - 8"	2000 - 5000 PSI	4 - 10 GPM
See ad page 54	CAM SPRAY 520 Brooks Rd., lowa Falls, IA 50126 800-648-5011 • 641-648-5011 • (f) 641-648-5013 www.camspray.com • sales@camspray.com	V		100' - 500'	2" - 24"	1500 - 5000 PSI	2 - 30 GPM
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See ad page 76	CHEMPURE PRODUCTS CORP. PO Box 740, Bolivar, OH 44612 800-288-7873 • 330-874-4300 • (f) 330-874-4448 www.rootrat.net • lloyd@chempure.com	V		100' - 400'	2" - 12"		
See ad page 60	COAST MANUFACTURING 3985 W 12th Ave., Eugene, OR 97402 800-541-7015 - 541-684-0743 • (f) 541-485-3617 www.coastmanufacturing.com sales@coastmanufacturing.com		V	35' - 150'	1" - 10"		
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Duracable Manufacturing Company See ad page 31	DURACABLE MANUFACTURING 300 Ashworth Rd., West Des Moines, IA 50265 800-247-4081 • (f) 515-223-4220 www.duracable.com • sales@duracable.com	V	V	Up to 250' Up to 150'	2" - 10" Up to 10"	Up to 3000 PSI	1.4 - 8 GPM
See ad page 16	ELECTRIC EEL MFG. 501 W Leffel Ln., Springfield, OH 45501 800-833-1212 • 937-323-4644 • (f) 937-323-3767 www.electriceel.com • info@electriceel.com	V	V	100' - 300'	1" - 8"	1500 - 3000 PSI	1.7 - 4.7 GPM
GENERAL PIPE CLEANERS See ad page 2	GENERAL PIPE CLEANERS 1101 Thompson Ave., McKees Rocks, PA 15136 800-245-6200 • 412-771-6300 • (f) 412-771-2771 www.drainbrain.com • info@drainbrain.com	V	V	30' - 400' 25' - 150'	2" - 12" 11/4" - 10"	1500 - 3000 PSI	2 - 12 GPM
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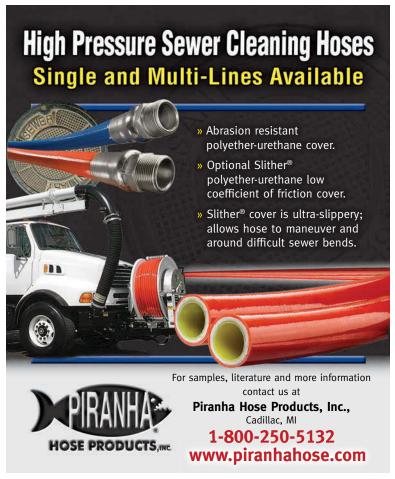
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See ad page 75	KEN-WAY CORPORATION 930 Roberts Rd., Sparta, WI 54656 800-533-0551 • 608-269-3752 • (f) 608-269-8129 www.ken-way.com • info@ken-way.com	V	V	25' - 150'	11/4" - 8"	1500 - 3000 PSI	1.5 - 4 GPM
See ad page 43	MONGOOSE JETTERS BY SEWER EQUIPMENT 1590 Dutch Rd., Dixon, IL 61021 800-323-1604 • 815-835-5566 • (f) 815-284-0452 www.mongoosejetters.com • sales@mongoosejetters.com	V		250' - 1000'	2" - 72"	2000 - 4000 PSI	12 - 80 GPM
See ad page 88	MTECH 7401 First Place, Cleveland, OH 44146 800-362-0240 • 440-646-0996 • (f) 440-646-9953 www.mtechcompany.com • sales@mtechcompany.com	V		300, - 600,	4" - 60"	2000 - 4000 PSI	12 - 80 GPM
See ad page 25	MYTANA MFG. CO., INC. 746 Selby Ave., St. Paul, MN 55104 800-328-8170 · 651-222-1738 · (f) 651-222-1739 www.mytana.com · mytana@mytana.com	V	V	50' - 300' 25' - 150'	11/2" - 10" 11/2" - 12"	1200 - 3000 PSI	2 - 8 GPM
NozzTeq See ad page 42	NOZZTEO INC. 1497 Main St., #354, Dunedin, FL 34698 866-620-5915 • 603-413-6583 • (f) 603-413-6744 www.nozzteq.com • info@nozzteq.com	V		Up to 200'	3" - 8"	2000 - 5000 PSI	15 - 80 GPM
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RIDGID	RIDGID® 400 Clark St., Elyria, OH 44035 800-769-7743 www.RIDGID.com • RIDGIDinfo@emerson.com	V	V	25' - 300' 90' - 250'	1 1/4" - 10" 3/4" - 10"	1350 - 3000 PSI	1.4 - 5.56 GPM
S PARTAN See ad page 96	SPARTAN TOOL, LLC 1506 W Division St., Mendota, IL 61342 800.435-3866 • 815-539-7411 • (f) 888-876-2371 www.spartantool.com • customerservice@spartantool.com	V	V	25' - 200' 15' - 112'	11/4" - 6" 11/4" - 10"	1250 - 3000 PSI	2.2 - 4 GPM
See ads pages 40, 81	THE GABLE CENTER, INC. 8318 Olive Blvd., St. Louis, MO 63132 800-257-7209 • (f) 314-432-8024 www.thecablecenterinc.com thecablecenterinc@gmail.com	V	V	25' - 400'	2" - 13"	1500 - 3000 PSI	2 - 12 GPM
See ad page 94	WATER CANNON INC. 4300 W Lake Mary Blvd., Units #1010-242, Lake Mary, FL 32746 800-333-9274 • (f) 888-928-9274 www.watercannon.com • sales@watercannon.com	V		50' - 550'	1" - 12"	1000 - 7000 PSI	2 - 12 GPM



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Disinfecting at the Source

Cleaning system for sewer equipment helps prevent spread of bacteria, viruses

By Kyle Rogers

isinfecting a jetter hose as it is being retracted from the sewer will prevent raw sewage and all the viruses and bacteria it contains from contaminating the outside environment.

It's a simple concept. But in more than 25 years in the wastewater business — whether it was cleaning sewer lines or overseeing jobs — TJ Suiter says it is a concept he didn't often see practiced.

"I noticed there is really nothing out there that is removing all the biohazards that are coming out of the sanitary sewer system at the source," says Suiter, owner of Colorado-based Hydro Products. "As workers are launching or retrieving the jet hose from the reel, they are exposed to raw sewage. Then they're transferring all those viruses and bacteria that are on their gloves to other parts of the equipment: the vacuum or jet controls, their personal cellphone or drinks they might have if they're out there on a hot summer day."

That's why three years ago, Suiter invented the Vanguard System, designed specifically to keep sewage and its associated pathogens where they belong — the sewer.

"The people who work on these maintenance trucks sometimes feel like they're bullet-proof. Well, they're not. Viruses don't have any respect for people."

TI Suiter

HOW IT WORKS

The Vanguard System can be set up with a roller frame that sits over the manhole, or with the new spray collar design. Each contains four highpressure sprayers connected to the truck's water tank and a 5-gallon tank holding an antibacterial cleaning concentrate. The system is operated by a control box that combines water from the truck's tank with the cleaning solution. The amount of cleaning solution per gallon of water can also be adjusted via the control box.

"As the hose is being retrieved out of the sewer, it is being sprayed at that source, so all the bacteria and viruses are going right back into the sewer," Suiter says. "When you open a manhole, you'll usually see several different lines coming in and every time you're going to clean a different line you have to grab that hose to steer it into the correct line. Since that hose was just in the sewer, with all those viruses and bacteria, all that gets on your gloves.

"With the Vanguard System, it's coming out and getting washed off as it's being spooled up. Now you're able to touch a clean hose as you guide it into the next line. And you're also hitting balls of tree roots or any number of things



The Vanguard System is designed to disinfect jetter hoses as they're retracted from sewer lines. The system is operated by a truck-mounted control box that combines a cleaning solution with water from the truck's tank.

that will stop the hose's progress jetting the line. So you'll have to grab that hose numerous times during the run and help it along."

The system also includes a hand gun attachment that can be used to disinfect the surrounding area or other equipment that comes into contact with sewage.

"The spray gun is there because there is a lot more that goes into the sanitary sewer than just the jetting hose," Suiter says. "You can wash down the vacuum tubes, cameras, the nozzles, your gloves, boots, tools, toolboxes, etc."

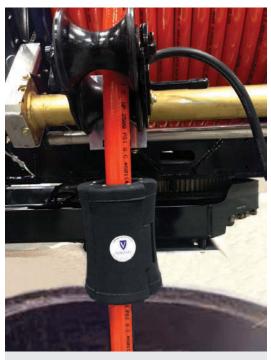
98 PERCENT

Suiter sold his first three units of the Vanguard System about three years ago to the City of Colorado Springs. He immediately received positive feedback, but the city also wanted quantifiable data that showed the effectiveness of the Vanguard System. A Denver-area independent laboratory was hired to follow Colorado Springs crews for a day swabbing equipment the system was used on. After three weeks of culture growth, the lab had some data: The system reduced bacterial counts by up to 98 percent. Colorado Springs ordered 11 more units to outfit the rest of its fleet.

System first began to develop for Suiter. He observed hospice workers flushing the contents of bedpans down the toilet, untreated.

"And those same workers were wearing all this high-tech safety gear and actually incinerating it, including gloves, gowns and even the sheets and clothing from those patients. But the workers outside the hospice were not being protected at all."

The Centers for Disease Control and Prevention does not currently recommend disinfection of patient waste before disposal into the sewer CONTINUED >>



The Vanguard System's spray collar design contains four high-pressure sprayers connected to the truck's water tank and another 5-gallon tank that dispenses antibacterial cleaning concentrate.

Suiter says that level of equipment disinfection is especially important in today's world where wastewater workers are at greater risk of contracting an illness because of their work environment.

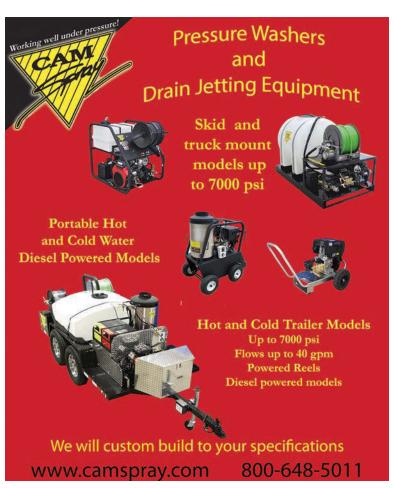
"Viruses and bacteria are getting stronger; they're not getting weaker," Suiter says. "And there are fewer effective antibiotics out there. All the low-hanging antibiotic fruit is gone, so it's getting extremely expensive and very time consuming to come up with new antibiotics that will treat infections.

"The people who work on these maintenance trucks sometimes feel like they're bullet-proof," he adds. "Well, they're not. Viruses don't have any respect for people."

THE GENESIS

A period of volunteering at a hospice with terminally ill patients is where the concept of the Vanguard





system, and the U.S. Environmental Protection Agency does not have any registered disinfectants that can be used for that purpose.

"Their position is basically, we don't recommend anything to kill pathogens in wastewater. It will be taken care of at the treatment plant," Suiter says. "That's all well and good if you're working with that water coming directly out of the wastewater treatment plant where all this raw sewage has been cleaned up. But the people we're trying to protect are the ones between the hospital and the treatment plant."

