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SWIMMING IN BUSINESS

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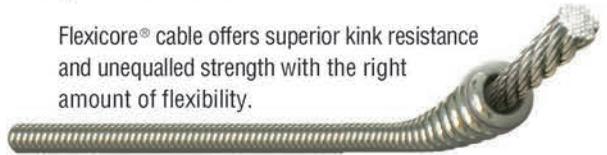
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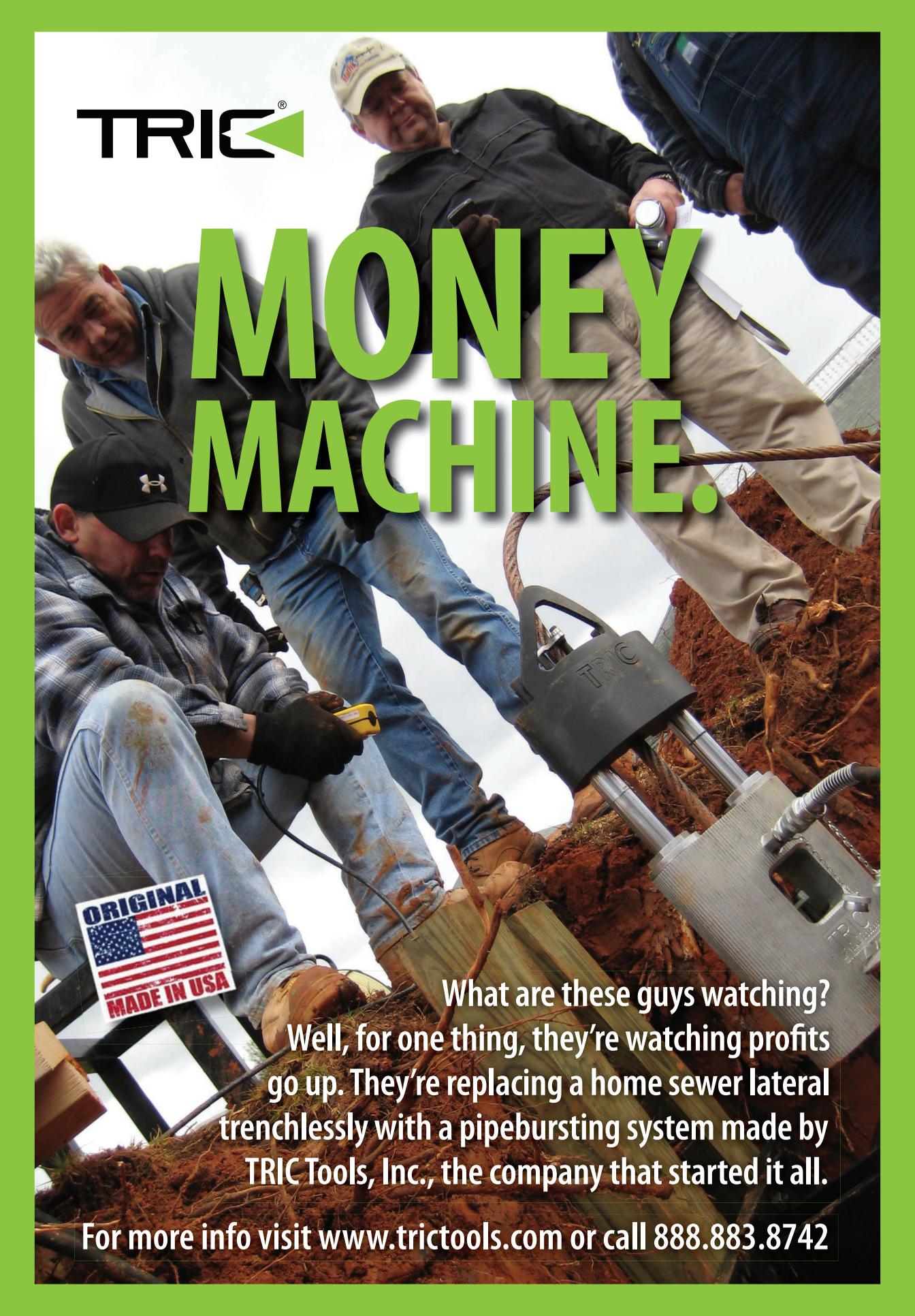
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Doing the Heavy Lifting

Motorized stair-climbing hand truck improves job safety and productivity at Ohio plumbing firm.

- By Ken Wysocky



On the Cover

Steve Reid of H2NO Leak in Miami uses a Leakalyzer (Anderson Mfg. Co.) to measure water loss. The Leakalyzer can measure water level changes to the 10,000th of an inch. Reid founded H2NO Leak in 2010 after leaving the general contracting industry. With over 76,000 pools in Miami, there is no shortage of work for Reid.

Photography by Rob Herrera

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Cory Dellenbach

Sweet on the Industry

A simple guideline to keep your crew focused on customers so your company can continue to grow

B

eing a plumber can be a sweet gig. If you need proof, just ask Bradd Conn.

Conn, owner of American Rooter Plumbing in Omaha, Nebraska, contacted me by email in mid-January after reading my column on what motivates you to be a plumber. Conn shared with me how he founded his company.

“We are the SWEET plumber and built our culture around working that way,” Conn says in the email. He then explains what he means by “SWEET.”

S — Self-improvement.

W — Wow experience.

E — Educate clients.

E — Encourage one another.

T — Transform lives.

If Conn and his crews aren’t following SWEET at each and every job they take on, they are doing a disservice to their customers. It’s an acronym that every plumbing company should adopt.

If Conn and his crews aren’t following SWEET at each and every job they take on, they are doing a disservice to their customers.

Going Through SWEET

As a plumber, you want to see yourself improve on each job. Treat each job as a learning experience because you’ll be running into different situations on each — PVC pipe versus copper, different valves, different setups from other plumbers, etc.

You want to provide your customers with that “wow experience.” Giving them a great experience will get you those callbacks when they need your services again. They’ll remember if your crews went above and beyond what was expected of them, or they’ll remember how nice they were or how well they cleaned up after a job.

Educating clients should be done at every job as well. It’s easy to do. Give the customer tips on what to look for if they suspect a leak, how to do little fixes like changing out a wash machine hose (yes, there are some customers that will call a plumber to do that). Explain how a filter might be useful for some customers if they have hard water. There is plenty that you can give customers information on.

Going to the second “E,” you have to encourage one another. Yes, I mean talk to each other in the plumbing industry. Attend trade shows and other industry events and talk to plumbers across the industry. Get their input on how you could do business differently, or communicate on social media to get tips on how to handle a certain job. It will help you grow, and who knows, you could be helping someone across the country do the same.

Finally, you need to transform lives. It doesn’t need to be a huge transformation, and it doesn’t take very much to do this. You could be saving someone if you go into a house to fix a leak and avoid any mold from developing. You’re not only there to fix pipes, you’re there to help improve quality of life at every home you work in.

SWEET Examples

There are several examples of plumbers following the SWEET acronym in this issue. In our First Responders feature, Texas-based contractor Biggs Plumbing was hired

Continued ▶



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38.0 ft

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to install a backflow prevention valve in a high-rise building in Austin.

Some of the technicians on this job had never done that type of work before, so they grew by working with experienced co-workers. They also gave the customer a "wow experience" by unclogging a drain prior to starting, which wasn't part of the original work order.

H2NO Leak of Miami is another company that follows SWEET. The company, profiled in this issue, has shown self-improvement since first entering the industry and has learned different methods in leak detection. The company also educates its customers by walking them through the leak detection method as the technician is doing it.

Are You Sweet?

How do you follow SWEET at your company? Let me know different ways your company follows this acronym. Email me at editor@plumbermag.com.

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PLUMBING POP

Plumber Creates Parody of Popular Pop Song

Remember the 2001 Enrique Iglesias pop hit “Hero”? What does that have to do with plumbing? For an answer, check out Michigan plumber Zak Wiersma croon, “I can be your plumber baby,” in a parody video he sent to *Plumber* magazine. Back in February, we had a fun chat with Wiersma about how he combined his career with his passion for music.

▶ plumbermag.com/featured



PLUMBING UP NORTH

Company Encounters Unique Challenges in Wisconsin's Northwoods

Longtime family-owned company Frasier's Plumbing, Heating & Cooling of Rhinelander, Wisconsin, was featured in the magazine in February. Read more about the company in this series of online exclusives. Everything from the challenges the company faces specific to its service area, to a system that was put into place to help fourth-generation owner Phil Frasier keep better track of the company's financial health on a day-to-day basis. ▶ plumbermag.com/featured

A DIFFERENT PATH

From Microbiology to Plumbing

A factor playing into the skills gap that is so often mentioned in the industry is that a traditional college track is commonly encouraged for people coming out of high school, although skilled trades like plumbing are still every bit a solid career path. Read about Travis Mullins — a man who was once firmly entrenched in a typical college track and took an interesting path to the plumbing field. ▶ plumbermag.com/featured



OVERHEARD ONLINE

“It's easy to sit there and say to yourself, ‘I don't care what color skin they have if they can do the work!’ The reality though, is that if the diversity of your staff doesn't actually reflect that, you have an opportunity to engage. As shepherds of the plumbing industry, we have jobs to fill and future plumbers to train. No stone can remain unturned in the search for talent and that might call for some change in tactic.”

— Promoting Diversity in the Plumbing Trade

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▶ Steve Reid, owner of H2NO Leak of Miami, prepares to inspect a client's pool for leaks.

