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ON THE COVER: Colorado Springs Water Systems General Manager Keith Riley oversees the repair of a leaking 30-year-old transmission line. The leak originated from a coupling with a fire hydrant line. (Photography by Carl Scofield)









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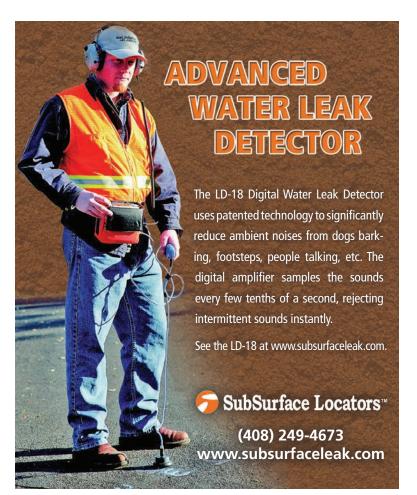
# **LEARN TO IMPROVE**

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ou never hear people say they wish they had less education.

If a four-year degree never figured into your goals, so be it. If you were driven to gain work experience right after high school and open your own business as soon as you were capable, more power to you. But I've never talked to a successful business owner who felt like they knew everything there was to know, or who thought a little more business or accounting knowledge would be harmful.

I had a friend who got a job with a well drilling company shortly after high school. He thought I was crazy spending thousands of dollars to go to college while he was making \$12 an hour — it was the '90s — standing next to a drill rig all day. I thought he was equally crazy. But in our own ways, we were both getting an education.



# If you're an hourly worker and think this doesn't apply to you, talk to your boss or the owner of your company. I bet they have a different perspective.

I see things a little differently now. He wasn't crazy; he just didn't want to go to school anymore. He wanted to work. But he also learned the business and moved up the ranks. It wasn't long before he was running that rig. I also don't regret a dime I spent on my education. I was exposed to a lot of new things. I learned how to learn more efficiently. And I picked up knowledge and skills that set me on a path to where I am now, getting paid to write and take photographs, to make other writers' work better, all of which I love, and to eventually reach a point where those divergent paths came back in parallel.

The thing is, my friend didn't go to college, but he kept learning. He didn't just punch in and punch out; he gained skill and knowledge. He took on more responsibility and carved out a nice career for himself.

You may or may not have continued your formal education past high school, but the simple fact you're reading this publication shows that you value learning opportunities and know education is one of the keys to your continued success. If you're an hourly worker and think this doesn't apply to you, talk to your boss or the owner of your company. I bet they have a different perspective.

The more you know about your water and wastewater systems, leak detection, inspection and maintenance procedures, the better you'll be able to do your jobs. And that, in turn, will make your utilities more efficient and your communities healthier.

To that end, and with the cancellation or postponement of so many industry events and training opportunities this year, we've launched a whole new series of virtual training sessions. All of it is available for free on the *Municipal Sewer & Water* website.

These prerecorded training videos — with subjects ranging from rainfall monitoring and sewer condition assessment to safety and adapting to coronavirus-related operational changes — are now available for viewing at any time. And new topics are being added regularly.

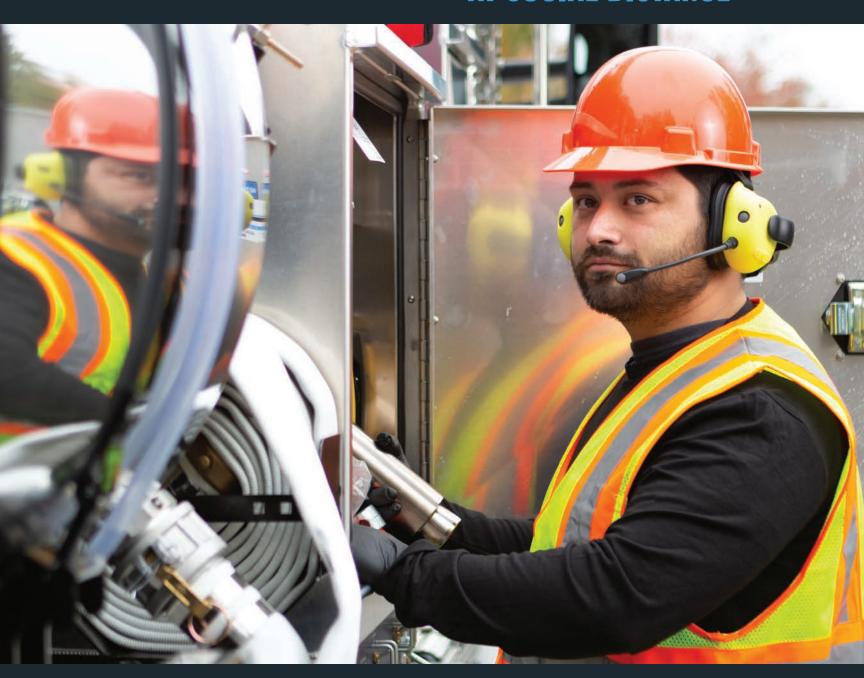
Just log on to www.mswmag.com/training to view at your own pace when it best fits your schedule.