COST-SAVINGS BENEFITS

The Vanguard System is modular so it can be installed on a new truck or retrofit on any existing truck for approximately \$6,000.

"When you consider that the average hospital stay is several thousand dollars a day, it's a pretty inexpensive investment to protect your workers,"

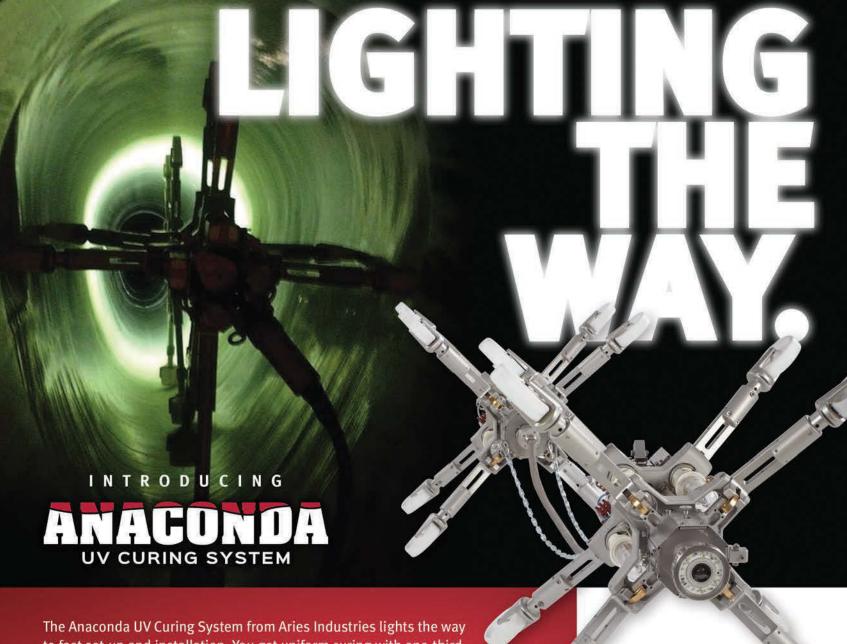
He recalls one of his contacts in Texas recently had a worker diagnosed with hepatitis. It led to a five-week hospital stay.

"The wastewater manager there said, 'You know, for the cost of this one individual being sick, we could've outfitted the entire fleet and been money ahead.' From just that single incident.

"Especially in light of the recent Ebola scare in the U.S., I think it's important that workers are able to actually wash down that area where a hose is coming out," Suiter adds. "This is a very rapidly evolving problem and there's really not an end in sight, so I think it's best to be on the front end of this thing rather than the back. The best defense is always good offense." c







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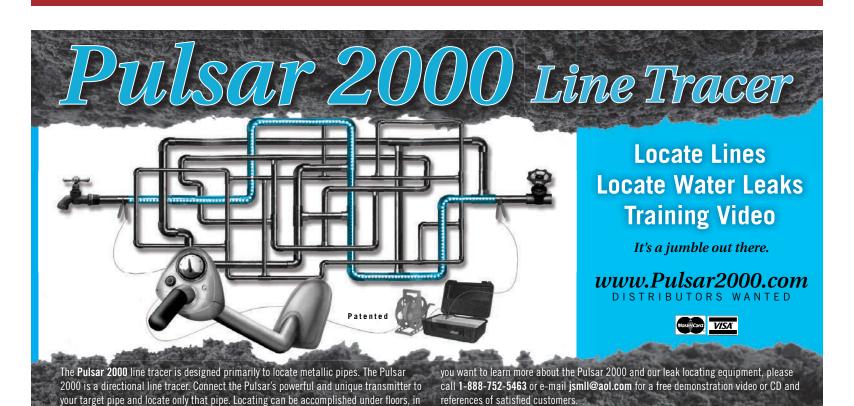
We have been using the **Pulsar 2000** along with the XL2 fluid detector and Geophones

since January 1989 in our leak locating business. Our leak locates are accurate 95% of

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	<u>50'</u>	<u>75'</u>	<u>100'</u>	<u>150'</u>	<u>200'</u>	<u>250'</u>	<u>300'</u>	<u>350'</u>	<u>400'</u>	<u>450'</u>	<u>500'</u>	<u>550'</u>	<u>600'</u>
1/8"	\$13.24	\$18.41	\$22.87	\$32.49	\$42.12	\$49.17	\$57.96	\$66.75	\$75.53	\$84.33	\$93.12	\$101.91	\$110.69
<u>3/16"*</u>	\$21.23	\$26.95	\$33.60	\$44.89	\$56.84	\$68.80	\$80.75	\$92.71	\$104.66	\$116.63	\$128.58	\$140.54	\$152.50
1/4"	\$25.87	-	\$48.40	\$70.91	\$93.40	\$109.53	\$130.45	\$151.36	\$172.27	\$193.17	\$214.08	\$235.00	\$255.91
3/8"	\$53.80	\$79.11	\$91.87	\$130.97	\$186.39	\$224.96	\$263.51	\$301.15	\$331.15	\$368.99	\$406.84	\$444.69	\$482.53
<u>½"</u>	-	-	161.80	-	\$306.77	-	\$438.40	-	\$572.01	-	\$707.17	-	\$842.97



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and editor in Racine. Wisconsin

Charging for Transportation

Fuel prices are down - but now is no time to stop thinking about how you factor that expense into your rate structure

By Erik Gunn

hen gas and diesel prices began to climb a few years back, your business probably faced a tough choice: raise prices to cover that extra bite off your bottom line, or hold the line and cut back on other costs. Some may have opted for a third alternative — a fuel surcharge.

That was fine then. But in case you hadn't noticed, fuel prices began 2015 at their lowest point in years — and about half of what they were just a year ago. With more fuel price fluctuations expected in the future, the issue now is how to make sure your invoices for service properly account for those shifting costs.

If you raised prices when your fuel costs were going up and didn't lose business — well, good for you. You got lucky. If you held the line on prices and cut back on expenses, you've probably been breathing easier. You should also be putting away some of that extra cash for a rainy day, or using it to make new investments in your business that you've been putting off.

And if you implemented a fuel surcharge? The last few months have probably been ... well, interesting.

FUEL SURCHARGE BASICS

Whatever strategy you've used, with fuel costs still extraordinarily low, it might be time to look again and consider your options.

Fuel surcharges are a standard in long-haul trucking as well as regional trucking-based services (think trash collection). The surcharge is typically indexed to a base fuel price at a certain time, then updated (often weekly) by plugging in the new fuel price. The formula also typically includes the miles traveled for the job.

The source for the fuel price figure can vary. You could simply choose the price of the station nearest your shop. Or, you could use something like the American Automobile Association's average price, available daily by state (see fuelgaugereport.aaa.com/todays-gas-prices).

Another option is FuelSurchargeIndex.org (www.fuelsurchargeindex.org). This online service was set up by a Texas IT firm, ProMiles Software Development Corp., in collaboration with large carriers. (ProMiles mostly produces software applications for truckers to set up routes, report fuel tax information and complete required paperwork.)

The FuelSurchargeIndex.org database pulls data from truck stops across the country and fuel card providers, offering up-to-the-minute price information. While mainly used by long-haul and regional truckers, the business does have some customers among local fleet owners, according to marketing

A subscription costs just under \$20 a month, but Lee notes that many subscribers sign up for just one month every quarter to get data, updating their surcharges for three months at a time.

REAL-WORLD EXAMPLES

Kenneth Combs is co-owner and CEO of CQC Home, a construction and remodeling business in Durham, North Carolina. Until about four years ago as the latest surge in fuel prices was taking off — CQC Home simply wrapped fuel costs into the general overhead expenses that were part of every customer's price quote.

Then it happened. "We were growing and starting to get jobs farther and farther away from our home base," Combs says. "We were starting to notice a decline in our bottom line and an increase in our overhead."

"We were growing and starting to get jobs farther and farther away from our home base. We were starting to notice a decline in our bottom line and an increase in our overhead."

Kenneth Combs

But rather than simply ratcheting up the overhead factor for all jobs, the business took a surgical approach.

For customers closer than 30 miles, the contractor made an across-theboard overhead adjustment. Customers more than 30 miles from the shop started getting a fuel surcharge as a specific line item.

The surcharge formula includes the price of gas, the distance to the job, the amount of time the job is projected to take (in CQC Home's business, that can be days, weeks or even months) and the number of vehicles required each day. The vehicle count is based on how many people are needed that day, which depends on what stage the project is in.

Customers subject to the surcharge have gone along with no pushback, Combs says. Consistency helps; as gas prices began coming down late last year, so did the surcharge, he points out.

And it's made a difference. "We spend, right now, about \$70,000 a year on fuel, and \$15,000 or \$20,000 of that we have been able to charge directly" to customers through the fuel surcharge.

American Standard Roofing in Southfield, Michigan, takes a different approach. Richard Goodman, the general manager, prefers wrapping the cost of fuel into the overall price. Trying to calculate a specific fuel charge for each job strikes him as a tedious waste of time.

"You know on a year-by-year basis exactly how much you have spent on fuel and how many jobs you have completed," Goodman says. "Take this information over several years to average it out and find your approximate cost per job." That approach "saves time and gives you a longer view of your business."

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Goodman cautions against cutting prices to reflect dropping fuel costs. "If you drop your pricing down too far and the prices suddenly spike back up, you can find yourself in a real sticky situation," he says. Instead, he recommends using the new extra cushion to put money back into the business.

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NO ONE ANSWER

The best strategy is the one that keeps you both profitable and competitive in your market, and that can differ depending on your circumstances.

Take calculating distance to the job as part of your surcharge. For the long-haul trucker, that's no big deal; the distance will be the same for any carrier. But for a local business that may draw customers — and face competition — from all over its territory, it isn't so easy.

When a potential customer in the city down the highway from you calls because her friend in your hometown loved your work, do you really want to charge her an extra fee to hire you instead of the contractor in her own community?

For that matter, will having to count up the miles to and from every job be helpful? Or just a drain on your time?

Then again, just wrapping the cost into general overhead could put you under the gun if or when fuel prices shoot up again.

MAKING IT WORK FOR YOU

If you do include a fuel surcharge as a customer line item, make it transparent and tie it to a consistent formula that you can explain in clear and simple terms. If it's just a black box, your customers will suspect a scam that lets you advertise lower prices while charging more.

Surcharge or no surcharge, now's the time to look again at how you account for the cost of fuel when you put a price on your services — and implement a new policy if you need one, says Lee.

With prices as low as they are likely to be for a while, you have an opportunity to put in place a fuel surcharge indexed at zero against the current price of fuel. "Then as the prices go back up, the new trigger points kick in,"

What comes down will probably go up again. And when it does, you'll need to be ready. c

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Residential and **Commercial** Sewer and Pipe Maintenance

By Craig Mandli

Drain and pipe cleaning professionals use a variety of tools to clear clogged pipes. Here are several cable machines, nozzles, grease trap maintenance supplies, hoses, reels, jet/ vac combo machines, portable jetters and pressure washers, inspection cameras, rodding machines and trailer jetters used to locate and clear blockages.

CABLE MACHINES

COAST MANUFACTURING TORQUEMASTER TM750

The TorqueMaster TM750 mainline drain cleaning machine from Coast Manufacturing has a double-welded, powder-coated tubular steel frame and an easy-start 3/4 hp dual-capacitor motor. The main shaft drive is fabricated from stress-



proof steel, with sealed ball bearings on the shaft and drive arm bearings that don't need lubrication. It has a straightforward pulley drive system, 10-inchdiameter solid polyurethane tires, extra-wide rear handle for stability in the upright position, and quick and easy one-man reel changeover. 800/541-7015; www.coastmanufacturing.com.