SWIMMING IN BUSINESS

In his golden years, Miami contractor finds a profitable niche market – detecting leaks in residential swimming pools

By Ken Wysocky | Photography by Rob Herrera



H2NO Leak, Miami

| | |
|---------------------|--------------------------------------------------------|
| OWNERS | Steve Reid and John Pessoa |
| FOUNDED | 2010 |
| EMPLOYEES | 2 |
| SERVICES | Leak detection |
| SERVICE AREA | South Florida |
| WEBSITE | www.h2noleak.com |



John Pessoa, of H2NO Leak, uses a Leakalyzer (Anderson Mfg. Co.) to measure water loss. The first step the H2NO Leak crew will do is check the pool's pump and all related equipment before going to measuring tools in the pool.

Steve Reid didn't realize it at the time, but when he established H2NO Leak — his cleverly named leak detection service — in Miami a little less than a decade ago, there were more than 76,000 compelling reasons to do so. In short, statistics from Miami-Dade County show that in 2006 there were 76,477 in-ground residential pools, which are the sweet spot for his business.

All Reid knew at the time was something that still holds true today: There are *a lot* of pools in the Miami area. Thousands and thousands of pools. That made for a compelling business case that goes something like this: Often enough, those pools leak. Pool owners need to find the source. Reid uses leak detection equipment to find them. Rinse. Repeat.

Actually, it's not quite as simple as that. But one thing is as clear as pool water: At age 71, Reid has parlayed years of experience as a general contractor and installer of leak mitigation systems into a successful business. His secret sauce? A blend of good customer service, strong relationships with pool-service companies, technologically advanced equipment and a finely honed sense for detecting leaks based on years of experience. And last but not least, specializing in one thing and one thing only: finding — not fixing — leaks.

"I'm a specialist, kind of like a urologist," says Reid,

whose latest career started in 2010 at age 63, when he founded H2NO Leak. "I diagnose the problem, but I don't do the surgery. Sometimes we (Reid and his business partner, John Pessoa) do minor repairs. But most of the time, the pool companies that call us do the repairs. They just want us to find the leak for them."

Reid estimates that 60 to 70 percent of the company's service calls come from pool-service companies, including one with a client base of more than 1,600 pool owners. "We

“I diagnose the problem, but I don't do the surgery.”

Steve Reid

usually do three or four service calls a day," he adds. "We can easily do five a day. It's good work, and the profit margins are decent."

Why start a business when most people are either contemplating retirement or already retired? "I just can't sit around and do nothing," he explains. "Plus, I was driving my wife nuts. And thank God I'm in great shape."

CIRCUITOUS CAREER

Running a leak detection service certainly wasn't on Reid's list of career choices when he graduated from the University of Arizona with a degree in metallurgical

Plumber Profile

- ▶ Steve Reid uses a LeakTronics LT1000 listening device to search for signs of leaks.
- ▶ John Pessoa uses dye to check one of the pool's skimmers for possible leaks.



engineering in material science. In fact, he ended up working in the securities industry for years as an analyst, stockbroker and financial planner.

In 2001, he started working as a general contractor in Miami. When the real estate market started to implode in 2008, Reid had shifted gears and was installing leak mitigation systems for insurance companies. Faced with a business slump as the economic downturn deepened, he decided to do another career U-turn.

“One of my buddies who’s a plumber told me I should get into leak detection,” Reid recalls. “As luck would have it, a friend of mine in California, Terry Bursell, makes Leak Pro leak detection equipment. So I went out to California, and he taught me a bunch of things about how to use the equipment.”

But as it often happens, Reid found his education in leak detection 101 really started when he began working back in Florida. “Like in any business, there are so many

“Like in any business, there are so many fine points you need to learn that only come with experience. You can't be taught everything in a classroom situation. Most of what I know now was predominantly self-taught.”

Steve Reid

fine points you need to learn that only come with experience,” he observes. “You can’t be taught everything in a classroom situation. Most of what I know now was predominantly self-taught.”

On the plus side, however, it didn’t take Reid long to get established. He credits that to many relationships he forged as a general contractor and a good reputation he forged along the way. “I never jacked guys around, and I always paid them on time,” he notes.

Anatomy of a leak detection

When Steve Reid — the owner of H2NO Leak — arrives at a job site to find the source of a pool leak, he first visually assesses the situation. But if his site inspection doesn't turn up a logical cause, he breaks out the heavy technology: acoustic leak detection equipment.

Here's how it works: Reid throws a microphone into the pool, then walks around its edge, towing the microphone with him. At every opening — light ports, the main pool drain, skimmer seams and suctions, spa jets, and so forth — he stops to listen. The microphone is so sensitive that he says on some job sites, he can actually hear the sound of a dog's nails clicking on a tile floor inside a customer's house.

"A leak sounds almost like a mini jet engine, even if it's just an itty-bitty hole," he explains. "A lot of times I use a smaller microphone that I can stick inside a pipe, and I can hear a leak really loud."

Reid typically can detect a leak in the first 10 to 15 minutes of his microphonic probing. But if that doesn't work, he uses a dye test. Using a syringe attached to a

thin, roughly 6-inch-long plastic tube, he slowly injects dye into the pool water. "If there's even the smallest crack or hole, you'll see the dye get sucked in," he explains. "It's not always a pipe or the pool — the seal in the back of a light fixture can leak, for example."

Another weapon in Reid's arsenal is pressurized detection. If he suspects the leak might be in the main pool drainline that goes to the pump, for example, he must isolate that section. So he dives into the pool, removes the drain cover and inserts a plug.

Then Reid disconnects the drainline from the pump, installs a special induction plug on the end of the drainline, and then connects an air compressor to the plug (the plug has a tiny hole through which it accepts air). "Now the system is plugged on both ends," he notes.

Next, he turns on the air compressor up to about 10 psi. If the pressure holds, there's no leak. If there is a leak, eventually just air will come out after all the water drains from the isolated section. Then it's time to get a microphone out and start listening. "A leak will sound like a kid blowing bubbles through a straw in a drink," he says. "And the closer you get to the leak, the louder it gets."



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“We work on wholesale basis with pool companies that give me five to seven jobs a week. I could make more money working directly with customers, but that’s not how we operate.”

Steve Reid



LEAKS HAPPEN

Why do pools — even brand-new ones — spring leaks? “It just happens,” Reid says. They usually don’t stem from cracks in the pool itself or bad installations; instead, leaks more often stem from ground settling or tree roots that damage waterlines, he notes.

“Sometimes a guy starts compacting soil before installing pavers and puts a lot of pressure on the pipes below,” he explains. “Or we have a tropical storm that uproots trees or flexes the roots, which are on top of a water pipe.

“Tree roots are a big enemy,” he continues. “We have a lot of ficus trees, and their roots can find water on a molecular level. They’ll just strangle a pipe and break it open to get to the water.”

Most leaks occur in pipes within 3 feet of the pool. PVC pipes aren’t the culprit; they’re usually flexible enough to withstand settling and other external pressures. But things like elbow and tee fittings — which Reid says are made from a more rigid kind of PVC — are not. “So when you get settling from improper backfilling, for example, a crack in the fitting can develop,” he explains. “Or if we get a lot of rain, a pool can float up a little bit — maybe as little as 1/16 of an inch. But that puts a lot of pressure on a pipe.”

Reid doesn’t need a lot of equipment, which is one reason he found the business concept attractive: lower startup costs. He uses an acoustic leak detection system made by Fisher Research Laboratory, another acoustic leak detection system built by LeakTronics, a RIDGID SeeSnake pipeline inspection camera, and a LeakTronics sonde.

WATCH FOR VISUAL CUES

The first thing Reid does when inspecting a pool has nothing to do with the equipment he owns. In a decidedly

untechnological approach, he takes a few minutes to visually assess the situation, including a look at the pool’s pump and related equipment. Key visual cues might include sunken pavers or pavement, indicating the source of a leak. “You don’t need to be Sherlock Holmes to figure out these things,” he quips. “A lot of it is just visual stuff. But I still run into things occasionally that I’ve never seen before.”

Reid learned to take a systematic and methodical approach early on. He recalls one job where he spent hours and hours trying to determine why a pool was losing anywhere from 1 to 2 inches of water a day. He even donned a wetsuit for a close-up visual inspection but couldn’t find anything wrong. Then he finally took a look at the equipment and found a pinhole leak in the backflow valve of a filter. “It was sending water into a sewer line instead of into the pool,” he explains. “That taught me to do first things first: Always check the equipment.”

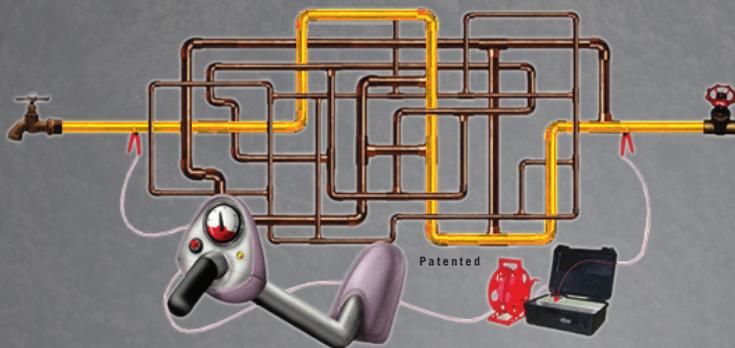
If Reid can’t find a leak, he doesn’t charge the customer; it’s all part of his emphasis on integrity and customer service. “I usually will go back as many times as it takes to find the leak,” he notes. “In the last five years, I can think of only one or two I just could not find, but I knew there was a leak. But if I can’t find it, I don’t deserve to get paid.”