I hope you find these sessions helpful and never stop learning. Enjoy this month's issue. ◆

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# **GETTING THE LEAD OUT**

# **Louisville Water Hits Milestone**

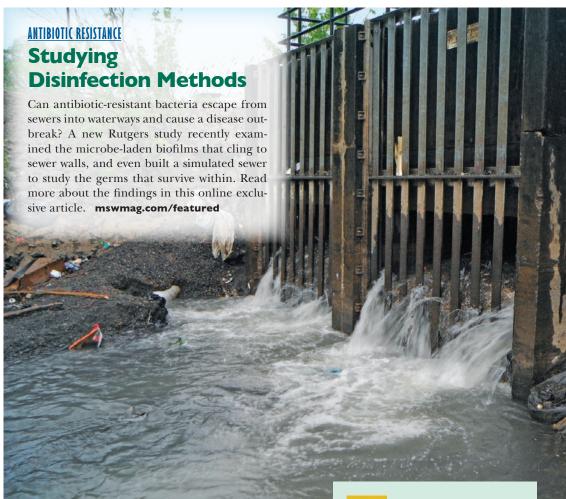
Louisville (Kentucky) Water Co. recently announced an important achievement for public health, as it removed all its known lead service lines that deliver drinking water — a milestone that only a few water utilities in the United States have achieved. In all, Louisville Water removed approximately 74,000 lead lines. mswmag.com/featured



# **NEW DEVELOPMENT**

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After Ellicott City, Maryland, suffered devastating floods in 2016 and 2018, officials were left wondering how technology could help predict future severe weather. Since then, the University of Maryland, Baltimore County's Nirmalya Roy received funding from the National Science Foundation to develop a rapid flood warning system for Ellicott City. mswmag.com/featured



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# **A BALANCED PORTFOLIO**

Colorado Springs takes a multipronged approach to securing and conserving water

By Giles Lambertson

ike every municipal provider of water services, Colorado Springs (Colorado) Utilities walks a tightrope. Not falling off that slender platform is all about balancing the needs and wants of utility consumers.

Demand too much regulatory compliance in exchange for a fat fee and alienated customers will revolt. Provide too little guidance or water - even when charging a reasonable fee - and customers will be just as disgruntled. It comes down to managing expectations and knowing how much risk to take.

In Colorado Springs, that means facing the fact that the community is not water-rich. "I'm not sure anyone is water-rich in Colorado," says Earl Wilkinson III, water services officer, the title given the senior administrative executive for the utility's water division. "We are not water-challenged, but we have to do a lot more work to bring water into our system. There is a lot more thought put into how to get water to this location."

Local officials have been working on it for a long time, dating to the second half of the 19th century when residents depended on wells and free-flowing ditches. "If you had a big tub and a strong back, you could lug home all the water you needed by scooping it out of the ditches that meandered through Colorado Springs," a resident is quoted in a local history account. In 1992, voters established Colorado Springs Utilities as a separate municipal enterprise.

# High and dry

Colorado Springs is the largest city in Colorado in terms of its footprint approximately 200 square miles. The more meaningful statistic is that elevation in the city varies 1,000 feet. As

a result, six water treatment plants are strategically placed to serve different elevations in the system. Wastewater lines have pumps to keep effluent moving up slopes to main connector lines.