DURACABLE MANUFACTURING COMPANY DM10

The DM10 drain machine from Duracable Manufacturing Company is ideal for residential drainlines from 1 to 4 inches. The frame is a double-tube design, which adds to the stability of the lightweight machine and allows for the wiring to run



Duracable Manufacturing

inside the frame. It has a 1/3 hp motor that operates at 195 rpm, and can efficiently run either 3/8- or 1/2-inch cable. It has a telescoping handle and wheels to make it easy to maneuver. It can run both 16- and 19-inch reels, which makes it easy to switch between cable diameters and lengths. 877/244-0556; www.duracable.com.

GORLITZ MODEL GO 68HD

The Model GO 68HD heavy-duty electric drain cleaning machine from Gorlitz Sewer & Drain is available in two different versions, either with an open steel reel or enclosed polyethylene drum, and can be outfitted with an optional power feeder. It comes with a standard configuration of 150 feet of 11/16-inch hollow-core cable. The



Gorlitz Sewer & Drain

overall weight is 185 pounds, and adding a loading ramp and electric winch to any vehicle makes transportation efficient. It is designed to clean pipes from 3 to 8 inches in diameter. 562/944-3060; www.gorlitz.com.

PICOTE SOLUTIONS MILLER

The Picote Miller drain cleaning system from Picote Solutions can clean cast iron drains and sewers from 11/4 to 10 inches in diameter. Three different sizes of machines are available, and when used with the Picote Stainless Steel Cyclone for fragile pipes, or Original grinding chains, allows for fast and efficient cleaning of soft



blockages, scale and calcium buildup, tree roots, concrete, lead, failed gaskets and imperfections in the pipe. 219/440-1404; www.picotesolutions.com.

CLEANING NOZZLES

ARTHUR PRODUCTS PX REVOLVER G3

The PX Revolver G3 from Arthur Products is designed for the operator who not only must service a line, but have the ability to travel a long distance in the line. It has three additional fixed rear jets dedicated to generating thrust for long runs. The addition of the rear jets allows the rotor jets to focus on penetration, polishing and flushing. It is manufactured from high-grade stainless steel and custom drilled to equipment. It is available 1/4, 3/8 and 1/2 NPT. 800/322-0510; www.arthurproducts.com.



ENZ USA ROTODRILL

The Rotodrill nozzle from Enz USA has a rotating front jet for improved cutting performance. It can be used to help clear blocked or frozen pipes, and move heavy debris. It has ideal propulsion but can also be used in hydroexcavation by plugging off the thrust jets. It is available in 1/2-, 3/4- and 1-inch systems. 877/369-8721; www.enzusainc.com.



HAMMELMANN PIPEMASTER

The Pipemaster high-pressure hoserotating system from Hammelmann is used to remove deposits from the inside of pipes, 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. Actuating the control lever causes the hose to start rotating, which produces the forward motion. Changing the angle of the three wheels that press onto the hose will cause the hose to move forward or backward. The rotating unit is driven by compressed air at 60 psi and comprises a pneumatic motor with gearbox, a pneumatic maintenance unit, the high-pressure rotary joint and a pneumatic control system, all mounted on a three-wheel trolley. 800/783-4935; www.hammelmann.com.

KEG TECHNOLOGIES HUMMINGBIRD

The **Hummingbird Micro Chain Cutter** from KEG Technologies is intended for use on lateral service lines ranging in diameter from 2 to 6 inches. It connects to 1/2-inch jetter hose and requires 12 gpm at 2,000 psi to operate. It fits in most cleanouts and can negotiate a 3-inch sweep elbow or tee connector due to its small size and light weight. Once powered up, the nozzle will hover in the



pipe and remove roots, grease, hard deposits and even baby wipe cloths while maintaining the structural integrity of the pipe being cleaned. 866/595-0515; www.kegtechnologies.net.

NOZZTEQ JAWS

The Jaws NASSCO Tier III sewer nozzle from NozzTeq has hydraulically engineered conduits and spray angles that produce efficient, powerful jetting streams using relatively low truck-supplied water pressures. Crews can clean more pipe with fewer passes, while generating less wear and tear on trucks



and using less fuel. Its water conduits preserve laminar water flows from the truck to final jet stream, so water pressure is never compromised by turbulence. The tightly focused jet streams are deployed at precisely calculated angles that move out debris efficiently. It is made of low-carbon stainless steel with styrene butadiene rubber covers that protect the conduits and jets. Jets can be switched as needed to accommodate water flows from 40 to 285 gpm. 866/620-5915; www.nozzteq.com.

NU FLOW MICRO-CUTTER

The Micro-Cutter pneumatic cutter from Nu Flow can be used to clean and remove calcite and roots from the inside of a variety of pipes, including steel, cast iron and Orangeburg. 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 that can cut through dense corrosion and root intrusion that is commonly found in drainlines. The drill tip has an adjustable spline available in various sizes to match different pipe diameters. 800/834-9597; www.nuflowtechnologies.com.

STONEAGE WARTHOG WGR MAGNUM

The Warthog WGR Magnum highperformance rotary nozzle from StoneAge operates for long periods between maintenance



intervals. It can effectively handle recycled water, retaining jet quality under poor water conditions. Its streamlined design allows for better forward and reverse movement through pipe. Hardened steel centralizer fins can be replaced individually as wear occurs, further protecting the tool for longer operation in the field. 866/795-1586; www.sewernozzles.com.

USB - SEWER EQUIPMENT CORPORATION ONE-PIECE NOZZLE

One-piece stainless steel cleaning nozzles from USB - Sewer Equipment Corporation aren't bonded or screwed together, enhancing strength and reducing the chances of failure under pressure. Their Advanced Optimized 3-D Hydro Mechanics®, located in the



lower part of the chamber, eliminate pressure in the upper portion of the nozzle and prevent explosion in a sewer line or manhole. The water coming from a pressurized hose is immediately guided directly into channels and smoothly directed into one-piece ceramic nozzle inserts, which don't require winglets or flow-straighteners due to the hydromechanics in and out of the chamber, resulting in an efficient jet pattern. They are engineered and manufactured according to DIN EN ISO 9001:2000. 866/408-2814; www.usbsec.com.

GREASE TRAP MAINTENANCE

BIOSTIM SUPER AUG PILL

Super Aug Pill time-release microbial FOG treatment for outdoor grease traps from BioStim enables the offering of an outdoor grease trap maintenance program, providing additional sales opportunities. The sustained microbial maintenance program reduces fats,



oil and grease, which cause foul odor, corrosion and sanitary sewer overflows. Since the waste load in grease traps often exceeds what the existing microbes can handle, treatment can supplement the natural microbial colony by infusing it with multiple strains of grease-eating bacteria. It contains no damaging chemicals, enzymes or emulsifiers that can cause pass-through to the sewer system. 800/338-8812; www.biostim.com.

CPI PRODUCTS TRAPMASTER

The Trapmaster from CPI Products, a division of Cavallero Plastics, enables inspection cameras to negotiate through 180-degree P-traps. The design consists of eight wheels mounted on two skids spaced roughly 2 inches apart. The front section mounts to the camera head while the rear section mounts at



the optimal spot along the camera head or spring push cable. Each section of the skid has four rocking SeamLeapers that swivel back and forth and adjust to various radiuses in the pipe, allowing for wheel contact and maneuverability. It allows for most standard push camera systems to negotiate traps, bends and corners in 4- to 6-inch pipelines while centering the camera at all times. 413/443-0925; www.cplasproducts.com.

CONTINUED >>

DRAINBO DRAIN AND **GREASE TRAP TREATMENT**

All-Natural Drain and Grease Trap Treatment from Drainbo is certified by the Natural Products Association and is a USDA certified biobased product. Once applied to the system, the multi-strains bacillus formula multiplies rapidly, producing a film of safe, FOG-digesting bacterial cultures that work to clean



and maintain drainlines, while improving the efficiency of grease trap systems and eliminating the concrete grease layer. Regular applications will reduce and eliminate line/trap deposits, control odor and reduce overall maintenance costs. It can help reduce the time needed to pump out the trap, increasing the number of jobs that can be completed. 877/372-4626; www.drainbo.com.

WESTMOOR CONDE' PROVAC

The Conde' ProVac preassembled industrial liquid waste pumping system from Westmoor Ltd. is designed to promote efficient grease trap pumping. The unit is quiet and lightweight and pumps at 120 gpm. Flip a switch to start the unit in vacuum mode for pumping. The built-in exhaust deodorizer keeps odor at a minimum. Flip the switch to pressure mode for off-loading. 800/367-0972; www.westmoorltd.com.



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with a 4,000 psi rating. It has braided high-tensile synthetic fiber reinforcement with a temperature range of -40 to 122 degrees F, and a seamless polyester innercore. 800/421-4580; www.draincables.com.

HOSE REELS

HANNAY REELS HDD6200

The heavy-duty HDD6200 Series hydraulic direct-drive reel from Hannay Reels is ideal for rodding, waterblasting and sewer cleaning operations. It has an external hose connection that allows tightening to occur without removing all hose from the spool. The optional hose guide arm and swivel base permits precise payout of hose from the reel. No chain or sprocket is required with the direct-drive hydraulic motor. The steel hub assembly is rated to 3,000 psi. 518/797-3791; www.hannay.com.



Hannay Reels

REELCRAFT SERIES LC

Series LC stainless steel hose reels from Reelcraft Industries are ideal for light-duty, spring-driven hose reel applications in corrosive or sanitary environments. Designed for stationary indoor and outdoor use, these reels can be attached to most surfaces that can be drilled. The reel is built with high-quality stainless steel components for corrosion resistance. The four base slots allow the reel to be easily mounted or adjusted. The



eight-position ratchet locks the reel at the desired hose length, while the guide arm adjusts to five positions. Models are available for 3/8- or 1/2-inch I.D. for up to 70 feet of hose. 800/444-3134; www.reelcraft.com.

JET/VAC COMBO UNITS

HI-VAC AQUATECH B-10

The Aquatech B-10 combination jet/vac truck from Hi-Vac Corp. has a single-engine design for lower fuel and maintenance costs, rear-mounted hose reel and 360-degree toploading rotating boom. The low center of gravity makes full loads more stable, while the



self-cleaning tanks are corrosion and abrasion resistant. The air/vacuum system has an operating capacity of 2,700 cfm and a 204-inch water column. Options include extended boom, pneumatic foot control for one-man operation and lockable vacuum tubes. An internal boom allows for pickup of materials above and below water. 740/374-2306; www.hi-vac.com.

GAPVAX MC ADVANCED SERIES

The MC Advanced Series combination jet/vac from GapVax includes a monitoring system allowing the operator to observe and troubleshoot the entire system. Two display screens control most functions, while providing manual control should something go wrong electrically. All body, boom and hose



reel functions, vacuum break, throttle and lighting are wirelessly controlled, still maintaining proportional boom and hose reel control. Specs include 3/16inch ASTM A572 Grade 50 Exten steel, 5- to 12-cubic-yard debris body and stainless steel water tank with capacity up to 2,000 gallons. Vacuum pump options range from 3,500 to 5,000 cfm, with up to 27 inches Hg. The 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.