Sometimes Reid finds a leak, then gets a call back from the customer because the pool still is losing water. In those cases, he usually finds there were two or more leaks.

▲ Steve Reid operates the pool pumps during a leak inspection.

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Reid considers himself a people person — a skill that comes in handy in his role as a subcontractor for pool-service companies. By the time Reid arrives, the customer already is upset because their water bill is sky-high, and they think the pool-service company should've been able to find and fix the problem. "So the first thing I have to do is soothe the savage beast," he says. "I have to save the customer for the (pool-service) company. It's basically a lot of PR work because I've got two customers — the customer who owns the pool and the pool-service company."

KEYS TO SUCCESS

Maintaining strong relationships with those pool-service companies is critical to Reid's success. As such, when a residential customer for whom Reid has diagnosed a leak calls back when another problem occurs, he refers them back to the service company. "It's an integrity issue," he explains. "We're not going to steal their customers. We work on wholesale basis with pool companies that give me five to seven jobs a week. I could make more money working directly with customers, but that's not how we operate."

Reid also does the simple things that enhance customer service, like calling ahead to let customers know he's on his way. "My wife, Lea, told me a long time ago to just treat everyone the way you'd want to be treated," he notes. "That was great advice." He also will not negotiate prices with customers; instead, he sticks to pricing that covers the cost

of his business expenses, plus a profit margin. "It just doesn't make sense to match or beat competitors' prices," he says.

Looking ahead, Reid doesn't expect the company to grow. At this point in his life, he's happy where the business is revenue-wise and feels that growth might lead to lower-quality work. "We generally have more than enough work," he says. "We're not looking to grow this into a giant company. There's no doubt in my mind that if we really wanted to, we could have three to five trucks on the road in a year's time.

"But that's when you start to lose control," he adds. "Things get more complicated in a hurry. It's like the old saying about buying a boat: The best two days of my life were when I bought and sold the boat. We don't want to buy the boat, so to speak."

As for retirement, it sounds about as likely as the more than 76,000 residential in-ground pools in Miami-Dade County springing leaks at the same time. "I plan to keep working until the day I drop," Reid says. "I love my work too much to stop." **PI**

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Doing the Heavy Lifting

Motorized stair-climbing hand truck improves job safety and productivity at Ohio plumbing firm

By Ken Wysocky

Campbell Plumbing and Drain Cleaning in Eastlake, Ohio, relies heavily on a silent partner of sorts that works without pay, improves on-the-job safety and efficiency, and never gets tired: a StairCat motorized stair-climbing hand truck, made by Escalera.

“We’ve had one since the 1990s,” Scott Campbell says. He co-owns the business with his father, Ray, who established the business, located about 15 miles northeast of Cleveland, in 1969. “It’s like always having an extra set of hands. One guy can safely move a water heater up or down stairs by himself. It does all the heavy lifting for us.”

Campbell says the StairCat is critical to operating the family-owned business, which focuses on service and repair plumbing and drain cleaning. In fact, when the company recently bought a new truck (a 2017 Chevrolet 4500 equipped



Eastlake, OH

| | |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COMPANY | Campbell Plumbing and Drain Cleaning |
| LOCATION | Eastlake, Ohio |
| TOOL | StairCat motorized stair-climbing hand truck from Escalera |
| FUNCTION | Safe transport of heavy loads up and down stair with just one person |
| FEATURES | Light but durable tempered aluminum alloy frame; climbs steps up to 10 inches tall; automatically adjusts to various step heights; two polyurethane lifting feet; two 4,000-pound lift chains; hardened steel gears, sprockets, and bearings; easy toggle-switch operation |
| WEBSITE | www.campbellplumbing.net |
| COST | Around \$2,200 |



with a 17-foot box body made by Unicell), they also ordered a second StairCat. “It was one of the top five things we ordered immediately after buying the truck,” he says.

The safety-enhancement factor the StairCat provides is huge, Campbell says. Anyone who hauls water heaters up flights of stairs knows how precarious it can be, even with two employees. And on-the-job injuries can raise the premiums paid for workers’ compensation insurance.

Continued ▶

◀ A plumber uses a StairCat motorized stair-climbing hand truck (Escalera) to move a 100-gallon water heater — weighing about 750 pounds — on his own to the truck. (Photo courtesy of Campbell Plumbing and Drain Cleaning)

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But the machine also increases productivity and profitability. How? Because water heater jobs now typically require just one plumber instead of two. That frees up the second technician to handle a different revenue-generating service call. That's a big benefit for Campbell Plumbing, which has just three employees, he notes.

EASY MOVING

Powered by a rechargeable, 17-amp gel-cell battery and an electric motor, the StairCat has two different weight-capacity options: 700 and 1,200 pounds, with different height options available. The various models weigh anywhere from 75 to 83 pounds. All models measure 2 feet wide with a standard toeplate depth of 10 1/2 inches.

Campbell Plumbing owns a 700- and 1,200-pound model. It can easily handle 40- or 75-gallon water heaters, or even a 100-gallon commercial water heater. The unit even can move heaters still full of water and sediment, he says. Other contractors sometimes use it to carry boilers, and friends borrow it to move gun safes, he adds.

"Many times there's no drain in a basement, so we have to take a water heater outside to drain it," Campbell explains. "Every time we use the StairCat, customers are amazed. They say, 'I was wondering how you were going to get that up the stairs.'"

The company also purchased a larger toeplate attachment for moving larger water heaters, as well as a so-called big wheel attachment. That's the unit's 10-inch-diameter pneumatic wheels that allow company technicians to easily move heavy water heaters over rough terrain. "We call them the 'off-road' wheels," Campbell says.

Another accessory — a retractable load-support mechanism — provides two extra wheels under the body of the hand truck for more support when carrying large, heavy items longer distances. "With that attachment, one guy can safely move a 100-gallon water heater down a long sidewalk or hallway, and they're not fighting any weight," Campbell notes.

DOING THE CLIMB

With a frame made from a tempered aluminum alloy, the StairCat can climb steps as tall as 10 inches and automatically adjusts for different step heights. It uses two polyurethane lifting feet; two 4,000-pound-capacity lifting chains; and a system of hardened gears, sprockets, and ball bearings to climb stairs. The lifting legs lift the hand truck

“It's like always having an extra set of hands. One guy can safely move a water heater up or down stairs by himself. It does all the heavy lifting for us.”

Scott Campbell

completely over the lip of a stair, which prevents it from damaging the edges of stairs, like a conventional hand truck might.

The 700-pound model climbs one step every four seconds; the 1,200-pound model climbs one about every six seconds. Operation is simple: Just position the loaded hand truck so its two belts touch the first step, tilt it backward, and flip a toggle switch to the “up” mode. That moves the machine's two lifting feet into position to start climbing. To go down a flight of stairs, simply flip the switch to “down” mode, and the process is reversed.

DURABLE AND COST-EFFECTIVE

Campbell says the StairCats are very durable. In fact, in more than 20 years of use, the first StairCat compiled an admirable operating-cost record — just a new battery every four or five years and one new operating switch, he reports.

A StairCat's suggested retail price is approximately \$2,200. But Campbell says it's well worth the money because of the value it provides in terms of increased productivity and profitability and reduced chances for serious injuries.

"But I actually don't care as much about the economic savings," he says. "We run a small family-business, and the less wear and tear I put on my body, the longer I can provide a living for my family. There are only so many years before I'm an old, banged-up plumber, but the StairCat will help me work longer and safer."

The company also relies on a wide array of RIDGID drain cleaning equipment, including SeeSnake pipeline inspection cameras, CS6x monitors, K-40 cable machines, K-38 hand-held drain cleaners and SeekTech SR-20 locators. But where would Campbell Plumbing be without its StairCats? "I don't even want to think about it," he says. "You need to have the right equipment to do the job right."



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Randy Lorge

Following the Code

Trying to figure out the plumbing codes and why there isn't a universal code **By Randy Lorge**

At the end of the day, it's all about "Protecting the Health and Safety of the Public, and the Waters of the State."

I'm a master plumber from Wisconsin. Our state writes its own code. It is not a national code like the Uniform Plumbing Code or International Plumbing Code.

382.10(1) reads: "INTENT. (a) Plumbing in connection with all buildings, public and private, intended for human occupancy, shall be installed and maintained in such a manner so as to protect the health, safety and welfare of the public or occupants and the waters of the state."

I'm not going to pretend that I'm expert on both the UPC and the IPC, both highly respected national plumbing codes, but what I am going to tell you is that I'm willing to bet the intent of those codes is very much the same as Wisconsin's.

With that being the case, this plumber has been asking himself as of late: "Why are there so many different plumbing codes, and why can't there be one plumbing

code used across the nation that is written in a way that's adaptable to all 50 states?" In other words, we could draft it so as to include climate conditions from North to South and East to West and account for detrimental conditions such as earthquakes or floods, which occur more often, if not exclusively, in some states rather than others.

Let me guess, you just thought to yourself: "Well of course there should be one code, and it should be the one I use. My code makes the most sense. All those other codes are wacked." How far off was I on my guess?

THE BEST ONE?

Plumbing codes can gather a lot of emotion when one is asked which one is best. I have the unique opportunity of sitting on a committee with my peers who have a plumbing code other than the one I use in my state. I will be first to say that it's extremely interesting to me to see the differences in these codes as I help develop training materials for plumbers and inspectors from around the world.