City founders situated their community on this slope at the base of the Rocky Mountains because it offered an unimpeded view of Pikes Peak and other dramatic mountain profiles. Unfortunately, the fact that no major waterway intersects the acreage was not considered. The South Platte River flows northwest of it, the Arkansas River south and the Colorado River on the far side of the mountain range, leaving Colorado Springs high and more or less dry.

Consequently, the city draws from all three river basins, with up to 70% of its water originating in the Colorado River. Pipes and tunnels channel the water to the city from as far as 100 miles away. More than 250 miles of pipe up to 66 inches in diameter have been laid over the years and deliver the water to 25 reservoirs.

An upside to the story is that because the water comes from snowmelt, it is rather pristine.

A Colorado Springs Utilities crew uses a RAMVAC HX12 hydroexcavator and a CAT 328D excavator to carefully uncover a leaking 36-inch transmission line serving customers in the Northgate and Briargate areas of the city. (Photography by Carl Scofield)

"Storage is a key factor for survival in any kind of drought situation in Colorado.'

**Earl Wilkinson III** 

Originating from high-mountain snowpack, it is virtually uncontaminated and Colorado Springs residents are its first users. "First-source water from the mountains is extremely high quality," Wilkinson says. "It is so good, in fact, it doesn't meet our turbidity standards. It's too clear."

Water the utility pulls from rivers downstream of other communities is not as pristine, but that water is also comparatively free of contaminants. All of which means treatment costs are relatively low, according to Wilkinson. "Treatment of the water is very affordable, which partly offsets the transportation costs."

It should be noted that the city does not drill for water. "Wells are not renewable water sources here in Colorado," Wilkinson says. "Let me be clear: We are going to stay away from use of wells. We are not going to use well water for our standard use."

### **Balanced portfolio**

Colorado Springs Utilities pursues a balanced portfolio of other strategies to ensure the growing city of just under a half million people can con-



tinue to slake its thirst, launder its clothes and flush its toilets. Its 2017 Integrated Water Resources Plan references historic droughts and predecessor initiatives and also formulates forward-looking solutions to water worries. The plan includes various strategies:

- Developing Colorado River Basin waters is a central tenet. The 2017 plan envisions siphoning an additional 10,000 to 15,000 acre-feet per year from the Colorado River, for which the utility already has legal rights. Developing this supply is a hedge against an unprecedented 10-year drought, a scenario posed in the water resources plan. Both new pipelines and expansion of existing acquisition facilities are also possible. On the other hand, Wilkinson says planners must also consider their options if this source becomes unavailable.
- Increasing water storage has dual purposes. Reservoirs near the city can be quickly tapped as needed during peak demand times, while waterholding structures higher in the mountains can capture runoff during snowmelt season and hold it in reserve. Expanding both types of structures is a management hedge against shortfalls, but

# "Conservation is the cheapest way we can add to the pool of what we need in the future."

**Earl Wilkinson III** 

construction requires long-term planning.

"If you are doing a high-mountain reservoir project, the environmental review process can take five to seven years," Wilkinson says. "Then a shorter building season in those areas can mean a construction period of three years." As a policy matter, the utility has enough water stored at all times to sustain residents for one to 1 1/2 years. "Storage is a key factor for survival in any kind of drought situation in Colorado."

• Reusing water has been a Colorado Springs water management tool since 1962 when a system for nonpotable water was launched. Nonpotable water is shunted into public and private systems for commercial use or irrigation. Wilkinson says the nonpotable water could be sprayed on residen-

# PROFILE: Colorado Springs Utilities

**SERVICE AREA:** 200 square miles

**WATER DIVISION EMPLOYEES:** 334

WATER CUSTOMERS: 148,000

**MILES OF WATER MAIN:** 2,453

**WATER RESERVOIRS:** 25

AVERAGE PEAK DEMAND: 126 mgd

**TREATMENT PLANTS:** 6 for wastewater

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"I've spent some time across the bed of a pickup talking to farmers. ...
There has to be trust and collaboration."

**Earl Wilkinson III** 

tial lawns as well, if property owners were ready to accept it. "The only real problem is the delivery system itself is only so large. We would need capital improvements to get the nonpotable water to the homes."