KEITH HUBER CORPORATION DOMINATOR

The **Dominator** vacuum truck from Keith Huber Corporation has a 3,300-galloncapacity steel tank with 5/16-inch shell, a 20-inch top manway, hydraulic tank lift and



full-opening rear door, a PTO-driven hydraulic vacuum/pressure system, a liquid-cooled high-performance pump, full-length hose trays, a 4-inch inlet with internal standpipe for easy decanting, a 6-inch discharge valve for direct pressurized or gravity unloading, rear work lights and LED running lights, and



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a backup alarm and grounding reel. Options include multiple compartments, ASME/DOT 412 certification, stainless steel tank with wetted stainless parts, high-pressure jetting systems with integral water compartment, an auxiliary transfer pump and a top-mounted hydraulic 4-inch boom. 800/334-8237; www.keithhuber.com.

LMT SMART-DIG HX-4000

The HX-4000 hydroexcavator from LMT, in partnership with Smart-Dig of New Zealand, has a modular subframe that mounts to a 33,000 GVW new or used single-axle truck. Features include an auxiliary 83 hp Kubota diesel



engine, 1,500 cfm Tuthill 6015 blower, 3,000 psi (7 gpm) Udor waterblaster, 6-cubic-yard debris tank and four side-mounted, rotary-molded water tanks totaling 396 gallons. The wireless, remote-control telescoping boom rotates 270 degrees. Options include a 400,000 Btu AquaBlast, fuel-oil fired water heater for cold-weather operation. 800/545-1074; www.vaxteel.com.

PAC-MAC VP SERIES

The VP Series service truck from Pac-Mac, a division of Hol-Mac Corporation, comes with a 2,500-gallon tank with 66 inches OD and 156-inch shell length (also available in 1,500, 3,000, 3,500, 4,200, 4,500



and 5,000 gallons), a 1/4-inch-thick shell and 5/16-inch nominal thick heads, right-angle drive pump system, 20-inch rear and top manways, manway ladder with safety tread, bolt-on baffles and hose trays with drains, rear hose hooks, 4-inch intake and 6-inch discharge, and a premium two-component epoxy primer-sealer and polyurethane topcoat in solid and metallic colors. Options include a hydraulic-drive jetting system, 36-inch rear manway, multiple toolboxes, bedliner applied to hose trays and tank, a chemical-resistant twopart epoxy interior liner, safety beacon, rear sump and stainless steel float level indicator. 800/844-3019; www.e-pac-mac.com.

POLSTON APPLIED TECHNOLOGIES PAT 360-HD

The PAT 360-HD combination truck from Polston Applied Technologies effectively removes sand, grit and other debris in difficult cleaning situations. It utilizes the Polston Process and COMBINATION3 technology (a combination of jetter, vacuum



and downhole system) 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 performs in surcharged conditions, allowing the facility to remain completely online. 844/765-7766; www.polstonprocess.com.

VAC-CON COMBINATION MACHINE

Combination machines from Vac-Con are available in configurations from 3.5- to 16-cubic-yard capacities, with hydrostatically-driven two- and three-stage centrifugal compressors and optional positive displacement blowers with up to 27 inches



Hg. High-pressure, smooth-flow water systems offer up to 120 gpm and 3,000 psi, with cross-linked polyethylene water storage tanks with total capacities up to 1,500 gallons. They can be equipped with a 180-degree articulating front-mounted hose reel in capacities up to 1,000 feet, and high-pressure hose diameters from 5/8 to 1 1/4 inches. Front-mounted telescopic booms are available with up to a 10-foot extension, and 8- and 10-inch tube diameter. They can double as a vacuum excavator with the optional hydroexcavation package, allowing the operator to reduce the volume of water, maintain the pressure for digging and direct the flow through a conventional excavation hand wand. 904/284-4200; www.vac-con.com.

VACALL - GRADALL **INDUSTRIES AJV R SERIES**

The AIV R Series with a rear-mounted hose reel from Vacall - Gradall Industries was designed for customers who prefer rearmounted reels located away from engine noise and providing an unobstructed view of the



job site. Its heavy-duty tailgate design with vault style latches and dual cylinder lift system allows optimized rear seal performance. Galvanized debris tanks are available in 6-, 8- or 10-yard capacities. 800/382-8302; www.vacall.com.

PORTABLE JETTERS/PRESSURE WASHERS

AMERICAN JETTER COMPACT VAN JETTER

Compact Van Jetters from American Jetter have a skid footprint as small as 24 by 36 inches, while offering room for a camera and tools. Water tank footprints are as small as 24 by 24 inches, making it easy to have a fully operational jetter inside



a van using minimum space. A full speed-control reel mounted above the engine and near the rear door maximizes operator comfort. A flexible mountanywhere exhaust system allows exhaust to be run through the floor or other areas, reducing engine noise. Kohler engines to 80 hp power low-water shut-off pumps from 7 to 20 gpm up to 5,000 psi. A wireless remote option allows for water on/off and engine shutdown. 866/944-3569; www.americanjetter.com.

BULLFROG INDUSTRIES CRAP SHOOTER 2

The Crap Shooter 2 "The Deuce" portable suitcase jetter from BullFrog Industries comes ready to use right out of the box. It offers 2,000 psi and 1.76 gpm, and only draws 14.5 amps. It comes with two heavy-duty nozzles and a tip cleaner, 25-foot power cord with two-prong GFCI plug, two faucet adapters, 25-foot feed hose and 75-foot high-pressure jetter hose. 303/338-0805; www.bullfrogind.com.



CAM SPRAY RCJ SERIES

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. A threeplunger industrial pump with pulse is powered by a 688 cc Honda engine. It comes with 200 feet



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bodus gmbh

SMALL, BUT MIGHTY: the mobile air circulating heating unit "Air Heater"





The Air Heater from bodus is a compact and powerful air-circulating heating unit, designed to accelerate the curing process of inliner in house connections.

It is ideally used in the renovation of drain pipes or on short sections, when installation of large heating units would be time-consuming or laborious. With its lightweight and compact design, the Air Heater can be installed and used in confined spaces or inaccessible sites. Sewer rehabilitation that meets quality demands is no longer an issue!

> The operating principle is similar to a hair dryer, circulating hot air in the relined pipeline, shortening the curing time of cold-setting resins many times over.

> > Handling, connecting to the impregnated liner and operating the device is simple. All required parameters, which are necessary for the heating process, can be adjusted and controlled easily.

> > > On construction sites, the Air Heater can be used as second heating unit. For example, when the larger mainline is cured with a steam generator, smaller secondary lines or drain pipes can be heated and cured. This means the Air Heater more than pays off even

after a short time. You'll never want to do without it again.

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of jetter hose that can also be used to supply an optional portable reel cart available with 200 or 300 feet of hose. It is equipped with a 35-gallon buffer water tank with float control, powder-coated heavy tube frame, washdown gun and four-nozzle set. It mounts in the side door of a cargo van, on a truck bed or inside a service truck. Add a root-cutting nozzle for residential root cutting. 800/648-5011; www.camspray.com.

GENERAL PIPE CLEANERS JM-2900 JET-SET

The JM-2900 Jet-Set gas-powered water jet from General Pipe Cleaners can quickly clear grease, sand and ice in 4- to 8-inch drainlines. It is light and maneuverable, and driven by a 13 hp Honda engine connected directly to a 3,000 psi, 4 gpm triplex pump. Vibra-pulse helps the hose



slide around tight bends in small lines and down long runs. A 200-foot-capacity hose reel with reel brake is mounted on a heavy-duty frame with two pneumatic tires. It has a thermal relief valve to protect the pump from heat damage, along with a backflow check valve and inlet filter. An optional spray wand is available. 800/245-6200; www.drainbrain.com.

MYTANA MFG. COMPANY M30 MAXBLASTER JETTER

The M30 MaxBlaster Jetter from MyTana Mfg. Company is suitable for applications such as household, commercial, fast food or agricultural/process industries. It delivers 4.5 gpm at 3,000 psi measured at the nozzle. It is mounted on a maneuverable cart with the motor, pump, reel, and hose. The removable hose and reel, combined with the included 50-foot jumper hose and reel stand, allows clean operation indoors while the gas engine



remains outside. The unit comes with 200 feet of 3/8-inch thermoplastic jetter hose, 75 feet of 1/8-inch hose for sink or drainfield lines, and a set of three nozzles for each hose - penetrating, cornering and blind thrust. 800/328-8170; www.mytana.com.

ROM BV ECONOMIC

The EcoNomic van-pack sewer jetter from ROM by comes with a 160-gallon water tank, and a swiveling hydraulically driven high-pressure hose reel with hinged guiding system and rotating control panel. Its iROM operation includes daylight display and waterresistant control panel with function display



(speed/working hour counter) and automatic service-interval indicator. It is suitable for medium-sized commercial vehicles. Its compact design and low weight allow operators to take a large supply of water with additional storage space. It comes with a Kubota water-cooled diesel engine, including temperature control and maintenance-free stainless steel exhaust. The SPECK high-pressure pump delivers cleaning pressure up to 2,900 psi and a water capacity up to 26.5 gpm. It is ideal for cleaning residential connections and sewer systems up to 20 inches. www.rombv.com.

WATER CANNON 18H26

The 18H26 hot-water pressure washer from Water Cannon is powered by a Honda GX 390 Engine, with the choice of a General Pump or Cat Pump. It sits on a portable four-wheeled push bar frame for support and ease of use. It provides 4 gpm and 4,200 psi and a 118-degree temperature rise, and includes an upgraded external recirculationplumbing feature that cools the water while the trigger gun is closed. The triplex ceramic plunger pump



holds up to commercial and professional daily use. It comes with an overheat safety valve that opens and closes automatically to allow the recirculating highertemperature water to be released and allow cool water to replace it, helping to protect the wear parts. 800/333-9274; www.watercannon.com.

PUSH TV CAMERA SYSTEMS/LOCATORS

AMAZING MACHINERY VIZTRAC II AM240-200

The Viztrac II AM240-200 pipe inspection camera from Amazing Machinery has 200 feet of durable 1/2-inch push cable with fiberglass rod inner core, a 20-inch cage reel and attached water-sealed case containing the controls, a highresolution 7-inch LCD monitor and wheels to increase mobility. It also has a 1-inch powder-



coated lay-flat frame with upright rolling stand; a 1 3/8-inch O.D. metal camera housing; nine dimmable high-output 5 mm LED lights; high-resolution color camera with a self-leveling head; scratch-resistant sapphire glass lens; highgrade 512 Hz sonde locator with an average range of 12 to 15 feet; and an integrated digital video recorder with remote control, compatible with most standard SD cards. 800/504-7435; www.amazingmachinery.com.

ARIES SEEKER

The compact, portable Seeker video inspection system from Aries Industries works in 3-inch or larger pipes. The 40-pound unit is a self-contained system with no external wiring, and can be used in conjunction with a CCTV truck. It comes with a built-in 512 Hz transmitting beacon and a bright 6.4-inch LCD screen. Users can select from either a self-leveling mini camera, or a pan-and-tilt camera with self-cleaning wiper blade. Built-in AV outputs enable inspection data to be recorded onto an SD card, DVR or a laptop. Wireless controls, video transmission up to 300 feet, and line tracing are available. 800/234-7205; www.ariesindustries.com.