Something as simple as the size of a drain for a kitchen sink, to the extreme differences in which we protect trap seals with our code-specific venting systems, completely took me back a bit when I first learned them. And of course, as you can just about imagine, my first knee-jerk reaction to that code was, "This code is wacked!"

But the thing that truly stands out to me is the passion each of us have for the plumbing industry and how we strive to deliver the same "intent" regardless of the plumbing code you pick up.

CODE HISTORY

I did some brief research into the history of plumbing codes to see if there had ever been a movement toward developing a national plumbing code. I found that in 1921, the U.S. Department of Commerce started a comprehensive effort toward the standardization of plumbing codes. A committee was put together, and the National Bureau of Standards conducted scientific experiments. Over the following years, changes were made based on the outcomes of the installations. In 1941, a committee was put together to develop what was to be known as the American Standard plumbing code. By 1949, the American Standard Code A40.7-1949 was adopted. From what I can tell, this was the first attempt to create a nationally accepted plumbing code. Yet by 1956, there were 26 states that had their own codes to regulate plumbing systems.

However, in 1972, the National Standard Plumbing Code A40.8-1955 was withdrawn as an American National Standard. It should be noted that for a number of years

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What I can tell you, though, is that the end of the day, all plumbing codes are about protecting the health and safety of the public, and the waters of the state.

there were three model plumbing codes available to states and municipalities for adoption. These model codes could be adopted with, or without, modifications made by local authority. The three were the BOCA Basic/National Plumbing Code (1968), the Standard Plumbing Code (1955) and the Uniform Plumbing Code (1945). It wasn't until 1994 that the International Plumbing Code arrived on the scene for adoption.

A tremendous amount of research and study in the fields of plumbing hydraulics and pneumatics has been done in the development of plumbing regulations in this country. The documented results of these studies have been incorporated in one form or another into the plumbing codes we use today. As our country continues to move forward toward being environmentally responsible for our most valuable resource, water, research across the country will continue and will dictate changes that our codes will need to adjust to.

So why isn't there only one plumbing code? I wish I could tell you the answer to that question, but I can't. What I can tell you, though, is that at the end of the day, all plumbing codes are about protecting the health and safety of the public, and the waters of the state. **PI**

Randy Lorge is a third-generation plumber and the instructor of plumbing apprenticeship at Fox Valley Technical College in Appleton, Wisconsin, for the past 18 years. Lorge was a coach for Team USA in 2015 in Nashik, India; 2016 in Diepsloot, South Africa; and in 2017 in Indonesia, where his team and he participated in the Community Plumbing Challenge. Lorge also sits on the International Association of Plumbing and Mechanical Officials (IAPMO) Training and Education committee. He enjoys time with his family and spending as much time as possible in his deer stand. To contact Lorge, email editor@plumbermag.com.

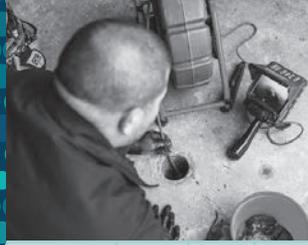


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The Craft Behind the Contract

Contractors should take time to carefully review and negotiate job terms before starting any work

By Neil Feldman

Though it's common for plumbing contractors pursuing projects to largely focus on securing the work and pleasing customers, it is vitally important to fully understand — before the work begins — the meaning and potential consequences of the terms baked into the contract or purchase order they are agreeing to.

Regardless of whether or not a company is in a bargaining position to meaningfully negotiate those terms, failing to appreciate what is being agreed to can mean the difference between a lucrative project and a messy dispute with potentially damaging financial and reputational fallout.

TAKING IT SLOW

Amidst the rush to win the work and secure the contract, prudent plumbing contractors of any size will first have an attorney or in-house contract expert carefully review the contract's terms and attempt to negotiate away language that carries the highest level of risk.

“At the very least, subcontractors want to limit the liability to judgments arising out of their own negligence because otherwise the clause can hold them accountable for something like poor quality-control by a manufacturer that results in serious damage or bodily harm.”

Steven Siegfried

While there are a host of potential pitfalls in contracts, those that bear the most risk should be the point of focus. And, while simply crossing them out is unlikely to be acceptable with most customers, there's often some room to negotiate to subdue the risk.

It is first important to know exactly what's being agreed to. “You must recognize that the contract you are signing often is not the full set of obligations that applies to your work,” says Andrew Glaab, a construction law attorney with the Boston-based firm Cohn & Dussi. He strongly advises obtaining the prime contract documents because subcontracts and POs often have “flow-down” provisions, meaning everything that contractually applies to the general contractor also applies to the subcontractors and suppliers working on the project.

“These obligations and limitations, which may only be in the prime contract documents but flow down to others, can be substantial in number and significant in their consequences.” Glaab says.

He offered the example of a prime contract being bound by liquidated damages that are uncapped. “If the manufacturer ships product late and a deadline is missed, that could trigger liquidated damages and quickly turn a job southward,” he says. Glaab suggests trying to limit the liquidated damages clause to a modest daily amount or an overall cap that does not exceed the profit figured in the job.

WATCHING THE CLAUSES

Another contract provision that bears notable risk is indemnification, which typically is written in conjunction with a “hold-harmless” clause. To “indemnify,” in its purest form, always means to be responsible for any judgments against the indemnitee (the party receiving the indemnification) and sometimes can include legal fees.

Continued ▶



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A hold-harmless clause essentially waives any claim you might otherwise have against a party or a right of recovery against it.

“In many contracts we see today, indemnity clauses are broadly written and hold a subcontractor responsible for any judgments arising out of work performed by or material supplied by that subcontractor,” says Steven Siegfried, a professor specializing in construction law at the University of Miami School of Law. “At the very least, subcontractors want to limit the liability to judgments arising out of their own negligence because otherwise the clause can hold them accountable for something like poor quality-control by a manufacturer that results in serious damage or bodily harm.”

Siegfried also notes it’s optimal to include a cap on indemnity exposure, which “should not exceed the value of the contract.” A further suggestion he offers is to maintain an umbrella insurance policy that would cover most claims arising out of negligent acts. While no policy fully covers all possible claims, there’s a high probability that a good umbrella policy would in most circumstances cover a significant part of a claim to at least mitigate the damages.

NEGOTIATING THE MONEY

Payment terms of a contract or PO need to be digested and are another point of potential negotiation. “The (contract) language concerning payment can be crafty and should be reviewed carefully,” says Peter Stassi, executive vice president at F&G Mechanical, a Secaucus, New Jersey-based plumbing and mechanical contractor. “A lot of contracts will have language that stipulate payment to subcontractors and suppliers is conditional upon receipt of payment from an owner, and on some projects, that can really impede cash flow.”

Stassi recommends trying to negotiate a cap on the amount of time any given payment can be held. Another avenue that sometimes works is to suggest a tiered discount tied to a quicker payment schedule. Under that scenario, general contractors can be incentivized to release payments within, say, 15 business days to save a percentage point or two off the contracted price.

Ensuring the full scope of what’s included — and sometime more importantly what’s not included — in a contract is clearly spelled out in writing is extremely important. While this is within the domain of an estimator or project manager who is intimately familiar with the project’s scope, it is essential because sometimes specifications have items noted that need to be excluded or modified. “It’s one thing to discuss a specific scope with a purchasing agent or PM, but those discussions will be long forgotten if they are not put in writing in the contract itself,” Stassi says.

DON'T FORGET THE WARRANTY

Contracts typically carry a warranty for the work being performed, and it’s advantageous for the warranty period to begin running from the date the work is complete or approved.

“Contracts drafted by owners will often state that warranties begin at the completion of the project as a whole, but you may have no control over when the entire project is completed, and thus your warranty may be a lot longer than you anticipated,” Glaab says. He suggests aiming for clear and specific language that “starts the clock ticking on your warranty as soon as you have completed your work or within a reasonable time thereafter.”

IN WRITING

Those in the industry all agree that the No. 1 piece of advice when it comes to contracts is when in doubt, get it in writing.

“Oral correspondence can easily be forgotten, and emails and notes on proposals can be construed as not being part of a contract,” Glaab says. “It’s always better to err on the side of caution and ensure anything you want in a contract is there in black and white and anything you don’t isn’t or is at least modified so you can sleep well at night.” 

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Tight Fit

Plumbing firm works overnight to assemble a backflow prevention valve in a high-rise office and hotel and completes job ahead of schedule

By Cory Dellenbach

A short time frame and a tight workspace didn't stop Dan Seligman and his team at Biggs Plumbing from completing an installation of a backflow prevention valve at a multistory hotel and office building.

The five-man crew from the Austin, Texas-based company would only have seven hours to install the valve and a double-check device at the water entry of the building.

After planning the job for several months, making sure the design of the new system and shutdown of the current system would both work, the company took on the job in December. The crew managed to complete the job in only five hours.

SECURING THE JOB

In the last few years, Austin authorities began enforcing an ordinance that requires backflow prevention at the water entry of existing buildings taller than 80 feet. Double-check devices are also required.

"We have been putting them in new buildings for the past several years," says Seligman, a project manager on the commercial construction side for Biggs Plumbing. "This was the second of these retrofits that we have done."

Biggs Plumbing is a family-owned operation that has been in business since 1972. The company, led by William Biggs, has about 70 employees. With a present focus on high-rise buildings, including multi-family condos and apartments, hotels, and office buildings, the company knew this job would be a good fit.



- ▲ The components for the backflow prevention valve sit out in the company shop, ready for assembly.
- ◆ The backflow prevention valve at a multistory hotel and office building after it is assembled by technicians at Biggs Plumbing in Austin, Texas. (Photos courtesy of Biggs Plumbing Co.)



