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cleaner.com | AUGUST 2014



Investing in INSPECTION

PHOENIX CONTRACTOR TAKING ON BIG CLEANING
AND CROSS-BORE PROJECTS ACROSS THE WEST
PAGE 18

MONEY MACHINES

Trailer jetties open revenue streams

TECH PERSPECTIVE

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COMING IN SEPTEMBER

ISSUE FOCUS: Mainline Sewer Inspection

- **TOUGH JOB:** Contractor bursts through city park
- **MONEY MANAGER:** Understand the return on your equipment investments
- **MONEY MACHINES:** Street sweepers provide alternative revenue source



ON THE COVER:

AIMS/PVIC CEO Maria Mihaletos and President Chris Mihaletos stand in front of one of their Vactor 2100 Series trucks at the company's shop in Phoenix. The company is in the midst of one of the largest cross-bore inspection projects in the country. (Photography by Mark Henle)

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Luke Laggis
editor@cleaner.com

A Bad Deal

Don't let your employees gamble on safety; put the proper emphasis on training and keep it top of mind

By Luke Laggis

Safety is one of those topics that is important to everyone, but most don't pay it the attention it deserves. It's easy to cut corners, until the corners kill you. Or one of your workers.

In the December 2013 issue of *Cleaner*, I wrote about a worker in Chicago who died when a surge of stormwater swept him down the 30-inch sewer line he was working in. He had removed his safety harness to clean a small area he couldn't otherwise reach. It was innocent enough, and well-intentioned, but it ended up being a fatal mistake.

That column prompted a response from a wastewater treatment operator in Tennessee:

"On five of the most recent projects and programs I have been involved

with, there have been workplace fatalities," he wrote. "Two of them were incidents where more than one worker was killed.

"One multiple-fatality incident was caused by a superintendent's deliberate decision to use incorrect anchors to hold forms in place. Two men were killed and two seriously injured. The other was a result of an explosion at a refinery. Our employees were there as professional services contractors. Fifteen of them didn't go home again. The company president had to make 15 phone calls of the type you never want to have to make. In one day.

"However, in my experience, most workplace injuries and fatalities are caused by decisions made, and actions taken or not taken, by the workers themselves. I believe this is in large part due to a mindset, prevalent among people who do the kind of work that can get you killed, that being mindful about safety somehow makes you a sissy; that it wastes time and reduces productivity. A common rationalization for not bothering with safety practices is that it isn't likely there will be a problem. To which I always respond, you don't plan for the likely. It may not be likely that the manhole you are about to enter hasn't enough oxygen to support life, or that there is H₂S in concentration at the bottom. But is it worth your life to keep gambling on that? For too many workers, such gambles are in fact acceptable, even necessary."

Safety isn't something to gamble on. It may seem like the odds are in your favor, and they may be – most of the time. But all it takes is the one fluke occurrence, the one unlucky break, the bad deal, and the house wins the final hand. Gambling is fine if you have a few extra dollars to lose, but when you gamble with your life, the best you can do is break even. No one has an extra life to wager.

There are always lessons to be learned from these tragedies. It's too bad more companies don't put a greater emphasis on teaching employees these lessons before they go out in the field, and then through continuing safety education talks and reviews. There's no upside to learning about the importance of keeping your harness on at all times while you're being pushed through a pipe gasping for your last breaths.

Put safety first. Make it a priority for everyone on your crew. It's the best thing you can do for them. **c**

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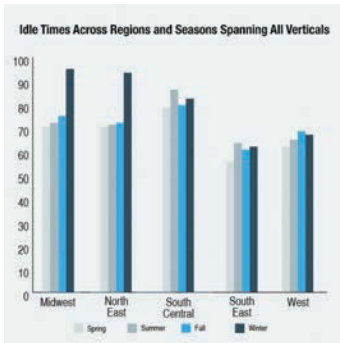


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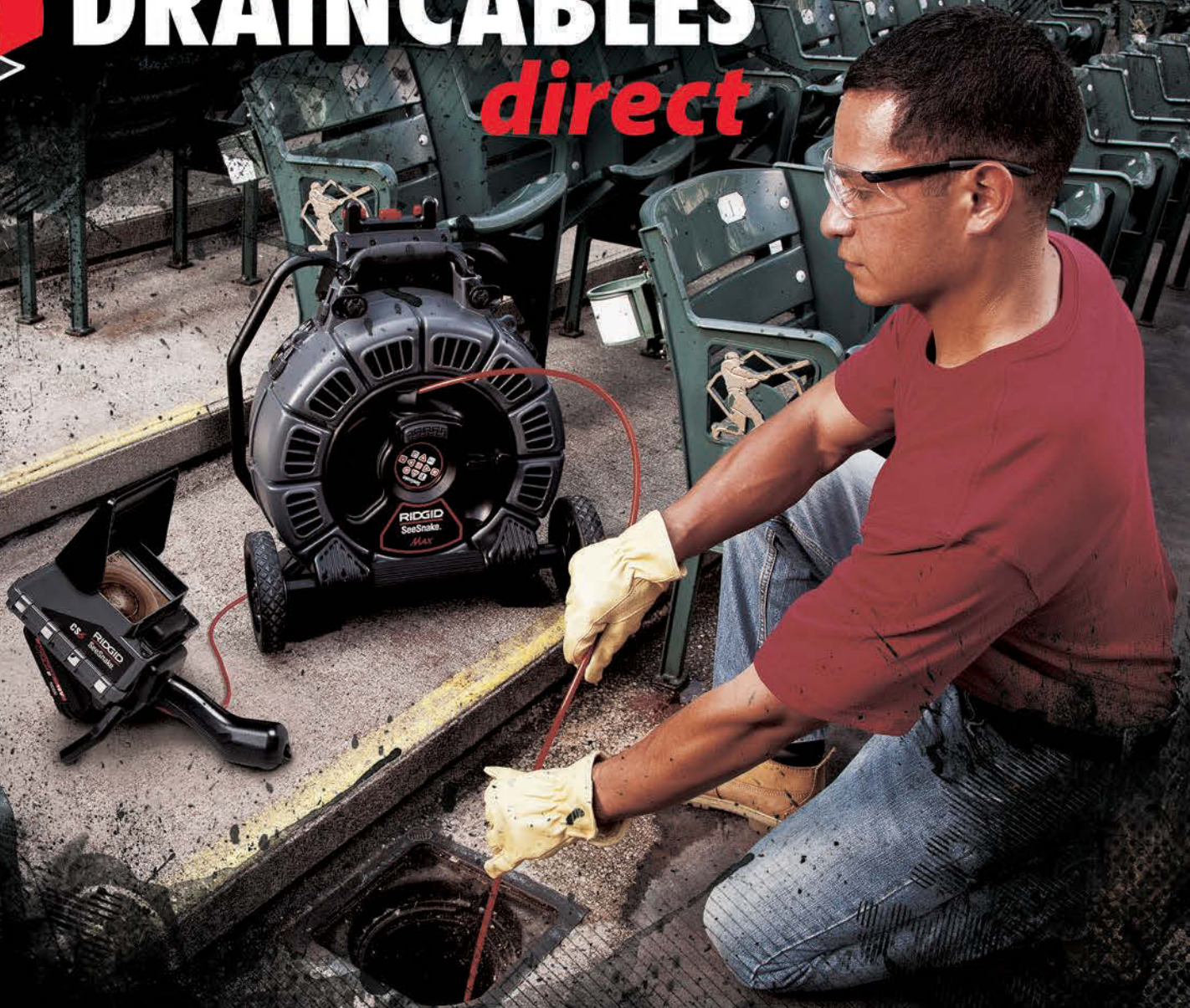
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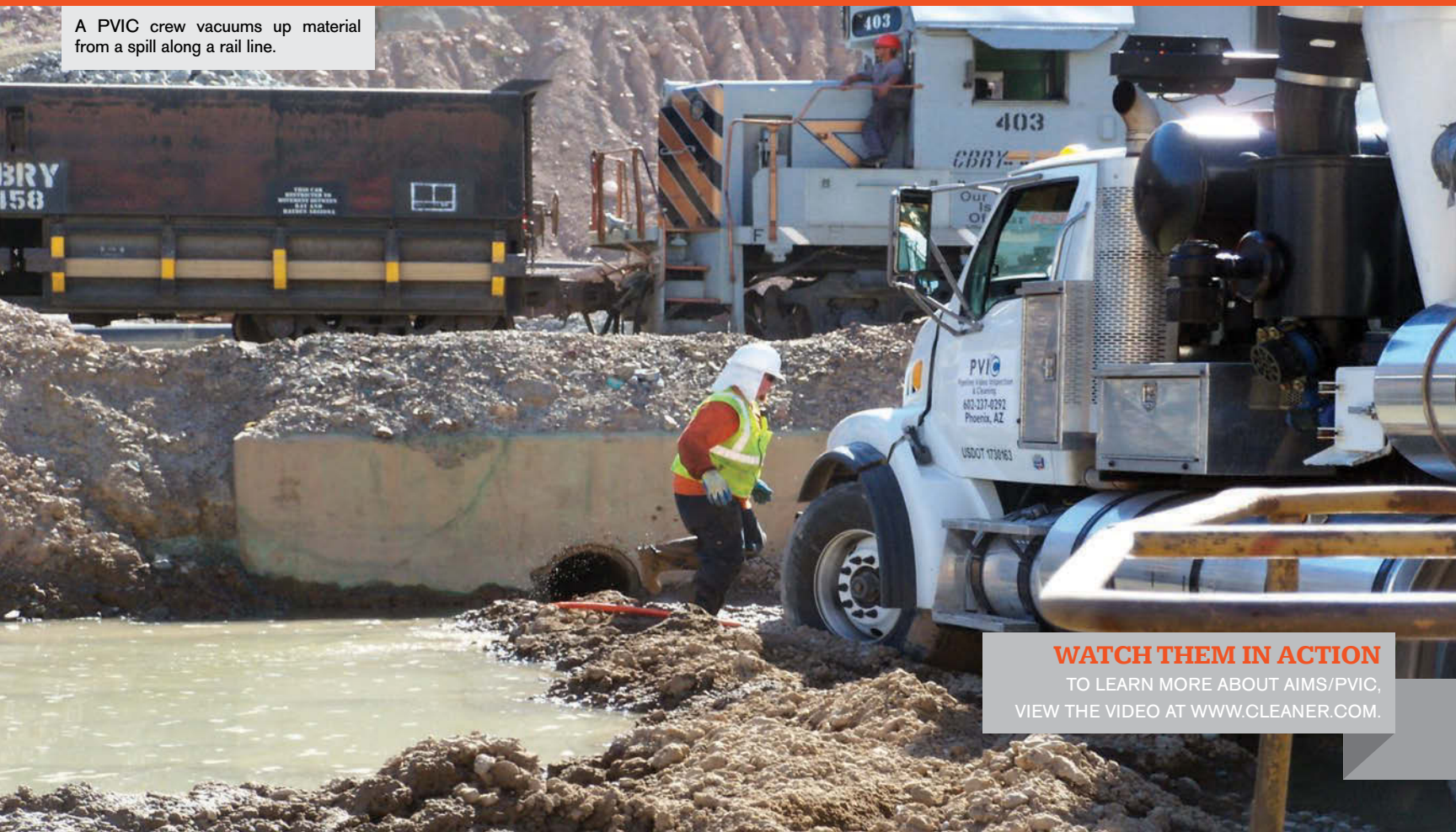
PHOENIX CONTRACTOR TAKING ON BIG CLEANING
AND CROSS-BORE PROJECTS ACROSS THE WEST

BY KEN WYSOCKY
PHOTOS BY MARK HENLE AND AIMS/PVIC



Pipeline Video Inspection & Cleaning (PVIC) crews use two Vactor 2100 Series trucks to remove dirt and reveal pipes that need to be cleaned.

A PVIC crew vacuums up material from a spill along a rail line.



WATCH THEM IN ACTION

TO LEARN MORE ABOUT AIMS/PVIC,
VIEW THE VIDEO AT WWW.CLEANER.COM.

C

amera trucks from Pipeline Video Inspection & Cleaning (PVIC) LLC will remain a familiar sight for residents of the San Francisco Bay Area as the company performs one of the country's largest cross-bore inspection projects over the next 15 years.

By the time the project concludes around 2030, PVIC camera trucks will have inspected countless miles of mainline sewers and lateral lines at tens of thousands of properties to determine if they've been pierced by natural gas service lines installed over the years via trenchless installation techniques like horizontal directional drilling, says Steven Hudson, vice president of AIMS/PVIC LLC, the corporate parent of PVIC, AIMS LLC and AIMS Coatings LLC.

Headquartered in Phoenix, PVIC also operates offices in Houston and San Antonio, Oregon, Arizona and northern California. The company, which also performs general pipeline inspections and does hydroexcavating work, is a subcontractor on the Bay Area cross-bore project, initiated by a California gas utility, Hudson says.

"We've already invested more than \$2 million in new equipment, employee training and offices for this project. And we are prepared to continue investing as the project grows."

Steven Hudson

"This is the biggest inspection project we've ever been involved with in terms of manpower, equipment and revenue," Hudson says. "We're in the third year of the project, which is projected to last another 10 years plus. We already performed approximately 2,000 property inspections in 2012 and 6,000 in 2013."

The project's genesis primarily stems from two factors: the increasing popularity of trenchless pipeline installations and the sometimes inaccurate (or even nonexistent) maps that show the location of congested underground lines, which results in dangerous cross bores. This year, Hudson projects that 10 PVIC camera trucks, manned by 25 to 30 employees hired locally just for the project, will perform 12,000 cross-bore inspections. In 2015, he anticipates that 15 camera truck crews will do another 20,000 property inspections.

RapidView LLC outfitted five of the camera trucks with IBAK LISY lateral-launch inspection camera systems that can launch from 6- to 48-inch-diameter mainline sewers and into lateral lines 4 inches or more in diameter. Five support crews are equipped with various push camera systems and jetting and locating equipment.

**AIMS/PVIC,
PHOENIX, ARIZ.**

OWNERS: Maria Mihaletos (majority owner and CEO) and husband Chris Mihaletos (minority owner and president)

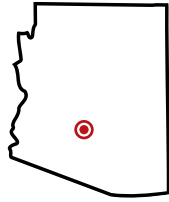
FOUNDED: 2005

SERVICE AREA: Western United States

EMPLOYEES: 150

SPECIALTIES: Hydroblasting, steel cutting, industrial vacuum cleaning, pipeline inspections and cleaning, hydroexcavating, sandblasting and protective-coating applications

WEBSITE: www.aims-pvic.com



Yusuf Munir operates the camera from inside the inspection van on a recent mainline inspection.

“We’ve already invested more than \$2 million in new equipment, employee training and offices for this project,” Hudson says. “And we are prepared to continue investing as the project grows.”

