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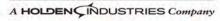
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Network connectivity allows remote diagnostics and maintenance, as well as automatic network connectivity allows remote diagnostics and measure defect size. In the latest undate adds tools to measure defect size. Network connectivity allows remote diagnostics and maintenance, as well as automatic firmware updates. (The latest update adds tools to measure defect size, flow capacity, and lateral angle, plus macro for one-button crawler return.)

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August 2012

features

12 Diamond in the Rough By Marian Bond



On the cover: Teri Marinello owns and operates Fletcher Sewer & Drain in Ludlow, Mass. New equipment, expanded services and an aggressive advertising campaign have kept the company moving forward despite some setbacks along the way. (Photography by Brian McDermott)

30 The Heart of the Matter

CIPP offers new breath of life for Illinois plumbing contractor.

By Marian Bond

44 Tech Perspective: A High Level of Success

Getting the most out of your combination unit is as much about the people as the equipment.

By Jim Aanderud

54 Waterblasting/Waterjet Directory

departments

10 From the Editor: Defining Your Future

Everyday decisions can play a key role in the success of your business.

By Luke Laggis

22 Better Business: Emotional Intelligence

You know you're smart, but how does your EQ stack up? By Lee Ellis

26 Money Machines: Ahead of the Game

Pipe bursting system allows contractor to offer customers more cost-effective solutions to rehabbing failing laterals.

By Ken Wysocky

40 Safety First: Protect Yourself

Fatal jetting accident underscores the need to be vigilant when it comes to safety.

By Luke Laggis

50 Tough Job: Flown-in Lining

Contractor uses blown epoxy lining technology to repair waterlines at U.S. Navy center in the Bahamas.

By Scottie Dayton

60 Money Manager: Let the Seller Beware

When it's time to sell your business, protect yourself with these 10 tips for a clean and trouble-free transfer of ownership.

By Fred S. Steingold

64 Product Focus: Waterblasting and Waterjet Cleaning and Accessories

By Briana Jones

74 Case Study: Waterblasting and Waterjet Cleaning and Accessories

By Scottie Dayton

76 Product News

Product Spotlight: Electric, gas jetters combine portability and maneuverability By Ed Wodalski

80 Industry News

COMING IN SEPTEMBER

Special issue: Mainline Sewer Inspection

- Profile: LiquiForce Services, Kingsville, Ontario, Canada
- Money Manager: Piercing the corporate veil
- Profile: Lake County Sewer Company, Willoughby, Ohio

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August 2012 Advertiser Index
All Jetting Technologies, Inc
Amazing Machinery, Inc15
Aqua Mole Technologies, Inc73
Aries Industries, Inc
Bandlock Corp
Bowman Tool Co. & Systems
Cable Center, The
Cam Spray
Central Oklahoma Winnelson81
Chempure Products Corp82 Cherne Industries, Inc39
Clog Hog40
TORRUS (VASER) THE MORESSCRAWS CHOICE
Coast Manufacturing
The General or Indiana of The General or Indiana or In
CUES, Inc
D
Draincables Direct
Dialicables Direct

E
Easy Liner
(Gadmon Industries)
Easy CAMT
Par Pa
Electric Eel Mfg48
electroscan
Electro Scan, Inc90
Envirosight
anz Musa inc
Enz USA, Inc62
F
SOLUTIONS WITH MINING
F. S. Solutions53
G
Gamajet Cleaning Systems69
CapVax
GapVax, Inc91
GARDNER DENVER
Gardner Denver Waterjetting47
General Programms
General Pipe Cleaners/
General Wire Spring2 GORLITZ SEWER INC.
Gorlitz Sewer & Drain, Inc31
GPM Pump & Truck Parts25
GUZZLERNX
Guzzler Manufacturing, Inc13
Hammelmann Corp28
Hannay Reels' The real leader
Hannay Reels
HEVIC'
Hi-Vac Corporation
j.
Jetstream sk
Jetstream of Houston20, 29, 36
K
Ken-Way Corporation73

L
LaPlace Equipment Co
M
MSD
Milwaukee Rubber Products29
47
MyTana MyTana Mfg. Company, Inc35
N
NAWT
NAWT, Inc72
NLB Corp.
NLB Corp
NozzTeq.
NozzTeq, Inc20
Nu Flow Technologies, Inc42
0
Oceanquip, LLC
Oceanquip, LLC20
PAT'S
Pat's Pump & Blower, LLC77
Facs Fullip & blower, LLC.
Perma-Liner Industries
Petersen Products Co72
PIPELOGUE
0
PipeLogix, Inc61 Piranha Hose Products24
PrimeLine Products, Inc80
Pulsar 2000 Line Tracer
Pulsar 2000, Inc74
R
IBAK
RapidView IBAK North America45
Ralech
Ratech Electronics, Ltd62
REELCRAFT
Reelcraft Industries, Inc38
RIDGID7, 23
FS Technical Services onc.
RS Technical Services Inc. 61

S	
₹SCA	
Safety Corporation of America	24
Committee of the Commit	
grantil .	74
Scooter Video Sewer Equipment Co. of America	/1
	03
SOUTHLAND SOL IN IN	
Southland Tool Mfg., Inc	37
SPARTAN	
Spartan Tool, LLC	
SPIR STAR	77
CTANDARD	
Standard Equipment Company	88
STONEAGE	
	1 75
StoneAge, Inc Stutes Enterprise Systems	4, /3
otates enterprise systems	T. mann
T	
T3T 100L5	
T&T Tools, Inc	01
TRIC Tools, Inc.	47
IRYIEK	10
TRY TEK Machine Works, Inc	10
U	
USJETTING	
US Jetting, LLC	11
v	
VAC:CON	
Vac-Con, Inc	3
Vacall	
VIVAX METROTECH	
Vivax-Metrotech Corp	52
VSI Rentals.	
(3) ((c)((d)),	
W	
Westmoor Ltd	52
WJTA IMCA	
WJTA-IMCA	33
Wohler USA, Inc.	
Woma Corporation	82
M. dosesta as	0.4
Marketplace	
	00
国的ながで	1
是一种	
TOTAL TO HERE!	7



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Defining Your Future



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EVERYDAY DECISIONS CAN PLAY A KEY ROLE IN THE SUCCESS OF YOUR BUSINESS

BY LUKE LAGGIS

efining moments. We all experience them. They're instances where the decisions we make and actions we take have a long-lasting impact. There is no way of knowing which situations will help define our lives or careers; they often call for quick decisions or immediate action. They're about how we respond to a given problem or opportunity, and they reveal much about who we are and what we'll become.

The folks at Valentine Plumbing & Sewer in Cortland, Ill., profiled in this issue of Cleaner, know a thing or two about defining moments. Bruce Foster had been in business for 30 years when he took on a new business partner, Tom Bowman, in 2009. Together they formed Valentine Plumbing, focused on cured-in-place pipe repair.

Foster was also teaching continuing education classes at the time, and his business was winding down. The decision to take on a partner had a huge impact and redefined the business. In the few short years since he and Bowman joined forces, their business has grown tremendously. If Bowman hadn't taken the chance, Valentine Plumbing would be a much different company.

Fletcher Sewer & Drain of Ludlow, Mass., also profiled in this issue, is another great example of embracing opportunity and allowing success to define the business. Company president Teri Marinello cites two defining periods in her company's history. The first came after a call to find a ring that had been lost down the drain. The call demonstrated the importance of new technology and led to the realization that each service van needed an inspection camera. That, in turn, opened up opportunities for expansion.

The thing about defining moments is you never know when they will present themselves, and you might not realize the significance until well after the fact. That's why it's critical to follow proper protocols, conduct business in a professional manner and make sure the job is done right the first time, all the time.

The second period began with customers asking for higher-level video inspection. In response, the company added a fully equipped CCTV van, began performing mainline sewer inspections for a wide range of projects, and built a larger client base. It was a major expenditure, but it was the right move, and the company hasn't looked back.

The thing about defining moments is you never know when they will present themselves, and you might not realize the significance until well after the fact. That's why it's critical to follow proper protocols, conduct business in a professional manner and make sure the job is done right the first time, all

It may just be that the nice old woman you go out of your way to help gives your name to her son, who manages several large apartment complexes and is looking to sign a service agreement with a new contractor.

The defining moment may come when you have to decide whether to take a risk and add a combination truck to go after larger municipal contracts. Or it could be in how you respond to a natural disaster in your community. It could turn out to be one of many decisions you make on a daily basis. That's why it's important to always to keep an eye on the future.

I hope these stories can help inspire the next phase of your business. Good luck, and enjoy this month's issue.





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SEIZING OPPORTUNITIES AND INVESTING IN NEW TECHNOLOGY PROPELS FLETCHER SEWER & DRAIN'S GROWTH AND SUCCESS BY MARIAN BOND

There are two defining periods in the overall operation of Fletcher Sewer & Drain Inc., according to company president Teri Marinello. The company has served western Massachusetts and parts of Connecticut for 27 years, but the first defining period began in 1996.

"That was the year we truly began to grow and to see the opportunities for expansion, all due to the one camera inspection unit we had at the time," says Marinello. "We had received a phone call late one night, and a man's wife had flushed her diamond ring down the toilet. We went out and saved the day. We found the ring in the lateral before the mainline sewer using our camera. That was the point where we really realized that we wanted to have a camera on each of our service vans. At that time we had three on the road."

Marinello says finding the diamond opened their eyes to the importance of updated equipment and being in touch with the newest technology. "We have made that a part of our standard. We can say we are state of the art as we move forward."

The second defining period for the company began in 2009 when they added a fully equipped CCTV van. Project manager Dave Lesure, who has been with Fletcher Sewer & Drain for seven years, likes to refer to 1996 as their "industrial revolution," and 2009 as their "atomic age." Before acquiring the

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(9)



ABOVE: A Standard Enz cleaning nozzle was used to clean storm sewers at Six Flags New England in Agawam, Mass. RIGHT: With the Batman roller coaster in the background, technician Michael Scarfe unwinds the hose from a Harben Hydrojetter on the Six Flags cleaning job.

new survey equipment, they had operated with push cameras but realized they needed more capability.

"We were getting requests from engineering companies and construction companies to provide a higher level of video inspection," says Lesure. "We realized we wanted the camera truck and a state-of-the-art video system. We started looking around because we didn't want to miss the boat with this technology."

"It was a major investment for us. Joe was an excellent salesman, and he wrote letters to restaurants and apartment complexes pushing a preventive maintenance agenda." Teri Marinello

Lesure says he and Marinello worked together to decide on the software that would work with the RapidView IBAK North America camera truck they selected.

"We contacted a variety of software companies to see what they offered, the ease of operation, and cost," he says. "We decided on PipeLogix Inc. as they provided what we and our customers wanted as far as survey reports, and it integrated into our system."

He says they didn't include mapping software because it was a function that would have been underutilized in their business.

"For every job, we hand a physical copy of the inspection to our client, and we retain a copy stored on our computer system hard drive," Lesure says.

The Video Survey Department with Fletcher Sewer & Drain has been in operation for over three years, enabling the company to perform mainline sewer inspections for a wide range of projects and develop additional clients. Working as a subcontractor, they surveyed 5,000 feet of storm drain lines on a MassDOT - Highway Division project. Again, as a subcontractor, working along with the



general contractor, they surveyed approximately 600 feet of 24- to 28-inch corrugated storm line that was on a railroad track.

Teri Marinello's son, Joe, and Lesure are the video survey team, and both have had Pipeline Assessment Certification Program (PACP) training. One or the other is always on board if another technician is involved. Most often they function together.

ALONG THE ROAD TO GROWTH

While the video survey van may go out once or twice a week - sometimes for up to two weeks on a lengthy project - the trailers and portable jetters used for drain cleaning work are in service every day.

"We got into jetting in 1997 after my husband, Joe, and Jim Fletcher attended the Pumper & Cleaner Expo and saw that this was another explosion in technology," says Teri. "It was a major investment for us. Joe was an excellent salesman, and he wrote letters to restaurants and apartment complexes pushing a preventive maintenance agenda. This really took off. In fact, we immediately hired one person as a full-time hydrojetter. Now, of course, all our technicians know how to use that equipment, as we have cross-training for all procedures."

Preventive maintenance for supermarkets and restaurants is a good selling point, particularly in areas where grease builds up frequently. With the jetter they can go in and jet those grease lines to open them up, limiting the number of emergency service calls throughout the year.