▲ The components for the backflow prevention valve sit out in the company shop, ready for assembly.

The company quoted the job in July 2017 and won. The work would take place in December. The biggest issue right away was the time frame.

“We were scheduled for this shutdown on a Sunday night since the hotel would have low occupancy,” Seligman says. “We couldn’t turn the water off until 10 p.m. and needed to have everything back up and running by 5 a.m. Monday.”

PREPPING FOR THE JOB

Work on the job began weeks ahead of the actual planned shut-off. Seligman and co-worker Mike Wells planned the work, measuring the existing piping in advance so the cuts for a 6-inch galvanized pipe could be grooved ahead of time for the new valve.

“We had the piping fabricated through one of our local vendors,” Seligman says. “We have the equipment to do that work, but we were short on manpower. Also, since they were fairly short pieces, we would have wasted a lot of pipe by buying full joints.”

A week before the job, crews made a hot tap on the bottom of the current 6-inch galvanized pipe to add a 3/4-inch valve with hose connection to facilitate draining into a shower in the adjacent building.

“During the installation of that valve, we found the shower drain was clogged, so we needed our service crew to unclog it before Sunday night,” Seligman says.

Crews also built the support for the backflow device and put a few pieces together.

“Due to the small space in the engineer’s storage room, we wouldn’t have room for lifting equipment,” Seligman says. “We put together the flanges on the butterfly valves and a few other parts, but most was done with individual pieces to keep the weight down.”

On the Monday before the job, the company’s backflow tester certified the device and filed the report with the city authorities.

“We don’t get to do these shutdowns or major replacements often, so I look forward to the problem-solving aspect.”

Dan Seligman



▲ The staff that worked on the backflow prevention valve were Taylor Votion, Josh Mason, David Wright and Mike Wells.

GETTING TO WORK

On the night of the job, crews arrived — with three of them driving from their homes an hour away — and assembled the backflow system.

The only challenge the crew faced was the isolation valve inside the building not holding.

“We had to turn the water off at the meter in the sidewalk vault,” Seligman says. “We lost some time deciding whether it was just slow to drain or the valve wasn’t shutting off completely.”

Crews also installed a bypass with the backflow system, which is something that usually isn’t acceptable on backflow devices but was requested by the customer. Seligman says the bypass was removable since they expected the inspector to require it to be taken out.

“I really have to hand it to the crew,” Seligman says. “Of the four guys, two of them were pretty new to the trade, one has less than a year’s experience, and Mike did a great job giving them detailed directions so that no mistakes were made. I was right there only to give guidance from my 40 years’ experience.”

VERY LITTLE MAINTENANCE

Looking ahead, Seligman says there should be minimal maintenance needed on the double-check device, saying they only need to be tested at the time of installation under the local ordinances.

However, if a problem does arise, Biggs Plumbing will be there.

“We work in both sides of this building on a regular basis,” Seligman says. “The hotel and office have different management companies and we are the preferred vendor for both.”

Seligman is already looking forward to working on the company’s next double-check device: “I really enjoy this kind of work. We don’t get to do these shutdowns or major replacements often, so I look forward to the problem-solving aspect.” **PH**



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 Other _____

WHAT BEST DESCRIBES YOUR PRIMARY JOB FUNCTION?

- President/CEO/Owner Management/Supervisor
 Operator/Technician Other _____

HOW MANY EMPLOYEES DO YOU SUPERVISE OR WORK WITH AT YOUR FACILITY?

- 0-3 4-9 10-19 20+

HOW MANY VEHICLES DO YOU CURRENTLY HAVE IN SERVICE?

- 1-5 6-10 11-15 16-20 21+

WHAT IS THE APPROXIMATE POPULATION OF THE AREA IN WHICH YOU PROVIDE SERVICE?

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 100,001-200,000 200,001-500,000 500,001+

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Should You Go With New Tires or Retreads?

Your budget for new rubber and ability to deal with occasional blowouts may be determining factors in your decision on how to keep rolling down the road *By Ronnie Tamez*

It's an age-old question in the world of trucking: Should I buy new tires or consider retreads?

First, I should explain what a retread tire is for those who might not know. There's a part of the tire that rarely gets talked about. It's called the casing. That's the sidewalls, the bead (where tire meets the rim), and the tread. The tread is what wears off as we drive. Federal regulations state that we have to change a tire when the drive tire tread depth reaches 2/32 of an inch or the steer tires reach 4/32 of an inch. To save on tire costs, retread companies offer to take your used cases and put a new tread on them.

We get the die-hard answers: "Never put a retread on my truck" and "Always buy retreads."

The ones who say to never put a retread on a truck claim that retreads are nothing but problems, citing many examples of truck drivers stuck on the side of the road waiting for a tire guy to come put a new retread on the truck. In most cases of blowouts, the truck has damage done when the retread comes apart at highway speeds.

The ones who advocate for always buying retreads state that they have had the same problems with new tires as they do with retreads, so they just buy retreads.

PRESSURE CHECKS

But the key is to frequently check and maintain tire pressures. How often should you check? Tire industry folks will tell you to check your tire pressures weekly. But remember that federal regulations require us to thump the tires daily with a hammer. Now, whether using retreads or new tires, tire pressure must be maintained to get the best tire wear and longest life.

I can share my own experience. When I started, all I could afford was retreads. Retreading tires can run about \$250. New tires can run about \$500. Which tires will get the most miles? That's up for debate. In my experience, retread tires have left me stranded with blowouts.

In case you haven't heard a blowout on the freeway at 60 mph, it really sounds like military artillery going off. The loudest boom I have heard.

I only ever had about five tires make it down to 2/32 of an inch tire wear before blowing out. I have lost count over the years of how many blowouts I've had, but my guess is about 15 tires. We don't gauge wear by miles but expect about 1.5 years out of a set of tires. With each blowout, I have not been able to reach my tire life expectancy, often losing a tire about 3 to 4 months early. But to this date, I have had zero blowouts with new tires.

I ran retread tires for many years. And I have spent hours on the side of the road waiting for a tire changer to show up and put on a new one. I have also had drivers experience blowouts. And in case you haven't heard a blowout on the freeway at 60 mph, it really sounds like military artillery going off. The loudest boom I have heard.

Plus when the retread blew, it ripped out air lines, mudflaps, and completely totaled the taillights and panel that houses those lights. So, whatever money I was saving by choosing retreads over new tires, well, it just got spent on bodywork and shop repairs.

I WENT NEW

One day, I decided to stop buying retreads. As each tire wore out, I would buy a brand new tire. One by one, they wore down and I would replace them. But the last retread on the truck just had to go out in a flame of glory. My driver was behind the wheel when it blew out. He spent more than an hour on the side of the freeway waiting for the new tire.

The tire dealer we use has a buyback program. If we purchase a new tire and we keep the casing looking nice by not damaging it by hitting curbs, he'll buy the casing back. He then uses this casing to sell retreaded tires. I think we get \$100 back when he changes them out. He'll have a company retread them, and he'll sell it to a truck owner who wants retreads.

When the retread did all of that damage, we decided to never put a retread on a truck again. We had our last blowout in November 2015, and this was the last retread tire. Is this luck? Is this coincidence?

Our tire dealer wants us to rotate the tires every few months to get even wear on all the tires and then they can all be replaced at the same time. I don't know about you, but I sure never want to replace all 10 tires at the same time. I can come up with \$400 for a single tire easier than \$4,000 for 10. Plus, my steer tires are very expensive at about \$800 each because of the weight and DOT weight restrictions. So with that in mind, we don't rotate tires. We just run them and whatever tires get down to the tread depth requirement for change, we change.

In our state, drive tire tread depth is allowed to get down to 2/32 of an inch before change is mandatory. If I see anywhere from 3-4/32 of an inch, we schedule it. We don't take chances waiting any longer.

BALANCING BEADS

We also have balancing beads placed inside the tires. These are special beads that balance from the inside. When I first heard of this, I was skeptical. But my Mack had an unbalanced tire on a steer axle with rims that made balancing impossible. I would get to 45 mph and vibrations would come up to the steering wheel and get worse with speed, but they would go away at about 60.

My tire specialist suggested balancing beads. When they were added, the truck drove like I was cutting butter. Smooth through all speeds. At that point, I was a believer and put them in every tire. Remember that you may not feel vibrations in a tire, especially in the rear tires. If your rear tires are having a minor vibration, you may not be able to feel it up in the driver's seat. But your suspension will take the abuse, and suspension components and bushings will wear out. A \$25 bag of balancing beads becomes cheap insurance.

I've also seen technology where you can link dual tires together at the valve stem to ensure that your tires

on the dual are at the same pressures. I understand the why behind this, but I don't ever want to have one tire get a nail, go flat, and take the other one with it. I want to be able to limp it back to the shop for a new tire.