CHALLENGING LINE OF WORK

The push cameras are necessary because in the San Francisco area, lateral lines often include P-traps or double P-traps that can prevent the lateral-launch camera from completing the required mainline-to-foundation inspection. In other cases, the lateral is broken so badly that it blocks lateral-launch camera entry. In either case, the small-diameter push camera can finish an inspection, Hudson explains.

“On any given day, one crew of four guys will do 10 to 12 inspections with a lateral-launch and a push camera truck [two men on each truck],” Hudson says. “It requires outreach efforts to property owners a week ahead of time.”

While admitting that investing millions of dollars in equipment and staff represents a calculated risk, Hudson says he does not expect the camera trucks and employees to remain idle after the project concludes.

“That equipment can be used for a number of different jobs, including routine pipeline maintenance,” he notes. “As long as there’s demand for building homes and building infrastructure that requires gas lines, there’ll be demand for [cross-bore] inspections. And that’s just for gas lines.

“Sewer lines also have to be inspected,” he continues. “When we work for gas companies, we’re looking for instances where the gas line conflicts with sewer lines. But on the sewer side, we inspect new pipeline installations

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The AIMS/PVIC team includes (from left) Buck Taylor, Giovanna Calleros, Yusuf Munir, Chris Mihaletos, Wayne Lovelace, Maria Mihaletos, Tom Verbridge, Steven Hudson, Trish Tafoya and Stephen Walker.

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for quality control. And it's getting to the point where gas companies aren't the only companies doing horizontal drilling – it's being used to install everything from fiber optic to water to cable television lines, too.”

EXPANSION THROUGH ACQUISITION

AIMS/PVIC was established in 2005 when Chris and Maria Mihaletos bought PVIC. In 2007, they acquired AIMS, which primarily provides hydroblasting, industrial vacuuming/cleaning and steel-and-concrete cutting services. About six months later, the Mihaletoses purchased a related industrial-coatings company, AIMS Coatings.

AIMS/PVIC is now a certified Women's Business Enterprise; the majority owner and chief executive officer is Maria Mihaletos; husband Chris, a minority owner, also serves as the company's president.

“We're always upgrading and updating our equipment. Our goal is to be the leader in our industries ... and advanced, more productive equipment is key.”

Chris Mihaletos

“After those three acquisitions, we decided that due to the volatile [economic] climate, we would hold off on further acquisitions and grow organically,” says Chris Mihaletos. “From 2008 to 2014, we've grown into a multimillion-dollar-a-year company [in terms of gross revenues].”

As the company grew, so did its fleet of equipment. Mihaletos says the company has invested more than \$15 million in machines and vehicles, including nine vacuum trucks (made by Guzzler Manufacturing and Super Products), five hydroblasters made by Jetstream of Houston, seven CUES camera trucks, the aforementioned IBAK camera trucks made by RapidView and six more vacuum trucks from Vactor Manufacturing.

“We're always upgrading and updating our equipment,” Mihaletos notes. “Our goal is to be the leader in our industries ... and advanced, more productive equipment is key.”

CONTINUED >>



An Arizona Industrial & Municipal Services Inc. (AIMS) crew uses a Vactor truck to service an industrial site near Phoenix.

DIVERSIFIED SERVICES DRIVE GROWTH

AIMS/PVIC LLC has achieved dramatic growth since the company was founded in 2005, and the ability to offer customers a wide array of services has been a critical factor in that expansion, says Chris Mihaletos, a minority owner and the president of the Phoenix-based business. (His wife, Maria, is the majority owner and also serves as chief executive officer of the company, which is a certified Women's Business Enterprise.)

Customers typically find diversified companies more attractive because it's easier and more efficient to deal with one contractor that can provide multiple services, as opposed to working with several different contractors to obtain the same amount of services, Mihaletos says. AIMS/PVIC owns three divisions that offer the following services: hydroblasting, steel cutting, industrial vacuum cleaning, pipeline inspections and cleaning, hydroexcavating, sandblasting and protective-coating application.

“Our chief advantage is our ability to provide turnkey operations, which is a huge advantage to our customer base,” he explains. “Customers are more inclined to reach out to one company that can provide all the required services. Not only is it less expensive, but it's easier, too, because the customer doesn't have to deal with, say, four different safety certifications [for four different contractors], plus four different points of contact, which requires more time and effort.

“It also makes for easier scheduling and communication,” he adds. “We all communicate easily with each other because we're all under the same umbrella company. This allows us to better focus on finishing jobs on time for customers.”

Mihaletos also points out that AIMS/PVIC gains efficiencies through sharing equipment between divisions, which reduces costs. Moreover, the company's service diversity promotes cross-selling. For instance, after employees clean an industrial tank, they might notice that the vessel now needs sandblasting and recoating – services provided by another AIMS/PVIC division.

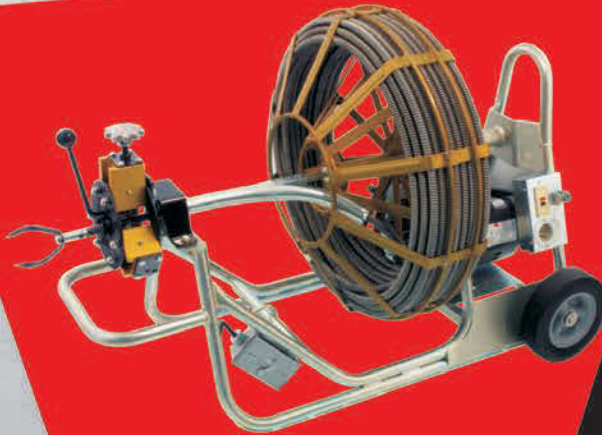
“We train our crews to constantly educate customers about other services we can provide,” he says.

Being a woman-owned business also offers a competitive advantage for customers required to fulfill diversity mandates, he adds.



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Yusuf Munir (left) lowers a camera into a manhole to begin an inspection with Chris Mihaletos (center) and Tom Verbridge.

As an example, he points to the Jetstream hydroblasters, which are capable of generating up to 40,000 psi, a level of pressure that some companies shy away from using because of the associated risk factors.

Mihaletos also points out that to increase efficiency and productivity, AIMS/PVIC cross-trains employees on all equipment so they're capable of operating virtually everything the company owns.

“Our crews perform confined-space cleaning in tanks with up to 1-million-gallon capacities. A large mine might have 10 to 15 of these tanks, while smaller mines might have three to five.”

Chris Mihaletos

MINES AND UTILITIES

On the AIMS side of the business, the company offers hydroexcavating and industrial vacuuming services to a number of markets, ranging from mines to factories to utility plants, Mihaletos says.

Rising copper prices have recently spurred the reopening of southwest copper mines, which has created demand for services such as hydroexcavating and tank cleaning.

Sometimes preparing a mine for reopening provides a year or more of work for AIMS at just that one mine, he notes.

“We do hydroexcavating to safely determine the location of underground lines in mines,” he says. “Often there’s no good record of where things like electrical, water and transfer lines are located.

“We also hydroblast steel thickener tanks to clean them for inspections ... and ensure they meet environmental protocols for asbestos and lead abatement,” he continues. “Our crews perform confined-space cleaning in tanks with up to 1-million-gallon capacities. A large mine might have 10 to 15 of these tanks, while smaller mines might have three to five.”

After the tanks are hydroblasted, crews use vacuum trucks to suck up the resulting debris. Depending on the post-cleaning condition of a tank, mine engineers might ask AIMS to sandblast the interior down to white metal, which provides a surface that’s amenable to recoating.

In other instances, AIMS gets called in to clean up spills such as acids, for example, which are used to separate copper from raw ore. “Sometimes a pipe breaks or leaks, and we come in with protective suits and use our Guzzler vacuum trucks, which have stainless steel tanks,” Mihaletos points out.

“This is where proper training comes in ... we get things up and running again quickly,” he continues. “That’s important because if a mine goes down, it can lose hundreds of thousands of dollars in lost production. As such, we focus hard on maintaining equipment in order to minimize breakdowns, which goes hand in hand with developing good relationships with customers.”

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MORE GROWTH EXPECTED

Mihaletos believes that AIMS/PVIC is well-positioned for future growth, either organically or via more acquisitions. He says that with the improved economic climate, the company's management team is always on the lookout for profitable, stable businesses that have developed good relationships with customers.

"We are fortunate to have good banking and capital behind us to aggressively pursue acquisitions," Mihaletos says. "We're looking at good companies that fit our portfolio of service or that can complement our core business. We want to focus on what we do best ... stick with what we know. We also want to expand geographically.

"Our plan is to eventually have a presence throughout the United States and Canada, and grow AIMS/PVIC into a multimillion-dollar-a-year company. It's a very, very exciting time for our company." **C**

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A Pressure-Free Decision

Weighing a few important factors will help you choose the right pressure washer

By Daniel Leiss

Finding the right pressure washer for the job isn't as easy as it sounds. If you choose an underpowered product, the results will be disappointing. Going with an oversized unit adds inconvenience and extra cost. Not to mention, you risk damaging property.

So how does a person determine what type of pressure washer he needs? Education is the only answer. It takes an understanding of the machine, the application and the cleaning process itself to make a proper selection.

HOT OR COLD?

As with any learning process, it's best to start with the basics. In the case of pressure washers, that means figuring out whether you need a hot- or cold-water unit.

Cold pressure washers are the most popular option. They're compact and economical, and they'll do the trick for a large number of cleaning jobs. Generally, cold-water units are best at washing away dirt and mud. That alone covers a lot of applications, like washing work trucks.

Where cold water falls short, however, is removing grease or grime (dirt that is ingrained or clinging to a surface). A cold pressure washer may push these substances around, but it won't produce a clean surface. For instance, if the machine is used to clean the fifth wheel on a tractor-trailer, it will likely splatter and smear the heavy grease rather than wash it off.

When dealing with grease, grime and oil, a hot pressure washer is usually a better choice. That's because hot water actually cuts through grease, loosening it from the surface. Once the bond between the grease and the surface has been broken, it can then be washed away.

Also, remember that the performance of either a hot or cold pressure washer can be enhanced by using cleaning chemicals. There are a variety of detergents available for use with pressure washers and using the right one can help the process go much more smoothly.

POWER PREFERENCE

Both hot and cold pressure washers are available with electric motors or gas-powered engines. This decision is largely based on where the machine will be used. If it will be operated outdoors without adequate electrical sources nearby, then a gas-powered unit is the best bet. Otherwise, many people prefer electric motors for their cost efficiency, low maintenance and quiet operation. Keep in mind that many of the higher-powered electric pressure washers require a 230-volt, three-phase power source, which isn't readily available in many locations.

If selecting a hot pressure washer, a person must also choose one of three options for heating the water: oil-fired, gas-fired or electric. The most popular choice is oil-fired, which can use diesel, fuel oil or kerosene to heat the water. These units are highly portable, and the fuels are affordable and readily available.

The next option is gas-fired, which means the machine can burn either natural gas or LP gas. However, this option is typically reserved for stationary pressure washers that are hard-plumbed into the gas system of the building where they are located.

The third option is to use electricity to heat the water. Although convenient and highly portable, these units use high voltage and draw high current. Therefore, these products are only recommended if the operator has easy access to such electrical sources.

Many people assume that pressure is the only important rating of a pressure washer, but that's not true. Volume, which is stated in gallons per minute (gpm), equally affects cleaning performance.

SPEC CHECK

After deciding on the type of pressure washer, a person must determine what specifications will best meet his needs. Pressure, volume and horsepower ratings are often misunderstood, but they play a large role in the performance of a pressure washer.

Start by considering pressure. Simply put, its purpose is to help break the bond between the contaminant and the surface being cleaned. If the pressure is too low, the bond won't break without extra help from hot water or detergents. If the pressure is higher than what's needed, the dirt will blow around more, and the high-pressure spray may even damage the surface.

With this in mind, it's best to find a happy medium – a pressure washer that has adequate ratings for the manner in which it will be used. For instance, if the user will mostly be washing vehicles, a 1,500 psi unit may work fine. If washing construction or mining equipment, consider using at least 2,000 psi. For even tougher industrial jobs, 3,000 psi or more is often required.

Many people assume that pressure is the only important rating of a pressure washer, but that's not true. Volume, which is stated in gallons per minute (gpm), equally affects cleaning performance. After the pressure has broken the bond between the contaminant and the surface, the contaminant must be washed away. And the greater the flow of water, the better the substance rinses off. In fact, professionals rely on high-volume units to complete their cleaning jobs quickly.

Although one might assume that a high-volume pressure washer would only consume large amounts of water, this is not necessarily the case. The average garden hose dispenses between 6 and 8 gpm, while the average

pressure washer only puts out 3 to 4 gpm. Therefore, even the highest-rated pressure washers usually offer some type of water savings.

The third factor, horsepower, is useful because it determines how much pressure and volume a pressure washer can produce. For example, a 3,000 psi, 4 gpm unit requires at least an 11 hp gas engine to achieve those outputs. Anything less than 11 horsepower will deliver less pressure and volume than the pump's actual rating.

Basic formulas can be used to calculate the minimum horsepower requirements of a machine. Note how electric-powered units use a different equation than gas-powered:

- Electric motor horsepower requirement: $(\text{psi} \times \text{gpm})/1460$
- Gas engine horsepower requirement: $(\text{psi} \times \text{gpm})/1100$

Another way to look at the pressure and flow ratings is through cleaning units. This factors in both psi and gpm to help compare the cleaning power of pressure washers. To come up with this number, simply multiply the pressure and volume specifications. For instance, a 3,500 psi, 3.8 gpm machine would have 13,300 cleaning units, while a 3,000 psi, 4.5 gpm unit would have 13,500 cleaning units. In this scenario, the second unit would offer higher performance.

DURABLE DESIGNS

Of course, reliability also plays an important role in the pressure washer selection process. Before deciding on one, carefully inspect the unit and pay attention to the details. For starters, is the frame constructed of thick steel? Considering the amount of abuse many pressure washers receive, this can make a huge difference in the longevity of a machine.

Also, check the quality of the engine or electric motor. Is it made by a reputable manufacturer? Does it have adequate horsepower to drive the pump? If the answer to these questions is yes, then the operator is more likely to be satisfied with the results.

Next, make sure the pump can handle the workload. Ceramic plunger pumps are regarded as the highest quality in the industry, and the best ones are designed to run for 2,000 hours or more, as long as they're well-maintained. Compare this to pressure washers intended for occasional homeowner use, which may have a service life of only 100 to 200 hours.

One of the most important components is the unloader valve, which experiences more wear and tear than any other part of the pump. The unloader valve activates every time the spray wand's trigger is released, allowing water to cycle through the pump, so if it's not functioning properly, it can lead to significant damage. Therefore, a person should ensure that this component is high quality and easy to replace before selecting a unit.