CUES MPLUS+

The MPlus+ lateral and mini-mainline push system with stainless steel frame from CUES enables easy operation with its all-in-one setup, and offers flexibility by facilitating quick removal of the control unit to be used separately for off-road or remote job sites, or to accommodate compact storage. Features include video CONTINUED >>







Mini Crawler with Pan n' Tilt



Pan n' Tilt Push Camera (Includes Reel and Remote Control)



Video Pipeline Inspection Systems

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titling, video observation coding, digital recording and optional line tracing. This lightweight system includes large and durable wheels for easy portability and a balanced footprint for stability. It is manufactured for rugged reliability and designed to handle rigorous field use. 800/327-7791; www.cuesinc.com.

EASYCAM E5200

The model e5200 full-size color inspection camera from EasyCAM comes with 200 feet of heavy-duty pushrod, standard 512 Hz transmitter, 7-inch recordable monitor with voiceover, powdercoated aluminum frame, cordless 12-volt operation and heavy-duty wheels. It has replaceable plug-andplay components, with up to 12 hours of battery life



between charges. It will work with a standard 110-volt outlet or can be charged using an included car charger. 239/260-2056; www.easycamllc.com.

ELECTRIC EEL ECAM PRO 2

The eCAM Pro 2 mainline pipeline inspection camera system from Electric Eel Mfg. has a rugged stainlesssteel-housed 1.68-inch self-leveling color camera with sapphire lens, a 20 LED light ring (with an impact-resistant polycarbonate light ring cover) and a high-resolution CCD element. The auto iris adjusts light automatically. A flexible camera spring is designed to navigate 3-inch P-traps. It comes standard with 200 feet of Kevlar braided 1/2-inchdiameter pushrod and industry-standard 512 Hz sonde. It includes a large 10.4-inch daylight-readable monitor with click touch controls, and allows for one-touch recording



directly to a USB flash drive. Equipment includes on-screen footage counter, a two-hour battery with built-in charger, adjustable light controls, 16 pages of text writing with memory saves, voiceover recording, an 8X zoom, audio/video out jacks, 8-inch wheels for easy maneuverability, a secure-locking reel brake, and rugged powder-coated steel tube and bar construction. 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 the visual feedback they need 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, recording 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 SDHCcompatible 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 stand-alone 6-inch nozzle can be purchased separately for use with an existing JetScan. 866/936-8476; www.envirosight.com.

FORBEST LOCATOR FB-R2012

The 512 HZ FB-R2012 wireless digital locator from Forbest Products can detect buried water pipes, sewer lines and other pipeline. It can be used in Normal or Noise-Control modes for different application environments. Noise Control is chosen where there is interference. A shift button enables sensitivity grade conversion between near and far for locating and pinpointing the location and depth of the transmitter. Onscreen status indicates the signal strength of 15 levels and battery volume. The lightweight hand-



held locator is powered with 6 AA batteries and comes with retractable poles that make it easy to carry. 650/757-4786; www.forbestusa.net.

HATHORN CORPORATION MAGNUM DVR

The Magnum DVR command module from Hathorn Corporation has USB recording and a navigation menu that is simple to use and easy to learn. With its 10.4-inch daylight-readable monitor, images can be seen clearly in bright sunlight. The system has a full-size keyboard, 16 pages of text



Hathorn Corporation

writing, 512 Hz sonde, on-screen footage counter, 8X zoom, microphone, speaker and two-hour built-in battery with smart charger. Several reel options are available along with three camera head sizes. The command module can also be programmed to work with other manufacturers' reels. 905/886-2835; www.hathorncorp.com.

PIPELINE RENEWAL **TECHNOLOGIES JETCAM 40**

The JetCam 40 from Pipeline Renewal Technologies uses high-pressure water for propulsion, steering and cleaning as it captures live inspection video from inside lateral lines. It's able to traverse multiple bends in pipe, steer through branches and levitate above debris to help municipal contractors and commercial plumbers locate failed pipes, cross-bores and blockages, as well as perform cleaning. Six propulsion nozzles generate the power needed



to pull its own flexible hose through multiple bends, and a side nozzle on the camera can be aimed to steer through diverging pipes and hover past obstacles. An optional forward-facing nozzle can be pulsed to clear debris and other obstructions. The system works with any high-pressure water source, including pressure washers and combination trucks. Its 1/2-inch hose comes in lengths from 115 to 190 feet. **866/936-8476**; www.pipelinert.com.

RADIODETECTION CORPORATION GATORCAM 4

The GatorCam4 pipeline video inspection system from Radiodetection Corporation has a ruggedized controller with an integrated lithium-ion battery that removes the need for an external power lead. A pushbutton fuel gauge provides quick indication of remaining power even when the controller is switched off. It can be configured to suit most inspection requirements. A range of pushrods is available, from the extra-flexible 100-foot plumber's reel up to the 500-foot extra-stiff rod designed to push for longer distances. Both 1- and 2-inch cameras are available which, when used with skids, can inspect pipes with diameters from

1 to 12 inches. 877/247 3797; www.radiodetection.com.



CONTINUED >>

Water Jet Solutions

New Typhoon™ nozzles: more tube cleaning choices

Three new nozzles in the Typhoon 10 series make it even easier to match pressures, flows and heads (cutting, polishing or universal) to your tube cleaning jobs. All are self-rotating, with a seal that cuts leakage in half.

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	Model	Maximum Pressure	Maximum Flow	Minimum Tube I.D.
NEWI	RPN1506	15,000 psi	6 gpm	1/2"
MEMI	RPN2006	20,000 psi	6 gpm	1/2"
	RPN1510	15,000 psi	10 gpm	5/8"
	RPN2410	24,000 psi	10 gpm	5/8"
	RPN1520	15,000 psi	20 gpm	3/4"
	RPN2020	20,000 psi	20 gpm	3/4"
NEWI	RPN4009	40,000 psi	9 gpm	3/4"



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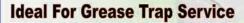


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RAPIDVIEW IBAK POLARIS

The POLARIS camera system from RapidView IBAK is used to effectively inspect smaller-diameter pipeline systems. Its three-axis range of movement improves on the company's navigating stick technology to allow the unit to



choose the direction of travel when encountering T's or Y's in the pipeline. The system has upright picture control, pan, tilt and angle control, a wide angle (plus or minus 120 degrees) of view, powerful LED lighting, low-light sensitivity and a laser measurement system for measuring defects inside the lateral. 800/656-4225; www.rapidview.com.

RATECH ELECTRONICS ELITE SD WI-FI

The Elite SD Wi-Fi pipeline inspection camera system from Ratech Electronics allows operators to record pipe inspections wirelessly to an iOS or Android device, and take live video and digital still photos that can be immediately uploaded to YouTube. USB thumb drives, SD cards and DVD discs are



Ratech Electronics

not needed. Download the app to an iPhone or iPad and stream the video wirelessly. The Wi-Fi interface is available on any current or existing Ratech system and is available with a sun-readable 10-inch LCD monitor and either a self-leveling camera, small ultra micro camera or pan n' tilt push camera. Systems come in cable lengths from 100 to 400 feet. 800/461-9200; www.ratech-electronics.com.

RAUSCH USA MINCAM360

The 2-inch minCam360 remote-controlled pan-and-tilt push camera from Rausch USA has a four-step zoom and a tri-band sonde with selectable frequencies. The Bluetooth remote includes a joystick for camera control. The cable reel comes with 200 feet of cable and can hold up to 300 feet.



Its battery enables four hours of runtime, and the 8.4-inch sunlight-readable monitor enables recording video, voice and photo directly to an SD card. This system has a text generator for detailed reporting capabilities, and an on-screen distance counter. It can be used in pipe 3 to 16 inches in diameter with all centering accessories. 717/709-1005; www.rauschusa.com.

RIDGID SEESNAKE INSPECTION SYSTEM

The combination of the SeeSnake CS65 digital reporting monitor and SeeSnakeMax rM200 camera system from RIDGID allows inspections to be quickly and easily documented, and professional multimedia reports automatically generated. The CS65 has a 6.5inch daylight display, an integrated water-resistant keyboard, and one-touch image and video recording to one or two USB drives and the built-in 1 TB hard



drive. The user-replaceable hard drive can store 1,000 hours of standard video, 10,000 hours of autolog or thousands of photos. It docks to the rM200 for easy transport and storage. The rM200 is capable of inspecting lines up to 200 feet and 1 1/2 to 6 inches in diameter. A self-leveling camera head provides a rightside-up view. Custom text overlay and annotated inspection reports can be added on the job. 800/769-7743; www.ridgid.com.

RS TECHNICAL SERVICES QUICKPEEK

The QuickPeek all-inclusive, portable video inspection system from RS Technical Services has a compact design in a lightweight, easily transportable, yet durable stainless steel housing. It is suitable to inspect lines 2 to 10 inches in diameter and up to 300 feet long. It has a high-resolution color, low-lux, self-leveling camera with high-intensity LED lighting and high-impact sapphire lens; 512 Hz in-line transmitter; 2-inch sleeve and 3-inch finned skid; 200-foot pushrod, 7-inch bright LCD monitor with adjustable viewing angle, easy access control center



and sun-shield that reduces glare and protects the monitor during transport; AC/DC input, video/audio I/O, condenser microphone and keyboard for text annotation. Options include an onboard or external battery pack; SD digital card recorder or laptop interface; additional roller skids for 6-, 8- and 10-inch straight runs; and a 100- or 300-foot pushrod and 512 Hz receiver with depth readout. 800/767-1974; www.rstechserv.com.

RVI PRO MINCORD

The minCord miniature drain inspection system, distributed by RVI Pro, incorporates a .5by .25-inch camera head with 50 feet of push/pull cable, integrated 3.5-inch LCD monitor with image capture and video recording, and AC/DC operation, all self contained in a shatter-proof housing with reel. 219/787-5092; www.lookrvi.com.



RVI Pro

VIVAX-METROTECH VCAM-5

The vCam-5 inspection system from Vivax-Metrotech comes with either 200 or 400 feet of 12 mm Kevlar-reinforced pushrod, stiff enough for distance runs while flexible enough for easy entry and turns. Two models of self-leveling color camera heads are available and are interchangeable. The system is fitted with field-serviceable terminations and dual-frequency locatable sonde standard. The Type-CP System includes the vCam-5 Control Module with an 8-inch daylight-readable color LCD,



512 Hz transmitting sonde, traceable pushrod, recording to HDD, USB thumb drives or SD cards, and Wi-Fi. 800/446-3392; www.vivax-metrotech.com.

VU-RITE VIDEO INSPECTION SYSTEMS

The durable 200' mini camera from Vu-Rite Video Inspection Systems is ideal for inspecting sewer lines as small as 2" or larger lines with the use of a mini lift adapter. The full color mini camera has adjustable lighting and a heavy duty stainless steel lens cover and body. It comes with a 512Hz transmitter molded into the camera head pigtail. The lightweight, versatile frame has removable/extendable wheels, legs, and handle for operating in confined



spaces. It is available with a very accurate footage counter and on-screen digital display, built in Wi-Fi, and RCA wireless for Apple, Android, or TV monitors. 423/256-3063; www.vu-rite.com.