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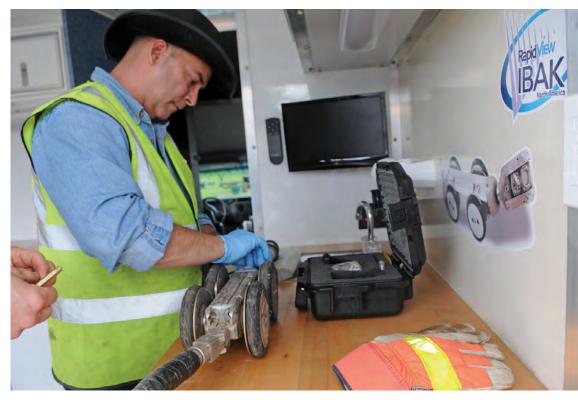
The company's jetting equipment includes a Harben 4018 DTK 300 E-180 trailer jetter, 300-gallon, 4,000 psi/18 gpm; a custom-built trailer jetter, 600-gallon capacity powered by a Kubota diesel engine with a 2,000 psi/39 gpm water pump by Giant Industries. Each trailer is equipped with multiple hose sizes, providing a wide variety of jetting capabilities. Portable jetters include a Mustang Model 1302, 1,300 psi/2.2 gpm; and a RIDGID KJ-1750 portable jetter, 1,750 psi/1.4 gpm.

Nozzles are from Enz USA Inc., Shamrock Pipe Tools Inc., RIDGID, and the Warthog by StoneAge Inc.

Their camera truck is a 2009 Ford E-350 16-foot box truck with separate office and operations areas that include two viewing sections to allow for instant review. The KRA65 system from RapidView IBAK North America includes the BE-3 controller and offers 650 feet of continuous inspection in 4- to 30-inch pipes. They use Muni-XS PACP software by PipeLogix Inc., and have multiple-format recording capability.

The company operates from a 4,500-square-foot facility in an industrial park. All technicians take their vans home at the end of the day, while the camera van and jetters are parked inside the building.

There are six service vans: four Chevrolet Express 3500 extended-wheel-base vans, and two Nissan NV 3500 HD cargo vans. Each carries a RIDGID standard SeeSnake color camera system and a



Project manager Dave Lesure prepares a RapidView IBAK tractor and camera for a storm sewer inspection in Ludlow, Mass. Fletcher Sewer & Drain's video system is installed in a 2009 Ford E-350 box truck.

RIDGID NaviTrack Scout Locator. They also have one RIDGID Mini SeeSnake Plus camera and other standard drain cleaning equipment.

The customer base is 50 percent residential and 50 percent commercial and municipal, including 20 or more property management and maintenance companies that represent major malls and their chain stores, and apartment complexes. Fletcher Sewer & Drain also does a lot of drain cleaning and jetting work for supermarkets. They hold a maintenance contract with one supermarket chain with 62 stores from western Massachusetts down to central Connecticut. This particular service takes place at night in order to avoid conflict with shoppers.

"It starts at the dispatch desk. Often a customer will say something that makes sense to them, but they're not giving the information we need. It's almost like translating a different language."

Teri Marinello

Current municipal work includes service for the City of Ludlow, but most nearby jurisdictions have their own equipment. The company also works with other plumbers, which represents up to 15 percent of their overall business, both in residential and commercial.

Engineering firms and general contractors come to Fletcher Sewer & Drain because their clients tend to be developers who want to have existing sewer lines televised to find out if there are problems, or to ascertain that the lines are acceptable.

Lines within buildings are primarily cast iron in western Massachusetts. In Connecticut there is some cast iron, but there is more plastic. Outside lines can be Orangeburg, clay, transite, reinforced concrete or PVC.

HONORING THEIR ROOTS

While the success of Fletcher Sewer & Drain Inc. has been notable, it has not been achieved without some significant losses.

James Fletcher started the company in 1985, and in 1989, Joe and Teri Marinello became partners in the drain cleaning company, which initially handled drain cleaning problems for one apartment building.

The partners grew the business and created a company culture of high standards that endures today. Sadly, Joe Marinello passed away in 2004, and in 2009, Fletcher also passed away. The reins were handed to Teri Marinello, who had worked closely with the two men over the years.

As president, Marinello continues to head up the company, and she says her endeavors rest with the employees who have shown a high degree of excellence and loyalty through both challenging and exciting periods in the company's history.

In 2011, she began a more aggressive advertising campaign with spots on cable television and several popular radio programs. She is an active member with the Better Business Bureau of Central New England and the Western Massachusetts Home Builder's Association. This has been a positive promotional move, illustrating her continued willingness to keep her company in the spotlight.

Joe Marinello, her son, is office manager and video survey technician. Her sons Tony and D.J. also work for the company as senior service technicians – thus perpetuating the family pursuit of service to the community.

(continued)

MEET BIG BROTHER



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The Fletcher Sewer & Drain team is led by project manager Dave Lesure and owner Teri Marinello. Additional members of the team include, from left, Joe Marinello, Michael Scarfe, Tony Marinello, Mike Carle, D.J. Marinello, Justin Babineau, Daniel Bator and Shawn Smith.

Structures can be new, but more are quite aged. One supermarket they service is a converted train depot that is 70 to 80 years old. Some homes in the area are 200 years old.

"Some of this plumbing is incredibly tricky," says Lesure. "It can be paper thin cast iron stuff."

Roots are a common problem in outside lines, but they also frequently run into ground swelling issues. They see egging where pressure has caused the line to lose its circular shape, and sometimes the entire line has eroded. Frostthaw cycles also flatten some pipes and cause joints to separate.



"We want our men in the field to help the customer understand the problem, and further to have a pride of ownership in every job they perform."

Teri Marinello

Because they televise every line they clean, they have a visual of all issues and can pass that along to the customer, along with a recommendation as to what can be done. The customer then has an understanding of what they are dealing with and can determine if they want the line excavated and replaced.

The company repairs and will replace sewer laterals and sewer mains outside buildings, but they are not a licensed plumbing firm and do no inside repair or replacement. When there is a requirement for excavation, they bring in a subcontractor to handle the digging.

IN THE HANDS OF THE CREW

Marinello says with emergency calls, it's not always clear just what the issue is, but she can depend on the staff to deal with these situations.

"It starts at the dispatch desk," she says. "Often a customer will say something that makes sense to them, but they're not giving the information we need. It's almost like translating a different language. By asking questions, the concerns can be passed on to the technicians, who will do their own troubleshooting when they get on site."

Regular training and weekly meetings (Tool Box Talk) are helpful in solving concerns. They cover safety issues, equipment and basic feedback.

When it comes to hiring and training new technicians, they are not necessarily looking for experience, and they make it clear that a training period will last from a couple months up to a year.

"We also point out from the beginning that we consider a training period worthy of that investment, and that they will benefit in the long run," says Marinello. "We want our men in the field to help the customer understand the problem, and further to have a pride of ownership in every job they perform."

VIEW FROM THE TOP

Teri Marinello, who since 1989 has actively assisted in managing of the company, bookkeeping, accounting, executive decisions, observing work in the field and managing personnel, was well equipped to step into the role of president when unfortunate events came about.

Marinello says she is well known in the industry and enjoys her relationship with her employees as well as their wide range of customers.

"I'm fully aware of the conditions our technicians work in, and I do consider them to be my most important asset," she says. "Our policy is that when we walk away from a home, or any other project, we know that the line is open and flowing, and what the problem was to begin with, and where we might need to go next for a resolution." c

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Emotional Intelligence

YOU KNOW YOU'RE SMART, BUT HOW DOES YOUR EQ STACK UP?

BY LEE ELLIS

he commercials on television today talk endlessly about treatments for low this and low that, but unfortunately, we don't hear much about low Emotional Intelligence (EQ). Here are some symptoms: You know you're brilliant, yet you find yourself reacting with impatience and anger with others who just don't get it. You've noticed that others don't seem to get your humor or your jokes or don't seem so interested in your great stories. Maybe your feedback to a teammate failed to come across the way you had intended. If as a leader at work, at home or in your community you have any of these symptoms, you're possibly suffering from low Emotional Intelligence.

For most people, EQ limits a person's career and influence more than IQ. So what are we talking about here? What indicates good emotional intelligence? It's really about being aware of and responding effectively to emotions - our own and those of others.

In many ways, good EQ is similar to the common courtesies that were emphasized more in previous generations. After all, the old saw about "counting to 10" when we felt anger was about as scientific as you can get. We now know that the emotional part of the brain (the Amygdala - /əˈmigdələ/) reacts four times faster than our cognitive quarterback in the pre-frontal cortex. In simpler terms, learning to slow down our response to emotional situations can keep us out of trouble.

The Amygdala is part of the limbic system and is the source of our natural protective response for flight or fight. For many who train regularly for combat - military, law enforcement, athletes - tapping into this source of high energy for a crisis response helps performance. But away from the job, that same response can get you in trouble - hence the term "Amygdala Hijack." But to some degree, all of us use and misuse this natural instinct to fight or flee - to dominate or withdraw.

So, the key to good emotional intelligence is awareness. Until we become aware of our emotions and predict where they will take us, we're clueless as to how to manage them; and that's what we really want to do. Likewise, an awareness of the emotions of others helps us manage our response to facilitate the most effective interaction. Let's walk through the four steps of emotional intelligence and you will get it quickly.

Recognize your own emotions. Awareness usually requires practice. You're in a meeting and Bob says something that you know is absolutely wrong - "how could anyone be that stupid," you think. Your first instinct is to call him out and show him how wrong he is. But you've been down that road before and know that will only embarrass Bob and ultimately make you look small. Besides, you may not even know all the facts that are behind his opinion. Fortunately, you recognize that you're angry and you've learned to coach yourself to hold back on your response. You slow it down and engage your cognitive quarterback to come up with a plan B.

Manage your emotions. You're a quick thinker and now your mind is running through options for an effective way of responding. Your goal is to respond with honor and respect because that's one of your personal values. You remind yourself that Bob is a bright guy, too. Also, you've heard from your leadership coach that listening is a really good tool. One option you remember that might work is to say something like, "Gee Bob, I had not thought of it like that before. Can you explain the logic of how that would work?" Of course, tone of voice and body language are very important to pulling this off because they are two of your strongest communicators of emotions. Once Bob gives his explanation, more than likely you will see that he's not stupid at all - just operating with a different perspective. But in any case, you've managed your emotions and maintained your decorum - signs of a good EQ.

Recognize the emotions of others. On the way back from the conference room, you run into Jane, one of your peers, who seems a bit down and overwhelmed. You're depending on her to deliver the data that you need for the next step of your project and the deadline is tomorrow. Your immediate fear is that it's not going to happen. Now that you've been working to raise your EQ, you mentally push back on your fear and consider what your teammate is up against and how her confidence and energy are sagging. It doesn't take an EQ genius to realize that putting a guilt trip on her is probably not a good idea, but what can you do?

Respond appropriately/effectively to the emotions of others. Because you're not fear-motivated, you focus on encouraging Jane. After all, she does good work and what she needs right now is an emotional boost. So you choose to show her some empathy and encouragement, telling her that you understand things are difficult right now and asking if there are ways that you and your team can help. You also offer to listen to her challenges and brainstorm with her on solutions. (By the way, this is one of the most helpful things you can do for an extrovert; they usually need to talk to think effectively.) You close out by reminding her that she is a great teammate and that you have confidence in her judgment.

Having good EQ may sound somewhat soft, but it's actually very powerful because it's about being the most effective we can be. It begins with awareness - we can't manage what we don't recognize - and then it's about managing our own emotions and our response to others. In the simplest terms, it's about reading the situation and then acting in the most effective manner. It does get easier with practice, and it makes you the kind of leader that others want to follow. Try it and see for yourself. c

Lee Ellis is a speaker and the author of Leading With Honor: Leadership Lessons from the Hanol Hilton, in which tee this is a special and the dutil of equality with motion, teaches the teaches that the shares his experiences as a Vietnam POW and highlights leadership lessons learned in the camps. As president of Leadership Freedom, a leadership and team development consulting and coaching company, tee consults with Fortune 500 senior executives in the areas of hiring, teambullating, executive development and succession planning. For more information, please visit www.leadingwithhonor.com.













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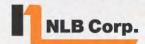


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Ahead of the Game

PIPE BURSTING SYSTEM ALLOWS CONTRACTOR TO OFFER CUSTOMERS MORE COST-EFFECTIVE SOLUTIONS TO REHABBING FAILING LATERALS

BY KEN WYSOCKY

eeping pace with rapidly advancing technology can be a challenge. But as Andrew Wyderka of Heiden Plumbing Co. Inc., can attest, there's a payoff: New tools can help contractors win jobs by offering customers better, more cost-effective alternatives to conventional techniques and solutions.

For Heiden, that tool is a HammerHead PortaBurst lateral pipe bursting system. Manufactured by Earth Tool Co. LLC, the machine can replace 2- to 6-inch failed laterals without expensive and disruptive open-cut excavating.

"The PortaBurst allows us to work safer and smarter. I can't put a price tag on it, but anyone on a job site would see that trenching in mud all day long is more dangerous than a technique where you hop in a small hole that's completely protected by a 4- by 4-foot-square aluminum shaft."

"It sets us apart from competitors if we can supply another option that is faster and more cost-effective - and that's less destructive, too.

"On an average residential application, you probably save about 20 percent compared to the cost of conventional excavation techniques," he concludes.