The guidelines for picking a pressure washer aren't complicated, but they're important. That's because your money may be wasted if you spend it on an inadequate unit that does a poor job. Even worse, the cleaning project could end up costing way more than anticipated if you damage a surface with an oversized pressure washer. In the end, learning these guidelines will be well worth the time. And getting the job done right will be well worth the investment. **C**

ABOUT THE AUTHOR

Daniel Leiss is the president of Jenny Products Inc. For more information, visit www.steamjenny.com.



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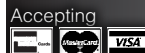
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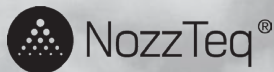


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Industrial Capacity

New continuous-duty vacuum pump from Moro USA is built to handle heavy workloads

By Craig Mandli

High performance and longevity ratings, low operating costs, and continuous vacuum are all highlights of the new PM3000 Storm vacuum pump, unveiled by Moro USA at the 2014 Pumper & Cleaner Environmental Expo International.

The PM3000 Storm is an addition to the company's Storm series of liquid-cooled models capable of pumping nonvolatile liquids and sludge from long distances, providing a solution for heavy-duty industrial applications with a tank capacity of 3,000 to 9,000 gallons. It is capable of 29 psi and features a 4-inch flange connection.

"It's rated at 1,000 cfm free air and was designed to appeal to vacuum truck operators who work in the industrial sector, including oil and gas utilities, municipal utilities and hydroexcavation," says Dave Flagg, company president. "It is also a pump that will appeal to municipalities that operate trucks continuously. It's not your typical truck-mounted vacuum pump."

Like all of Moro's liquid-cooled vacuum pumps, the PM3000 Storm includes an integrated check valve, change-over valve, automatic oiling system, industrial-duty bearings, Viton seals and state-of-the-art high-flow-rate asbestos-free spark-proof vanes. It incorporates a cantered rotor that promotes less air slippage with six Kevlar, heat-resistant vanes that improve performance and recovery time.

"This isn't the largest vacuum pump model we've made," Flagg says, noting the company's other vacuum pump models are designed for tanks ranging from 1,000 to 9,000 gallons. "This design provides a higher cfm rating at 24 Hg continuous [28 Hg maximum], which is really the top end when you need deep vacuum and high flow, such as when hydroexcavating."

A cantered rotor and Kevlar vanes allow the pump to generate 29 psi. In addition, the efficient design means the pump doesn't need to spin as fast (1,200 rpm), which also increases longevity and reduces heat, noise and oil consumption. "This unit is built to run 24/7 and last," Flagg says.

The self-contained closed-loop oiling system injects oil into the pump's housing, lubricating the vanes and industrial-grade bearings. The integrated four-way valve allows it to work under both vacuum and pressure, boosting longevity in applications where the pump works at high pressure for long periods, Flagg says. In addition, its onboard liquid-cooling system incorporates



Matt Gibbs, western territory sales manager for Moro USA, explains several features of the company's new PM3000 vacuum pump to an attendee at the 2014 Pumper & Cleaner Environmental Expo International. (Photo by Craig Mandli)

a forced circulation external water pump and cooling circuit "burp" points that are manually operated to remove all air pockets from the cooling circuit. The new systems were in the research, development and testing phase for roughly five years before being introduced to the marketplace, according to Flagg.

"The response has been terrific," says Flagg. "We took orders for several units from our dealers right at the Expo."

As for the company's plans for the 2015 Water & Wastewater Equipment, Treatment & Transport Show (WWETT), the new name for the Pumper and Cleaner Expo, Flagg says Moro USA is working with all industry segments promoting its products.

"Our goal is always to have something new ready to bring to the Expo, and I know our research and development team has some projects that we're very excited about," he says. "We're already looking forward to next year." 800/383-6304; www.morousa.com. **C**

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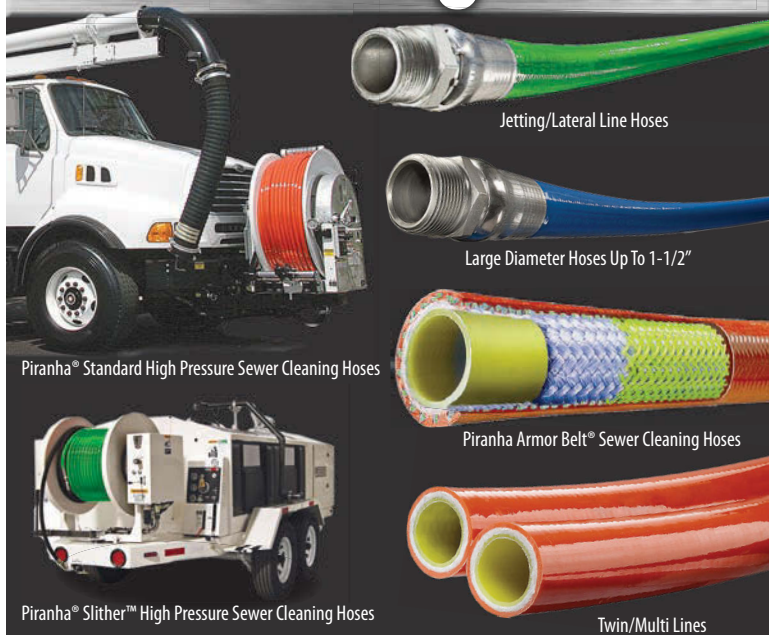
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PROFILE

Scott Spencer, owner
of Jim Dandy Sewer &
Plumbing in Seattle.



Building Off **TRADITION**

NEW OWNER EXPANDS HOURS AND SERVICES, UPGRADES TECHNOLOGY
AND BREATHES NEW LIFE INTO AN ICONIC CENTURY-OLD SEATTLE BUSINESS

BY MARIAN BOND

PHOTOGRAPHY BY MARK MULLIGAN



Jim Dandy Sewer & Plumbing technician Zach Jenkins inspects a new residential sewer line.

S

cott Spencer didn't have to look far when he set out to purchase a plumbing business. He had been the general manager of Roto-Rooter in the Seattle area for 12 years and knew that long-standing Jim Dandy Sewer & Plumbing was for sale. The challenge was modernizing and expanding a company so steeped in tradition.

He decided to take the challenge, purchasing the company in December 2012 and immediately implementing changes. One of the first orders of business was extending shop hours from five to six days a week and moving to an hourly pay scale rather than commission. He also invested more than \$200,000 in new equipment in order to better serve his customers.

The changes paid immediate dividends. By the end of 2013, the company had seen a 40 percent growth in sales.

Moving to six days a week produced varied reactions among his technicians, but when he explained his vision, and the options he was offering, things fell into place. Four of his technicians decided they would be happy with Sunday and Monday as their days off. Two excavation crews (two men each) also became part of the Saturday staff. Two other crews switched to four 10-hour days per week, and the new six-day schedule has worked out quite well for everyone. Service is also available on evenings and Sundays on a standby basis.

"I believed I could increase my business by 15 to 20 percent with that one move, and it has been successful for us," Spencer says. "On Saturday there is always a regular dispatcher ready to answer calls from the customer."

Another big part of the company's success has been the employees, Spencer says, noting they are the company's most valuable resource.

"Human resources were probably the highest priority," he says. "I also had my business plan, and I stayed right on target with that."

profile

JIM DANDY SEWER & PLUMBING, SERVING WASHINGTON'S KING, PIERCE AND SNOHOMISH COUNTIES

- OWNER:** Scott Spencer (since 2012)
- ESTABLISHED:** 1908 as Ericksen Plumbing
- SERVICES:** Excavation, pipe bursting, relining, CCTV, hydroexcavation, plumbing, sewer and drain cleaning
- CUSTOMER BASE:** Residential, commercial
- EMPLOYEES:** 36

BY THE HOUR

Operating as an hourly shop has set this company apart in many ways. Spencer believes that an employee paid by the hour is much more concerned with the customer than one who's paid on commission. This goes along with the concept that customer service is top priority.

"I know in the industry that the hourly shop is sacrilegious, however, I believe that this practice will provide a long-term value for the customer," Spencer says. "It's not what I get today or tomorrow. It's what I will get from them over the next 30 years."

Customers are charged a \$49 service fee – which goes to the technician on after-hours and Sunday calls – and \$158 an hour for time spent on the job.

The whole staff is trained to explain that while the competition may be offering “free estimates,” there will be a charge for the actual service they ultimately provide. Spencer contends that his pricing is a better value – a more straightforward way of taking care of customer needs as opposed to a menu of prices.

“I don’t mind telling people up front that it costs money to run a business. This is what I have to do, but I offer the best value in town. That is the way I run my business, by being up front on the phone. It costs money to send someone to the door, costs money in fuel costs, in equipment and to pay my guys an hourly rate.”

In 2013, Spencer’s equipment purchases included new excavation trucks, plus an additional pipe bursting machine, and he added relining equipment and new cameras.

In another bold move, Spencer went paperless at the beginning of this year. His technicians now use a system from Smart Service, which interacts with an iPad.

“This allows the individual to close out the job through the iPad. There is no need for calls back and forth with the dispatcher. This program maps it all out for them. The technician can take pictures that attach permanently to the invoice,” Spencer explains. “So if there was previous damage, this allows us to have equal footing with the customer if issues arise. This allows the tech to interface with the manager of the job. If the technician runs into something he has never seen before, they can actually have face time with the manager by sending pictures with what they have in real time.

“We email the invoice to the customer and everything is downloaded instantaneously. Payments can be processed electronically.”

FIRM FOUNDATION

Spencer’s corporate structure includes General Manager Larry Bellach, who has been with Jim Dandy 17 years; excavation manager Ted Toft, who has been with the company four years; and sales manager Bob Kerr. Mel Irons runs the office, and Spencer’s wife, Honey, takes care of the books.

There are 36 employees, up from six service people when Spencer purchased Jim Dandy, and they all report to work on a 1-acre site with a 10,000-square-foot warehouse and separate office.

The growing stable of equipment includes a 1986 Vactor on an International chassis with a 2,000 psi/65 gpm jetter, 1,000-gallon freshwater tank and a 6-yard debris tank. Jetters include a 1995 Lely GemJet (1,600 psi/15 gpm) and a custom-built machine with a 200 hp Saab engine and 300-gallon storage tank, producing 3,000 psi/17 gpm.

There are eight excavators with varying capacities, six large utility trucks and six full-sized service vans that are all equipped for CCTV inspection – the team uses RIDGID SeeSnake cameras with 200-foot reels and CS10 monitors.



ABOVE: Technicians Luke Boer (left) and William Coffman excavate a residential lateral line for repair.
BELOW: Technicians Joshua Stubbs (left) and Austin Berg take measurements while working on a lateral line replacement job.





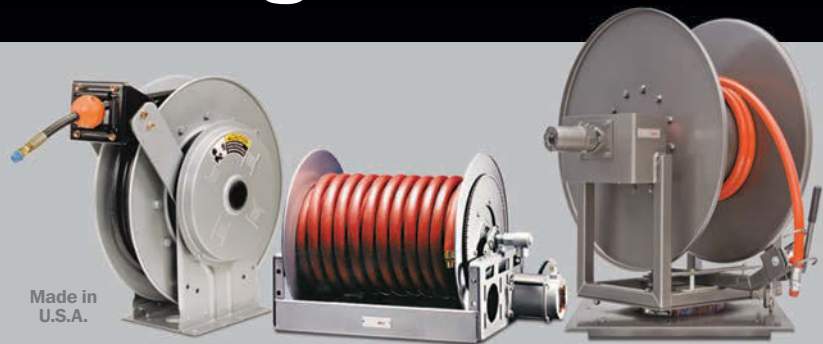
The Jim Dandy Sewer & Plumbing crew includes (from left) Scott Spencer, Kyle Ardoin, Gary Hoffman, Adam Forbes, Joshua Stubbs, Averi Graves, Mike Daniels, Carl Banks, Mike Minetti, Larry Bellach, Chad Hagan, Jon Hoffman, Austin Berg, Cody Harris, Joe Hicks, Ted Toft, Zach Jenkins and Mel Irons.

“I don’t mind telling people up front that it costs money to run a business. This is what I have to do, but I offer the best value in town. That is the way I run my business, by being up front on the phone.”

Scott Spencer



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Technicians Joshua Stubbs (left) and Austin Berg finish a lateral line replacement job in a Seattle residential neighborhood.

The responsibility for taking care of all this equipment falls on the people who use it.

“We encourage our technicians to care for their equipment, and one thing that helps is feedback from our mechanics,” Spencer says. “My rule is that whoever takes the best care of equipment gets the new equipment.

“My rule is that whoever takes the best care of equipment gets the new equipment. It doesn’t matter if I gave a guy the new equipment three months ago, five months ago, if I do an inspection it is the person who takes the best care of equipment who gets the new stuff.”

Scott Spencer

It doesn’t matter if I gave a guy the new equipment three months ago, five months ago, if I do an inspection it is the person who takes the best care of equipment who gets the new stuff. I go down the line. It is amazing how much people care. I have guys washing their truck down every night and taking care of equipment.”

While everyone is responsible for taking care of the equipment, specific work duties within each service are kept separate, mainly for safety issues.

“Some of my competitors might have plumbers doing excavation work because of a commission offered on large jobs,” Spencer says. “Those people might not understand soil conditions, shoring issues and safety equipment.

OPEN TO OPPORTUNITY

Jim Dandy Sewer & Plumbing owner Scott Spencer sees opportunities for continued growth, but that doesn’t necessarily include expanding the footprint of the business.

“We are in a large metropolitan area, and the growth opportunities are incredible,” he says. “The reason I have [sales manager] Bob Kerr is to expand the commercial side of it. We can drive 10 miles up I-5 and see more businesses than I could ever manage to service in my lifetime.

“However, I do consider other opportunities for growth, including directional boring and adding an HVAC department. We have a database of over 40,000 customers. Air conditioning, however, in this region is not in high demand.”

Spencer believes he has laid a strong foundation for growth, from his new hourly rate structure for technicians, to new services and technologies he’s brought on board and the knowledgeable staff he’s assembled. And he believes it’s the staff that really makes the growth and success possible.

“I believe if you take care of your people, if they know you care for them and want them to move forward in their daily lives and improve their station, they will reflect that same attitude toward your customers. Ultimately, a company is only as good as the customer service the employees provide. They are the ones who have direct contact with the customer, and the ones who talk with them on the telephone. I want to build a company culture inclusive with the customer.”

With an hourly shop there is no incentive for a plumber to know how to pipe burst or reline. My technicians are all specialists. My plumbers are specialists.

“That is important because one of my major responsibilities is to make sure everyone who goes out in the morning comes back safely in the evening.”

DRAWING LINES

Jim Dandy crews most often work on tile and concrete lines. Spencer says the tile lines in the area have held their integrity, while concrete lines are often in pretty bad shape. Ground settling and movement are common problems, and an earthquake some years back caused significant shifting.

“We see a lot of offsets,” he says. “That’s why we’ll often go to pipe bursting. We push that a little more than relining. Fortunately, the City of Seattle allows all procedures. The homeowner is responsible for the lateral line to the mainline.