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Lateral Mounted

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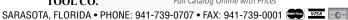
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Drain Camera FB-PIC3188/3188D-65

Specs: • 65FT Cable & Reel

- Waterproof Color Camera Head
- 7" LCD Monitor w/ or w/o DVR & MIC
- Aluminium Case

Layflat Pipe Inspection Camera FB-PIC3588A/3588BT

7"/10" LCD Control Station with Built-in USB Flash and SD Card Recorders and Li-Ion Battery

- 3/8" 150FT /200FT Cable & Reel w/Electronic Meter Counter Crawler for easier push
- 7/8" Stainless Steel Color Camera Head w/Built-
- in 512HZ Sonde Transmitter for 3588A (1.5" Self leveling Head w/ Built-in 512HZ Sonde Transmitter for 3588BT)

Pan-Tilt 360°/180° Camera System

FB-PIC3688B Specs:





Camera Head w/Manual Zooming

- 7"/10" LCD Monitor w/DVR & MIC
- · Recording with USB Flash Drive & SD Card
- Crawler for easier push Starting at \$5,190

Portable Color Sewer/Drain Camera

FB-PIC3188A/3188DN Specs:

- 65FT/100FT/130FT Cable & Reel
- Color Camera Head
- 7" LCD Monitor w or w/o DVR & MIC
- · Heavy Duty Waterproof Case Option 1: upgrade to Color Camera Head w/Built-in 512HZ Sonde Transmitter

Option 2: upgrade to 130FT Cable & Reel w/Meter Counter (New)

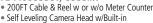
- 512HZ Sonde Transmitter
- Recording with USB Flash Drive or SD Card





Mid-Range Pipe Inspection Camera

FB-PIC3388UT/3388MT



- 10" LCD Monitor w/DVR & MIC
- Heavy Duty Waterproof Case
- · Crawler for easier push



512HZ Locator FB-T2011-Locator NEW

Specs:

- Frequency: 512HZ Operation Mode: NORM/NOISE
- Power Supply: 6*AA
- Current: < 100mA
- Sensitivity: NEAR/FAR
- · Continuous adjustable





- 130FT Cable & Reel w or w/o Meter Counter Color Camera Head w/Built-in 512HZ Sonde Transmitte
- 10" LCD Monitor w/DVR & MIC
- · Recording with USB Flash Drive & SD Card
- Heavy Duty Waterproof Case

Long Range Pipe Inspection Camera

FB-PIC3288T/3488T

- 300FT/400FT Cable & Reel w/Meter Counter
- Self Leveling Camera Head w/ Built-in 512HZ Sonde Transmitter
- 10" LCD Monitor w/DVR & MIC
- · Recording with USB Flash Drive or SD Card
- Heavy Duty Waterproof Case
- Crawler for easier push





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www.forbestusa.net

WOHLER USA VIS 350 PLUS

The VIS 350 Plus visual inspection camera system from Wohler USA comes with a 1 1/2-inch, 360-degree-pan and 180-degree-tilt camera head and a 1-inch, straight camera head. Both are waterproof and have brilliant LED lights with adjustable brightness levels for an all-encompassing view. Operators can follow the camera's path on a color monitor as it glides around 90-degree bends and up



to 100 feet away. Digital-distance measurement pinpoints the exact location of trouble spots. Take still photos and record video via SD card or USB port. It is packaged in a tough, self-contained carrying case, and comes with two rechargeable batteries providing up to four hours of mobility. 978/750-9876; www.wohlerusa.com.

RODDING MACHINES

POW-R MOLE SALES MODEL P1-6RT

The P1-6RT Mechanical Rod Turner from Pow-r Mole Sales integrates with the PD-6 Thrust Boring Machine and P1 Pusher Box to help install sewer pipes on grade and more accurately steer the bore to the target. It eliminates the need for pipe wrenches to turn the rods, making steering safer and more



productive. It creates 4,500 ft-lbs of torque, allowing the operator to steer the boring machine up to 200 feet. Quick disconnect hoses allow for fast and easy removal of the unit. 800/344-6653; www.powrmole.com.

SOUTHLAND TOOL SPD-6.5

The SPD-6.5 power rod turning machine from Southland Tool rotates 5/16- or 3/8-inch section rods with a quick-connect couple chuck on the front to engage couplings easily and safely. It can rotate more than 500 feet of rod. Models are available with instant reverse transmission and gasoline engines of 3, 6.5 and 8 hp. The three-wheel unit enables easy tracking. It can be used with a carry-all trailer and rod reel and tools for a



complete rodding machine setup. 714/632-8198; www.southlandtool.com.

TRAILER JETTERS/ACCESSORIES

SEWER EQUIPMENT MONGOOSE JETTERS MODEL 254

The Mongoose Jetters Model 254 from Sewer Equipment comes with a run-dry pump rated for 25 gpm at 4,000 psi, a tubular steel frame, corrosion-resistant prepainted subassemblies, updated



controls, a strong hose reel and high-quality diesel engine. 800/323-1604; www.mongoosejetters.com.

SPARTAN TOOL SOLDIER **HYDRO-JETTER**

The Soldier Hydro-jetter from **Spartan Tool** operates in 2- to 12-inch lines. It offers 3,000 psi at 12 gpm, and includes noise-dampening engine shrouding, a complete antifreeze system and 200-gallon water tank. It is easy to tow and simple



to position on the job site, while the 27 hp gasoline engine provides power. When matched with a Warthog nozzle, it is able to clear large root balls. It includes a washdown kit for job site cleanup, 75 feet of 1/4-inch hose for small drainlines, a 180-degree rotating hose reel and a hose protector for longer hose life. 800/435-3866; www.spartantool.com.

US JETTING JMS REMOTE

The Jetter Management System Remote from US Jetting is fully sealed and uses a cutting-edge electronic control unit. The box easily retrofits to older units in the field and is equipped for J1939 standards for Tier 4 Final engines. The platform has built-in flexibility for multiple radio providers, allowing it absolute versatility. It provides customer-selectable enhancements, such as adding a fuel gauge. The digitally controlled display panel contains selfdiagnostic screens that can identify any failures that can



happen in the system. This minimizes downtime in the field, and allows for easy repairs when needed. 800/538-8464; www.usjetting.com. c





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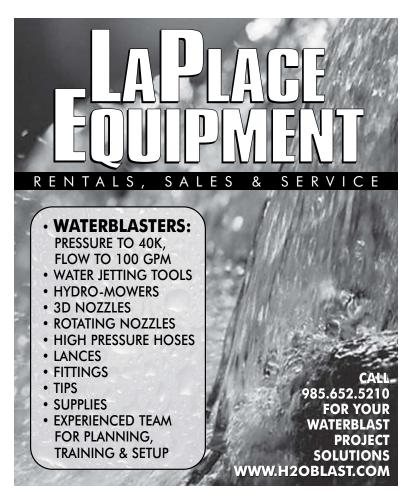
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Residential and **Commercial Sewer** and Pipe Maintenance

By Craig Mandli

GREASE DIGESTER HELPS KEEP DRAINLINE CLEAR

PROBLEM

The owner of a Menasha. Wisconsin. restaurant was dealing with his system backing up into the three-compartment sink every five weeks. The drainline would plug up and the restaurant would have to close early to clean up the foul smelling mess. This resulted in a loss of



business, and sanitary conditions in the restaurant were compromised.

SOLUTION

Speedy Clean Drain and Sewer completed a thorough cleaning of the 50-gallon indoor grease trap. They installed one Trap-Cleer dosing pump injection system into the mainline located under the three-compartment sink feeding into the grease trap. Liquid Trap-Cleer was dosed in at 2 ounces per evening. It is designed to keep the system flowing properly and consume much of the grease, extending the time between clean-outs and servicing.

RESULT

Several months later, the system continued to operate normally. Only a small amount of grease built up in the trap. The restaurant hasn't shut down and the smells disappeared. The trap finally needed pumping after eight months of operation. Because cleaning the system out when the level of grease reached one-third full was recommended, a schedule to have it cleaned every four months was established. 800/223-3083; www.lenzyme.com.







PRODUCT SPOTLIGHT

Hydrodemolition robot removes concrete without damaging the reinforcement

By Ed Wodalski

Hydrodemolition surface preparation robots from Conjet AB/National Hydro use high-pressure water above 14,500 psi and repetitive motion to remove concrete, clean rebar and leave a roughed surface for the adhesion of new concrete without causing cracks or damaging the reinforcement.

As an alternative to jackhammers and hand-held waterjetting, standard models include the electric-powered 327 for areas where exhaust is a problem and the diesel-powered 557. Customized models 367 (electrical) and 437 (diesel) are available by special order.

Continuous communication between the Conjet robot and enclosed powerpack/high-pressure pump unit enables the operator to activate the high-pressure pump when the robot is set to automatic mode and deactivate the pump when the automatic mode is turned off. For added safety, the integrated emergency stop enables the complete system to be turned off from the powerpack, robot or control box. The communication system is available as a cable unit or wireless kit.

Designed for confined spaces, the 327 easily passes through a 3-foot opening. It has a carrier beam of 2 feet 8.3 inches, feed beam of 5 feet 5 inches and cutting width of 4 feet 11 inches. The robot is 7 feet 8.5 inches long and 3 feet 10 inches high. It weighs 2,293 pounds. Power requirements are three-phase 380 to 480 volts, 16 amps, 50-60 Hz or three-phase, 200 volts, 32 amps, 50-60 Hz.

Features include wide-track stability, 360-degree arm, three-position feed beam and 45-degree lance angle for cutting into corners and under rebar. Track sensors control travel distance. Removable side covers enable the robot to reach into corners and partly up walls, as well as provide access to debris.



Attachments include the standard surfacing tool for flat structures, horizontal and vertical; the surface preparation tool for removing the topmost layer of concrete and steel; and the ship cleaning tool for removing paint, rust and barnacles from hulls and other curved surfaces.

Additional equipment includes base extension, arm extension, tower kit, fork nozzle, winch kit and wireless kit. The base extension is used to adjust the arm's center of rotation when working in tunnels or pipes. The arm extension attaches to the boom arm for work in larger tunnels. The tower kit is made to remove concrete in front of the robot on high structures such as walls and pillars. The fork nozzle is mainly used for scarification. The winch kit enables the robot to work on slopes or other challenging surfaces. 517/223-0915; www.conjet.com.









ELECTRIC EEL COUNTER-TOP DRAIN CLEANING MACHINE

The Model CT counter-top drain cleaning machine from Electric Eel Mfg. has a 90-volt DC variable-speed motor for operator controlled cleaning power from 75 to 350 rpm. Designed to clean up to 50 feet of 3/4- to 2 1/2-inch lines, the drain cleaner has an air-operated foot switch and cord assembly. Options include a two-way automatic cable feed. 800/833-1212; www.electriceel.com.



PEERLESS BATTERY DISCONNECT SWITCH

The 75920 Cole Hersee master disconnect switch from Peerless Electronics has a capacity of 300 amps at 12 volts DC. Designed to protect vehicles against tampering, theft and battery drain, the switch can be used in positive or negative path applications. Waterproof and dustproof to IP67 (immersible), the switch is made from engineering grade plastic. The large divider on the base prevents accidental shorting. 800/285-2121; www.peerlesselectronics.com.

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HONDA POWER PORTABLE WATER PUMPS

WT Series portable water pumps from the Honda Power Equipment Group are designed for dewatering construction sites as well as removing water contaminated with leaves, debris, stones and other waste materials. The WDP diaphragm pump moves wastewater containing up to 2.4-inch solids. It has a 118 cc GX 120 OHV commercial grade engine and can discharge 80 gpm. It has 3-inch suction and discharge ports, spring-loaded connecting rod, rock channel and oil alert. 678/339-2600; www.powerequipment.honda.com.

MCELROY HYDRAULICALLY ADJUSTABLE PIPE STAND
The hydraulically adjustable pipe stand from McElroy Manufacturing is designed to align 4- to 20-inch-diameter thermoplastic pipe on butt fusion job sites. The stand has a hand-pumped hydraulic lift that gives the operator the ability to adjust the height of the stand without having to remove the pipe. 918/836-8611; www.mcelroy.com/fusion.