A good portion of that savings stems from reduced labor costs and increased productivity. A conventional open-cut lateral replacement might require up to

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OWNER: Helden Plumbing Co. Inc., Milwaukee, Wis.

MACHINE: HammerHead PortaBurst lateral pipe

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Andrew Wyderka

The system employs a burst head that breaks apart broken lateral lines; at the same time, it pulls into place behind it a new, high-density polyethylene (HDPE) pipe.

"My father bought the unit in the late 1990s," says Wyderka, the vice president of the Milwaukeebased company. Established in 1925, Heiden does drain cleaning, general plumbing and lateral repairs, among other services. "We were the first one in the state to own one. It's a great option in our bag of tools.

"We always like to set ourselves ahead of the game in terms of new technology because it provides more options for customers," he continues.

Heiden Plumbing uses the HammerHead PortaBurst lateral pipe bursting system. Manufactured by Earth Tool Co. LLC, the machine can replace 2- to 6-inch failed laterals without expensive and disruptive open-cut excavating. The system employs a burst head that breaks apart failing lateral lines; at the same time, it pulls into place behind it a new, highdensity polyethylene (HDPE) pipe. (Photos courtesy of Heiden Plumbing)



four workers and take five or six days to complete, while pipe bursting typically requires only three employees and takes about three days, Wyderka says.

Pipe bursting isn't always the best option, he notes. Sometimes, excavating and replacing a failed lateral is more cost-effective, depending on various factors. But in many cases – especially in high-density commercial areas with many underground utility lines in the way or residential lots with new landscaping in play - pipe bursting quickly becomes a more attractive option, he says.

"The PortaBurst improves our productivity by about 20 percent from start to finish on jobs," Wyderka points out. "Over the course of a year, it all adds up. If I can do, say, 10 more jobs a year, that's 10 more than we otherwise would have completed."

The easily transportable PortaBurst replaces failed laterals with a solid, butt-fused HDPE pipeline that can be the same size or larger than the failed pipeline. It exerts 30 tons of pulling force, and can operate at production rates of up to three feet per

Thanks to a small footprint, the unit does not require a large excavation, which also saves time. It operates at low pressure, and runs on either a dedicated hydraulic power pack or a third-party supply (a backhoe or mini excavator, for example) that can produce 3,000 psi and a minimum flow of 13 gpm.

Wyderka says the PortaBurst also boosts employee health and safety. Working in an open excavation always increases the risk of injury and takes its toll on workers through bodily wear and tear.

"The PortaBurst allows us to work safer and smarter," Wyderka says. "I can't put a price tag on it, but anyone on a job site would see that trenching in mud all day long is more dangerous than a technique where you hop in a small hole that's completely protected by a 4- by 4-foot-square aluminum shaft."

Overall, Wyderka says the PortaBurst unit is a valuable company asset. In terms of return on investment, he says it took only 10 jobs to recoup the unit's \$25,000 cost.

"There's definitely a payoff," he notes. "But you have to educate yourself about a good product and look for opportunities where that product can help you. We're always willing to take an educated risk. As my father always says, 'Nothing ventured, nothing gained.' We're constantly trying to stay ahead."

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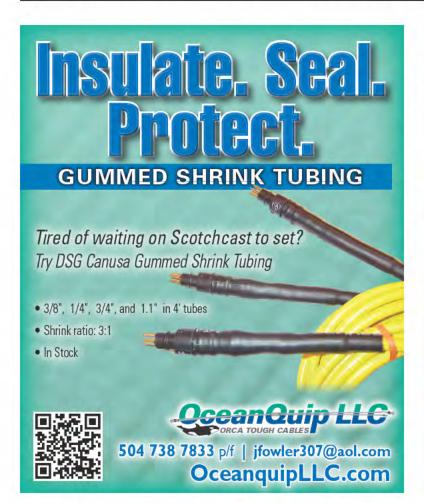
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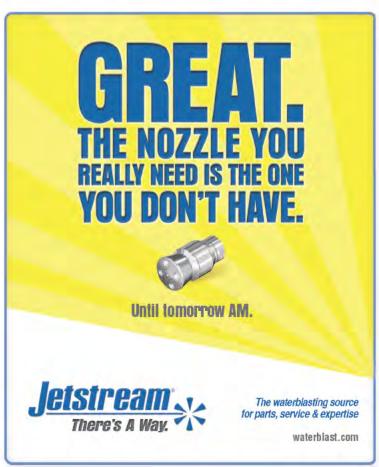
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OF THE MATTER

CIPP OFFERS NEW BREATH OF LIFE FOR ILLINOIS PLUMBING CONTRACTOR BY MARIAN BOND

After more than 30 years providing basic plumbing services, Valentine Plumbing in Cortland, Ill., was at a crossroads. Owner Bruce Foster, who was also teaching continuing education classes to licensed plumbers and apprentices, had his hands full and the business was on life support. Foster, a licensed inspector for the state, was more or less retired from the service business.

Along came Tom Bowman, a friend and journeyman plumber with an extensive background in sewer repair and several years of lining experience. The two men became partners in Valentine Plumbing & Sewer, LLC, with the focus on offering cured-in-place pipe repair. Bowman became the point man in the revival program. That was in 2009.

"Our growth over these years has been huge," says Bowman. "Through networking and sharing our knowledge we have been able to expand aggressively in a short period of time. The industry is so small right now as far as pipe lining is concerned, and the number of contractors doing this is minimal.

profile

VALENTINE PLUMBING & SEWER, LLC, CORTLAND, ILL.

OWNERS: Bruce Foster and Tom Bowman

SERVICES: CIPP, drain cleaning, jetting, basic plumbing

EMPLOYEES: 4

CUSTOMER BASE: Residential, light commercial, restaurants, hospitals

VEBSITE: www.valentineplumbingcompany.com

If you look in the telephone book you will find hundreds of plumbers listed, but when you look for someone offering to replace and to be truly trenchless you find just a couple."

With the focus on trenchless line repair, drain cleaning and jetting is now 70 percent of the business; the balance is basic plumbing. Their customer base is about 35 percent residential, with the remainder in light commercial, including restaurants and hospitals.

(continued)



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"You need to know and understand the technology," he says. "We like to look 'outside the box.' Look at the whole system, especially inside the building because we can reline anything - sewers, drains, chiller lines, hydraulic lines, storm drains, swimming pool lines, fire suppression systems and conduit lines."

He compares the apprehension over relining to the time when plastic pipe was first introduced, when people said it would never take off. "Now everybody installs PVC," he says.

GETTING IT RIGHT

Bowman chose the Nu Flow CIPP system when Valentine jumped into the lining business.

"During our training with Nu Flow, which is actually ongoing, we have been taught many different ways to re-establish the inside diameter of the host pipe, with or without water. We have the use of great specialty tools and we can repair it without a single bit of damage to the hardscape, landscape or the property. We knew we had made the right choice."

Bowman describes one situation where they had a challenge while lining some grease drains at a franchise restaurant. The crew was working at 2 a.m. to avoid conflicts with the

restaurant's normal operations when they ran into trouble. They contacted Nu Flow's 24-hour tech support hotline and were offered a solution that allowed them to complete the job without any disturbance to the business.

"Our growth over these years has been huge. Through networking and sharing our knowledge we have been able to expand aggressively in a short period of time." Tom Bowman

He notes that people in the industry are beginning to understand the CIPP process, but he doesn't understand why more contractors don't offer the service because the market is there.

"We promote ourselves as being trenchless, and we will go wherever the job is," Bowman says. "We've gone into Wisconsin to do jobs. We've gone to Indiana, Iowa. I hope others get into this. It does not cost a fortune and it pays for itself."

As for enlightening the customers, Bowman likes to use the analogy of angioplasty and a stent to repair vessels to the human heart, which he says most people are familiar with and understand.

"When we first got started, I had diagrams and photos, but with the human heart analogy, they get it right away," says Bowman.

THE RIGHT TOOLS

"Our cameras are our best friends," he says. "Without a good camera system and being able to see every inch of the pipe and to know where the



bends are, or where bad offsets are, you will not have a good outcome. You need to know where to start and where to stop the line."

The company's camera systems include a RIDGID SeeSnake Flat Pack, a RIDGID SeeSnake microDrain and a RIDGID SeeSnake Plus, along with a Spartan Tool LLC PROvision 2.0 camera system.

Their Nu Flow van is a 2006 Chevrolet Express 2500 Access cargo van with hydraulic side panels and remote control. Service vans are a 1999 and a 2000 GMC/Isuzu cab-over 14-foot box with pullout ramps.

Their 2008 Vactor 2100 has a positive displacement blower, water pump rated at 4,000 psi/80 gpm, 2,500-gallon water tank and a 15-cubic-yard debris tank.

Drain equipment includes a Spartan 1065 rod machine, a Tulip cutter from Enz USA Inc., and both the Micro and Scorpion cutters from Nu Flow. For hydrojetting they have a Spartan 798 trailer jetter with 4,000 psi/18 gpm, and a Harben Eliminator trailer jetter, 3,000 psi/12 gpm.

A TEAM EFFORT

Around 30 percent of Valentine's business comes from plumbing contractors who are not offering lining service but have customers who are looking for a trenchless solution. Bowman says they welcome this and promote the idea that while one company is not offering CIPP, they do and will work directly with the customer or act as a subcontractor. The choice is with the primary contractor.

"We are not out to take away customers from someone else," says Bowman. "Often they will say to us, 'Just take care of our customer. Do whatever

(continued)

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they want.' Other times the referring company will want a small percentage of the business. On other occasions they may want us to ride along in their service vehicle, and we can do that. Our equipment is not that difficult to transport."

Bowman says they also look for other networking opportunities. When Andrew Kawalewski, owner of Kawalewski Plumbing in Mittagong, New South Wales, Australia, came to the United States to attend the 2012 Pumper & Cleaner Environmental Expo International in March, he visited Valentine Sewer and they did some lining together, shared ideas and sharpened their skills.

"One of the things we like about CIPP is developing new ideas," says Bowman. "We like to bring in trainers frequently to keep fresh and on the cutting edge. We have started to do some potable water lining, which is going to be important for us."

The technicians working for Valentine Plumbing & Sewer are enthused about the technology and the part they play in providing CIPP to their customers. They often take time to share experiences and experiment with the product in order to be better prepared for their part as a member of the team.

All Around Pumping, a company that shares Valentine's 2,400-squarefoot office space, is also part of the team. The company provides additional support when needed.

In instances when Valentine needs to reline a 12-inch or larger line, they will make a referral.

SUITED TO THE NEEDS

Valentine is located near the suburbs of Chicago, where there is a great deal of pipe. "Plenty to go around," says Bowman. And he says this includes pipe inside the structure that also needs to be addressed. "You might have a 100-foot sewer lateral outside the house, but double or triple inside. There will be root problems outside, but also problems with inside lines."

Typically they deal with lines from 4 inches up to 10 inches for both cleaning and relining. In situations where a 4-inch line transitions to 6 inches, they can prepare a transitional liner to complete the CIPP job. "The end result will be beautiful," says Bowman.

Pipes they see are typically cast iron, clay tile, galvanized, PVC and Orangeburg. "We run into situations where the bottom of a pipe has deteriorated completely, or is full of grease or debris," says Bowman.

"In the past, if a 4-inch pipe was 3 3/4-inch full of grease we would say, (continued)

REMOVE THE BLINDFOLDS

While a college student, Tom Bowman was a certified swimming pool operator, and as a manager he saw the tremendous bills that would come from pool repair technicians. He convinced the board of directors to allow him to make the repairs, and thus he began working with pipe and understanding pressure systems, pumps and all that is involved. This started his interest in the plumbing trade. He worked with a contractor as an apprentice, and soon got his license. He ran a crew under a pilot program using CIPP in small-diameter pipes for the state of Illinois.

"Pipe lining removed the blindfolds and gave us a different approach and opportunity to be able to serve our clients," says Bowman. "For years we had dug up half the town digging and replacing, and every time we looked at a job we had to dig.

"This process really turned me on. I was always one of the guys who liked the education aspect. I researched our direct competitors, how they did things. I realized that the only way to do it right was to be truly trenchless – to not tear things up. That was amazing to me. Whether we were going to access through a closet, or a roof duct or cleanout, we could access the system to solve a problem."

Bowman says that when he started with CIPP nine years ago, he thought there would be a good percentage of times when they would not be able to access the line from inside a building, but the fact is that in 95 percent of their sewer replacement jobs, they can gain access inside a building and they are successfully relining. The result is a happy customer.

"We can go into a home and not tear up grandmother's rose bush or grandfather's apple tree," he says. "We can save the property and do the project and not look like we have even been there. They see their neighbors where the property is dug up, having to deal with the whole reconstruction of the driveway and landscape. Our customers are thrilled. This is our reward."