“Seattle is an older community and there is a lot of rehabilitation needed. We find many customers like to have their line maintained, so we offer the

camera for that. They can look at it, and participate, and they want to explore options, and we give them the cost to replace or repair. We have the three services: excavation, pipe bursting or relining.”

Open-cut line replacement is often the best solution, unless the customer is concerned about having to dig down 12 feet and disturb the yard. Then it might be a trenchless solution.

Spencer says that, personally, his choice would be a new line.

Jim Dandy Sewer &

Plumbing was well-entrenched in excavation prior to Spencer’s ownership, the mix being 60 percent excavation or pipe bursting to 40 percent other services.

“We’re doing more like 70 percent line repair and replacement and 30 percent service now,” he says. “We’ll have 20 excavation jobs on my board at any time. We’ve not had a down day since the purchase, and we grew from four to six crews on that side. We went from \$3.2 million in sales to \$4.5 million in 2013, attributed to expanding hours and line repair and replacement. In 2014, we expect to see a continued growth at 20 percent, or about \$5.4 million for the year.”

INTO THE NEXT CENTURY

In less than two years, Spencer has added services, grown his staff and increased revenue substantially.

Spencer has brought innovation and has broken from some of the traditional ways of running a plumbing and drain cleaning business. Behind it all is the new owner’s simple, steadfast and long-standing rule: The customer is always right.

“There is nothing like goodwill,” he says. “If you do the right thing in business, good things will come about in return.” **C**

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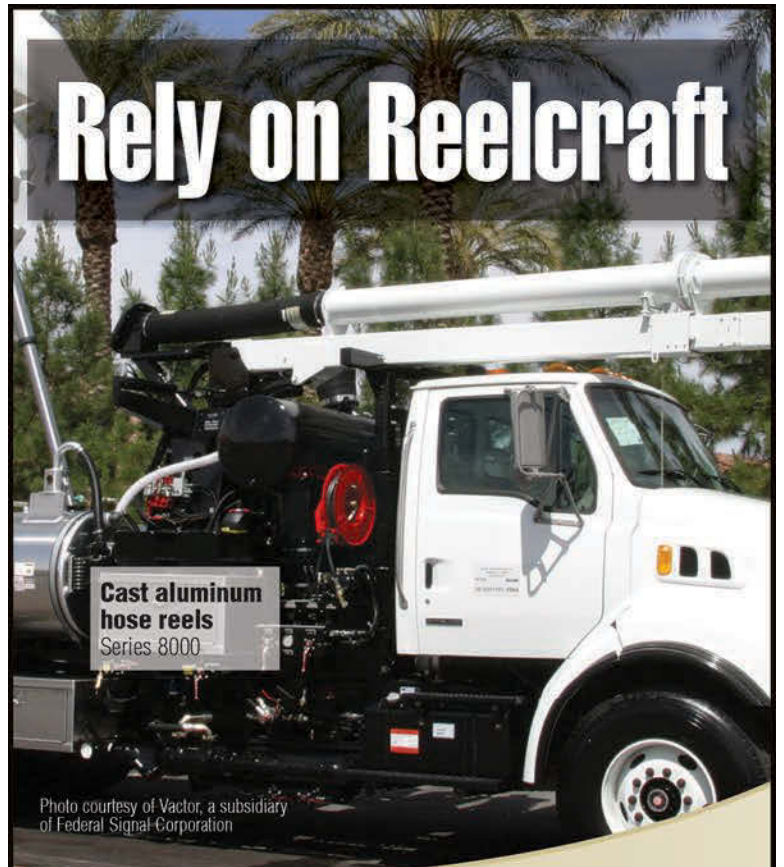


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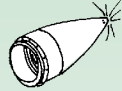
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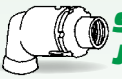
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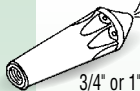
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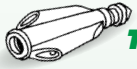
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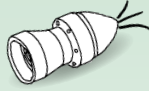
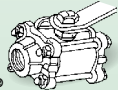
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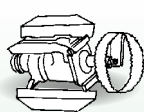
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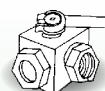
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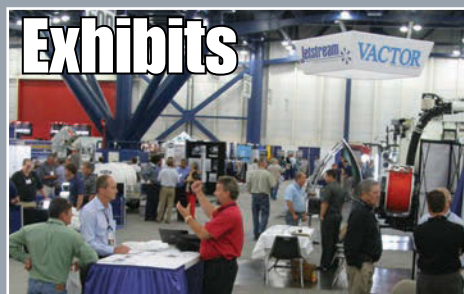
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Build a Better Team

Take ownership of your financial well-being so you can do what's right for your business

By Ellen Rohr

Leslie is the owner of a drain cleaning company, a business she inherited from her father. Back in the day, her father managed a small crew and operated with handshake contracts and stacks of cash. Now that her dad has retired, ambitious Leslie sees a different future. She wants to grow her company so that she can make a fortune ... and provide career opportunities for her beloved team. And she wants to build on her (and her father's) reputation for taking great care of her customers.

Leslie called me one day after reading one of my articles. She described the vision she has for her company and her intent to build an empire. In response to my questions, she shared that ...

She knew how much she had in accounts receivable but only saw financial statements once a year at tax time.

She didn't understand how the financial statements related to what she did every day ... sales, payroll, materials ... so she pretty much ignored the reports anyway.

Your assets are on the line.

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She knew that she was in debt but wasn't sure how much. She just secured another line of credit to keep the cash flowing.

I confronted Leslie about her lack of financial literacy. "It's your company and your assets on the line. You need to know. Tell me who is in charge of the accounting at your company."

For the last 15 years, her mom has been the bookkeeper. Mom does the books as "a favor" to Leslie. She works 40-plus hours a week but nothing is ever really finished or ready for Leslie to look at, so Leslie has quit asking for day-to-day financial information. Everyone else in the office avoids Mom, who seems to have a different set of rules than the rest of the team. While Mom is responsible for paying bills, whom she pays and when is a mystery. Once, when Stan the warehouse man had a question about his paycheck, Mom flew out of the office sobbing, "And that's the thanks I get?" It took Leslie three apologetic phone calls to woo her back.

At the end of the year, Mom hands over whatever it is that she assembles for financial information to a fellow named Art. Art is an accountant who files the tax return. Leslie has asked Art for help understanding the balance sheet and income statement he prepares for the return. She called and set up an appointment to meet with him. His secretary scheduled a date to meet ... in six

weeks. At that meeting, Art leaned over his massive mahogany desk and patted Leslie's hand. "You worry about running the business. I'm a professional. I will take care of the accounting," he said dismissively, then escorted her to the door. For the money she pays him, to be treated like this?

Martyr Mom is holding Leslie back. Art the Intimidator is holding her hostage.

I advised Leslie to fire both of them.

"But then what?" Leslie sputtered in response to my suggestion. "Where do I find another accountant? Who else would I trust with my money? Where do I start? And, by the way, my mother will disown me."

I responded, "Leslie, you can do this. You can get to a known financial position. You can create a clean, accurate set of financials. You can build a team of financial pros who will help you get timely, accurate data in a format you understand so that you can make good business decisions.

"And, Leslie, your mom will get over it."

Bookkeeping is a part-time position. Enter sales, make the deposit, pay bills ... and you are 90 percent there. Find a smart, savvy bookkeeper and have her or him help you set up your accounting program and learn basic accounting. It's not hard ... it's just that you haven't been taught this stuff.

Then enlist a certified public accountant (CPA) to check your work and handle your tax responsibilities. Unless you have a very big company, you just don't need an in-house CPA.

These professionals do not relieve you of the primary stewardship of your company. Your assets are on the line. You have to pay attention. A good financial team can help you make good decisions. You direct them; they don't direct you.

I went through this process myself when I realized that we weren't making any money and no one was going to figure out how to fix that for me. It was my responsibility. Finding the right financial team to help you build your empire may appear to be a daunting task, but take heart and take my advice: Do not put up with the martyr or the intimidator. Fire them! Learn to do the duties yourself if you must. Do not be held hostage. Know there are people out there who love bookkeeping and accounting, and be determined to find them. **C**

ABOUT THE AUTHOR

Ellen Rohr is president of Zoom Drain and Sewer LLC, a columnist for *Huffington Post* and *PHC News*, and a contributor to many business journals and trade magazines.

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An Investment in Productivity

Enclosed trailer jetters open pipes – and new revenue streams – for New York contractor

By Ken Wysocky

Sometimes an equipment purchase leads contractors to unexpected jobs they never initially envisioned. That's the case with Rick Zielinski, the owner of Adirondack Septic Tank, an Amsterdam, N.Y.-based company that primarily cleans and inspects drainlines and septic tanks.

In 2005, Zielinski bought a 4018 water jetter made by US Jetting Inc. His main objective: increased pressure to muscle through tough clogs. Pleased with the results, he bought another 4018 jetter in 2008. Both units are mounted in enclosed trailers and feature 300-gallon water tanks, 500-foot-capacity hose reels and pumps that generate pressure and flow of 4,000 psi at 18 gpm.

"We've had jetters since the mid-1980s, but they were lower psi/higher gpm units," Zielinski says. "We wanted to go to higher-pressure units to be more productive with difficult drains ... deal more effectively with tree roots and grease clogs."

In that respect, the 4018s provided exactly what Zielinski sought. Talk about power: On one particular job, where a sewer-installation crew inadvertently flushed excess concrete and mortar into a new line while washing off tools and equipment, one of the 4018s actually removed the dried concrete and mortar.

money machines

- OWNER:** Adirondack Septic Tank, Amsterdam, N.Y.
- EQUIPMENT:** Two US Jetting Inc. 4018 water jetters in enclosed, tandem-axle trailers
- FUNCTION:** Drainline cleaning
- FEATURES:** Pressure and flow of 4,000 psi at 18 gpm, 300-gallon water tank, 500-foot-capacity hose reels, trailers made by Wells Cargo Corp. and United Trailers Inc.
- COST:** About \$38,000 and \$42,000 each

"It was one of the tougher jobs we've encountered because all the new sewer lines ran under a manufacturing facility's production floor, so it was virtually impossible to dig up the line and replace it," Zielinski explains. "We saved that company a lot of money and effort. The jetter saved the day in that case. We got some 'attaboys' on that one."

But the jetters also come up big in other creative applications. For example, at both a local college and a minimum-security prison, Adirondack crews used the jetter to clean out old, never-used conduit pipes, then inspected them to make sure they were ready for fiber-optic cable installations.

"In both cases, we had to confirm that the 3-inch-diameter conduit

OPPOSITE PAGE: Adirondack Septic Tank's 4018 water jettters from US Jetting are set up in enclosed trailers with 300-gallon water tanks and 500-foot hose reels.

RIGHT: Adirondack jetting technician Jamie Rossi feeds hose from the jetter to a drainline on a recent cleaning job.

was still viable," he explains. "But after that, we used the jetter to pull a small cable through the conduit so the fiber-optic installers had something to use to pull the fiber-optic cable through. We ran the jet to the far side of the line, then hooked up the smaller pulling cable and reeled the jet hose back in.

"Both machines have definitely opened up new markets for us," he adds. "There are many jobs over the years that we wouldn't have attempted without these jettters. We feel very confident about what they can do."

Among others, the company also uses the jettters for jobs such as cleaning grease trap lines and breaking up greasy sludge inside grease traps, and cleaning leachate collection lines under landfills – some of them up to 1,000 feet long, which required adding an additional 500-foot-long hose. And during the past winter, which was unusually harsh, Zielinski says he used the 4018s to unclog frozen lines in everything from septic systems to force mains.

Zielinski prefers the enclosed trailers for two reasons: They allow the jettters to function during below-freezing temperatures and allow crews to carry as much equipment as possible. That averts time-consuming and profit-killing trips between job sites and the company's shop.

The 14-foot, tandem-axle trailers are made by Wells Cargo and United Trailers Inc. The

company also owns four pipeline-inspection cameras, three QuickView models made by Vivax-Metrotech Corp. and one unit made by Ratech Electronics. Each trailer carries two cameras. "It's like wearing a belt and suspenders – if one breaks, you've got to have a backup plan," Zielinski quips.

The newer of the two 4018s features a remote control, which Zielinski says is a very handy feature, especially in terms of employee safety.



"The remote doesn't always eliminate the need for a second man," he points out. "We still send out two guys on a job because safety first is a better way to do business. But the remote is very useful. If both guys on a crew are inside a building, they don't have to run outside to turn it off.

"That's not only convenient, it's also safer," he adds. "If both guys are in a building and water suddenly starts coming up another floor drain or out of some fixture, like a toilet or a sink, and there are electrical panels nearby, they can shut the jetter down quickly and assess the situation."

Overall, Zielinski says the units – which cost about \$38,000 and \$42,000, respectively – have been a great investment. So good, in fact, that he's strongly considering buying another unit.

"They're one of the more profitable tools we have because there are no disposal costs involved with the work they do and they don't require other materials in order to use them," Zielinski says. "So there's a better profit margin on the type of work they do.

"They generate a large percentage of our overall gross revenue," he continues. "And they can provide stand-alone service or work in conjunction with our other equipment, like our vacuum trucks. I don't know what we'd do without them." **C**

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"Both machines have definitely opened up new markets for us. There are many jobs over the years that we wouldn't have attempted without these jettters. We feel very confident about what they can do."

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Video Spells Out Dangers

The simplicity of vacuum excavation often leads to improper use with new operators

By Doug Day

It seems simple enough – water or air under pressure to loosen soil and a vacuum to suck it up. But as a warning on a new safety video states, “Misuse of this equipment can lead to property damage, serious injury or even death.”

The 19-minute DVD from the Association of Equipment Manufacturers (AEM) is supported by AEM’s 36-page safety manual along with equipment and job site checklists available from its website at www.aem.org. “The vacuum excavation industry is growing rapidly with over 25 manufacturers,” says William Bernhard, manager of Technical & Safety Services for AEM. “The video was produced to promote the safe use of the equipment to help prevent injuries and damage to underground utilities.”

“As with most large equipment, the main safety errors are a lack of knowledge of the machine, how it operates and the application being utilized. Plus, a large factor is always speed and hurrying to get the job done.”

William Bernhard

Since vacuum equipment is often rented, the video stresses the importance of reading and following all operating and safety manuals provided with the equipment. “As with most large equipment, the main safety errors are a lack of knowledge of the machine, how it operates and the application being utilized,” Bernhard says. “Plus, a large factor is always speed and hurrying to get the job done.”

The video covers seven major topics, including the importance of calling 811 or other locating services before doing any work:

- Operator safety
- Equipment inspection
- Transporting equipment
- Before starting on the job site
- Operation and maintenance
- Finishing the job

As the video demonstrates using a watermelon, both the vacuum equipment and high-pressure water present unique risks for serious injury. Along with normal personal protective equipment, the video suggests full face shields when necessary, snug-fitting clothes that protect from rocks and other objects that can be thrown by the high-pressure stream of water, cut-resistant gloves, shin guards, and electrically insulated boots and gloves when working around energized lines.