5 SENSORAY MULTIFUNCTION PIPELINE INSPECTION SYSTEM

The Model 2253P A/V Codec with GPS receiver and incremental encoder interfaces from Sensoray can simultaneously encode, decode and preview A/V content. Independent video processors allow for two different video streams to be simultaneously produced from a single composite input. Image transformation such as resolution, rotation and mirroring are independently configurable for each stream, as are compression type and bit rate. 503/684-8005; www.sensoray.com.

Flex-Tube Series hoses from Flexaust are made from polyurethane or PVC and are available in OEM colors with plain ends or screw cuffs.

The medium-weight hoses with smooth interiors are available in 1-, 1 1/4-, 1 1/2- and 2-inch diameters in lengths up to 100 feet. 800/343-0428; www.flexaust.com.

HACKNEY FORD TRANSIT PERFORMER BODY

The Performer body from VT Hackney, available on the Ford Transit cab and chassis, has a maximum payload of 3,000 pounds. Available in a 12-foot model for the 9,950 GVW Transit chassis and 12 1/2-foot body for the 10,360 GVW Transit chassis, the all-aluminum body includes custom shelving. 252/946-6521; www.hackneyservice.com.

TRIMBLE CONSTRUCTION LASERS

The Spectra Precision GL412N/GL422N grade lasers, LL400HV laser level and HV302 horizontal/vertical laser from Trimble feature automatic self-leveling, glass lighthouses, IP66 protection rating, metal sunshade and simple keypads. They can withstand drops of 3 feet onto concrete and tripod tipovers up to 5 feet. The single- and dual-grade lasers have a radio remote that operates from up to 330 feet. The LL400HV long-range exterior laser has a working diameter of 2,600 feet. The HV302 has a high-visibility beam for simultaneous rotating and 90-degree plumb references. 800/527-3771; www.spectralasers.com.

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The Metrum LTE network from Aclara Technologies provides cellular connectivity to utility devices, including SCADA, commercial and residential meters. Combined with Aclara's iiDEAS platform, applications include AMI, outage and restoration management, conservation voltage reduction, volt/Var optimization, fault detection and location. 800/297-2728; www.aclaratech.com. c

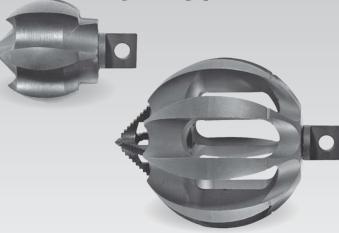
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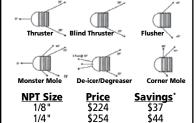
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Hi-Vac Improves a Favorite

Modifications to popular 7040 Series jetter make the unit more efficient

By Craig Mandli

he Water & Wastewater Equipment, Treatment & Transport (WWETT) Show is a showcase for new innovations. While that means there are hundreds of new products on the show floor, innovative companies often use the show to display updated products as well. One of those — the O'Brien 7040-SC dieselpowered hydrojetter from Hi-Vac — garnered plenty of attention this year.

The diesel-powered trailer jetter comes with plate-mounted 700-gallon-capacity polyethylene water tanks. A built-in tank sump system, which is new, is designed to keep sediment from settling on the bottom of the tanks.

"It's definitely more convenient for the operator," says Dave Sutter, aftermarket manager for Hi-Vac. "The user only needs a shop vac to keep the tanks clean. That's going to appeal not only to municipalities, but also smaller plumbers and other drain and sewer cleaning contractors that maybe don't have a lot of time to devote to cleaning the tanks every day. It can be a huge time-saver."

The hydraulically actuated swinger reel has a variable-speed control and pivots 190 degrees, providing access to the manhole regardless of how the trailer is parked. While previous models came with a square cover cowling, the improved model features a round cover that encloses the air cleaner and exhaust system.

"Overall, the unit is less weight and is easier to clean than the previous model," Sutter says. "The changes cut between 350 and 500 pounds off the finished product, which is a pretty significant chunk."

It is powered by a 65 hp Cummins diesel engine with Murphy safety gauges and variable electronic throttle control. The triplex pump from General Pump is rated to 40 gpm at 2,000 psi. The standard 400-foot, high-impact, thermoplastic sewer hose is easy to clean, maintains stiffness and is abrasionresistant. The tandem-axle trailer has a 6-foot channel frame and is rated to carry a full tank of water at highway speeds.

"We typically get a lot of questions and interest in this unit, and this year has been no different," Sutter says. "We get a lot of people who look around at all the jetters at the show, and maybe give a call a few days later. We also have a lot of repeat customers who were looking forward to seeing the changes we made to this model."



Dean Peake, regional sales manager with Hi-Vac, points out some of the features on the O'Brien 7040-SC dieselpowered hydrojetter's hydraulically actuated reel. The unit features variable-speed control on an easy-to-use control panel. (Photo by Craig Mandli)

The portability of the diesel-powered system makes the O'Brien 7040-SC a versatile, do-anything choice. "It's a great unit for cleaning grease traps as well, in addition to day-to-day sewer line cleaning," he says.

Sutter says Hi-Vac chose to feature the 7040-SC at the 2015 WWETT Show simply because company leaders figured its versatility would appeal to the diverse crowd.

"That's the great thing about this particular show, you could be talking to a municipal sewer director one minute, then to a large plumbing contractor with franchises all over," he says. "We love talking to the smaller contractors as well, and there's a place for this unit with them, too. That dynamic is what makes this the biggest show in this industry." 800/638-1901; www.obrienmfg.com. c





2016 Day Pattern Shift:

Education Day:

Wednesday, February 17

Exhibits:

Thursday, February 18 Friday, February 19 Saturday, February 20



Steamatic names director of franchise development

Restoration and cleaning services company Steamatic named Bill Helton director of franchise development.

NozzTeq names sales manager

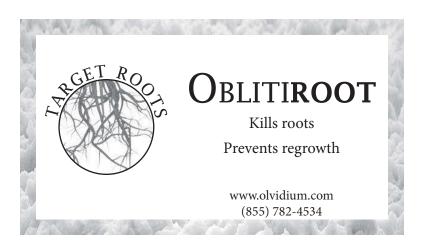
NozzTeq named Bob Miller sales manager representative for the northeast United States. Based in New Jersey, he will be responsible for states along the East Coast, from Virginia to Maine.

ePIPE barrier coating approved to NSF 61.5 standard

ePIPE, a hydrophobic epoxy based protective barrier coating from Ace DuraFlo Systems, was approved by the National Sanitation Foundation (NSF) to standard NSF 61.5 for commercial water exposure with a two-hour cure.

Sioux Corp. becomes ISO certified

Sioux Corp.'s quality management system was certified to ISO 9001:2008 standards. The management system includes logging nonconformance or customer concern and weekly management team review. Sioux also performs internal audits of all departments including receiving, fabrication, welding, paint, assembly, testing, packaging, engineering, sales, purchasing, human resources and management.





Chevin Fleet Solutions adds staff

Fleet management information software provider Chevin Fleet Solutions named Jennifer Tanner project manager and Chris Linton client support representative. Tanner





Jennifer Tanner

will be responsible for overseeing the implementation stages of Chevin's flagship Web-based application, FleetWave. She will also advise clients on how to harness technology to enhance fleet operations.

Subaru Industrial Power redesigns website

Subaru Industrial Power redesigned the layout and functionality of its website, www.subarupower.com. Product pages include 360-degree views. Quick search provides parts accessibility and illustrated guides help ensure proper selection.

GapVax names Gulf Coast representative

GapVax named Alexander Teich sales representative for the Gulf Coast. Based in Deer Park, Texas, his territory includes New Mexico, Texas, Louisiana, Oklahoma and Arkansas.



All Jetting adds CNC technology

All Jetting Technology added CNC technology to the production of its UHP sapphire nozzles, rotating lances, UHP parts and hose accessories. The STAR SR-32J CNC machine has a feed rate of 24 m/min.



Pictured from left are Mike Silverman, Jeff Silverman, Steve Glick, Steve Silverman, Art Silverman, Marty Silverman, Bob Silverman, Lee Silverman and David Silverman.

General Pipe Cleaners celebrates 85 years

General Pipe Cleaners, a third-generation, family-owned business founded in 1930, celebrates its 85th anniversary. The company's line of products includes drain cleaners, jetters, video inspection systems, water leak detectors, pipe freeze kits, pipe thawing kits, and copper and plastic tubing cutters.

Continental completes Veyance acquisition

Tire manufacturer Continental completed the acquisition of Ohio-based rubber company Veyance Technologies upon receiving approval from the Brazilian antitrust authority CADE (Council for Economic Defense). As part of the agreement, Continental will divest Veyance's air springs business in NAFTA and its steel-cord belting business in Brazil. The transition is valued at \$1.6 billion. c



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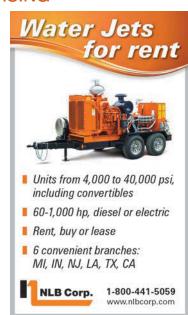
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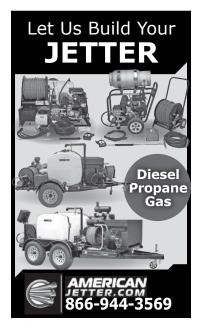
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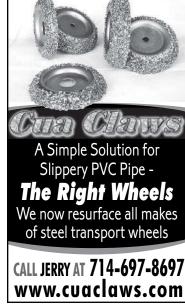
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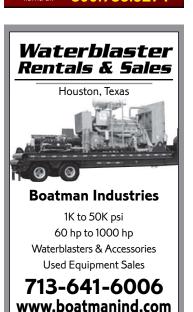
















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C05



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2008 GMC PipeHunter: John Deere rear engine, 700-gallon poly water tank, 3/4" jet hose, Giant pump. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

2008 Ford PipeHunter: 7844TMV. 1/2" hose. Giant jet pump 14.2gpm @ 4,000psi. Tuthill blower, 1/2-yd. debris tank. John Deere rear engine. 294 hrs. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

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1995 Ford CF8000 Vactor Jetter: Carb-compliant for California. 500 ft. jetter hose 3/4" can be changed to 1". 60 gallons per minute. 1,600-gallon water tank. Was city truck, well maintained. 112,000 miles.\$26,900 OBO

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1993 GMC 1-ton Jetter: 35gpm FMC pump, 3/4" hose, 500-gallon plastic tank.\$14,500 0B0 Other jet trucks and trailers available.