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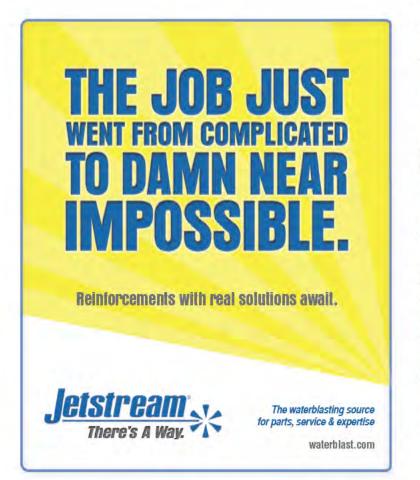
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Andy Raff, left, and Tom Bowman pour epoxy into a new liner.

'Well I guess we close the facility down and dig up underground and replace.' Maybe water is not even running in the pipe but into the gravel below. Now we come in, use jetters or other tools that don't use water in order to open up and re-establish an open diameter and run right through with the relining material. It's phenomenal - I can't say enough about it."

Other situations include carbonic acid that builds up in the soda machine lines at franchise restaurants, especially when they are cast iron. This can deteriorate the pipe, but does not affect a relined pipe.



He gave a scenario where they might have to rely on a more traditional method of repair. "We might run into an outside issue with Orangeburg for the sewer line, and it is completely deteriorated. The inside laminate is just brittle and falling away. There is a need to rip it out and replace.

"On the other hand, we might have times when there is a section of pipe that has deteriorated, but the existing pipe is lined up properly and we can shoot through a blank space and connect properly to the other side of the pipe. We had one instance during the pilot program with the state where we were lining a piece of Orangeburg pipe. It had good shape. It was not oval, which would mean it had lost structural shape. We removed some roots. There were three 8-inch-long, 3- to 4-inch-wide holes in the bottom of the pipe. But we had the sections where there was no pipe at all. We were able to line right through it. I understand they have not had a problem since. That was an extraordinary project. It was about 17 feet deep under a concrete porch, walkway and stairway. It would have been a phenomenal chore to replace conventionally."

"The key is knowing what technology to use in each instance, and to be aware of what is good and what is bad in the system. Sometimes it depends on the access."

Tom Bowman

Bowman says the average job is a two-man project. They initially televise, clean and prepare the line, looking for bad offsets and determining where to start and stop the line.

"We have different ways to insert the line," says Bowman. "Whether it is a process where we pull the system into place where there is not a good cleanout access. If we have great access we can use inversion. Where we have a single point of entry we can use a pushrod system and push the system into place."

According to Bowman, once preparations have been made, the relining process can often be completed in about two hours, unless the ground is wet or

the temperature is cold. If they are not using a hot water or steam cure they might want to leave it overnight.

"The key is knowing what technology to use in each instance, and to be aware of what is good and what is bad in the system. Sometimes it depends on the access."

And the best part for Bowman is that they rarely have to dig. "I don't want to put my guys or myself in a 20-foot-deep hole, even with proper shoring and dig protection. Now we can do it above ground and fix it, warranty it, and you have a seamless structure that is not going to have joints that will leak or misalign, or have roots growing in between. It will be one solid piece of pipe running through the whole system.

"It is a fully certified structural material, and can stand alone by itself," he says. c

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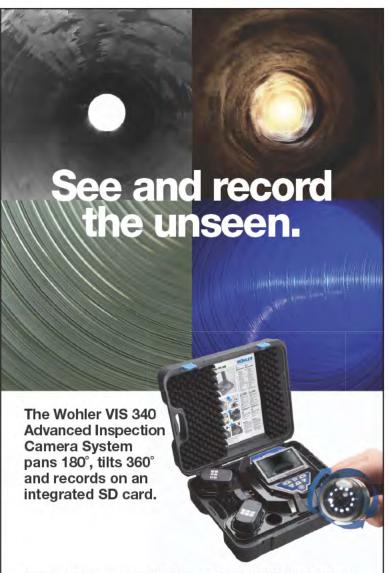
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Protect Yourself

FATAL JETTING ACCIDENT UNDERSCORES THE NEED TO BE VIGILANT WHEN IT COMES TO SAFETY

BY LUKE LAGGIS

ou never know what day will be your last. While we were preparing this issue of *Cleaner*, news surfaced of a fatal accident in Indiana. The man was jetting a drain line and was reportedly struck in the neck by the jetter's water stream.

According to New Castle – Henry County EMS chief Ron Burns, 55-yearold Chad Unverzagt, owner of Hoosier A-1 Sanitary Sewer Service, was called to New Castle High School to clear a blocked drain line on the morning of Friday, May 11. Unverzagt had accessed the line from a manhole on a concrete walkway outside the building.

At 9:12 a.m., New Castle – Henry County EMS received the emergency call. When they arrived on scene, bystanders said Unverzagt had just taken his last breath. The first responders acted quickly, took steps to revive the victim and got him to Henry County Hospital in New Castle. He was later transported to a trauma center in Indianapolis, where he was eventually pronounced dead.

Much of what is known about the accident was relayed to local authorities

from a school district maintenance worker who was with Unverzagt at the time of the accident. According to Burns, the worker reported that Unverzagt was retrieving the hose from the manhole when "it got away from him." The high-

pressure trailer jetter he was using was still running, and the hose began flailing around "like a snake."

Unverzagt was first struck in the chest by the hose, which left a substantial bruise, Burns reported. As Unverzagt struggled to regain control, the high-pressure water stream from the jetter nozzle lacerated his neck. He somehow managed to get over to the machine and turn it off, before staggering a few feet

away and collapsing. The maintenance worker, who was not injured, used his shirt to apply pressure in an attempt to stop the bleeding while he waited for the EMS crew to arrive. Sadly, it wasn't enough.

"I've been doing this 25 years and it's one of the most bizarre things I've seen," Burns said.

Unverzagt was included in our old "Reader Pipelines" column several years ago. He talked about the importance of hiring the right people and developing a good rapport with customers. Those two themes come up a lot in these pages, along with another: the need to take proper safety precautions at all times.

When jetting sewer or drain lines, never start the flow of water until the jetter nozzle is far enough inside the pipe to eliminate the threat of water from rear-facing jets, and always depressurize the system before removing the nozzle.

All jetting hoses should also include a leader hose or be clearly marked so the operator knows when the nozzle is nearing the end of the line. This limits the chance of pulling the nozzle out of the pipe while still under pressure.

When jetting sewer or drain lines, never start the flow of water until the jetter nozzle is far enough inside the pipe to eliminate the threat of water from rear-facing jets, and always depressurize the system before removing the nozzle.

Indiana workplace safety officials are reportedly investigating the New Castle incident, and while there are no reports of any safety violations at this point, the accident certainly underscores the need to be vigilant when it comes to safety. You never know when a job will take a bad turn, and you can never let your guard down.

The National Association of Sewer Service Companies (NASSCO) recently released a new video, "Introduction to Sewer Cleaning with Jetting Equipment," which covers the safe use of high-pressure waterjetters. It may seem elementary to experienced drain cleaning professionals, but Unverzagt had 30 years of experience under his belt when he was struck down. A safety refresher is never a bad idea and it could end up saving your life or the life of one of your employees.

The NASSCO video is available at www.nassco.org. Even if you don't feel the video is necessary, use this incident to remind your employees of the importance of proper safety measures. You'll never regret it.



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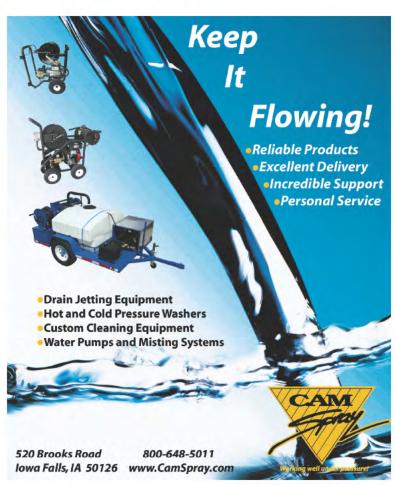
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A High Level of Success

GETTING THE MOST OUT OF YOUR COMBINATION UNIT IS AS MUCH ABOUT THE PEOPLE AS THE EQUIPMENT

BY JIM AANDERUD

ou may have the newest, biggest and brightest combination unit in the world, but if you don't have someone capable of operating it at a high level, then you are falling way short of its potential.

We tend to think that we can achieve superior performance by simply putting a top-of-the-line unit into the field, but that is not the case. Sure today's technology makes it a lot easier, but the truth is that it takes a quality operator to make the equipment function properly. Neither a pipeline cleaning program nor a CCTV inspection program will attain its full potential without a sharp operator.

A lot of thought and analysis goes into purchasing a combo unit. There is typically an exhaustive study and evaluation process that narrows down the search. Other brands are compared for their strengths and weaknesses and the equipment is tested under live conditions in order to prove its worthiness. All of this effort goes into making sure that we select the right equipment for our needs.

If we are to raise the level of our work performance, then we must make the same effort in the selection of our employees, and in particular, our equipment operators. Whether it is a combination unit operator or a CCTV inspection operator, we must make sure we do our due diligence and select people that are willing and able to operate our equipment at the highest level possible.

ACHIEVING CONSISTENT PERFORMANCE

What are some of the things that we can do in order to promote an elevated level of performance in our employees? What details must we look at in order to maximize their commitment and performance?

To begin with, no employee will meet high standards without proper training. Training must be meticulously planned and measured to make sure that set goals are reached and milestones are achieved. Training must be thorough and take place over a lengthy period of time. Remember that preparing an operator properly can take at least a year. The key is to make sure the training is carried out by an experienced and capable trainer. Whatever shortcomings the trainer has will be passed on to the student.

A trained and competent operator cannot attain top-of-the-line performance without properly maintained vehicles. Equipment must be carefully cared for in order to assure peak performance. Anything short of this will prevent operators from achieving their goals.

Employees must also be provided with the proper tools. If they are given a shovel where a backhoe is needed, they will never reach their maximum



Mark Chamberlin, center, wastewater collection manager at the Eastern Municipal Water District, discusses the day's cleaning schedule with Rocky Howard, left, and Ron Jubera, assistant wastewater collection manager. (Photos courtesy of Jim Aanderud)

capabilities. Agencies and contractors alike must stay abreast of available technology in order to be assured that their operators are maximizing effort.

An operator must be given correct information. Employees can't be expected to perform their jobs properly without knowing exactly what is needed. Information must be clear, precise and understandable. Maps must be accurate and up to date, and instructions simple, detailed and comprehensive. An operator's performance can only be as good as the information he or she is given.

Employees must also recognize the importance of their work. They need to be aware of its significance to our society and understand the positive and negative consequences of their effort.

There are many things that can affect an employee's performance, but none more than the lack of rest. Employees with insufficient sleep are unable to perform adequately and could actually become a liability, or even a danger to those around them. Getting enough sleep is the key to maintaining clarity and focus throughout the day.

(continued)

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We may not think about this often enough, but a combination unit, in particular, is a very dangerous piece of equipment to work around. There are numerous hazards throughout the truck to be aware of. If an operator is not on his game, these risks will be magnified and will place them and their crews in danger. A lack of sleep slows down reaction time and could wind up being the difference between avoiding a hazard and becoming a victim.

Keeping an eye on an employee's eating habits can be a good idea, too. If they are eating a lot of candy bars and drinking a lot of soda, then they may be overloading on sugar. Sugar can have unintended consequences and can wind up affecting job performance. A sugar-high may result in a short-term spike in their energy output, but eventually they will experience a crash that can be a drag on their drive and job performance. Energy drinks can also have similar affects, and like everything else, should be consumed in moderation.

Employees must drink sufficient water throughout the day and eat at scheduled intervals. It is easy for them to become so focused on work that they lose track of these essentials. As the day progresses, the lack of water and food will seriously hinder their job performance.

Combination unit and CCTV inspection operators need to keep their heads in the game at all times. Bringing problems from home can be very distracting. Supervisors must stay vigilant and take quick action when an employee is being affected by outside circumstances.

A common misconception is that we can improve employees' work behavior by offering them more money. We figure that everyone is motivated by money and if we just offer them more of it, they will automatically raise their level of performance and do a better job.

Excessive overtime can also have a serious impact on the quality of an employee's work. When workloads are heavy, we must be mindful of the effects that long hours can have. If employees are consistently subjected to extended work hours and few days off, fatigue will prevent them from performing at a high level. We must resist the temptation to over-schedule and ensure that employees are given sufficient time to rest and recuperate.

HIRING IS THE KEY

The most effective way to guarantee that we have employees performing at a high level each day is by hiring the right employees from the onset. This is a pivotal point in the building of capable crews. If the wrong selection is made, no amount of training or preparation will matter. A tremendous amount of resources and energy can be expended trying to get an ill-equipped employee to perform properly. We must be able to clearly define the type of individuals we are seeking before the selection process begins. Attributes such as intelligence, aptitude and attitude must be closely evaluated along with their experience and backgrounds. Every effort must be made to find the most teachable and capable candidates possible. When the selection pool is lacking and none of the candidates meet our standards, we must resist the temptation to settle.