Since it is relatively new to the U.S., some people don’t appreciate using the proper pressures and volumes for air and water and figure that more is better. Under normal application, the recommended water volume is under 10 gpm. While the maximum recommended water pressure for straight-tip nozzles is 2,500 psi and 3,000 psi for a rotary nozzle, the video suggests operators use just enough pressure to excavate the soil. Too much water or pressure can erode or undermine the soil and cause damage to nearby structures, such as power poles and streets. The video also warns against using sewer vacuum equipment for vacuum excavation because it is not designed for such use.

While vacuum excavation may look easy, Bernhard says that only multiplies the risk of injury. “Training is always necessary when operating equipment. As vacuum excavation becomes more popular with experienced and knowledgeable operators, these machines are being used appropriately. Without proper training, people often overlook the precautions that experienced operators use.”

Five members of AEM’s Underground Equipment Manufacturers Council – Ditch Witch, Sewer Equipment, Vacall, Vactor and Vermeer – collaborated with AEM on the writing and planning of the video, which was produced by a professional production company. The DVD is available for purchase at AEM’s online store for \$19.95 (\$49.95 for nonmembers). AEM’s vacuum excavation safety manual is available for \$2.25 (\$2.75 for nonmembers). **c**



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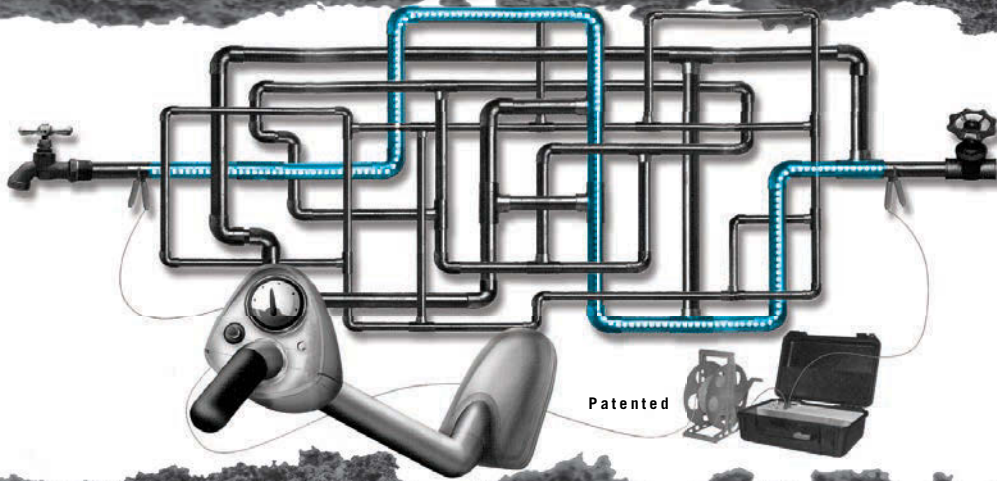


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Lock and Load

Michigan contractor battles ice and bitter cold while cleaning the Poe Lock manholes and underfloor drainage system

By **Scottie Dayton**

Multiple contractors attempting to clean the manholes and under-floor drainage system of the Sault Ste. Marie (Mich.) Poe Lock in early 2013 were thwarted by ice clogging hoses and vacuum lines. The work, scheduled from Jan. 15 through March 25 when the locks are closed for maintenance, was never completed.

In late 2013, the U.S. Army Corps of Engineers put the project out to bid again. “We contracted to clean 14 48-inch manholes and 1,700 feet of 12-inch pipe,” says General Manager John Fukey of Tunnel Vision Pipeline Services in Escanaba, Mich. “That’s normally a one-day job.”

However, the 2013-2014 winter at the Soo was one of the coldest and snowiest on record. Daytime temperatures averaged minus 30 degrees F. The lock funneled Arctic air off Lake Superior, causing wind chills to reach minus 80 degrees. Almost daily storms dropped 123 inches of snow. Workers struggled for three weeks, but they were the first to beat the ice and clean the system.

ICE BRIGADE

The 1,200- by 110- by 70-foot-deep lock has an upper (north) gate and a set of lower (south) miter gates. Gate 2 is a spare in case the operating Gate 3 is damaged. Most work occurred between the pair.

During maintenance, 10- to 23.5-foot-deep manholes drained water off the lock floor. Three 24-inch manhole covers at each end of the lock had 1-inch ventilation slots, allowing debris to enter. The suction created as boats passed through the lock had popped off two other lids.

The hulls also ground up the oak fenders on the lock and gates. “Our biggest issue was wood,” says Fukey. “The seven manholes between the lower gates were jammed full of it. Even with two of the 14 manholes impossible to reach, cleaning the remainder accounted for 95 percent of the project.”

The Corps lowered equipment and supplies into the lock, then manual labor took over. “After hauling around 20-foot sticks of 8-inch Schedule 40 PVC pipe for debris removal, we learned the hard way to bring your own skid-steer,” says Fukey. “Besides their weight, footing was tricky because everything was coated in ice.”

Water poured constantly through the gates and down the manholes. Fukey ran two 3-inch dewatering pumps continuously, but they couldn’t



tough job

PROJECT: Clean manholes and underfloor drainage system of the Sault Ste. Marie Poe Lock

CUSTOMER: U.S. Army Corps of Engineers

CONTRACTOR: Tunnel Vision Pipeline Services, Escanaba, Mich.

SUBCONTRACTORS: Steve’s Plumbing and Ken Norris Construction, both from Sault Ste. Marie, Mich.; Bosk Corp., Escanaba

EQUIPMENT: Combination trucks from Vector Mfg., Hi-Vac Corp. and Super Products LLC

RESULTS: System operating as designed



LEFT: Tarps shield a 2100 Series Vactor from the cold. The truck, parked near Gate 2, is 70 feet above the Poe Lock floor. A 90-degree elbow connects the shoot to 260 feet of 8-inch Schedule 40 PVC pipe. (Photos courtesy of Tunnel Vision Pipeline Services)
BELOW: Richard Solka (left) and Josh Villeneuve (center) prep a sealed manhole for sediment removal, while Scott LaCombe coaxes a 3-inch dewatering pump to life. Gate 3 holds back the St. Marys River and Lake Huron.



keep up. “We tried sandbagging around manholes, but water accumulated behind the bags, then spilled over,” he says.

MEAN AND NASTY

Rocks up to 20 inches in diameter caused more problems. “The Wacker Neuson’s PG pump with Honda engine spit them out, but they jammed the impeller of another manufacturer’s pump,” says Fukey. “Freeing the impeller was risky because flesh froze instantly to metal surfaces.”

The pumps discharged through 200 feet of hose to clean-outs in the floor. Each night, workers drained the pumps and hoses. The next morning, they jammed steam lines down the hoses to warm them and into the pumps to free them enough to turn over. Steam came from the Corps’ plant.

Since Fukey’s crew had never worked with live steam, he hired Steve’s Plumbing of Sault Ste. Marie to act as steam safety adviser. “By spending \$10,000 on steam hoses and feeding steam into our cleaning lines, we beat the ice that defeated other contractors,” says Fukey.

The warm pipes and hoses melted trenches in the snow and ice, and had to be pulled out frequently. Workers often fell on snow-covered ruts as they freed lines and moved snow, but no broken bones or concussions resulted. To avoid slipping and falling down a manhole, workers spread ice-melting crystals around the structures.

Overhead ice on gates and walls was another threat. Occasionally, the sun was warm enough to loosen chunks slightly smaller than a Volkswagen Beetle. “The Corps let steam lines blast for hours to melt ice above an area where we’d be working,” says Fukey. “They just couldn’t get all of it and some fell near us.”

“By spending \$10,000 on steam hoses and feeding steam into our cleaning lines, we beat the ice that defeated other contractors.”

John Fukey

FIRST ORDER OF BUSINESS

The Corps marked a route to a parking space alongside the lock for Fukey’s Vactor 2100 Series combination sewer cleaner. Any deviation from the path could damage property. He covered the truck with tarps to help keep it warm and subcontracted Ken Norris Construction of Sault Ste. Marie to deliver 170-degree water in a 3,000-gallon tanker to use in the machine.

The U.S. Army Corps of Engineers blasted steam for hours to melt overhead ice before workers arrived, but it couldn't keep up with water seeping through the gates and freezing.

Workers assembled 65 feet of PVC pipe on the floor, tying the joints with heavy rope to prevent separation as they hoisted the shoot up the wall to the truck. A fitting connected the pipe to the corrugated vacuum tubing, and a roll of duct tape reinforced the connection.

The crew assembled 260 feet of PVC pipe to reach the nine manholes at Gate 3 and attached the pipe to the shoot with a 90-degree PVC elbow. Then they brought down the 65 gpm/2,000 psi jetter and 300 to 400 feet of 1-inch hose.

The manholes – all below the frost line – had 30-inch-diameter chimneys for 4 feet before expanding to 48 inches. Drainpipes entered at 6 inches to 7 feet from the bottom. Dewatering the manholes had little effect, and workers vacuumed 10 times as much water as material.

Provided the decanted water was almost debris free, the Corps allowed Fukey to discharge it into the lock. The Vector, pulling 18 inches Hg, sucked water and maybe some sand, if in solution, but it couldn't pull rocks or wood. "We dumped four loads of water and very little debris the first two days," says Fukey. "The Vector is a good machine, but it wasn't designed to do what we were asking of it."



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Then the cold caught up with the truck, breaking several lines and the hydraulic fluid cooler. Fukey substituted his 1988 Aquatech B10 combination cleaner (Hi-Vac Corp.) with 10-cubic-yard debris tank, 1,000-gallon water tank, 65 gpm/2,000 psi water pump and 2,700 cfm/15-inch Hg positive displacement vacuum system. "We made better headway the next four days, but it still wasn't fast enough," he says. "Even this truck struggled to move rocks and wood."

REGROUP AND ATTACK

Brutal cold and massive snowfalls canceled work the next week, allowing Fukey to make equipment changes. He hired Roger Fritz of Bosk Corp. in Escanaba to bring a Supersucker Model 5227 (Super Products) with 13-cubic-yard debris tank and 6,000 cfm/27-inch Hg positive displacement vacuum system. (Bosk had removed the water tank and pump for simplicity and weight reduction.)

"The machine pulled rocks through the pipe so fast they smashed through the elbow," says Fukey. "We padded the back of it and used more than 100 rolls of duct tape making repairs." Fritz dumped debris three times a day, averaging 3 to 5 cubic yards per load.

Once workers uncovered the drainpipe in a manhole, they lowered the jetter hose on a hook, positioned the nozzle in the pipe, and turned on the pump. With little debris in the lines, cleaning to within 3 inches of the bottom went quickly.

"We couldn't stay dry," says Fukey. "Our faces were always wet from spray, but water freezes at 32 degrees, which was 62 degrees warmer than the air temperature." Although the crew had an insulated ice-fishing shack with portable propane heater in the lock, the work was so strenuous they seldom used it. They met their March 14 deadline and left the lock's drainage system flowing freely. **c**

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The Future is Now

It's never too soon – or too late – to form a strategy and start saving for retirement

By Erik Gunn

How soon should you start thinking about retirement? It's never too soon – even if yesterday was your very first day on the job and you won't be turning in your last time card for four decades. You'll benefit from preparing for that last day now.

That way, says Jim Wright, a fee-only financial planner in Paoli, Pa., outside Philadelphia, “You get more time with the benefit of compounding.” The money you put aside now makes gains – and those gains can be reinvested to make more gains, and so on.

So step No. 1 is start saving. If your employer offers a 401(k) self-funded retirement plan, that's an easy way to start. It's even better if the company matches part of your contributions. “It is free money,” Wright points out.

STARTING SMALL

But wait, you say – retirement isn't just a long way off. There are so many more immediate expenses ahead – buying a house, raising a family, taking them on vacation once in a while, pursuing a hobby.

Wright is well aware of that. “We also recognize that when you are younger, you are not earning as much,” he adds. “So the important advice is just to get started. Once you get started, it would be great to try to modestly increase your savings amount each year.”

No 401(k)? Don't let that stop you. You can still start saving now through an Individual Retirement Account or similar instruments. The point is, don't put it off. Wright urges putting aside as little as 1 percent of your paycheck. Boost that by a percentage point every year or two; in 10 years you'll be up to 5 or 10 percent.

The long-range objective is to end up with a significant chunk of money at retirement that can throw off income each year for you to live on, along with what you collect in Social Security.

HOW MUCH?

But how big should that pot of money be? That's a much tougher question to answer.

“If your spouse is getting a pension, your needs at retirement will be very different from someone who has no pension,” Wright says. If all you really want in retirement is a very simple lifestyle, and your projected monthly Social Security payment is adequate, “then you may not need as much saved as someone who has greater needs or lower Social Security payments.”

Of course, the younger you are, the harder it will be to be sure of what your future needs or resources will be. So the more you can save – without going into excess debt to pay your current expenses – the better off you're likely to be.

“The key here is that life doesn't end at retirement,” adds Patrick McGonigle, a certified financial planner at CJM Wealth Advisers Ltd. in Fairfax, Va. “A 65-year-old retiree could still be looking at a 30-plus-year retirement.”

LIFE CYCLE INVESTMENT

The next question is, how do you invest those savings? With professional help is the first answer – and this column can't offer concrete investment advice; only your professional investment adviser can.

Still, the broadest principle is pretty simple: Go for growth when you're young – that means stocks or stock-based mutual funds. As you get older, reduce your risk. Conventional wisdom says to do that, you buy more bonds.

“A portfolio for a typical client in their 20s through 40s would primarily be invested in equities [stocks, stock-based exchange-traded funds/mutual funds] with minimal bond exposure, depending on the level of risk they are comfortable with,” says McGonigle.

“The focus on younger investors is really about making sure they are building that portfolio so the effects of compound interest can work in their favor,” he continues, while for people who expect to retire in 10 years or fewer, “the focus is typically getting growth with minimal risk. The challenge is finding the right balance between risk and return.”

CHANGING FORMULAS

It was once thought that if you subtracted your age from 100, the answer was what percentage of your savings should be in equities. So if you're 30,

Calculating what you need

Various publishers and organizations have put calculators online to help people see how much they should be saving based on their age and the income they want to have in retirement. Here are three:

- www.kiplinger.com/tool/retirement/T047-S001-retirement-savings-calculator-how-much-money-do-i/index.php
- www.aarp.org/work/retirement-planning/retirement_calculator.html
- www.calcxml.com/calculators/retirement-calculator



your portfolio should be 70 percent stocks and 30 percent bonds.