So what's the verdict: purchase retreads or new tires? It's up to you how you want to run them. I can only speak from my experience. If your company is new and money is tight for a long time, start with retreads. The upfront cost is less expensive. If you never experience blowouts or problems, keep on running them. If you start having issues, then it may be time to order new tires. **P**

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Pipeline Inspection, Location and Leak Detection

By Craig Mandli

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CUES MPlus+ XL

The **CUES MPlus+ XL** push system is designed for easy operation with an all-in-one setup and flexibility by quick removal of the control unit to be used separately. It includes a coiler configuration and pan-and-tilt camera for mainline and larger pipeline applications up to 500 feet. It integrates video observation coding, observation coding interface and digital recording into an easy-to-use package. The lightweight system includes large, durable wheels for portability and a balanced footprint for stability. It is manufactured to handle rigorous field use. **800-327-7791; www.cuesinc.com.**

Electric Eel Ecam Pro 2

The **Ecam Pro 2** mainline pipeline inspection camera system from **Electric Eel** has a stainless steel-housed, 1.68-inch self-leveling color camera with sapphire lens; 20-LED light ring with an impact-resistant polycarbonate light ring cover; and high-resolution CCD element. The auto-iris adjusts light automatically. A flexible camera spring navigates 3-inch P-traps. The unit comes standard with 200 feet of braided fiberglass premium 1/2-inch-diameter pushrod (with a capacity of 400 feet available on the reel), industry-standard 512 Hz sonde, 10.4-inch daylight-readable monitor with click-touch controls, and one-touch recording directly to a USB flash drive. It has an on-screen footage counter, a two-hour battery with built-in charger, adjustable light controls, 16 pages of text writing with memory saves, voiceover recording, an 8x zoom function, audio/video out jacks, 8-inch wheels for easy maneuverability, a secure-locking reel brake, and rugged powder-coated steel tube and bar construction. **800-833-1212; www.electriceel.com.**



CPI Products Universal Roller Skids

Universal Roller Skids from **CPI Products** protect push cameras and enable them to go farther down the pipe and return with less strain on the cable. They provide a durable plastic enclosure around the camera body, with wheels to move smoothly down the pipe, around corners and over seams. They have movable arms that expand and contract to center the camera and jump over debris, seams and move around corners. A light kit is available to improve the camera image, and a large wheel kit enables it to be centered in pipes up to 16 inches in diameter. The TrapMaster is designed to enable cameras to navigate traps and seams in pipes 4 to 6 inches in diameter. The PoleCat converts a push camera to a pole camera to enable easy control of the camera. **413-443-0925; www.cplproducts.com.**



Envirosight VeriSight Pro

The **VeriSight Pro** from **Envirosight** has a stainless self-leveling camera with shadowless, variable LED illumination that captures crisp video footage regardless of pipe material. With supplied centering devices, it inspects lines 2 to 9 inches and snakes through multiple bends for maximum range. An integral tri-band sonde (33 kHz, 512 Hz, 640 Hz) works with almost any locator. Its welded steel coiler comes with 130, 200 or 330 feet of pushrod. The entire system runs continuously for six hours off internal rechargeable lithium-ion batteries or off main or vehicle power. Its multilanguage controller displays footage on an 8-inch TFT LCD and captures up to 90 hours of MPEG 4 video on an SD/SDHC card or USB stick. It lets the user zoom 3x, captures images in JPEG format from both live and recorded video, and offers a 16-page text writer with full QWERTY keyboard. **866-936-8476; www.envirosight.com.**



General Pipe Cleaners Gen-Eye POD

Lightweight **Gen-Eye POD** video inspection systems from **General Pipe Cleaners** offer optional Wi-Fi capability. A Wi-Fi transmitter inside the monitor lets the user send video to a tablet or smartphone to record the inspection. They can send the video to customers or post it to YouTube from the field. The package combines camera, reel and monitor. The full-size unit sports a self-leveling camera and 200 feet of Gel-Rod for troubleshooting 3- to 10-inch drainlines. The Mini-POD version carries 125- or 175-foot pushrod with a mini self-leveling color camera that's small enough to troubleshoot 2- to 4-inch lines. A video-out connection lets the user record to an external device. A 7-inch LCD color monitor is mounted on a rugged, flexible gooseneck that swivels for optimal viewing angles. **800-245-6200; www.drainbrain.com.**



Hathorn Magnum M7

The **Magnum M7** from **Hathorn** is packed with multiple features and is extremely lightweight at only 29 pounds. The unit can easily be carried down a flight of stairs or rolled on its 6-inch wheels. The 7.4-inch monitor delivers a clear, bright picture and is covered



by an acrylic shield for durability. It offers USB recording, 2-hour lithium battery, on-screen footage counter, 512 Hz sonde transmitter, adjustable lighting and text writer. A Wi-Fi transmitter can be added for recording to a mobile device. It comes with a variety of pushrod lengths and camera sizes to fit every job type. **905-604-7040; www.hathorncorp.com.**

MEDIT MiniFlex

The **MiniFlex** plumbing camera from **MEDIT** is designed for small-diameter pipe inspections by plumbers, pool and spa professionals, and pipe fitters. The 0.76-inch-diameter camera will make straight runs in pipes 0.8 inch and larger while the flexible neck allows the unit to navigate bends and traps in pipes 1.25 inches in diameter or larger. It is a self-contained set with a cassette tape design that houses the push cable on the reel around the outside, a 5.6-inch color LCD screen in the middle to view live inspections, a memory card to capture image and video, text generation, video output, an on-screen foot counter, a built in 512 Hz sonde to locate the camera head underground or behind walls, LED lights, a rechargeable battery, and lengths from 49 to 98 feet. **800-239-9934; www.fiberscope.net.**



MyTana Mfg. Inspect and Locate Package

Designed for full capability in lines large and small, the **MyTana Mfg. Inspect and Locate Package** comes with a single control unit that attaches to a large-diameter camera for inspecting 8-inch lines on 200 feet of pushrod, as well as a small-diameter camera for inspecting 1 1/2- to 3-inch lines on 100 feet of pushrod. The control unit's daylight-readable monitor delivers high-clarity footage, and all-digital recording lets the user save that footage to either the 64 GB internal drive or a removable USB flash drive. Operators can also stream video wirelessly to multiple devices. It works on all pipes, including cast iron. Continual depth readout and directional indicators allow for intuitive operation with audio feedback. With the included transmitter, the user can trace a signal on drainlines or find buried utilities. **800-328-8170; www.mytana.com.**





Pearpoint/SPX P343

The **Pearpoint/SPX P343** 500-foot reel is designed to deliver push distance when used to inspect main drains and pipes with relatively straight routes. This system is made to inspect sewers from 2 to 12 inches in diameter (12 inch with the adjustable skid). It will also go around 90-degree bends in a 6-inch pipe, as well as 45- and 33-degree bends in a 4-inch pipe. The 500-foot reel is an ideal choice for those who do not need a crawler system. **800-688-8094; www.pearpoint.com.**

Perma-Liner Industries Perma-CAM

The **Perma-CAM** from **Perma-Liner Industries** comes complete with a self-leveling color camera head with a sapphire lens and centering skid and a 200-foot heavy-duty push cable with a standard 512 MHz transmitter, all mounted on a heavy-duty, powder-coated aluminum frame. The 7-inch monitor comes with a weatherproof hand-held holder, complete with a custom sunshade. The HD monitor records to an SD media card and also has voice-over capability. The standard, Wi-Fi-compatible unit comes with a complimentary Samsung tablet. **866-336-2568; www.perma-liner.com.**



Pipeline Renewal Technologies Cleansteer 40

The **Cleansteer 40** from **Pipeline Renewal Technologies** uses high-pressure water for propulsion, steering and cleaning as it captures live inspection video from inside lateral lines. It can traverse multiple bends in pipe, steer through branches, and levitate above debris, helping municipal contractors and commercial plumbers locate failed pipes, cross bores and blockages, as well as perform cleaning. Six propulsion nozzles generate the power needed to pull its own flexible hose through multiple bends, and a side nozzle on the camera can be aimed to steer through diverging pipes and hover past obstacles. An optional forward-facing nozzle can be pulsed to clear debris and other obstructions. The system works with any high-pressure water source, including pressure washers and combination trucks. Its 1/2-inch hose comes in lengths from 115 to 190 feet. **866-936-8476; www.envirosight.com.**



R.S. Technical Services Inc. (RST) Quick Peek

The **Quick Peek** all-in-one, fully portable video inspection system from **RST** is a compact, lightweight solution for drainline condition assessment in lines 2 to 10 inches in diameter up to 300 feet in length. The unit includes a 7-inch, bright, LCD, handle-mounted monitor equipped with a sun shield/screen protector that can be positioned for a comfortable viewing angle. Easily accessible monitor controls include power mode; aspect ratio (screen size); menu; and set buttons for color, brightness, contrast, tint and volume. The side-mounted AC/DC power source houses controls for all camera functions and provides a camera test terminal, AC/DC input, video/audio output, keyboard input and a condenser microphone with an on/off switch. It has a high-resolution, low-lux color camera; AC/DC input; keyboard for annotation; video/audio output; microphone; and is fully locatable with 512 Hz in-line transmitter. **800-767-1974; www.rstechserv.com.**

RapidView IBAK North America MiniLite Pushrod System

The **MiniLite Pushrod System** from **RapidView IBAK North America** is a compact and versatile platform for inspection of small-diameter pipelines. The system works with HYDRUS, JUNO, NANO, NANO-L, ORION Zoom, ORION-L and POLARIS cameras. It has a bright, 10-inch touch screen and a built-in Windows PC with power supplied by an 18-volt rechargeable battery. The multifunction joystick allows precise control of the pan-and-tilt camera. **800-656-4225; www.rapidview.com.**



Ratech Electronics Elite USB with Wi-Fi

The **Elite USB with Wi-Fi** from **Ratech Electronics** lets users record pipe inspections directly to a USB flash drive and wirelessly via an app to an iOS or Android device while taking live video and digital still photos, which can be immediately uploaded to YouTube. The Wi-Fi interface is available on any current or existing Ratech Electronics systems in the field. It's available with a sun-readable, 10-inch LCD monitor and a self-leveling camera, ultramicro camera or pan-and-tilt push camera. Systems come in cable lengths of 100 to 400 feet. **800-461-9200; www.ratech-electronics.com.**

RauschUSA minCam360

The 2-inch **minCam360** remote-controlled, pan-and-tilt push camera from **RauschUSA** has digital zoom and a tri-band sonde with selectable frequencies. The Bluetooth remote includes a joystick for camera control. The cable reel is equipped with 200 feet of cable (with up to 300 feet available), and the removable batteries run for four hours. Its RID steering skid enables it to push into 45-degree Y and 90-degree T branches in the pipe. The 8.4-inch, sunlight-readable monitor enables recording video, voice and photo directly to an SD card. This system is designed as a capable stand-alone inspection system, including a text generator for detailed reporting capabilities and an on-screen distance counter. Applications range from 3- to 20-inch pipe diameters with all centering accessories. 717-709-1005; www.rauschusa.com.