As part of a direct potable reuse pilot project, Colorado Springs Utilities is partnering with the Colorado School of Mines and local beverage producers to use reused water in bottled alcoholic and nonalcoholic beverages "to show folks it is some-

- thing we can do and to get rid of the negatives associated with wastewater reuse," Wilkinson says. "We believe we can improve customer perceptions about reuse."
- Managing customer demand for water is a key strategy because providing an acre-foot of water derived from conservation will cost the utility about \$8,000, whereas the same amount of water procured and introduced into the system will cost \$25,000. "Conservation is the cheapest way we can

# THE RULES OF CONSERVATION



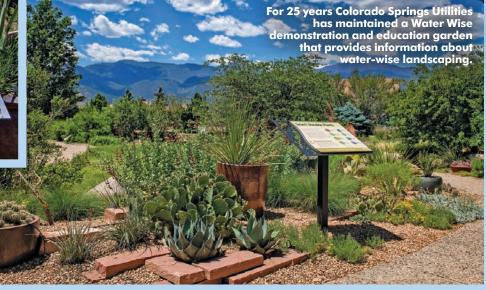
Telling water customers when and how to use the water they have purchased can be a little tricky. After all, they paid for it. But in semiarid Colorado, where water is a precious commodity, restricted water use is the rule, and informing customers of restrictions is an ongoing task.

"We all have very similar rules on the front range," says Earl Wilkinson III, water services officer at Colorado Springs Utilities. "Denver and Aurora and Fort Collins have similar rules. None of us are doing something that is very far from previous suggestions."

That's the kicker — proper water utilization used to be suggested. Now suggestions have become hard and fast rules. Colorado Springs' new water-wise rules include limiting irrigation of lawns to three days a week, before 10 a.m. and after 6 p.m., and prohibiting the pooling of water on hard surfaces like patios and driveways. Wilkinson says he has not experienced "any significant pushback" since the suggestions evolved into rules — new habits apparently having been formed during the suggestion phase of regulation.

Wilkinson defends the rules as being in everyone's best interest. "We have moved in that direction for a lot of good reasons. There needs to be rules. We needed to implement them. It was best for the community. We need to make a concerted effort to save additional water every year."

And then there's the issue of enforcement. Will property owners irrigating their lawn at midday be ticketed? Perhaps down the road. "This first year we are not trying to do anything other than send people information telling them what they need to know to change the way they are doing things," he says. "The overwhelming majority gets it. Some residents are more tuned in than others; for some, it will take a little bit of time to understand and see the need for the rules."



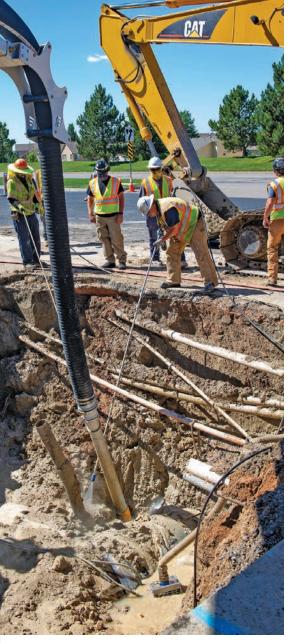
The water metering system helps the utility spot overwatering on a property and new meters will be even more helpful in identifying offenders. Wilkinson says the department also receives calls from customers who turn in their neighbors for violating the rules. The ultimate answer to universal compliance, he says, is more education on the necessity of not wasting water.

To that end, the utility created a multimedia campaign about wise watering. The coronavirus situation precluded assembling a video crew to create a TV ad, so they worked with a local advertising agency, Vladimir Jones, to go the animated route. The resulting ad spots stress such things as a customer being able to choose which three days of the week to water.

"I have gotten positive feedback from the campaign. I think people really like it," Wilkinson says. "I like the animation part. It's something we haven't done a lot of in the past. It's a pretty cool way to do it, and it introduces characters we can use going forward."

Colorado Springs Utilities has partnered with one agency or another for two decades. Wilkinson says going the agency route is the best use of the company's funding.

Natalie Eckhart, the utility's public relations lead, notes that staff members are involved in local groups and sit on area boards helping to spread the word about water conservation. In 2014, after the last major drought situation in Colorado Springs, the utility's communication team won a Silver Anvil Award from the Public Relations Society of America for a campaign that stressed "every drop counts."