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1995 Ford F800: 64,000 miles, Vac-Con, 60gpm 2,000psi. 1" hose on hydraulic-driven reel. John Deere engine, 1,600-gallon water tank. \$13,000. 218-750-3394 (C06)

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2005 Kenworth Vactor 2115: 15-cubic-yard hopper, 1,500-gallon water capacity. Roots 1024 Ras-J 18" blower 80gpm/2,500psi water system. 800' x 1" sewer hose/2,500psi. 2005 Kenworth T800, CAT C-470hp, tri-axle chassis. Eaton-Fuller manual transmission with push axle. \$193,000. Call Jeff Brooks @ 317-258-4900. (C05)



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2001 VacCon PD 2001 Vac-Con jet vac combo: CAT 3126 engine, Roots 824 PD blower, Allison automatic, 55,000 miles. 600 ft. 1" hose, 2,000psi @ 80gpm, 1,200-gallon water tanks, 12-yd. debris tank. Cummins 4BT rear engine, rear strobes, arrow board on rear. Debris body flush system. 8" telescoping boom. Excellent condition. \$80,000 OBO

Kyle 515-360-8582, IA kyle@accujetiowa.com

C05

C05

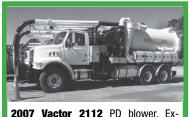
2005 International Vac-Con V-230 jet vac: DT-466, Allison automatic, 3.5-cubic-yard debris tank, 500-gallon water, 2-stage fan, winter recycling system. Municipal truck, 105,604 miles. \$59,900

814-696-4343, PA

2007 Mack Guzzler: Damaged, rear unit new in 2011. Ingersoll Rand Air Solutions Hibon model SIAV 8702 blower. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

2006 International Vactor 2112\15: 9,300 hours, S\N: 05-07V-9443, Vactor jet pump 80gpm @ 2,000psi. 600' 1" new hose. 800' hose reel capacity. Pump-off system. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

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1997 Vactor 2110: 10-yard debris tank, 1,000-gallon water capacity, 2-stage fan, 80gpm water pump. Ford chassis with CAT engine, air-ride seat. Recently installed new instrument panel. \$45,000

> **Call Brown Equipment** 260-747-2312. 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)

2001 Vactor 2100 Series hydro-vacuum truck. 3,700cfm @ 28" Roots 1016 blower. Cold-weather package & much more. 970-653-8588 (C05)

2006 International Vac-Con, CAT pony motor, 3-stage fan, 12-yard tank, 1,300-gallon water tank. \$88,000. Call Jeff Brooks @ 317-258-4900.

1998 Volvo GapVax: Stk# 2301, VIN# 4VHJCB JF8WN857157. Stainless steel tank. N-14 Cummins, 9-speed Fuller transmission, Roots 27" blower. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

2002 International Guzzler: 54,000 miles, 10-speed, 27" Roots blower. Stainless steel tank. Stk# 2300. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

2009 Sterling Vac-Con: VPD3616LHAEN S\N: 09085083. 3,975 main engine hours. Bean jetting pump. Roots 824 RCS blower, 16vard debris tank. New aluminum extension tubes. Hydraulic-driven jetter pump. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277

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 - 65gpm @ 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

Pre-owned 2002 Sterling LT 9500 cab and chassis with a Clean Earth Safe Jet Vac 1015 Combo Unit. (Stock #3876C) www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648). (CBM)

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).

Vac-Con industrial machine mounted on a pre-owned 2006 Sterling cab and chassis. (Stock #8593C) www.VacuumSalesinc.com (888) VAC-UNIT (822-8648)

2006 Volvo cab & chassis with a Vactor 2110 combination vacuum loader and high-pressure sewer cleaning system. (Stock #3483C) www.VacuumSalesinc.com (888) VAC-UNIT (822-8648) (CBM)

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MISCELLANEOUS

Titan 8000 series, high performance, RIDGID 8000 Zero-Gravity. The Cable Center: 800-257-7209. (CBM)

NOZZLES

Chemical cleaning trailer of tractor trailer: 3 open top tanks, all stainless, two heat exchangers, 2 CAT pressure pumps. \$35,000. More information available willhamilton01@gmail.com (C05)

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PIPE BURSTING EQUIPMENT

HammerHead HB80 Downhole Unit: This static pipe-bursting system is a versatile and proven system. This consists of the downhole hydraulic pulling unit only, which is 80-ton static and does not include tooling or hydraulic power unit. \$25.000. 207-754-2425 (C05)

New 50-ton TRIC pipe bursting equipment complete with 300 feet of 7/8" cable. Down hole unit 12-inch base, 8-inch head. M50 hydraulic puller. Cost \$38K, will sell for \$32,000. 415-883-3676 ask for Mike. (C06)

PIPELINE REHABILITATION



Complete Quikshot heat cure lining system. Includes 30cfm air compressor, boiler system, Picote cutting system and more. \$19,000. Buyer pays all shipping.

> info@quikpipes.com 626-252-1679, CA

C05

TRIC trenchless pipe burster - 25 ton. c25 Ram. 5.5hp hydraulic pump. 4" fusion machine. 4" and 6" bursting heads. 100ft. and 150-ft. cables. \$14,500. Pictures can be emailed. fodajamin@gmail.com. 740-333-7731

PIPELINE REHABILITATION



2005 Freightliner Boiler Truck: 220K miles. Cleaver Brooks Model CBE200-125 diesel fire-steam boiler, 2008 Ingersoll Rand compressor and Doosan generator. This unit is all plumbed and ready for work. \$79,000. Please email for any additional info:

casbury@californiatrenchless.com

One trade-in model of Pipe Genie heavy-duty, pipe bursting equipment. Excellent condition, looks new, 30-ton, 100 feet cable, full 2-year warranty. 877-411-7473.

Complete Max Liner ambient and hot water cure system. All in good working order. Does not include tow-behind compressor. \$14,900. Buyer pays all shipping. pgalligani@rooterman-capecod.com 508-430-4000 (C06)

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On Site companies has multiple employment opportunities available for our current branches and future expansion branches for key Management, Operations, and Sales positions. Contact hr@onsiteco.com or call 651-429-3781. Check us out at www.onsiteco.com (P06)

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Operations Manager - Regional - Arizona, Nevada, New Mexico. Tucson, AZ based preferred. The Operations Manager is part of a growing Operations team overseeing the management of projects within an assigned area. This person will exercise independent judgment and discretion in the execution of project strategies by providing leadership and direction to individual teams. Responsibilities include: ensuring that the machinery and equipment used is producing at acceptable standards; manages a team of subordinate supervisors and provides coaching and support to this team: coordinates with personnel to make sure that the deliverable meets acceptable standards; performs or provides guidance to subordinates on interviewing, hiring, training, rewarding performance, and counseling of employees; reviews and signs off on direct report's timecards, mileage reports, and expense reimbursement reports; provides excellent customer-service and responds in a timely manner to customer requests; assists with fleet tracking and management; creates or assists in the creation of budgets for his/her division(s); procures products and equipment within an assigned budget; plays a key role in mapping the overall operational policy including developing short and long-range operations plans based on the company's goals and objectives; enforces compliance with administrative policies, procedures, OSHA safety rules, and DOT governmental regulations. Other duties may be assigned as needed to support the company's operational needs. Travel required for this position (75% of the time). Qualifications: Associates Degree and 5+ years of operations management experience required; Bachelor's degree and 10+ years of operations management experience preferred; Valid state issued license required; MSHA, OSHA, DOT, ADEQ, and/or Hazard Recognition Certification; Bilingual communication skills (Spanish/English) a plus, but not required; must pass pre-employment drug screen and background check. We offer competitive pay and benefits after 90 days. AIMS is an Equal Opportunity Employer. Candidates should submit their resume AND cover letter to CorpHQ@pvicaz.com. (C05)

McKim & Creed, a top ENR 500 environmental engineering and surveying firm with locations throughout the Southeast and Texas, is looking for experienced SSES Technicians and CCTV Operators for our Norfolk, VA office. Some travel required, but great benefits and potential for growth. Compensation based on level of experience. Apply online at www.mckimcreed.com/careers. McKim & Creed is proud to be an Equal Opportunity and Affirmative Action Employer (Minorities/ Females/Disability/Veterans) and maintains a drug-free workplace. (C05)

Hennigan Engineering Company, Inc. is looking for an experienced camera equipment operator for video inspection of pipe systems of all sizes and types. The job offers competitive wage rates and travel opportunities throughout the United States. Visit our website for more about the company. 800-472-8484. www.henniganengineering.com. Resumeto: Maggie@henniganengineering.com

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Honda model WP40X, 8 hp, 4" with hoses. Honda 4 hp, 2" pump with hoses. The Cable Center: 800-257-7209. (CBM)

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Giant GP1745 water pump: 50gpm/ 3,000psi. Excellent condition. 212 hours. Recently rebuilt with new seals. Pressure tested to original specs. Comes with large pulley, some plumbing. Unit off of ex-municipal Vac-Con truck. \$7,000. Email questions to

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C05

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Dynamic Repairs - Inspection Camera Repairs: 48 hour turn-around time. General Wire, Ratech, RIDGID, Electric Eel Mfg, Gator Cams, Insight Vision, Vision Intruders. Quality service on all brands. Rental equipment available. For more info call Jack at 973-478-0893. Lodi, New Jersey. (CBM)

TOOLS

RIDGID model #300 with stand, RIDGID tristand vises, RP 330 ProPress kit. The Cable Center: 800-257-7209. (CBM)

T&T Tools: Probes, hooks, Probes feature steel shafts with threaded and hardened tips. The insulated Mighty Probe™ tested to 50,000 volts. Top Poppers™ open manhole covers easily. Free catalog. www.TandT tools.com. Phone 800-521-6893. (CBM)

Bosch Brute hammer drill with cart irons. The Cable Center: 800-257-7209.

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

TV INSPECTION



1995 Chevrolet TV Camera Inspection Truck: Isuzu 3.85 liter 4-cylinder 235-cubic-inch. Aries Saturn III unit - Can be converted to portable, Aries L.E.T.S. Lateral Inspection System able to launch 80'. Badger mainline transporter (wheeled) 6" - 30", Aries L.E.T.S. Transporter 8" - 24", TR1000 track transporter 8" - 30". Pan and tilt camera, older straight mainline camera (no pan and tilt). Portable reel with 500' cable, CUES gold 1000' cable reel, lateral launch cable - max. 500'. Strong Arm 12v winch, Yamaha VG6600D gas generator, Aries Pipeworks Pro, ProSine inverter, extra launch cable. Fuel: diesel. Truck mileage = 189,514. Truck GVW = 14.250. VIN = J8BC4B1K1S7000085.Pickup in Fountain Hills, AZ. Well maintained – Ready to work.....\$14,500 OBO

> Call Bill @ 480-797-1826 or 480-889-6278, AZ

C05



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319-759-7774, IA

2003 Ford Aries TV Inspection: Stk# 2168, V10 Triton gas engine. Honda motor powers rear unit. One (1) camera. Ken's Truck & Equipment: www.khtrucks.com 972-938-1905 or 214-632-5277 (CBM)

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

CUES 19991/1987 grout inspection trucks – both under 60,000 miles. Tracked crawlers, electric winches, Onan generators. Both exmunicipal vehicles with little usage. \$30,000 and \$25,000 respectively. Contact Joe 419-408-1060. (C05)

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1999 Ford E250 Saturn III pipe inspection van: TR2000 tractor, ST700 micro camera and much more. 52k miles. Local gov't retired. www.shumatetruckcenter.com 813-877-6638 (C05)

2000 Ford E450: 7.3 diesel, 53,000 miles. Roof air, Genset, CUES ProData 2000, Florida gov't retired. \$31,500. 1-888-874-8757 or www.shumatetruckcenter.com (C05)

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FOR SALE: Guzzler and SuperSucker air movers; Wet vacs; Hydraulic submersible pumps; Air compressors; Sandblast systems; 5,500-gallon dump tank trailers. Call 502-551-0158 for more info. Cash buyer of used equipment. (C06)

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

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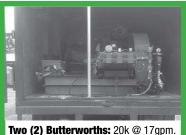
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Two (2) Butterworths: 20k @ 17gpm. Series 40 engines in Ford cab overs. Onboard water tank.\$45,000 USD

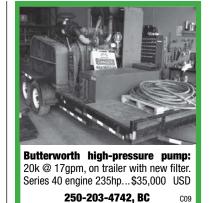
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C09

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