“That’s changed a little over the last 15 years,” says Jamie Hopkins, assistant professor of taxation at the American College of Financial Services in Bryn Mawr, Pa. If you still want a formula, he’d raise the starting number to 110 or 120. Using 120 as the starting point, a 30-year-old will put 90 percent in stocks (120 minus 30 equals 90), while a 50-year-old would draw that down to 70 percent (120 minus 50 equals 70).

As retirement approaches, however, it gets a lot more complicated. At least until your 60s, Hopkins recommends, you’ll want to maintain a strong equity component. “At age 60 or 65, you could still be saving 20 or 25 years,” he says. “You don’t want to get to the point where you’re too heavily invested in bonds or you’re going to run out of money.”

“So the important advice is just to get started. Once you get started, it would be great to try to modestly increase your savings amount each year.”

Jim Wright

That’s been especially true since the 2008 market collapses and the resulting period of very low interest rates. Those low rates have been good for borrowers, but for lenders – and that’s what you are when you buy bonds – not so much. Bond mutual funds may be a better choice for people who want at least some form of guaranteed return in their portfolios, Hopkins says.

McGonigle also points out that bonds aren’t necessarily as safe as the conventional wisdom implies. If inflation spikes, an all-bond portfolio risks losing value. If interest rates stay low, bond returns will be anemic. You could boost your interest rates by buying high-yield bonds, but they carry a higher risk of default.

For those reasons, McGonigle says, “we believe that equities remain a vital part of the portfolio in retirement.” Still, your age will be a factor. You can move from high-risk/high-reward stocks to safer ones, which often pay dividends. Stocks, he says, “offer a return that, historically, has outpaced inflation.”

MAXIMIZING RETURN

Hopkins says another traditional rule of thumb has been that you want enough money when you retire that you can take out 4 percent of your nest egg a year for the rest of your life.

Finance experts have conducted tests imagining how hypothetical portfolios would perform for a person living as long as 30 years after retirement under all the ups and downs of the market for the last 100 years.

If the assets are adequate to start with, simply keeping the mix steady at 60 percent stocks and 40 percent bonds will be enough to provide that 4 percent yearly payout going strong under virtually any historical market conditions, and regardless of how long the hypothetical investor lives after retiring. “According to the historical data, they would never run out in 30 years,” Hopkins says.

DELAYED GRATIFICATION

There are some other wrinkles in decision-making about retirement and how to amass your resources, he points out. When you start collecting Social

Security is a big one.

You don’t have to take it the moment you retire – and if you can afford not to, there are incentives to put it off. Every year you delay collecting Social Security from the time you’re eligible until you turn 70, your monthly payment rises 8 percent. (If you start collecting it early, you get penalized, too.) And over time, the eligibility age is rising.

Suppose you’re eligible at the age of 66. If you delay collecting until you’re 68, your monthly Social Security check will be 16 percent more than it would be if you didn’t wait. Hold out until 70 and you could get 32 percent more.

KEEP IT SIMPLE

It’s never too soon to start saving for retirement – and never too late, either. The key is to do it step by step, and to parcel out your investments so that you focus on growth when you’re young and security as you age.

And then, when you’re ready to leave the workforce and put your feet up, you won’t just be ready – your bank account will be, too. **c**

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- Cat C-13 engine
- Eaton Fuller transmission
- 380 horsepower
- Mileage: 252,094 Hours: 10,528
- 18 yard debris box
- 27" Hibon 8705 blower
- Extendable boom

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1/8" AND UP FOR JETTERS

NEW VARCO SEWERFLEX SEWER HOSE

DESCRIPTION	3/4"	1"
Varco Sewerflex Orange 2500psi	\$2.48 ft	\$3.10 ft
Varco Sewerflex Blue 3000psi	\$2.45 ft	\$2.89 ft

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4000 psi rated • Safety Green - Pressure Tested • Precoupled assemblies MXM pipe thread fittings

	50 ft	75 ft	100 ft	150 ft	200 ft	250 ft	300 ft	400 ft	500 ft	600 ft
1/8"	\$15.28	\$21.25	\$26.38	\$37.49	\$48.60	\$56.74	\$66.88	\$87.15	\$107.45	-
3/16"	\$26.12	\$33.17	\$41.35	\$55.25	\$69.95	\$84.68	\$99.38	\$128.82	\$158.25	\$187.69
1/4"	\$29.85	-	\$55.85	\$81.82	\$107.77	\$126.38	\$150.52	\$198.77	\$247.02	\$295.28
3/8"	\$62.08	\$91.28	\$105.54	\$151.12	\$215.06	\$259.57	\$304.05	\$382.09	\$469.43	\$556.77
1/2"	-	-	\$186.69	-	\$353.97	-	\$505.85	\$660.02	\$815.97	\$972.66

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HAMMELMANN®

Waterblasting and Waterjet Cleaning and Accessories

By Craig Mandli

Waterblasters and portable jetting systems enable professional drain and pipe cleaners to maneuver into tight spaces to complete their work. The waterblasters, jetters, hoses, cleaning nozzles, pumps, reels, safety equipment and vacuum trucks highlighted below will help you efficiently and effectively complete the job.

WATERBLASTERS

HIGH-PRESSURE WATERBLASTER

The Aqua Miser Ultra Boss Model E75V-II with closed-loop containment system from CESCO removes rust and paint by using water pressures up to 40,000 psi without releasing chemicals into the air. The system captures the water, filters the paint particles for disposal, and reuses the water for further paint removal, keeping harmful particles out of the air. The system reduces emissions and hazardous waste, as well as man-hours. 843/760-3000; www.aquamiser.com.



CESCO

HYDROSTATIC-DRIVE WATERBLASTER TRUCK

The hydrostatic-drive waterblaster truck from Freedom Enterprises eliminates the second engine, saving fuel and maintenance costs. It is ideal for pressure testing, line cleaning, tank clean-out, surface preparation and coating removal. It has a heated enclosed body with 925-gallon water tank with hot-water blasting capability; quick-change pressure/flow up to 40,000 psi; instant pump shutdown; a remote hydraulic tool circuit; 120-volt AC power and compressed air for tools and equipment; a cold-weather purge and antifreeze system; and a diesel-fired heater to warm the truck engine, water tank or van body all night, or when utilizing a programmable timer. 970/653-8588; www.freedomseweranddrain.com.



Freedom Enterprises

MOBILE WATERBLASTING UNIT

The X-Series mobile waterblasting unit from Jetstream of Houston has a greaseless spread-bearing PTO that provides reliable power transmission and reduced maintenance time. Its integrated filter and water tank system extends component life and



Jetstream of Houston

increases operating time, while a strong, lightweight frame provides better towing performance. It is built around the UNx fluid end system designed for fast conversion between 5,000 and 40,000 psi operating pressures. 800/231-8192; www.waterblast.com.

PORTABLE TRUCK/TRAILER JETTERS

JETTER/PRESSURE WASHER COMBO UNIT

The Performance line of trailer-mounted jetter/pressure washer combo units from Amazing Machinery is designed for easy trailering, and the large water supply tank allows technicians to jet anywhere. A rear-mounted 12-volt electric jetter hose reel and SS rear stack-mounted manual pressure washer and garden hose reels provide ample hose space. They come standard with 300 feet of jetter hose, two nozzles and a complete set of washdown accessories. The triplex ceramic plunger pump provides pressures up to 4,000 psi and flow rates up to 15 gpm. 800/504-7435; www.amazingmachinery.com.



Amazing Machinery

PROPANE-POWERED CART JETTER

The Electric Platform Cart Series from American Jetter offers safe propane power up to 40 hp and 20 gpm. A self-powered cart houses the entire jetting system, and a low-water shut-off prevents pump damage in low-flow situations. The powered hose reel can carry up to 500 feet of 1/2-inch hose or 600 feet of 3/8-inch hose, and a speed control allows for precise cleaning in both directions. Optional hose reels can be added for a smaller jet hose or washdown gun. 866/944-3569; www.americanjetter.com.



American Jetter

HIGH-PRESSURE WATER JETTER

The Eel Jet EJ3000 gas jetter from Electric Eel cleans 2- to 8-inch-diameter lines up to 300 feet. It has steel nozzles that penetrate and clean sludge, ice, grease, sand, soap, dirt and debris from pipe walls. It has pressures of 3,000 psi at 4.7 gpm, a quiet 13 hp overhead valve engine with electric start available, a 2-to-1 gear-reduced triplex pump with pulsation, and a 300-foot-capacity hose reel. Its throttle back control automatically adjusts engine speed, while a low-tone muffler offers quiet operation. It is easily maneuverable on pneumatic 12-inch tires, with a rugged steel base front bar for motor protection. A heat shield protects the hose, while convenient nozzle storage is located on the unit. It utilizes 1/4- and 3/8-inch-diameter jet hose. 800/833-1212; www.electriceel.com.



Electric Eel

WATER JET DRAIN CLEANER

The JM-3080 Jet-Set water jet cart drain cleaning machine from General Pipe Cleaners clears grease stoppages, as well as sand, sludge and ice clogs. It generates 3,000 psi at 8 gpm to break up tough stoppages and flush them away. Vibra-pulse on demand helps the hose slide easily down long runs and around tight bends. A 20 hp



General Pipe Cleaners

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Honda engine with electric start and 2-to-1 gear reducer drives the pump, while a 12-gallon buffer tank protects the jet if the water supply can't match the pump demand. **800/245-6200; www.drainbrain.com.**

POWER WASHER

The heavy-duty **HydroForce** power washer from **Guardair Corporation** combines compressed air and standard municipal utility water to generate cleaning power. No external pressure unit or power package is used, and it requires no electricity or gasoline to run. A single trigger provides convenient air/water operation. Water can be turned off with the provided shut-off valve for air-only drying. It has a rugged, lightweight, ergonomic handle, a heavy-duty adjustable auxiliary handle and a stainless steel extension. It is virtually maintenance free, hot- or cold-water capable and ideal for mobile applications. It comes with an aluminum safety tip nozzle, 3/4-inch FNPT air inlet and a female garden hose connector for water. The unit meets OSHA standards. **800/482-7324; www.guardaircorp.com.**

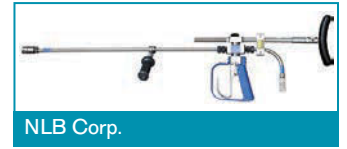


Guardair Corporation

valves are easy to use. A 12-gallon water tank is set up for continuous resupply from the garden hose. The unit comes with 250 feet of 3/8-inch thermoplastic jetter hose and a set of nozzles for penetrating, cornering and blind thrust. It also has a handy hose cart with two reels, one for 3/8-inch hose and one for a 50-foot jumper hose for remote jetting. **800/328-8170; www.mytana.com.**

WATER JET LANCE

The **NCG24-535** water jet lance from **NLB Corp.** is rated for applications requiring operating pressures up to 24,000 psi, and designed to reduce the chance of hose or fitting failure. It reduces stress on the inlet connection by eliminating the bend radius in the hose that supplies high-pressure water. Instead, it has an inlet tube with a 90-degree bend and a safety shroud that surrounds the hose where it attaches to the lance. The shroud complies with WJTA-IMCA recommended practices, as does the color-coded handle that identifies the lance's operating pressure. It comes with a one-finger latch to prevent accidental actuation, and a trigger that immediately dumps pressure when the operator pushes it forward. It also has a quick-change cartridge seal that can be replaced in the field in 60 seconds. Other ergonomic features include an adjustable shoulder stock and handgrip. **877/652-7796; www.nlbcorp.com.**



NLB Corp.

TRUCK-MOUNTED HYDROJETTER

The **O'Brien 7000-T** hydrojetter from **Hi-Vac Corporation** includes all of the features of the O'Brien 7000 series trailer jetter but is designed for true truck-mounted applications. It has flow ranges of 18 to 65 gpm and pressure capabilities of 2,000 to 4,000 psi. **800/752-2400; www.obrienmfg.com.**



Hi-Vac Corporation

PORTABLE WATER JETTER

The **Model KJ-3100** portable water jetter from **RIDGID** offers 3,000 psi working pressure to handle large commercial and industrial applications. It propels a highly flexible and lightweight hose through 2- to 10-inch lines, providing increased flexibility without reducing any of the strength. The hose blasts through sludge, soap, grease and sediment blockages, power scrubbing the line to flush debris away and restore drainlines to full, free-flowing capacity. The reel can be completely removed to ease loading, and the unit is maneuverable as the two-wheeled cart easily fits through standing doors and negotiates tight turns. The pulse action can be activated to easily negotiate difficult bends and traps. The reduced number of fittings, hoses and parts minimizes leaks and downtime. **800/769-7743; www.ridgid.com.**



RIDGID

RUBBER-TRACKED POWER CARRIER

The **Easement Machine** heavy-duty, all-terrain, rubber-tracked power carrier from **KWMI Manufacturing** is used in conjunction with a high-pressure hydraulic sewer cleaner. Its maneuverability allows access to easements, ravines, wooded areas, wetland areas, narrow alleys, and behind homes and buildings. It travels at speeds up to 5 mph, and gas models weigh 2,900 pounds, while diesel models weigh 3,200 pounds. It has a variable-speed removable reel, water-pressure gauge, reel guide with foot counter, narrow 46-inch design for tight areas, 3.5 psi ground-pressure tracks and a 27 hp Kohler engine. Options include 600 feet of 1-inch, 2,500 psi hose, hydraulic tilt bed, work light or plug-in spotlight, or a 26 hp Kubota diesel engine. **800/503-0076; www.easementmachine.com.**



KWMI Manufacturing

COMPACT TRAILER HYDROJETTER

The compact **Soldier** hydrojetter from **Spartan Tool** has pressures up to 3,000 psi at 12 gpm. It comes with noise-dampening engine shrouding on the 27 hp gas engine, a complete antifreeze system and 200-gallon water tank, and can clean up to 15-inch lines. It allows for simple towing and positioning on the job site, and when matched with the controlled rotation of a Warthog nozzle, is able to penetrate large root balls. It includes a washdown kit for job site cleanup, 75 feet of 1/4-inch hose for small drainlines and a hose protector for longer hose life. **800/435-3866; www.spartantool.com.**



Spartan Tool

TRAILER JETTER

The **Model 184** jetter from **Mongoose Jetters** has a tubular steel frame, corrosion-resistant pre-painted sub assemblies, state-of-the-art controls, a heavy-duty hose reel, high-quality diesel engine and a run dry pump. **800/323-1604; www.mongoosejetters.com.**



Mongoose Jetters

POWERFUL CART JETTER

The **MV80 Jet Pro Cart** from **MyTana Mfg. Company** delivers 8 gpm at 3,000 psi and is powered by a 24 hp Honda engine. The redesigned steel cart is more compact and the repositioned controls for the pressure unloader and pulseable



MyTana Mfg. Co.

TRUCK-MOUNTED SEWER JETTER

The truck-mounted **Ramjet** from **Vector Manufacturing** uses a Jet Rodder water pump to break up blockages and flush out debris in sanitary lines. Armed with up to 2,500 gallons of water in a stainless steel tank, it delivers flows of 60 to 100 gpm at 2,000 or 2,500 psi. The water



Vector Manufacturing

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IT'S YOUR NEW WORKHORSE.