Scooter Video WIFI li

The compact **WIFI li** ion color camera system from **Scooter Video** comes with a 200-foot pushrod. And it is lightweight, easily transported and rechargeable. It provides approximately eight hour of use on a charge and sends video directly to an included cell phone, monitor, or other wireless device, making it easy and convenient to send video files wirelessly. It includes an articulating phone mount armband so the user can clearly monitor inspection progress hands-free, as well as narrate if recording the inspection. The package includes chargers for the batteries and phone. 800-772-6165; www.tvinspection.com.



RICO GmbH CROSS|TOUCH

The **CROSS|TOUCH TV** inspection system from **RICO GmbH** has a motorized cable drum with carriage synchronization and a 1/4-inch diameter, 1,000-foot, single-wire camera cable. If the camera cable is damaged in use, it can easily be refitted. It is designed for use in pipes between 4 and 80 inches in diameter. In the system, a PC with corresponding pipe software is already integrated. Users can easily capture data via the touch screen without using a mouse or keyboard. Videos and images are displayed on a 12.1-inch anti-reflective screen. www.rico-gmbh.de.



Spartan Tool Explorer

The **Explorer** modular camera system from **Spartan Tool** has a control box that is compatible with five different pushrods up to 400 feet in length, letting the user quickly adapt to any environment. Included WinCan software allows the user to map full plumbing systems for future reference, and files can be saved to a WinCan account, the cloud, external USB drives and the system's internal storage. The stainless steel camera head provides a crisp color picture to the super-bright, sunlight-readable LCD display. Change out reels to create a system that provides the ability to tackle any size job. 800-435-3866; www.spartantool.com.

Trojan Worldwide C100-512SL

The **C100-512SL** self-leveling color camera system from **Trojan Worldwide** is a lightweight, easy-to-operate system designed for 1 1/2- to 4-inch lines. It has a 1-inch, self-leveling waterproof color camera head with adjustable LED lights. The 512 Hz sonde transmitter is built into the spring of the camera, which allows more flexibility when maneuvering around sharp turns, and also creates a stronger signal for locating. The system has a 115-foot durable pushrod and a built-in foot counter. The display screen is a 7-inch LCD with DVR, with SD card recording and a built-in microphone for voice recording. The built-in battery offers 7 hours of runtime and has an AC adapter for charging or direct power. Also included is the SD card, USB adapter for the SD card, protective visor, two skids and a waterproof case for the entire system to fit in for easy transportation. 800-392-4902; www.trojanworldwide.com.



RIDGID CS65x

The **RIDGID CS65x** digital reporting monitor has Wi-Fi and Bluetooth, as well as immediate access to footage from drainline inspections. It provides one-touch image recording for fast, efficient documentation of inspections, along with a new, faster processor and solid-state hard drive. It has ample storage for multiple jobs and docks to the SeeSnake Max rM200 camera system for on-site reporting. It has a built-in, water-resistant keyboard for easy addition of on-screen titles and annotation of captured media, as well as a daylight-viewable display for a crisp, clear in-pipe image. It has a companion app compatible with Android and iOS devices. 800-769-7743; www.ridgid.com.





Vivax-Metrotech Type-CP

The **Type-CP** inspection system from **Vivax-Metrotech** has a reel available in 200-, 300- or 400-foot lengths of stiff pushrod that's flexible enough

for easy entry and turns. The 1.6-inch D34-CP self-leveling camera provides 700 pixels of resolution to inspect up to 6-inch pipes. It includes the vCam-5 control module with an 8-inch color LCD; transmitting sonde; full-function keyboard; internal microphone; AC/DC power; rechargeable batteries; distance counter; camera LED brightness control; and digital recording to the USB thumb drives, SD cards or internal hard drive. The control module ships ready to use with LACP software such as POSM, WinCan or MuniXS. **800-446-3392; www.vivax-metrotech.com.**

Wohler USA VIS 700

The **VIS 700** high-definition inspection system from **Wohler USA** provides flexible features needed for a variety of inspection applications. It offers razor-sharp, high-definition images; zoom; a focus function via joystick for precise inspection; and the ability to stream live images and video via wireless LAN. It comes with a removable touch-screen monitor with adjustable handgrip; automatic screen rotation; on-screen keyboard for notes; a voice-over recording option; an easy-to-clean, removable pushrod; and variable pan-and-tilt speed via joystick. **978-750-9876; www.wohlerusa.com.**



by NSF International to NSF/ANSI Standard 60 for use in and around drinking water. They are available in fluorescent yellow/green, red and orange, and nonfluorescent blue. They come in tablet, liquid or powder form. **800-394-0678; www.brightdyes.com.**

Electronic Leak Detection

FloLogic flow-based Smart Leak Control



FloLogic offers a comprehensive smart leak detection system for catching and automatically stopping leaks that happen

anywhere in a plumbing supply, from appliances to hidden pipes. A flow sensor identifies leaks as small as a half-ounce-per-minute (about a drip per second). Since normal water use comes in intervals, while leaks are constant, the system measures all flow into a property to find all leaks, which are recognized as flow that exceeds the flow time allowance in the home or away modes. Once a leak is suspected, the water is shut off automatically to prevent damage and waste. The app-based connection allows water system oversight, control and receipt of auto shut-off notifications, from any location. **877-356-5644; www.flologic.com.**

Hermann Sewerin GmbH SePem 155



Systematic monitoring of a water pipe network with a **SePem 155** data logger from **Hermann Sewerin GmbH** lets users reliably

identify existing leaks and catch new ones early on. It can report a leak after just one night. In a pipe network, water loss caused by a number of smaller leaks added together is likely to be considerably higher than the loss caused by a few spectacular pipe bursts visible on the surface. Noise loggers are capable of reliably detecting both types of leak sites: slowly growing and spontaneously occurring. It can be used for mobile or stationary monitoring of water supply networks. The SePem 01 Master, with its simple and intuitive menu navigation, provides fast and reliable results and can also be reliably operated by less-experienced users. Measuring times and periods of radio activity are freely programmable. **888-592-9916; www.sewerin.com.**

Dye

BRIGHT DYES - Division of Kingscote Chemicals inspection dyes

Concentrated leak inspection dyes from **BRIGHT DYES - Division of Kingscote Chemicals** dissolve rapidly in water and provide a vivid fluorescent color detectable in murky water, sewage or effluent. They can be used to validate sanitary and septic hookups; identify leaks, infiltration and exfiltration in plumbing connections; and perform septic inspections to identify leachfield issues, as well as sources of contamination in wells. They are safe, nontoxic, biodegradable, and certified



Electronic Pipe Location

Forbest Products FB-R2013E

The FB-R2013E multifrequency underground pipe locator from Forbest Products allows users to locate the pipeline, measure the depth and detect the leaking coating point. The locator comes with seven multifrequency options: 512 Hz, 1 K, 2 K, 8 K, 33 K, 65 K and 83 kHz. A variety of measurement modes for pipeline positioning (valley, peak, broad peak, peak arrow) can verify each other to ensure the accuracy of pipeline positioning. The built-in GPS helps to generate the pipeline drawing automatically. It can detect the pipe coating damage points and size or the outer layer breakdowns of electric cable with the "A" frame. The working depth reaches 20 feet. It displays on a 3.5-inch LCD with backlight. The built-in rechargeable battery can last more than 10 hours. 877-369-1199; www.forbestusa.com.



Safety Equipment

Superior Signal AccuTrak

AccuTrak ultrasonic inspection systems from Superior Signal detect and locate compressed air leaks, any pressurized gas, refrigerant leaks, vacuum leaks, plus electric arc and corona, as well as diagnose mechanical faults. The units can be employed as an essential part of plant maintenance programs to reduce costs, and increase equipment reliability. 800-945-8378; www.superiorsignal.com.



Schonstedt Instrument PK-500 Plumber's Kit

The PK-500 Plumber's Kit from Schonstedt Instrument gives professional plumbers two tools in one kit: a sonde/camera locator and a magnetic locator. It includes a GA-92XTd magnetic locator, a XT-512 sonde and camera locator, a holster, and a hard carrying case. It can be used for camera and sonde locating; finding water and sewer line blockages/obstructions; locating a plastic pipe with a tracer wire; and finding manhole covers, septic tanks, and steel pipes. It combines the portability of an expanding/retracting, pistol-grip receiver with 512 Hz sonde and passive locating capabilities. The magnetic locator has a pistol grip that retracts for carrying in a holster. 888-367-7014; www.schonstedt.com.