The last thing we want to do is to invest time and money into an employee that isn't cutting the mustard. This problem can be easily avoided by taking the time to thoroughly screen prospective employees before they are hired.

Mark Chamberlin, wastewater collections manager at Eastern Municipal Water District in Perris, Calif., thinks that the probationary period can also be an important part of the screening process.

"A new employee's behavior is always at its best during their probationary period," Chamberlin says. "Even so, their pride and dedication will become



Rocky Howard and Gabriel Correa clean a sanitary sewer line in the City of Perris, Calif., for the Eastern Municipal Water District.

evident at this time. Dismissing inadequate probationary employees before they have established full-time employment will save a significant amount of money in the long run."

If we expect our employees to perform at a high level, then we must find individuals who are capable and committed to being exceptional employees. Maturity is an important factor, but not necessarily applicable to a specific age. Individuals who are career-minded and family-oriented often make the best employees. These individuals tend to focus on the long-term potential of their jobs and are apt to be less impulsive to change because of their family responsibilities.

A common misconception is that we can improve employees' work behavior by offering them more money. We figure that everyone is motivated by money and if we just offer them more of it, they will automatically raise their level of performance and do a better job.

Sure, we may see a measurable rise in their work effort, but it will only be temporary. Money is only short term. It doesn't change someone's core character. It may be momentarily exciting to the employee and actually motivate them to try harder, but it will only last for a short time. It won't be long before the money is taken for granted and the individual reverts back to his core character. If they weren't motivated before the money, they won't be motivated after the money. If they were lazy before, they will be lazy afterward.

CONCLUSION

Raising the level of our work performance starts with employing qualified individuals with traits and abilities to become quality operators. Once we have identified worthy individuals, we must set them up for success by providing the best training possible. And then, we must give them sufficient time to absorb and practice their new skills.

Supervisors are the key to ensuring that ongoing quality performance is being met. By staying consistently engaged, they will be able to provide the accountability and motivation necessary to ensure that employees consistently operate at a high level. c

ABOUT THE AUTHOR Jim Aanderud is owner of Innerline Engineering, a video pipeline inspection company based in Corona, Calif.



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CONTRACTOR USES BLOWN EPOXY LINING TECHNOLOGY TO REPAIR WATERLINES AT U.S. NAVY CENTER IN THE BAHAMAS

BY SCOTTIE DAYTON

uring normal water-quality testing, officials at the U.S. Navy Atlantic Undersea Test and Evaluation Center (AUTEC) on Andros Island, the Bahamas, discovered high levels of lead in the water at the guest house. The single-story building with 10 suites also had pinhole leaks in the 3/8to 2-inch copper pipes supplying hot water. Maintenance crews stopped the drips with repair couplings, but they had no way of preventing the water from absorbing lead from the solder joints as it sat in the pipes for long periods when the house was vacant.

Replacing the lines using traditional methods would take the building out of commission for too long and be too expensive. Jeffery Longshore, project manager for AUTEC Facilities Engineering, flew in three lining contractors to evaluate the project. Engineered Lining Systems, a Jacksonville-based company with a specialty in cured-in-place pipe and structure restoration, won the bid.

"They gave us two weeks to complete the job before VIPs arrived on the base," says ELS project manager Asa Whitehead. "Small-diameter pipes inside walls can be tricky to line. This also was the first time I had to ship all our tools and supplies. If I forgot something, we would have to do without, since the island has no do-it-yourself center."

Using blown epoxy lining technology (BELT) from Pipe Shield, ANSI/NSF Standard 61-certified epoxy, and modified equipment, Whitehead's team finished the project three days ahead of schedule.

BUILDING MOMENTUM

As a refresher course, ELS sent Whitehead and technician Mikal Biegner to Toronto to work alongside Pipe Shield employees on a similar project. "There is no such thing as too much training," says Whitehead. "ELS bases its reputation on making the impossible look easy, and that takes hands-on experience."

Jody Wright (left) and Mikal Biegner set up the air/grit cyclone and Torit 600 cfm air filter for a day of lining. (Photos courtesy of **Engineered Lining Systems)**

Back home, he spent a week studying the guesthouse plumbing plans, created the packing list, and loaded everything into an 8- by 20-foot steel shipping container. "I brought a lot of extra fittings to accommodate blowouts or other problems we might have," says Whitehead. "Trying to anticipate everything that could happen took a lot of forethought."

tough

PROJECT: Coat small-diameter copper water pipes

without tearing down walls

CUSTOMER: U.S. Navv Atlantic Undersea Test and

Evaluation Center, Andros Island, Bahamas

CONTRACTOR: Engineered Lining Systems, Jacksonville, Fla.

Blown epoxy lining technology, Pipe Shield EQUIPMENT:

> 800/463-0251 www.plpe-shleid.com

Pipes coated ahead of schedule, walls intact





Lining technician Jody Wright rests from unloading material at the job site. Pictured (from left) are the blower used to circulate air, a spool of extra air hose, a pushrod camera system from Ratech Electronics, and Sheetrock mud. Behind him are hand tools and the team's primary mode of transportation, single-speed bicycles. RIGHT: An example of a visually perfect 15-mil epoxy lining in a 1-inch hot water pipe.

Larger equipment included Donaldson Torit dust collectors, an IQ 750 cfm (100 psi) trailer-mounted air compressor with thermostatically controlled dryer from Atlas Copco, 40 50-pound bags of Black Beauty coal slag abrasive from READE Advanced Materials, cyclonic dust collection tanks, hoses, and a Brut 300 siphon sandblaster.

ELS transported the container to Cape Canaveral, then an AUTEC barge ferried it to the island. A week later, Whitehead, Biegner, and two other technicians boarded an AUTEC plane for Andros.

LADY LUCK SMILES

Whitehead's plan was to complete five suites by the deadline. Workers shut off the water to bathrooms and kitchens, disconnected the fittings, re-

"Avoiding the removal of too much stock was mainly by sight. When the exhaust came out clean, so was the pipe."

Asa Whitehead

moved wall splashes, and attached couplers to the bathroom cold-water pipes for the air hose. "The only hole I had to cut was in one shower to get around a valve," he says.

Each room had four 30-foot runs of three

cold-water pipes and a separate hot-water feed. Cleaning and lining products exhausted through the kitchen sink's cold-water line. While the pipes showed little tuberculation, they required sandblasting to score them for the epoxy. It also was necessary to use instrument-quality dry air heated to 120 degrees F to remove traces of moisture.

"We blasted with coal slag, which is softer and not as abrasive as garnet or sand," says Whitehead. "Our greatest concern was blowing holes in the back side of the numerous elbows, then tearing out the walls to replace them."

Their fears materialized when they blew through two thin couplings. "We really lucked out because both fittings were in the attic and accessible," says Whitehead. Workers set up the blower to circulate air in the stuffy space, replaced the bad sections of pipe, and lined through them later.

WHAT THE NAME IMPLIES

Engineers at ELS modified the round blasting pot, changing it from an open to a closed system. "Managing dust was a major project, even with all the equipment outside except for the hoses," says Whitehead. "We laid Uline sticky mats inside the doorways to remove dirt from the soles of our shoes and hung plastic sheets from the door jambs." The air filtration units ran constantly.

The team began cleaning the pipes with a 10 blast, manually opening and closing the valve on the blasting pot 10 times. Because the Ratech pushrod camera could not inspect pipes smaller than 2 inches, Whitehead evaluated progress by examining the exhaust for foreign material. "Avoiding the removal of too much stock was mainly by sight," he says. "When the exhaust came out clean, so was the pipe. The most we cleaned was 40 blast."

Whitehead consulted a chart to determine how

much epoxy he needed to travel 30 feet, and how much air pressure to apply to achieve a 15-mil coating.

While commercial heating and measuring tools are available, the team improvised, using kitchen measuring cups to measure the epoxy and resin. They kept the small batches warm in a Crockpot.

ELS engineers also designed a cartridge for firing epoxy into small pipes. After Whitehead poured in the mixture and loaded the cartridge in the air gun, he opened a valve and 25 psi shot the liquid through the line.

RIPPLE EFFECT

Whitehead's first shot was a learning curve. "We didn't want any sags," he says. "They don't effect usage, but we want a visually perfect lining. Too long a blow forms a skin on the epoxy, then pushes it into ripples.

When Whitehead removed the hose fitting and looked in the pipe, he saw minute signs of rippling. Reducing the blow time from three to two minutes solved the problem.

After the epoxy ambient-cured for 24 hours with both ends of the pipe open, workers attached new shutoffs using SharkBite and Viega ProPress leadfree fittings and ball valves to eliminate soldered joints. They then turned on the water, flushed the lines, and tested the new fittings for leaks. There were none.

Whitehead split his team in half, with two members doing site preparation and restoration and two doing lining. With the first five suites ready for occupancy, work moved along so fast that they were soon completing two per day and finished ahead of schedule.

"It always appears as if there is nothing to a job until you get on site," says Whitehead. "Making real progress depended on mastering the learning curve and getting the routine down pat. The highly engineered BELT system assured us of quality control and insurance." ©



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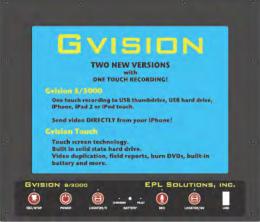
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WHEN IT'S TIME TO SELL YOUR BUSINESS, PROTECT YOURSELF WITH THESE 10 TIPS FOR A CLEAN AND TROUBLE-FREE TRANSFER OF OWNERSHIP

BY FRED S. STEINGOLD

here may be business deals you can safely write up on a restaurant placemat. The sale of your business isn't one of them. Yes, the "keep it simple" principle has its limits. To protect your legal and financial interests, you need to put together a detailed sales contract for you and the buyer to sign.

Here are 10 items to consider including in your sales contract:

What the buyer is buying

Usually the buyer will purchase business assets. These typically include the furniture, fixtures and equipment. The assets also may include lease rights, spouse co-sign for the debt so you can reach their jointly owned assets if the buyer doesn't pay. If you're really nervous about being paid — and the buyer is willing - see if you can further protect yourself by having the buyer give you a mortgage or deed of trust on the buyer's house.

Allocation of the purchase price

Different assets receive different tax treatment. It will smooth things out with the IRS if you and the buyer agree in the sales contract on how the purchase price will be allocated among the different types of assets. In other words, if you're selling the business for \$500,000, how much of that amount is for

Try for a down payment of at least 25 percent. One-third is even better. Of course, before you agree to terms other than 100 percent cash, you'll want to see the buyer's financial statement and get a credit report.

phone numbers, the business name, and a catchall called goodwill. While buyers prefer to take assets, if your business is a corporation there's another way to go: you can sell the corporate stock. The buyer will then own the corporation, which, in turn, owns the assets. There can be some tax advantages for you if you sell the stock rather than the assets. See your accountant for details.

The buyer's investigation

The buyer may want some time after signing the sales contract to further check out the business - for example, looking into financial statements and tax returns. That's usually no problem. But protect yourself by keeping the checkout period short. Then, if the buyer decides to walk away, you'll be able to quickly resume marketing of the business. Have the buyer acknowledge in writing that your business information is confidential and won't be divulged to others without your permission.

The down payment

Seller financing is common. The buyer makes a down payment and then pays you the balance (with interest) over the next three to five years. The more the buyer has invested in the business, the more likely you'll get paid on time; the buyer won't want to lose what's been invested. So try for a down payment of at least 25 percent. One-third is even better. Of course, before you agree to terms other than 100 percent cash, you'll want to see the buyer's financial statement and get a credit report.

Security for the balance

You should retain a security interest in the assets until the full balance is paid. That way, if the buyer gets behind in paying you, you can take back the assets you sold. Another way to protect yourself is to have the buyer's equipment? How much for the lease rights? How much for inventory? How much for goodwill? This is another area where your accountant can help.

Your lease

If your lease for business space will last past the sale closing date, see if you can assign the lease to the buyer. You may need the landlord's permission to do that. Also consider asking your landlord to release you from further responsibility for rent after the buyer takes over. You may want to make the deal contingent on the landlord letting you off the hook for future rent.

Warranties

In almost any sales contract, you'll be asked to make warranties — that is, guarantees that certain facts and statements are true. If it turns out you were wrong, the buyer may sue you or use it as an excuse to make big deductions from what's owed to you. Read the warranties very carefully. If you're not absolutely sure of the facts, protect yourself by adding the words, "to the best of sellers' knowledge." That way, if the facts aren't as you thought they were, you can't be held responsible.

Non-compete clause

The buyer won't want to pay you for a business and then find out you've become a competitor. Chances are the buyer will want you to agree not to compete for a certain number of years within a designated geographical area. Make sure the area isn't too big and that the restrictions are reasonably needed to protect the buyer. You may still need to earn a living in a related field.

Prepaid items

If you've paid property taxes or rent in advance, it's smart to provide that

those items will be prorated at the closing. In other words, the buyer will reimburse you for the portion that will benefit the buyer.