We know time is money. So we built the new JT25 with more thrust/pullback, more stability and a more efficient rotational drive than the competition. Its simple, durable design also delivers more uptime with less upkeep, and all service points are in one time-saving location. You need more productivity and profitability. So we built more than a drill. We built a workhorse.

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pump is a single-piston, hydraulically driven, dual-acting pump that delivers a jackhammer action water flow, breaking through line blockages and scouring even the toughest caked-on debris from pipe walls. It can be configured with either a front- or rear-mounted hose reel. The auto wind hose guide allows hands-free operation from the control panel for a clean, tight wrap. 800/627-3171; www.vactor.com.

HOT WATER DIESEL PRESSURE WASHER

The **Hot Water Diesel Pressure Washer** from **Water Cannon** is powered by a Kohler KD 420ES electric-start 10 hp power plant with a 12-volt self-contained electrical system. The portable four-wheel push bar frame boasts 13-inch no-flat foam-filled tires. The efficient Beckett 12-volt DC oil-fired burner creates a 118-degree temperature rise. The EZ Series general triplex ceramic plunger pump delivers 4 gpm and 3,200 psi. Options include a 50-foot commercial grade hose, trigger gun, wand, downstream chemical injector and quick-connect nozzles. 800/333-9274; www.watercannon.com.



Water Cannon

COMPACT JETTER

The **EcoMaster E 70Y 1000/17 Classic** compact jetter from **Woma Corporation** has a 40 hp electrically driven motor that delivers 4.5 gpm at 14,500 psi. It is ideal for cleaning concrete-molded parts, formworks and steel structures, as well as for surface preparation. Its compact, robust design can withstand the everyday operational demands required on construction sites and industrial environments. The unit is simple to operate and offers low and easy maintenance. Accessory packages are available to tackle a broad range of cleaning applications in the industrial field. 800/258-5530; www.womacorp.com.

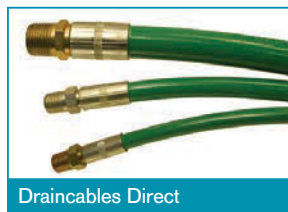


Woma Corporation

HOSES

REPLACEMENT JETTER HOSE

Replacement jetter hoses from **Drainables Direct** range in size from 1/8- to 1/2-inch ID in lengths from 25 up to more than 500 feet. The green high-abrasion and fungus-resistant hoses have a seamless polyester tube inner core and braided high-tensile synthetic fiber reinforcement for durability. They are recommended for use with all high-pressure sewer jetter equipment up to 4,000 psi. Custom hoses are also available up to 1 inch ID, including a wide range of psi ratings. 800/421-4580; www.drainables.com.



Drainables Direct

HIGH-TEMPERATURE HOSE

High-Temperature Hose from **Piranha Hose Products** withstands temperatures up to 190 degrees F for cold, difficult jobs encountered in residential and industrial sewer cleaning applications. Hoses are currently available in Series LLGR green-covered 4,000 psi hoses, ID sizes 1/4-, 3/8- and 1/2-inch and Series LLBU blue-covered 3,000 psi hoses in 1/2-inch ID size. 800/250-5132; www.piranhahose.com.



Piranha Hose Products

HIGH-POWER PRESSURE WASHING HOSE

The **Goodyear Gauntlet** pressure washing hose line from **Veyance Technologies** is ideal for high-power water release. The abrasion-resistant cover is ideal for washdown service on the job site or in the factory, where intensive cleaning is a must. Rated up to 250 degrees F, it is available with durable synthetic rubber covers and RMA oil-resistant compounds. The inside and outside diameters of the hose end are gradually tapered, forming a powerful nozzle, with reinforcement extended all the way to the end. For extra security, a rubber end cap is added to protect and properly shape. 800/235-4632; www.goodyearrep.com.



Veyance Technologies

NOZZLES

CENTERING DEVICE

Manufactured from an aerospace elastomer, the flexible **Cnt-r-Kut** centering device from **Arthur Products** conforms to damaged or deformed lines, and can easily be trimmed in the field to fit virtually any line from 2 to 8 inches in diameter. Simply attach a 3/8- or 1/2-inch npt hose to one end, and a 3/8- or 1/2-inch npt nozzle to the other end. 800/322-0510; www.arthurproducts.com.



Arthur Products

ROTATING NOZZLE

The **Golden Jet Bulldog** rotating nozzle from **Enz USA** operates with both recycled and freshwater. An integrated oil-free braking system results in low wear and tear operation, and in a controlled number of rotations. It is available in 1/2- to 1 1/4-inch connecting threads. The cleaning pipe diameter range starts from 2 1/2- through 24-inch pipe, depending on which nozzle specification suits the equipment. 877/369-8721; www.enzusainc.com.



Enz USA

ROTARY IMPINGEMENT TANK CLEANING MACHINE

The **EZ-8** automated rotary impingement tank cleaning machine from **Gamajet** eliminates time-intensive and hazardous manual cleaning. Not only is confined-space entry eliminated, 85 percent of water and chemical usage can be recovered, as well as 80 percent of the time spent cleaning. It is compact in design and easily maneuverable at 11 inches tall and 14 pounds, allowing for space saving while maintaining the impact, durability and range required for optimal impingement tank cleaning. It is available with directional nozzles that concentrate the cleaning power downward, enabling grease and other debris at bottom corners of tanks to be blasted away quickly and more efficiently while using the least amount of resources. It operates between 50 and 300 psi at 50 to 120 gpm, has a cleaning range between 35 and 50 feet, and completely cleans tanks in 8 to 12 minutes. 610/408-9940; www.gamajet.com.



Gamajet

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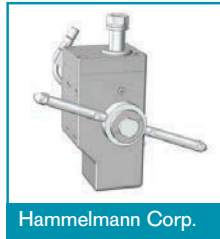
IBAK has been working for over 50 years to make your job safer and give you less headaches at the end of the day. Our pipeline inspection equipment is *not* the cheapest equipment you can buy, but we will guarantee it is the highest quality, most reliable investment you can make. We have the industry's largest research and development team with over 15% of IBAK devoted entirely to new product development. Adherence to core principles of quality and technological innovation have driven IBAK to remain the industry leader since we invented sewer cameras in 1957. Call us or visit www.rapidview.com to find a dealer near you!



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AUTOMATIC TANK CLEANER

The **2.5D** automatic tank cleaner from **Hammelmann Corp.** removes deposits including hardened materials from tank internal walls at pressures up to 23,150 psi and flows exceeding 200 gpm. It is ideal for efficient cleaning in long vessels and towers when the rotary motion of the standard 3-D tank cleaning unit is not useful. The swing angle of the nozzle holder has optional adjustments to 35 or 83 degrees. The swing angle of the unit around its axis is optionally set at 36 or 81 degrees. It operates using high-pressure water, with the nozzle arms rotating due to the reaction force of the water jets emitting from the nozzles. This rotational motion is transferred via a built-in drive and reduction gear, which in turn rotates the cleaner around its vertical axis. By rotating in two axes, the jets can reach all parts of the tank interior. The rotation speed is controlled by an adjustable induction brake magnet. **800/783-4935; www.hammelmann.com.**



Hammelmann Corp.

VERSATILE SEWER NOZZLE

Multi-Global series sewer nozzles from **NozzTeq** have replaceable orifices similar to the company's Ice Bear design. They have a crisscrossing front jet pattern for clearing grease, debris and ice blockages. They can be configured with up to four different front jets (or no front jets) for general sewer cleaning or specific types of sewer obstructions. They also have been used for hydroexcavation with the rear orifices blocked and only penetrating orifices in the front. By replacing orifices as needed, overall nozzle life can be extended. Laminar flow is preserved from truck to nozzle end, producing more powerful jet streams at lower pressure to extend the life of jetting equipment. **866/620-5915; www.nozzteq.com.**



NozzTeq

ROTARY NOZZLE

The **Warthog WGR Magnum** high-performance rotary nozzle from **StoneAge** is designed to operate a long time between maintenance intervals. Its speed control and seal technology improve its tool life while reducing maintenance for better operation in harsh environments. It handles recycled water, retaining jet quality under poor water conditions. The streamlined design allows for better forward and reverse movement through pipe. Hardened steel centralizer fins can be replaced individually as wear occurs, providing further protection. **866/795-1586; www.stoneagetools.com.**



StoneAge

CONTROLLED-ROTATION NOZZLE

The **Turbinator** high-performance rotating nozzle with controlled rotation speed from **USB – Sewer Equipment Corporation** is operated with high-pressure water that drives the nozzle and creates vibrating cleaning jets. The controlled rotation occurs from the turbine in conjunction with the jets in the head. Durable construction and the specifically engineered housing design provide protection against impact, preserving the internal parts that require no lubrication. Applications include grease, scale, crusts and roots. It can be used with fresh or recycled water. **866/408-2814 www.usbsec.com.**

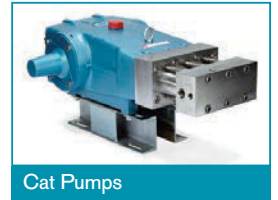


USB - Sewer Equip. Corp.

WATER PUMPS

TRIPLEX PLUNGER PUMP

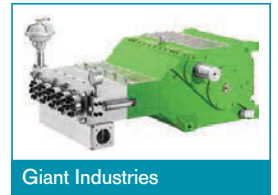
The model **6810** triplex plunger pump from **Cat Pumps** offers a flow rate of 10 gpm and pressure to 10,000 psi at 600 rpm. Concentric, high-density, polished, solid ceramic plungers provide a true wear surface and extend seal life. V-packings and low-pressure seals are lubricated and cooled to increase service life. Low upswept volume maximizes volumetric efficiency that reduces energy costs while supplying consistent flow. Block-style, stainless steel manifolds are designed for strength and corrosion resistance. A chrome-moly crankshaft provides strength and surface hardness. Oversized crankshaft bearings withstand high loading capacity leading to longer bearing life. **763/780-5440; www.catpumps.com.**



Cat Pumps

COMPACT QUINTUPLEX PUMP

The **K80000-5G** compact quintuplex pump series from **Giant Industries** is capable of producing 31 gpm at 50,000 psi with 1072 input hp. Designed for either electric motor or diesel engine power input, the pump allows for direct-drive operation, eliminating space-consuming belts and pulleys. Standard options are force-fed lubrication, oil-cooling system and easy-to-change valves and seals. The series has a flow range up to 920 gpm. **800/633-4565; www.giantpumps.com.**



Giant Industries

GASOLINE CONTRACTOR PUMP

The **2AUW** gasoline-engine-driven contractor pump from **Goulds Water Technology - a xylem brand** is lightweight, portable and compact. It has a Subaru Robin EX series engine with overhead cam design, die cast aluminum casing, low-oil shutdown and an automatic decompression system. It is equipped with 4.3 to 6 hp and has a trouble-free mechanical seal and fabricated carry handle base. **866/325-4210; www.goulds.com.**



Goulds Water Tech.

TRIPLEX PLUNGER PUMP

High-pressure triplex plunger pumps from **Moro USA** produce a smooth liquid flow up to a maximum water temperature of 140 degrees on standard pumps (higher temperature ratings available). The double projection drive shaft can be operated by pulley, flexible joint or cardan shaft. The pump includes ceramic plungers, double pressure packings, vertical-fitted valves, water spill venting and oil-bath mechanical parts with splash lubrication. They are available with a maximum flow rate of 128 gpm and maximum pressure of 22,000 psi. Versions include stainless steel or aluminum-bronze fluid ends. **800/383-6304; www.moroussa.com.**



Moro USA

WATER BLAST PUMP

NX-365 and **NX-600** all-in-one water blast pumps from **PSI Pressure Systems** offer pressures from 8,000 to 40,000 psi. The complete conversion from 10,000 to 40,000 psi takes 10 minutes and can be done by one person, with no torque wrench or bolts. The unit is protected from over-pressurization, and the operator must use the same hose rating as the pump pressure rating. **855/774-5055; www.psi pressuresystems.com.**



PSI Pressure Systems

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Vacall's new High Dump option allows the debris tank to raise 76" above ground level and shift 21" beyond the bumper – an industry best accomplished with remote control. You get productive, no-spill debris dumping into on-site roll-offs or municipal dewatering containers. AllJetVac combination sewer cleaners and AllExcavate models also feature high performance jetting and vacuum with just one engine – a "Green That Works" advantage that slashes fuel consumption, emissions and service requirements. For details and a demo, visit our web site to find your nearest authorized dealer.

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HOSE REELS

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Compact, lightweight **1500 Series** hose reels from **Hannay Reels** handle long lengths of hose with manual- and power-rewind options. They are suitable for pressure washing and steam cleaning applications. The heavy-duty reel can accommodate high-pressure liquids with temperatures from 20 to 400 degrees F. It also includes a cam-lock drag brake and a spring-actuated pin lock. The chain and sprocket drive are powered by an electric, hydraulic or compressed air motor. **877/467-3357; www.hannay.com.**



Hannay Reels

SWIVELING HOSE REEL

Series PW7000 hose reels from **Reelcraft Industries** are fitted with a nickel-plated, carbon steel Aflas sealed swivel specifically for pressure wash applications. The reel is able to hold up to 50 feet of 3/8-inch ID hose. Its rigidity, compact design and powder-coat finish make it ideal for all-weather and truck mount applications. The guide arm adjusts to three positions for ceiling, wall, truck, bench or pit mounting. It comes in the company's standard red, with a number of other colors available upon request. **800/444-3134; www.reelcraft.com.**



Reelcraft Industries

SAFETY EQUIPMENT

PROTECTIVE GLOVES

ProOperator protective gloves from **TST Sweden AB** are tested and certified for pressurized liquids, such as water and hydraulic fluid. They withstand the same levels of pressure as the company's other ProOperator clothing—500 bar for rotary and flat jet, and 200 bar single jet. They are waterproof and have a coating to provide friction for a secure grip on tools. They also have high ratings for cut-resistance, abrasions, tears and punctures, making them ideal for work in harsh environments. The gloves are made using durable Dyneema fiber and have a shelf life up to three years. **www.tst-sweden.com.**



TST Sweden AB

INDUSTRIAL VACUUM TRUCKS

TRUCK VACUUM EXCAVATOR

The **FXT50** truck vacuum excavator from **Ditch Witch** mounts directly to a truck's frame rails, allowing the system to flex independently of the truck, providing stability and confidence. Ditch Witch dealers will mount the truck vacuum excavator to the single-axle chassis of customers' choosing and can customize the truck with toolboxes and other support equipment, such as a 1,020 cfm blower and 3,000 psi/5 gpm water system. It is a quiet unit that offers ideal filtration. **800/654-6481; www.ditchwitch.com.**