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Pipeline Inspection, Location and Leak Detection

By Craig Mandli

System integrated in smart home



Problem: Gary Arch, owner of an insurance practice, lives in a house in Tustin, California. Arch has experienced water floods with extensive damages of more than \$35,000 in the past five years in his 2,800-square-foot home. He wanted a system that's able to prevent future leaks, and he wanted the water management system to be part of his modern "smart home" with little to no change in the infrastructure.

Solution: After lengthy research, Arch came across the Triple+ CLM system, which includes the Triple+ CLM Actuator installed on the main water pipe, and multiple flood sensors placed in locations where high risks of water floods may occur. When detecting water leakage, the water flood sensors communicate with the system's HUB, which in Arch's case was installed in his garage, resulting in shutting off the main water pipe. Arch called upon a licensed plumber to install the system.

Result: Being cloud-based, the system allows Arch to communicate easily with each component via the Triple Plus app. He gets notifications in case of an event or malfunction of any of the devices. The app also offers the freedom to control his system from anywhere. 844-729-8775; www.tripleplus.io. 



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National Hardware Show, Las Vegas Convention Center, Las Vegas. Visit www.nationalhardwareshow.com.

May 15-16

Sixth Biennial Emerging Water Technology Symposium, DoubleTree Hotel, Ontario, California. Visit www.aspe.org/2018ewts.

June 7-9

Illinois Plumbing Heating Cooling Contractors Association Convention, French Lick Resort, French Lick, Indiana. Visit www.ilphcc.com.

June 11-14

American Water Works Association (AWWA) 2018 Annual Conference & Exposition (ACE), Mandalay Bay Convention Center, Resort and Casino, Las Vegas. Visit www.awwa.org.

Sept. 28-Oct. 3

American Society of Plumbing Engineers Convention & Expo 2018, Georgia World Congress Center, Atlanta. Visit www.aspe.org.

Oct. 8-12

PHCC CONNECT 2018, Hyatt Regency Albuquerque Hotel, Albuquerque, New Mexico. Visit www.phccweb.org. 

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Product Spotlight

Inhibit corrosion in a hydronic system

By Craig Mandli

Corrosion can be a death knell to hydronic heating systems. The buildup of magnetite can reduce heat transfer and boiler efficiency substantially. That means higher heating costs for the homeowner and a shorter life span for their boiler. The MagnaClean Professional2XP from ADEY Innovation is designed to virtually eliminate the problem.



“Because of the unique design, and the fact that MagnaClean works completely independently of particle size, it’s able to deliver a 98 percent, first-pass, magnetite-filtration rate,” says Tom Tonkins, director of U.S. Business Development. “There is no reduction in efficacy, as magnetite is captured around the magnetic rod and remains in the canister, clinging to the sheath around it, until the rod is removed for easy cleaning.”

Ideal for 1-inch copper and 1 1/4-inch NPT iron pipework, the magnetic filter has a powerful neodymium magnet that captures and eliminates within minutes of its installation nearly all of the magnetite circulating in a system.

The large-capacity canister also houses two nonmagnetic capture zones for larger circulating debris. It can be easily fitted on the return pipe to the boiler/circulator, and it has low-profile drain valves and built-in air vents for easier servicing.

“In the field, we’ve had contractors express surprise at how much magnetite they’re finding in the filter,” Tonkins says. “Most recently, a contractor who installed it on a professionally maintained system told us he didn’t expect to find any magnetite, but instead removed about 3/8 inch of accumulation both times he cleaned it. The ease of installation, with a typical install taking only a few hours, is also something contractors appreciate.”

In fact, the design of the filter has no moving parts. Instead, the filter works as water is forced in a cyclonic flow around the magnet simply by the shape and location of the inlet and outlet. Installation of the filter does not block or restrict flow, and pressure drop is minimal.

“It’s an absolutely essential component of any hydronic system installation with iron pipework — in both new and retrofit situations,” Tonkins says. “Since studies have shown that magnetite can reduce heat transfer to the home by as much as 15 percent and reduce boiler efficiency by up to 6 percentage points in only three weeks, removing it from system water is critical.” 844-378-0442; www.adey.com/us.



John Guest USA ProLock Slip Connector

The ProLock Slip Connector from John Guest USA is available in 1/2- and 3/4-inch CTS sizes. Designed for burst and/or frozen pipe breaks, pinhole leaks, and other situations when pipe movement is restricted, the connector fitting allows for repairs in a confined area. They require no tools to make secure, leak-proof connections and can be used with copper, PEX or CPVC pipe. The fittings are not suitable for potable water applications. 973-808-5600; www.johnguest.com.

Webstone, a brand of NIBCO, PEX connections

Webstone, a brand of NIBCO, has 40 new SKUs with F1960 or F1807 PEX connections, including thermostatic mixing valves, press x PEX transitional ball valves, Isolator uni-flange ball valves, E-X-P tankless water heater valves and a Pro-Pal ball drain. 800-255-9529; www.webstonevalves.com.



RIDGID thermal imagers

Thermal imagers from RIDGID are ideal for locating electrical issues, hidden moisture, overheating motors, insulation voids and thermal bridges. The product line includes four imagers: RT-3, RT-5x, RT-7x and RT-9x. They range from providing 160 x 120 to 320 x 240 pixel thermal images. Using pixel shift technology, SuperResolution effectively doubles the resolution of the camera for saved images, allowing greater detail to detect anomalies, and is featured on all models. The RIDGID Thermal App creates and shares reports from the thermal imager onto a mobile device. With e-Assist, via the integrated digital camera, the imager recognizes a placed reference sticker, determines emissivity and reflected temperature, and sets both values automatically. **800-769-7743; www.ridgid.com.**



Geberit North America Sigma10 flush plates

Dual-flush Sigma10 Series flush plates from Geberit North America offer touch-free toilet flushing. Sensor technology provides optimum water savings with a wave of the hand; users may also walk away for a full flush. The Sigma10 Series is compatible with both the standard 1.6/0.8 gallons per flush Geberit in-wall toilet systems and low-consumption 1.28/0.8 gpf systems. The Sigma10 is available with either battery or AC power and comes in seven decor-enhancing finishes. Independent sensor electronics prevent tampering, and a vandal-resistant stainless steel cover plate is available. **847-803-7777; www.geberitnorthamerica.com.**



Presscision PPT pressure test instrument

The Presscision PPT test instrument is a digital test platform for regulatory pressure and temperature testing. Applications include fuel gas lines, drain waste vents, water supply lines, medical gas installations and fire suppression systems. It provides test automation to eliminate human error and subjectivity from the test process, accurate pressure and temperature measurement using certified sensors, permanent recording of comprehensive test data records and hard-copy test reports generated at the completion of each test. **774-521-9132; www.presscision.com.**



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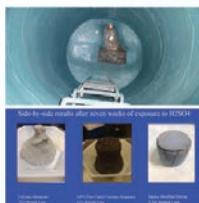
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▲ Daniel Hodges



▲ John Yuan

Brasscraft presents Zell Award

Brasscraft announced it awarded the Robert M. Zell Award to two employees: Daniel Hodges, product engineer; and John Yuan, financial planning and analysis supervisor. Both are located at the company's Novi, Michigan, headquarters. The award was created in honor of the company's founder to recognize employees who deliver the highest quality and innovative products to its customers. Winners of the Zell Award receive an engraved plaque and monetary reward.

Reliance Worldwide Corp. (RWC) announces Streamlabs smart home water technology division

RWC, manufacturer of the Shark Bite, Cash Acme, and HOLDRITE brands, announced the launch of Streamlabs, a new smart home water technology. Streamlabs was born out of RWC's acquisition in November 2016 of Soneter, a Georgia Tech startup founded in 2010 by Jeff Leaders, who currently serves as director of business development for Streamlabs at RWC.

Armstrong Fluid Technology acquires HALM Motors + Systems GmbH pump unit

Armstrong Fluid Technology announced it completed the acquisition of the circulator pump business unit of HALM Motors + Systems GmbH in Germany. The business will be integrated into Armstrong Fluid Technology's global Building Business and will generate synergies by leveraging both the increased scale and global distribution opportunities. 

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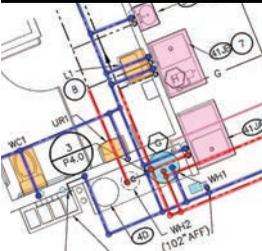
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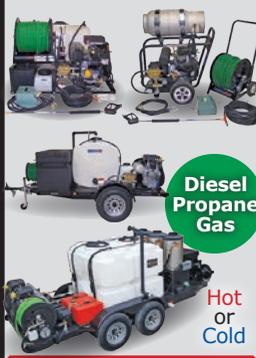




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PERMA-LATERAL™ LINING SYSTEM

THE #1 SELLING SMALL DIAMETER PIPE LINING SYSTEM IN
NORTH AMERICA

100% AMERICAN MADE

100% TRENCHLESS

100% SUPPORTED

TRADITIONAL DIG & REPLACE

- ✓ Backhoe and Operator
- ✓ Blacktop and Concrete Disposal
- ✓ Road Detour
- ✓ New PVC Pipe Materials to Install
- ✓ Inconvenience
- ✓ Possible Utility Service Damage
- ✓ Street Reconstruction

PERMA-LATERAL™ LINING

- ✓ Zero Dig Technology
- ✓ Multiple installs per day
- ✓ Work Year-Round, Increased Productivity
- ✓ Ease of Use
- ✓ #1 Selling Small Diameter Pipe Relining System
- ✓ Proudly Made in the USA

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& TURN-KEY BOX
TRUCKS

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PAYMENTS FOR
90-DAYS



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