Liabilities

The buyer will want you to assume liability for debts or other legal obligations (such as an accident claim) that relate to when you owned the business. That's fair. But it's also fair for the buyer to assume liability for debts and other legal obligations that come up after closing. Sometimes these matters are handled through clauses using the words "save harmless" or "indemnify." ©

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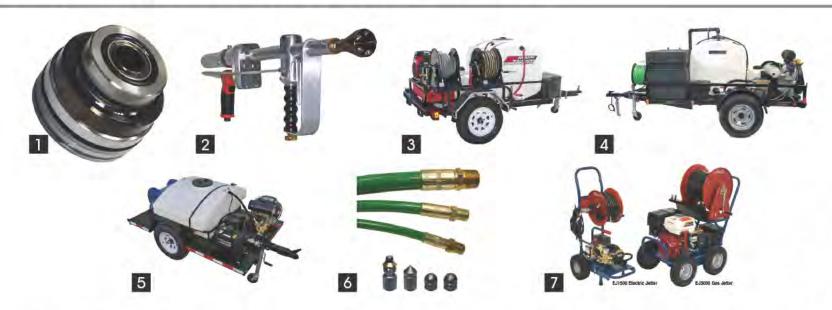
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1. VALVE REPLACEMENT ASSEMBLIES

The new line of aftermarket suction/discharge valve replacement cartridge assemblies from Advanced Pressures Systems (APS) is for Jetstream 15,000 and 20,000 psi pumps. The assemblies are equal in performance to OEM components. 877/290-4277; www.waterblast.pro.

2. ROTATING JETLANCE

The AJT Rotary Waterjet gun from All Jetting Technologies offers 4,800 rpm and a working pressure up to 55,000 psi. Designed for high-pressure surface preparation, the pneumatic air drill's high rotary speed quickly and effectively cleans surfaces while reducing hazardous byproducts. The handheld jetlance weighs 10.5 pounds, has an adjustable front safety trigger, a long-life seal and no midstem bushing. The gun is customized with a 22- to 36-inch barrel. Highpressure sapphire nozzles, heat-treated for longevity and laser-etched with the sapphire size are also available. 772/286-1218; www.alljetting.com.

TRAILER-MOUNTED JETTERS

Max Flow trailer-mounted jetters from Amazing Machinery are available with a single jetter hose for large lines or dual jetter hose for large and small lines. The single-hose system operates with 1/2-inch hose while the dual jetter operates with 3/8- to 1/2-inch hose. All models are equipped with a rear-mounted 12V electric jetter hose reel. The jetters include curbside-mounted jetting controls, water fill tube and fender-mounted toolbox, heavy-duty trailer, compact design, and large water supply tank. 800/504-7435; www.amazingmachinery.com.

4. MID-RANGE TRAILER JETTER

The 58 series trailer-mounted jetter from American Jetter includes userfriendly controls and Kohler power up to 40 hp, allowing it to cover a wide range of cleaning jobs. Available flow ranges from 7 to 20 gpm allow flushing from large pipes, and pressures to 5,000 psi allow root and scale removal. The main powered reel holds up to 500 feet of 3/8- or 1/2-inch jetting hose. A portable jet reel holds up to 200 feet of 3/8-inch or smaller hose and can be used indoors with included foot valve.

Optional antifreeze and recirculation systems allow for use in cold climates, and an oversized toolbox offers ample tool or camera storage. Low oil and water shutoff prevent engine and pump damage. The mid-range jetter has a 2,900-pound full-tank tow weight and a 1,300-pound empty weight, and standard 2-inch hitch. 866/944-3569; www.americanjetter.com.

5. ECONOMY TRAILER JETTER

The EJT series economy trailer jetter from Cam Spray includes a 28 hp Honda engine in flows and pressures in the following combinations: 7 gpm at 4,000 psi and 11.5 gpm at 2,700 psi. Both models feature a manual reel with 250 feet of 3/8- or 1/2-inch hose. The jetter cleans 6- to 10-inch lines.

Standard features include industrial three-plunger pump with stainless valves and ceramic plungers; power pulse valve; air purge and recirculation for freeze protection; 5-gallon fuel tank; heavy-duty trailer with close-tube frame and full metal deck on a 3,500-pound axle and includes road-ready wiring and lights with 2-inch ball hitch; and 150-gallon water tank with auto shutoff if tank runs dry. The jetter also includes a set of four nozzles, storage box, tiger tail, safety face shield, rubber gloves and high-vis safety vest. 800/648-5011; www.camspray.com.

JETTER HOSE AND NOZZLES

Draincables Direct offers the 4,000 psi jetter hose and nozzles. Units are available in 1/8-, 3/16-, 1/4-, 3/8- and 1/2-inch-size IDs with lengths from 25 to 500 feet. Custom sizes are available. Four-pack jetter nozzles are available in the same sizes. 800/421-4580; www.draincables.com.

7. ELECTRIC AND GAS JETTERS

EJ1500 electric and EH3000 gas jetters from Electric Eel Mfg. clean 1 1/2- to 8-inch drain lines. The electric jetter cleans 1 1/2- to 4-inch-diameter lines. Features include 1.7 gpm at 1,500 psi, 1.5 hp, 15-amp motor, duplex pump with pulsation, reel capacity of 150 feet of 1/4-inch hose, pump/motor assembly that removes in seconds for added portability, thermal relief valve and inlet shutoff valve, and removable handle/reel on cart assembly.

The gas jetter cleans 2- to 8-inch-diameter lines up to 300 feet. Features

(continued)

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8. ROTATING NOZZLE

The golden jet Bulldog rotating nozzle from Enz USA is designed for operation with recycling water and freshwater. An integrated oil-free braking system results in low wear and tear, and in controlled numbers of rotation. The nozzle cleans root intrusions, grease, solids and heavy debris. It is available in 1/2- to 1 1/4-inch connecting threads and can clean pipe from 2.5 to 24 inches in diameter. 877/369-8721; www.enzusainc.com.

9. HYDROEXCAVATOR

The HV55 HydroVax hydroexcavator from GapVax is made of 1/4-inch ASTM A571 Grade 50 steel. It has a 12 1/2-cubic-yard debris body and water tank options ranging from 400 to 1,000 gallons. The unit includes a positive displacement vacuum pump rated at 5,250 cfm with 28 inches Hg. The design prolongs the life of filter bags and eliminates the threat of material entering the vacuum pump.

The fully opening tailgate has a field-adjustable hinge and dual cylinders and also has four fail-safe, individually adjustable locks that assure a complete seal. Optional equipment includes a cold-weather recirculation package, sludge pump, auger unloading system, body pressurization system, remote pendants and wireless remotes, high rail package and stainless steel body. 888/442-7829; www.gapvax.com.

10. TRAILER JET

The Typhoon trailer jet from General Pipe Cleaners delivers 12 gpm at 2,500 psi to clean grease, sediment and debris. A 200-gallon holding tank carries enough water to handle remote applications where access to water is limited. Two rear-mounted hose reels (a jet hose reel with 400 feet of 1/2-inch capacity featuring variable-speed electric rewind, and a water supply hose reel carrying 150 feet of 3/4-inch hose) are located next to the pressure gauge and output valve. Engine controls, including an hour meter, are mounted within easy reach in the lockable toolbox with slide action doors just below the reels.

The unit includes electric brakes, safety strobe light, three safety cones with holder, rear fold-down stabilizer jacks, retractable hose guide arm, and antifreeze system. A 24 hp Honda engine with electric start powers the durable triplex pump with Vibra-pulse to help slide the nozzle around tight bends and propel the hose down long lines. 800/245-6200; www.drainbrain.com/jets.

11. INDUSTRIAL VACUUM LOADER

The NX industrial vacuum loader from Guzzler Manufacturing is designed for the cleanup and recovery of solids, dry bulk powders, liquids, slurries and thick, heavy sludge. The unit has an injection-cooled Robuschi blower that delivers 5,435 (free air) cfm with vacuum capabilities up to 28 inches Hg, enabling the operator to load more material at lower engine rpm. The vacuum loader is rated at 88.9 dB per SAE Test J1372 and features cyclone and bag houses configured together for increased efficiency and lower overall truck weight. 800/627-3171; www.guzzler.com.

DIRECT-DRIVE PUMP

The HDP-7750 S class pump from Hammelmann Corp. is a vertical, directdrive pump capable of delivering a variety of pressures and flow rates depending on fluid-end configuration (137 gpm at 10,000 psi, 71 gpm at 20,000 psi, 34 gpm at 43,500 psi). It is a 1,000 hp pump that can fit into a 20-foot container.

Features include a rigid base frame with anti-vibration mounting feet; Caterpillar engine in accordance with EPA/EC II; insulated spiral silencer installation with exhaust and rain cap; ES 2 electronic control and monitoring system with digital display for pump and diesel engines; pneumatic system with shaft driven compressor, air tank and bypass control; pneumatic pressure regulating valve; bypass water overflow line to tank (no water to ground); burst disc safety device; stainless steel boost pump; and stainless steel inlet filter installation. 800/783-4935; www.hammelmann.com.

13, VERSATILE REEL

The versatile PW-2 series reel from Hannay Reels is designed to quickly mount to almost any type of pressure washer unit. The model is specifically manufactured for mobile and portable pressure wash equipment as well as steam cleaning, spray and washdown applications. Constructed of 12- and 14-gauge steel with a black powder-coat finish, the reel has a pressure rating of up to 4,000 psi. The reel includes adjustable split bearing brake assembly, which allows for multiple tension settings. The unit offers permanently attached direct-crank rewind and a variety of optional mounting kits and accessories are available. 877/467-3357; www.hannay.com.

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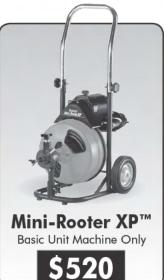
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14. COMBO CLEANER

The Aquatech B-10 combination cleaner from Hi-Vac Corporation is designed for catch basins, storm and sanitary sewers, lift stations and treatment plants in municipal and industrial applications. High-performance features increase productivity. The 360-degree rotating boom allows for faster positioning of the vehicle. A top-loading boom provides even load distribution, combined with a tandem axle chassis for maximum load capacity. Single-engine operation for all systems eliminates the need for two engines, reducing operating and maintenance costs.

Other features include 10-cubic-yard debris body, water tanks made with high-molecular density polyethylene, short wheelbase for easy maneuverability, cylindrical debris tank with no internal obstructions, and high-pressure, continuous flow water pump. 800/752-2400; www.aquatechinc.com.

MOBILE WATERBLAST UNIT

The X-Series mobile waterblast unit from Jetstream of Houston features the UNx fluid end for conversion between 5,000 and 40,000 psi operating pressures and lightweight frame for easy towing. Other features include a greaseless spread bearing PTO for reliable power transmission and reduced maintenance and integrated filter and water tank system for extended component life. 800/231-8192; www.waterblast.com.

16. AUTO-FEED REELS

Roto-Reel units from NLB Corp. automatically feed and rotate highpressure waterjet hose to efficiently clean pipes while reducing the strain on operating personnel. The automated rotation maximizes the waterjet force and helps the hose and attached rotating line mole negotiate bends.

There are two models available. The Roto-Reel 200, for smaller pipes, has a 200-foot, 1/2-inch hose and operates at pressures up to 20,000 psi. The Roto-Reel 500 has a 500-foot, 3/4- to 1-inch hose and has a maximum pressure of 10,000 psi. Both units have feed rates of up to 40 feet per minute and rotate their reels at 30 rpm. They can be air- or hydraulically powered and come skid-mounted with a protective cage. A wide range of rotating line moles are available, featuring operating pressures, left- or right-hand threads and standard or custom drill patterns to suit user needs. 800/441-5059; www.nlbcorp.com.

17. SIX REAR JETS

The JAWS nozzle from NozzTeq includes six rear stainless/ceramic jets to provide maximum thrust and cleaning power along with the jetting conduit/ tube system. A better grip allows users to change sled sizes for more range of cleaning from 6- to 30-inch pipes. The nozzle is made of high-grade stainless steel with SBR rubber cover to protect the conduit system. Sleds are available in sizes from 6 to 8 inches, 8 to 10 inches, 10 to 12 inches, and 15 inches and up. The unit is made for all types of lines including storm, water and sewer. 866/620-5915; www.nozzteq.com.

18. LIGHT-DUTY REELS

Series CU hose reels from Reelcraft Industries are designed for lightduty applications that require long lengths of low-pressure air/water hose. The hand-crank reels include a balanced brass swivel and brass inlet and have corrosion-resistant powder-coat paint. All reels feature a drag break to prevent de-spooling when reel is not in use. The unit is economical for storing and retrieving hose. 800/444-3134; www.reelcraft.com.