Ditch Witch

INDUSTRIAL HYDROEXCAVATOR

The **HV56** hydroexcavator from **GapVax** has a 15-cubic-yard debris body and water tank options ranging from 350 to 1,200 gallons. Its PD vacuum pump is rated at 3,500 cfm with 28 inches Hg. The design prolongs the life of the filter bags and eliminates the threat of material entering the vacuum pump. The tailgate is fully opening, with a field-adjustable hinge and four fail-safe, individually adjustable locks ensuring a complete seal. Options include a cold-weather package, sludge pump, auger system, body pressurization system, wireless remotes, high rail package, washdown system and stainless steel body. **888/442-7829; www.gapvax.com.**



GapVax

INDUSTRIAL VACUUM LOADER

The **Guzzler NX** industrial vacuum loader from **Guzzler Manufacturing** provides total operator control over working speed. Its powerful Robuschi blower delivers 5,435 (free air) cfm with vacuum capabilities up to 28 inches of mercury. The large, injection-cooled blower allows the operator to load more material at a lower engine rpm, conserving fuel and reducing noise levels, eliminating the need for a sound shroud. The cyclone and bag houses are configured together to maximize efficiency and reduce overall truck weight without sacrificing loading capacity. An increased filter area, combined with offline cleaning, extends bag life while forcing carry-over back to the debris tank. **800/627-3171; www.guzzler.com.**



Guzzler Manufacturing

VERSATILE VACUUM LOADER

The **King Vac** vacuum loader from **Keith Huber Corporation** combines deep vacuum loading and high air conveyance. It can perform multiple tasks such as hydroexcavation, hazmat response, jetting and general industrial cleaning. It has a 3,000-gallon carbon steel tank with 5/16-inch shell for long life, 20-inch top manway, hydraulically operated full-opening rear door, hydraulic tank lift, power via the transfer case, 3,700 cfm liquid ring vacuum pump, 6-inch discharge and intake valve with internal standpipe, rear work lights, LED running lights, backup alarm and grounding reel. Options include ASME/DOT 412 certification, high-pressure jetting systems with integral water compartments, a Huber Lock rear door, stainless steel tank and wetted stainless parts, auxiliary transfer pump and a top-mounted hydraulically operated 6-inch boom. **800/334-8237; www.keithhuber.com.**



Keith Huber

DURABLE VACUUM LOADER

The **Supersucker HDX** industrial vacuum loader from **Super Products** has a water system that includes a standard 600-gallon-capacity water tank and a hydraulically driven pump that delivers up to 14 gpm and pressure up to 3,000 psi. Its 8-foot articulating boom rotates 330 degrees and reaches 27 feet, and has the ability to pivot 45 degrees upward and 25 degrees downward. To ensure thorough removal of material, an 8-inch positive-displacement vacuum system provides airflow to 5,800 cfm and 28 inches of vacuum. Single-mode filtration enables the loading of both wet and dry material with no changeover required. The durable collector body is constructed of 1/4-inch steel with a payload capacity of 18 cubic yards. A heavy-duty, telescoping double-acting cylinder provides a 51-degree dump angle for thorough unloading. It is available with the Acculevel load sensor system. **800/837-9711; www.superproductsllc.com.**



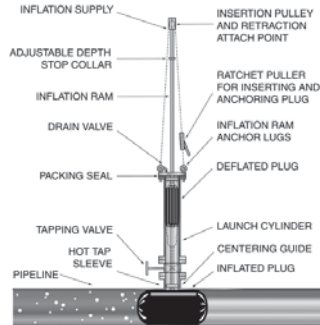
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The F4 Slope hydrovac from Tornado Hydrovacs holds 13 cubic yards of mud and more than 2,100 gallons of freshwater. It has a water tank from which to excavate, a mud tank where excavated spoils are held, a water pump, a boiler to heat the water, and a 3,600 to 6,300 cfm positive displacement vacuum blower to pull spoils to the tank via a boom. The boom has a 342-degree rotation and a 26-foot reach. All critical components are housed in an insulated and heated aluminum van body. Its mud sweep empties the tank without hoisting, which eliminates the dangers of dumping on uneven ground and around overhead power lines. 877/340-8141; www.tornadotrucks.com.



Tornado Hydrovacs

FILTERING VACUUM LOADER

The Industrial Vacuum Loader from Vac-Con was designed with a filtration system to handle lightweight dry material. It has ideal airflow efficiency as standard equipment and options such as Hi-Dump and the Automatic Material Return System. Single-mode machines can recover wet or dry material with up to 28 inches Hg. Positive displacement blowers are capable of pulling material as much as 700 feet. It is available with a hydroexcavation package, which adds a powerful, high-pressure water system that works with the vacuum system to excavate around sensitive underground utilities, locate underground systems and excavate in areas with limited access. 888/491-5762; www.vac-con.com. c



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INDUSTRY NEWS

Super Products names vice president

Super Products promoted Dan Koziczkowski to vice president of sales and marketing. He will oversee internal and field sales staff, manage and support the company's municipal distributor network, and identify growth opportunities.



Dan Koziczkowski

Sprayroq names certified partners

Sprayroq named Certified Foundations of Lakeland, Fla., and Empire Solutions of Hannon, Ontario, as members of its Sprayroq Certified Partner network. Certified Partners complete two weeks of training in the application of Sprayroq structural and protective coatings and undergo an annual performance review.

Service Spring names directors

Service Spring Corp., parent company of Drincables Direct, promoted Rankin Walkup to director of strategic operations and Kaley Wichman to director of marketing.



Rankin Walkup



Kaley Wichman

TRIC Tools attends commerce seminar

TRIC Tools participated in the U.S. Department of Commerce's fourth annual "Make it in America; Sell it to the World" seminar in Hayward, Calif. Michael Lien, director of operations, represented TRIC.

Resiplast hires national sales manager

Resiplast US named Ed Paradis national sales director for the United States and the Caribbean.



Ed Paradis

HammerHead to distribute Picote Cutting Systems

HammerHead Trenchless Equipment will distribute Picote Cutting Systems in North America, including products to clean pipe and reinstate branches from 2 to 6 inches in diameter.

Ditch Witch names top dealers

Ditch Witch recognized its top dealers with membership in the 2013 Crescent Club Top 10. Club members include Ditch Witch of Oklahoma & Arkansas, Ditch Witch of Minnesota, Witch Equipment Company, Ditch Witch Central California, Ditch Witch Southwest, Ditch Witch of South Louisiana, Ditch Witch of Virginia, Ditch Witch Sales of Michigan, Brandt Tractor Ltd. and Ditch Witch of North Dakota. **c**

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PRODUCT SPOTLIGHT

Pneumatically controlled wet-out table adds precision

By Ed Wodalski

The pneumatically controlled wet-out table from HammerHead Trenchless Equipment features a powered conveyor system, enabling rollers to be raised or lowered to a preset gap. Variable-speed controls and forward and reverse operations provide ease of installation. The table (30 inches wide, 43 inches high and 57 inches long) is designed for 2- to 12-inch diameter liners. A roller bed attachment is available.

“One of the most unique features is the pneumatically controlled calibration systems,” says Ryan Boldan, lateral product manager for HammerHead Trenchless Equipment. “Basically, the rollers are raised or lowered to a preset gap gauge, which makes for faster operation when you’re putting the liner in to wet out or raising or lowering it to the right height.”

Adjustments are made with the touch of a switch that raises or lowers rollers, providing greater gap accuracy and less chance of human error than hand cranking.

“As a CIPP contractor it increases your productivity,” Boldan says. “You get better wet-outs. Your wet-out product is going to be the



highest quality as far as resin impregnation and consistency in the liner.”

Other features include adjustable downward pressure, lockable wheels and gap gauge replacement set (6, 8, 10 mm). 800/331-6653; www.hammerheadtrenchless.com.



1



2



3



4

1 OPTRONICS LED SERIES LAMPS

ONE Series LED lights from Optronics International are available in single-diode 4-inch round and 6-inch oval stop, tail and turn lamps. The lights meet FMVSS 108 photometric requirements for visibility and safety. 800/364-5483; www.optronics.com.

2 MCELROY SOCKET FUSION TOOL

The 15-pound Spider 125 socket fusion tool with universal clamping from McElroy Manufacturing is designed for polypropylene pipe installation in overhead, vertical and tight work spaces. The clamping feature eliminates the need for inserts. An assortment of heaters and heater adapters for 63 to 125 mm (2.48 to 4.92 inches) diameter pipes are available. 918/836-8611; www.mcelroy.com/fusion.

3 ECCO WIRELESS REVERSING CAMERA

The EC5605-WK wireless reversing camera system from ECCO Safety Group includes 5.6-inch LCD touch-screen color monitor and CMOS color infrared camera. The system delivers high-quality images in low light conditions and is expandable up to four cameras. 800/635-5900; www.eccogroup.com.

4 RITAM TECHNOLOGIES SUMMIT RENTAL SYSTEM-PLUS

The Summit Rental System-Plus edition software from Ritam Technologies features 36 billing methods, including daily, weekly, monthly and special events. The system can be modified according to needs by upsizing to Pro, Deluxe or Premium editions to add routing, mapping and inventory control. 800/662-8471; www.ritam.com. **c**



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- Aluminum Case

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w/Built in 512HZ Sonde Transmitter

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



Layflat Pipe Inspection Camera

FB-PIC3588A/3588BT

- 7" 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

- 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:

- 400FT Cable & Reel w/Meter Counter
- Pan-Tilt 360°/180° Color Waterproof Camera Head w/Manual Zooming
- 10 inch LCD Monitor w/DVR & MIC.
- Recording with USB Flash Drive & SD Card

NEW



Portable Color Sewer/Drain Camera

FB-PIC3188A/3188DN

Specs:

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- 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)



Mid-Range Pipe Inspection Camera

FB-PIC3388MT

- 200FT Cable & Reel w/Meter Counter
- Self Leveling Camera Head w/Built in 512HZ Sonde Transmitter
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- Color Camera Head w/Built in 512HZ Sonde Transmitter
- 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
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- Recording with USB Flash Drive or SD Card
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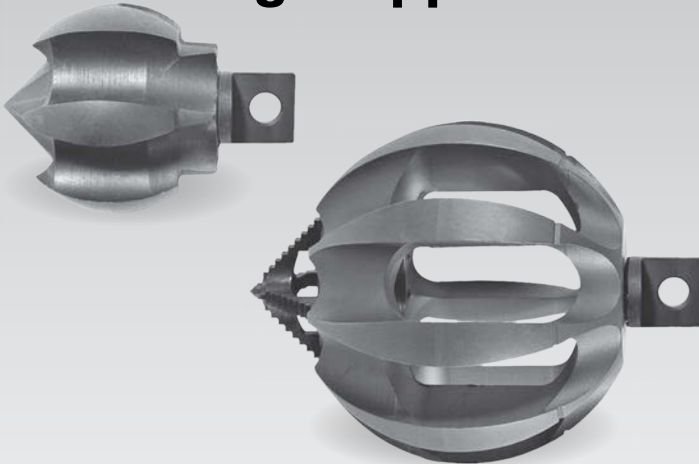
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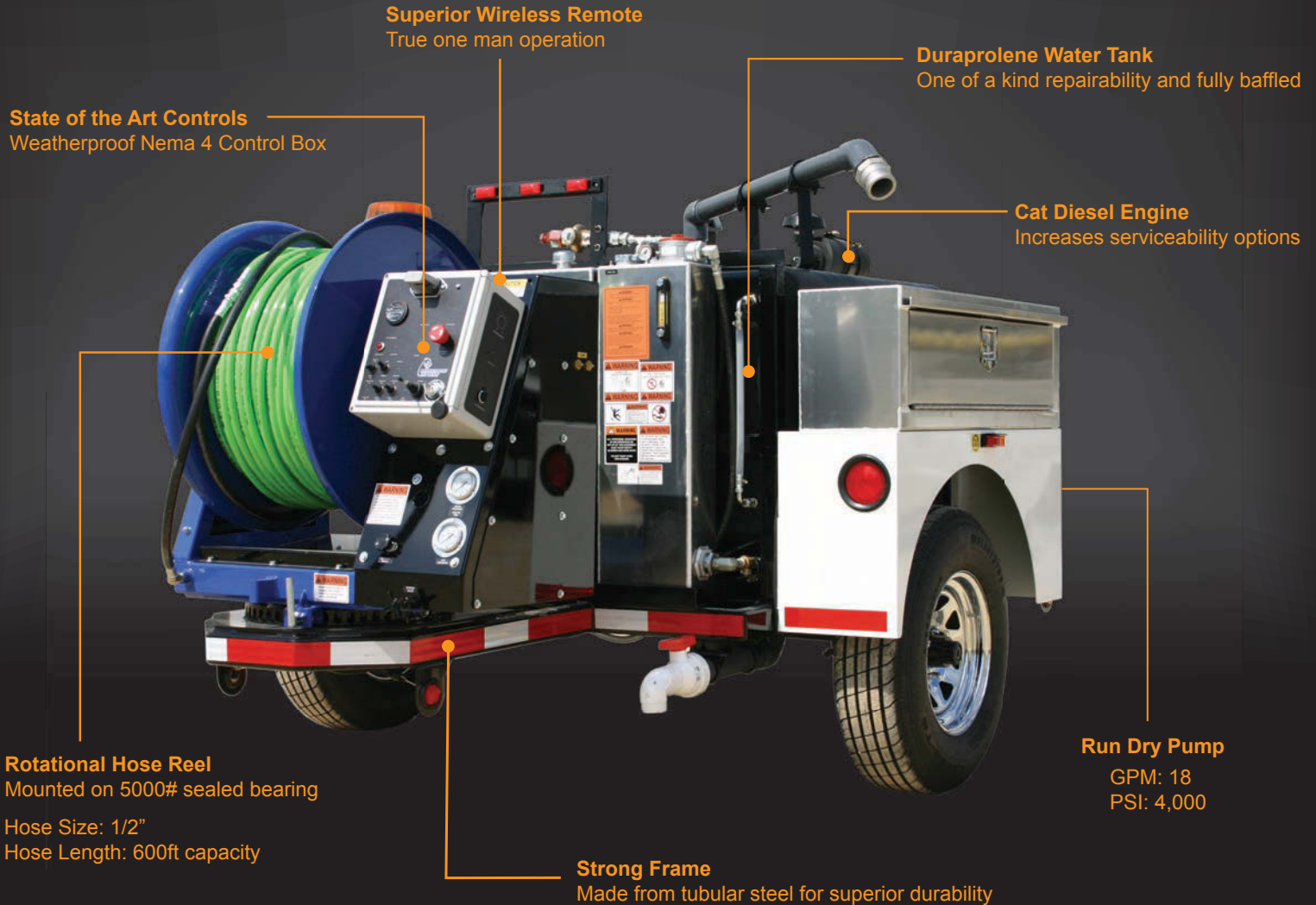


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