19. TWO-NOZZLE JETTER

The KJ-3100 waterjetter from RIDGID offers a fast and effective method for removing pipe obstructions like roots and mud. Powered by a 16 hp gasoline engine, the unit uses a full 3,000 psi working pressure and a flow of 5 1/2 gpm to clear blockages in 2- to 10-inch-diameter drains. Designed for easy maneuverability, the unit also comes with a propulsion nozzle that helps carry a 200-foot hose, and a penetrating nozzle for cutting through ice and sludge. 800/769-7743; www.ridgid.com.

20. PRESSURE WASHER PACKAGE

The TRS-2500 standard trailer-mounted pressure washer package from Shark Jetters and Pressure Washers includes a self-contained water tank. The trailer provides a high degree of portability and the flexibility of pulling water from the onboard water tank or from a garden hose supply.

Features include industrial undercarriage with leaf-spring suspension of a maximum of 3,500 pounds; high-density, 200-gallon white polyethylene water tank; 4.7 gpm at 3,500 psi hot-water pressure washer skid with electric start and generator (battery installed); high- and low-pressure hose reels, two saddle boxes and rock guard; three-way ball valves for switching between freshwater hookups and supply tank; cool bypass for extended run times by circulating water back through the tank; and 39-inch tongue with swing-away hinge for easy storage. 800/771-1881; www.sharkpw.com.

(continued)



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21. QUIET-ENGINE JETTER

The Soldier hydrojetter from Spartan Tool offers 3,000 psi at 12 gpm, with noise-dampening engine shrouding, a complete antifreeze system and 200-gallon water tank. It cleans lines to 15 inches and has a 27 hp gasoline engine. The unit includes a washdown kit for job site cleanup, 75 feet of 1/4-inch hose for small drain lines, and a hose protector for long hose life. 800/435-3866; www.spartantool.com.

22. HIGH-QUALITY REELS

High-quality hose reels from Steel Eagle use heavy-duty super swivels rated at 4,000 psi and 325 degrees. The reels include 200-degree swivel to provide optimum travel range for the hose, a hose holder that provides the option of coupling the hose to the reel to keep it securely attached, a locking shaft collar to hold the reel in place, double bearing design with stainless steel shaft to allow the reel to turn easily, a durable lock pin to prevent unwanted reel rotation, a hose guide to allow for easy winding of the hose and an adjustable friction brake which eliminates backlash when unwinding. The heavy-gauge cold-rolled metal construction can hold 100 feet of 3/8-inch high-pressure hose with a durable powder-coat paint. 800/447-3942; www.steeleagle.com.

23. THRUSTING SEWER NOZZLE

The Warthog WHP-3/4 sewer nozzle from Stone Age Inc. offers strong forward thrust, easy field maintenance, replaceable nozzle tips, and handles long distances and inclines. The nozzle cleans 6- to 18-inch lines. The rear-facing jets are angled sharply and the centralizer fins are trimmed back. The nozzle features five jet ports, including a boring jet offset at 15 degrees, and four jets at 172 degrees. 866/795-1586; www.stoneagetools.com.

24. COMPACT PUMP

The Compact pump series from Thompson Pump is available in dieseldrive portable sizes of 4 and 6 inches. The lightweight system offers a small size, few parts and low maintenance. The series includes the Enviroprime system, which keeps pumpage from discharging into the environment. The series is available with automatic start/stop and Silent Knight sound attenuation. 800/767-7310; www.thompsonpump.com.

25. ONE-PIECE NOZZLES

One-piece stainless steel cleaning nozzles from USB - Sewer Equipment

Corporation are neither bonded nor screwed together. The nozzles' 3D hydromechanics, located in the lower part of the chamber, eliminate pressure in the upper portion of the nozzles and prevent explosion in sewer lines or manholes. Water coming from a pressurized hose is immediately guided into channels and directed into one-piece ceramic nozzle inserts, which do not require winglets or flow-straighteners.

The nozzles are made according to DIN EN ISO 9001:2000 and remove sand, mud, silt, grease and obstructions from sewer and stormwater lines. The nozzles include the Antiblaster Nozzle 3D, the Flying Nozzle 3D, the Cleaning Nozzle 3D and the FJ Penetrator Nozzle 3D. 866/408-2814; www. usbsec.com.

26. INDUSTRIAL CLEANER

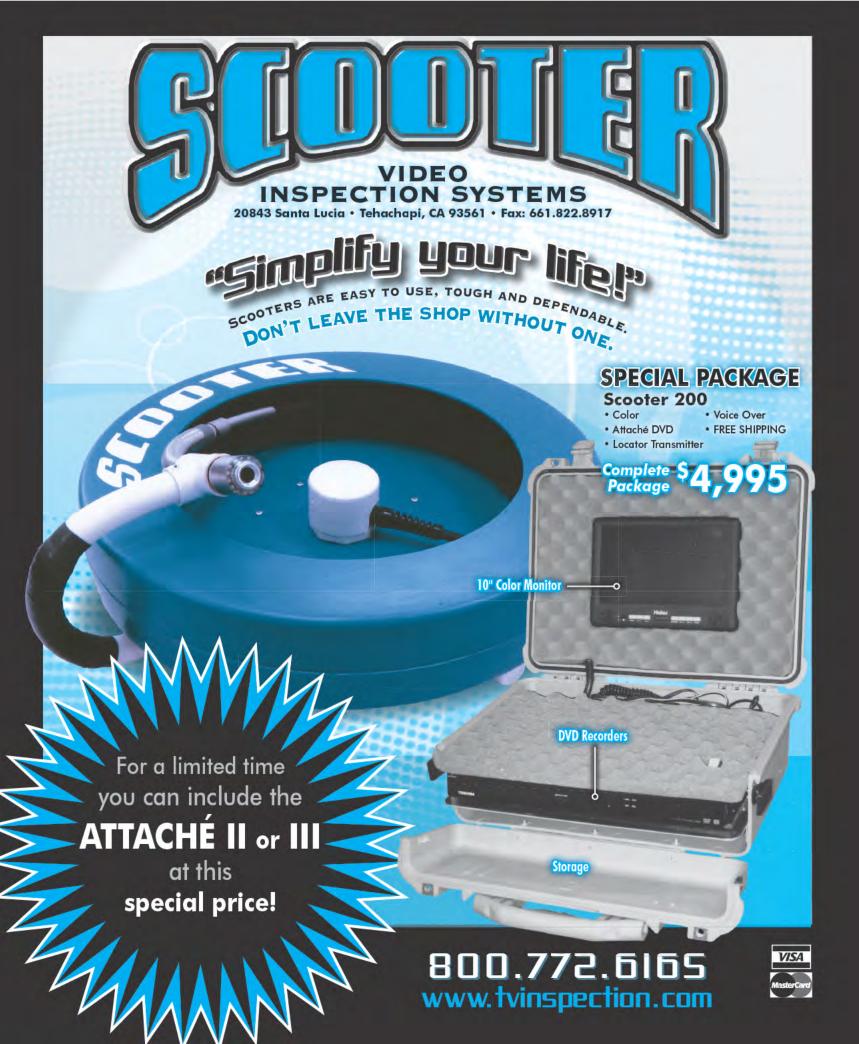
The AllVac industrial vacuum machine from Vacall offers a high-quality vacuum and filtration design for high productivity and long life. Twin cyclones ensure wet, dry and fine materials are separated to create clean air. The unit operates with a single engine that controls the chassis and vacuum system, resulting in less fuel consumption and less noise,

Features include an air cannon cleaning system that operates continually and resets after every cycle, universal filter bags that maximize volume of airflow, hinged twin-cyclone top door for access to duct work for easy decontamination, fail-safe tailgate design that opens/closes and locks with one control, control panel with multi-pin connector to join the control panel with circuit breakers to the electrical harness, poured-in-gasket seals for toughness and longevity, oversized dump chutes, and one-man safety prop that allows engagement of the body prop by one person. 800/382-8302; www.vacallindustries.com.

27. DUAL-ACTION WATER PUMP

The dual-action, single-piston, 3,000 psi JetRodder water pump from Vactor Manufacturing is designed for sewer cleaning and delivers additional capabilities of high pressure when needed to scour pipes.

The hydraulically driven unit contains five moving parts. The pump has a hydraulic cylinder on one side of a sealed center block and a water cylinder on the other side. A single shaft with specially constructed piston heads is slowly driven back and forth. The pump is constantly loading and expelling hydraulic oil and water. The slow stroke design reduces friction and provides long field life with low maintenance. There are no belts to adjust or maintain. The unit does not depend on water for lubrication or cooling. 800/627-3171; www.vactor.com.





28. DRY-RUN PUMP

The Dri-Prime NC150 pump from Godwin, a Xylem brand, is a compact pump with flow capabilities up to 1,767 gpm and discharge heads up to 195 feet. The pump features Flygt N-technology with a self-cleaning hydraulic impeller. NC Series pumps deliver high efficiency, resulting in low energy and fuel costs while reducing downtime.

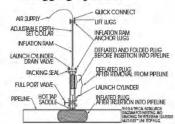
Features includes an automatic self-priming system that primes and reprimes from dry up to 28 feet without operator assistance or foot valve control; non-clog performance; Hard-Iron (60 HRC) impeller and insert ring; dry-running high-pressure oil bath mechanical seal with highly abrasion-resistant silicon carbide faces; and close-coupled centrifugal pump mounted to a diesel engine or electric motor for easy pump-end or engine/motor changeover in the field. The pump can be customized with highway trailer, skid-mounts or quiet enclosure. It is also available as a Godwin DBS for pump station backup. 856/467-3636; www.godwinpumps.com. ©

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PROBLEM

Chocolate and grease clogged lines at the M&M Hershey's factory in Las Vegas, Nev. Companies using cold-water jetters took hours to clean the lines, creating production problems.

SOLUTION

A technician from Silver Star Plumbing used a trailer-mounted sewer jetter from Hot Jet USA to clean the lines. The unit has a 35 hp Vanguard engine, TSF2021 triple v-belt driven General pump generating 8.5 gpm at 3,600 psi, soap injection system, and diesel heater producing 165-degree water.



RESULT

The hot-water jetter cut cleaning time in half. The lines are cleaner and odor free with fewer backups and less downtime. 800/213-3272; www. hotjetusa.com.

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saving benefit of the Pulsar 2000, we will let you return it for a full refund if you are not satisfied. If you want to learn more about the Pulsar 2000 and our leak locating equipment, please call 1-888-752-5463 or e-mail jsmll@aol.com for a free demonstration video or CD and references of satisfied customers.

We have been using the Pulsar 2000 along with the XL2 fluid detector and Geophones since January 1989 in our leak locating business. Our leak locates are accurate 95% of the time, but I can honestly say, the line we trace is always there. Our equipment is user-friendly and requires very little training, as you will see on the video. Purchase the Pulsar 2000 line tracer, XL2 fluid detector and Geophones, and start locating leaks immediately.

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Electric, gas jetters combine portability and maneuverability

BY ED WODALSKI

Designed for indoor use on 2- to 4-inch pipes, the portable SJPE-1500 electric jetter from Shark Jetters and Pressure Washers, a division of Karcher North America, has a retractable handle, 200-foot detachable hose reel for maneuverability in tight locations, metal toolbox, heavy-duty frame and 1,725 rpm Baldor motor that operates on 115 volts.

"The idea behind it is we wanted to manufacture a product that would be easier than a snake in the sense that it's more efficient and compact," says Eric Loucks, national sales manager for Shark. "It has a 35-foot power cord (with GFCI) and a steel roll-cage that protects the components (motor, pump and jetter valve)."

One of three electric cold-water jetters from Shark, each unit delivers 1.7 gpm and 1,500 psi. Other features include triplex pump, on-demand Pulse Technology, thermal relief valve, backflow check valve, inlet filter, pressure gauge and 1 1/2 hp, 13-amp motor with GFCI.

Pulse Technology delivers a pulsating action that breaks the friction between the hose and pipe for ease of movement, especially around tight comers. All models include gloves and safety goggles and are available with B and C accessory kits. The B kit includes 150 feet of 1/4-inch hose, 25 feet of 1/8-inch hose, basic nozzle kit and 1/4-inch basic nozzle kit. The C kit includes 150 feet of 1/4-inch hose, 75 feet of 1/8-inch hose, 1/8-inch basic nozzle kit and 1/4-inch basic nozzle kit.



The SJPE-1500 measures 27 inches long,

17.5 inches wide, 32 inches high and weighs 105 pounds, while the basic SJHE-1500 measures 22 inches long, 14 inches wide, 13 inches high and weighs 71 pounds. The handcart style SJPE-1650 includes 200-foot reel and pneumatic tires. It measures 26 inches long, 26 inches wide, 38 inches high and weighs 130 pounds.

Shark also offers four gas-powered jetters (SJDDG-3011, SJGDG-3013, SJGDG-3016, SJGDG-3020) that deliver from 4 to 8 gpm and up to 3,000 psi for cleaning 4- to 6-inch lines. Options on the gas-powered models include 200-foot hose reel, 200-foot hose reel with foot pedal and 300foot portable cart hose reel. Powered by Honda or Vanguard engines, three models are gear driven and one is a portable direct-drive unit.

All the jetters feature powder-coated 10-gauge steel frames for long life, have the power to break through grease, dirt, debris and ice and are ETL certified to UL-1776 safety standards. "That's very important to us as a company," Loucks says. "Not only do we want to make sure we're putting out a quality-made product that will last, but we want to make sure the person using it is safe and protected." 800/771-1881; www. sharkpw.com.

XPLORE TECHNOLOGIES TABLET COMPUTERS

The ix104C5 tablet computer from Xplore Technologies can withstand 7-foot operating drops to plywood and 4-foot drops to concrete. Fully submersible for up to 30 minutes, the tablet is impenetrable to dust and debris. The docking unit allows the tablet to be mounted in vehicles and quickly removed. The tablet has a temperature



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The Flex-Tube EF (eco-friendly) flexible hose from Flexaust is made from mediumweight clear, coextruded polyolefin elastomer with rigid green external polypropylene helix. An environmentally friendly alternative to PVC, the hose is phthalate-free, has low VOCs and smooth interior for efficient airflow. Hoses are available in 2.5- to 10-inch sizes with 0.028-inch wall thickness (2.5 to 4 inches), 0.030-inch wall



(5 inches) and 0.035-inch wall (6 to 10 inches) in 25- and 50-foot lengths. 800/343-0428; www.flexaust.com.

MAX-LIFE CLAW RAKE, HOSE GRABBER

The M3R-1 claw rake and MLHG-1 hose grabber fiberglass pole accessories from MAX-LIFE come either clipped or threaded. The threeprong rake with 90-degree bend is made for grabbing roots and debris from manholes and storm drains. The hose grabber is designed to retrieve sewer hoses, skids and nozzles. Opposing round "C" hooks enable the tool to secure the hose. 888/873-6295; www.flexmax.com.



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A relining adapter for VIS2xx and VIS3xx visual inspection camera systems from Wohler USA is designed so the entire circumference of the lateral line is visible when re-installing. The kit comes with centering star to ensure the camera



remains on the bottom of the lateral and three protection sleeves that prevent the camera cable from being cut during re-installment. 978/766-2956; www. wohlerusa.com.



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INDUSTRY

LEGACY EQUIPMENT ACQUIRES AG TRUCK

Legacy Equipment Co. acquired AG Truck Equipment Co., supplier of truck-mounted equipment and specialized vocational trucks, and The Truck Shop, a retail store for truck and van storage. The new entities will be combined with Legacy Equipment Rental to form Legacy Equipment Co. AG Body will continue as an ongoing business and operate independently.

RATECH LAUNCHES REDESIGNED WEBSITE

Ratech Electronics, manufacturer of pipeline inspection camera systems, redesigned its website, www.ratech-electronics.com, logo and catalog.



PERMA-LINER ACQUIRES MANUFACTURING, DISTRIBUTION SPACE

Perma-Liner Industries acquired 34,000 square feet of manufacturing and distribution space, bringing total square footage for its Clearwater, Fla., facilities to 60,000 square feet.

SPARTAN TOOL ADDS TERRITORY MANAGERS

Spartan Tool hired Steve McKenna and Philip March as territory managers. McKenna will be responsible for sales, service and customer support in northern New Jersey. He is a certified master plumber and fully licensed in



the state. March will be responsible for sales, service and customer support in the LA Inland Empire. He has 30 years experience in construction and facilities management and is a certified Green Plumber.

WJTA-IMCA EXPO SEPT. 10-12

The 2012 WJTA-IMCA Expo will be held Sept. 10-12 at the George R. Brown Convention Center in Houston, Texas. The Expo will focus on technology, equipment and safety practices with live demonstrations and the latest equipment, trucks, parts and accessories. Education sessions will cover hydroexcavation, nozzle selection, hose integrity, safety, understanding the power of vacuum and high-pressure waterblasting applications. For more information contact Ken Carroll at 314/241-1445, or visit www.wjta.org.

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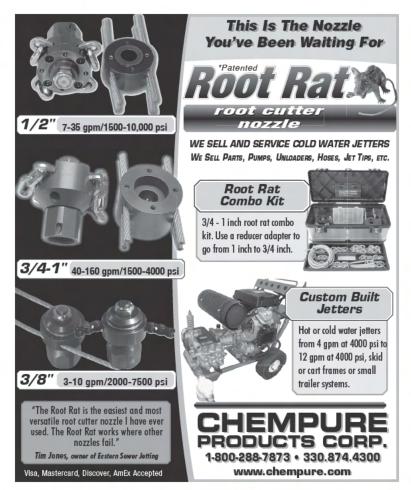
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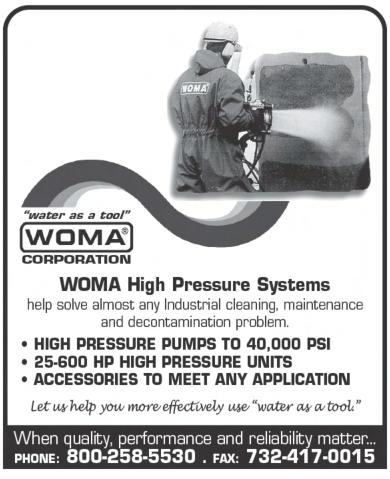
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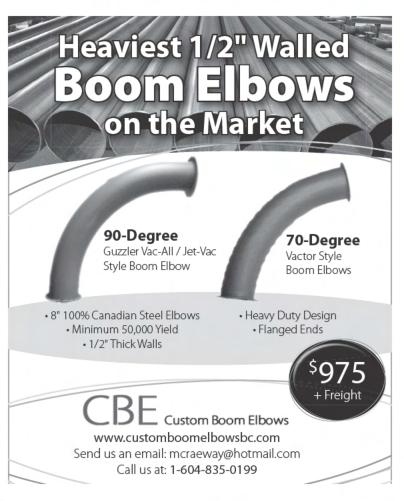
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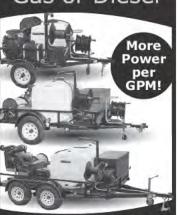


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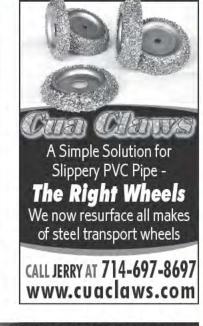
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www.servicewithasmile.com Sewer Cam Reel and Camera Repair: Authorized for General Wire, Ratech, Vision & Ridgid. Quality service on all brands. Need more info? Give Chuck a call. Electronic Repair Co., Birmingham, AL 35206. 205-836-0454; email: part@servicewithasmile.com.

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

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TRUCKS (DUMP, MISC.)



1997 Freightliner F112: 20,000 lb front axle, 40,000 lb rear axle, long wheelbase, double frame, M11, Cummins 330 hp, 10 speed with PTO, has 26' box, can shorten chassis.....\$19,995 with box

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TV INSPECTION

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inventory

2011 Cues, steerable Pipe Ranger with Oz II camera, k2 system, electric power lift, mounted in 2006 Freightliner/Mercedes Sprinter demonstrator diesel, 55,000 miles, 22 gpm, POSM software, on-board inverter power system. Truck is immaculate, \$105,000. Call 813-489-3108. FL.

2007 Cues, Chevy 3500 high cube: Steerable Pipe Ranger tractor with power lift, Oz II camera with Lasar Profiler and micrometer, 1,200' lf of cable replaced within last year, pole camera, granite software (pacp/macp module), Ready to work. \$79,999. Call 813-489-3108. (C08)

Goel Services (http://www.goelwastewater. com/) is seeking TV operators for state of the art CUES TV Inspection Trucks. For more information call 202-465-6900 or email pj.goel@8a. com. Top Pay in industry offered.

1998 Cues Mainline TV System: GMC Savanna 3500. Cues with Pro-Data on-screen titler. Honda generator, Sony combo DVD/VHS, 1,700' of M/C cable, pan & tilt camera with shorty transporter, \$39,500, 608-835-7767, WI.

Need spare parts? Looking to build a lateral launch system? CUES Lamp I components for sale: Reel, cable, launcher, cameras, etc... Almost 2 complete systems. Call 1-800-675-9409, ext. 303.



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1998 Sterling cab & chassis with a Cusco Mastervac 3800 wet & dry industrial loader. (Stock #5088C) www.VacuumSalesInc. com, (888) VAC-UNIT (822-8648). (CBM)

POWERVAC 3800, 3,250 gallons, carbon steel vacuum tanker with a Hibon PD blower, 3800 SCFM with vacuum to 27" Mercury. Dump type; DOT 407/412 regulations installed on a 2009 Sterling tri-axle. (Stock #4931) www.VacuumSalesInc.com, (888)VAC-UNIT (822-8648). (CBM)

1999 Sterling cab & chassis with a Cusco Turbovac 3800 industrial loader with a jetting system. (Stock #3163C) www. VacuumSalesInc.com, (888) VAC-UNIT (822-8648).

VACUUM LOADERS

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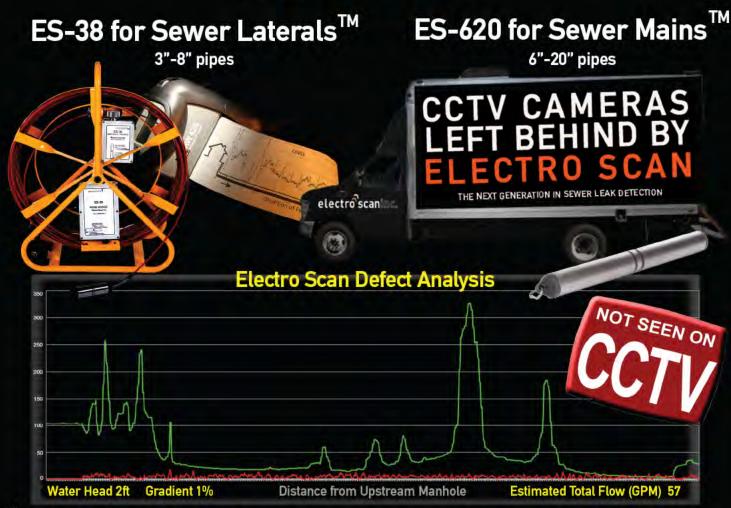
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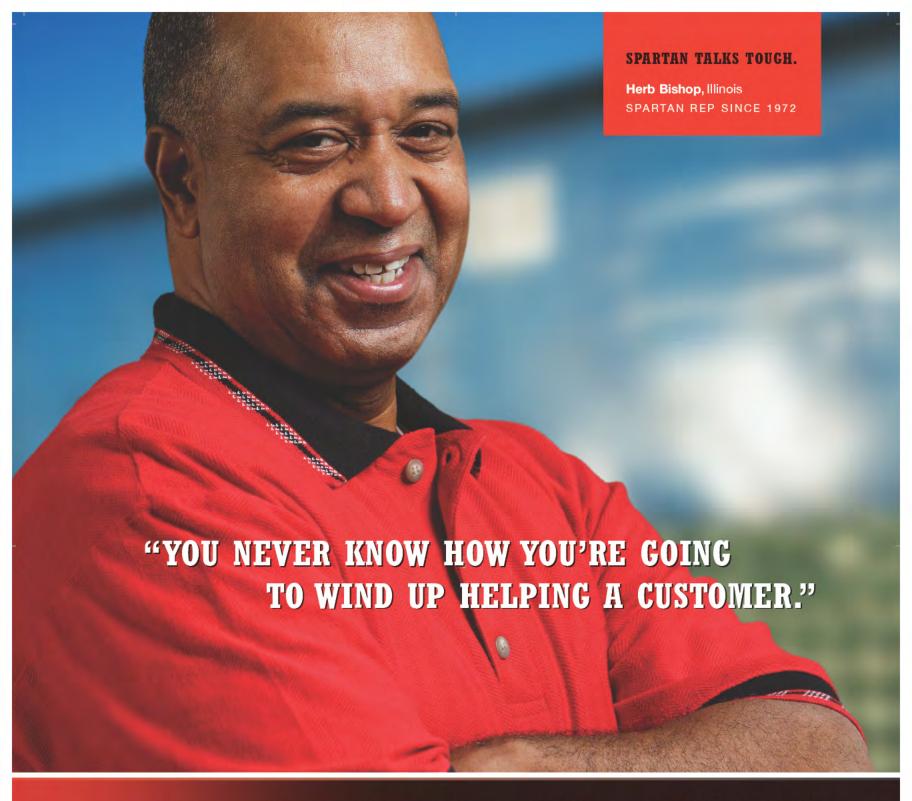
SEPTEMBER **Brings** great shows WJTA-IMCA in Houston, TX Sept. 10-12 at the George Brown **Convention Center**

South Texas Oilfield Expo is Sept. 19-20 at the American Bank Center MINExpo is Sept 24-26 in Las Vegas at the Vegas Convention Center

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