Operators use a Foremost hydroexcavator to expose a leaking large-diameter transmission line beneath a maze of other utilities.

add to the pool of what we need in the future," Wilkinson says.

Water use recommendations and rules are one tool. In addition, Colorado Springs land-scape contractors and companies have collaborated with the utility to encourage residential and commercial property owners to plant flora appropriate for the semiarid region. "You can still have a beautiful landscape, but if you select the right kind of plant, you can also save water."

 Partnering with farmers and produce growers to share water is a new and innovative solution.
 Called "alternative transfer mechanisms," or ATMs, the agreements divvy up a source of water in ways that can benefit both parties. Wilkinson cites the example of row crop farmers in the Arkansas River valley south of Colorado Springs.
 The proposed ATMs for the valley would leave the water rights with the owner of a property through which water flows. Instead of buying water rights, the municipal utility company would purchase the right to divert the water from time to time.

This might mean Colorado Springs would control the water three years out of 10 — a year at a time, perhaps — during which the city would supplement its water supply while the property owner would let the ground lay fallow or plant a crop not requiring irrigation. Plus, the landowner would receive guaranteed payment for the interruption. "These ATMs are still being negotiated, but if we can time it right, when farmers have an excess of water in a wet year, for instance, it will be a win-win for agriculture and the municipality."

### **Trust and confidence**

Some of these management tactics require mastery of hydrology and other technical matters, which Wilkinson, as a civil engineer and administrator, seems comfortable navigating. The rest of it is political — that is, winning the trust and confidence of fellow citizens. The water services officer seems adept at that, too.

"I've spent some time across the bed of a pickup talking to farmers," he says of the negotiations with corn and alfalfa farmers and market produce growers in the Arkansas River valley. "Staff members have done the same. There has to be trust and collaboration. One of the difficulties is



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there really haven't been any long-term ATMs before. It is new enough that on both sides we have to take a leap of faith. Building that kind of a relationship takes time. It's a process."

He says he hopes it will play out so that the economies of the valley and the city mutually benefit. "We have a lot of small restaurants here and their owners want to say they use produce from the Arkansas River valley or buy beef from the Arkansas River valley. At the end of the day, this is about so much more than water sharing."

Clearly, Colorado Springs Utilities is balancing critical choices as it serves its customers — negotiating historic water agreements with neighboring communities, persuading water users to more stringently use their purchased water and overseeing dozens of reservoir and pipeline construction projects costing hundreds of millions of dollars. It is, as Wilkinson says, quite a process. •

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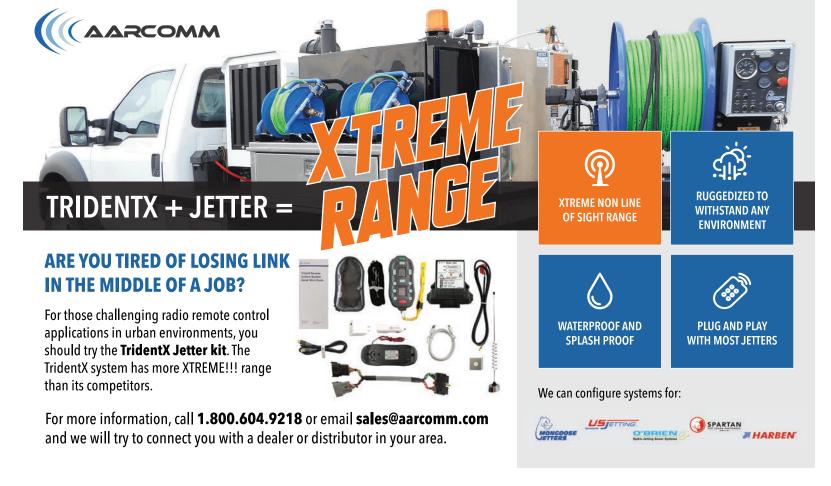
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# RISE ABOVE THE SILENCE

When you see someone doing something wrong or unsafe, what counts is what you say and how you say it

By Ken Wysocky

o you see a colleague violating a safety procedure while operating a combo vac truck. Or breaking an office ethics protocol. Or doing something as simple as not wearing a mandated mask or refusing to socially distance during the height of the COVID-19 pandemic.

Given most people's propensity for avoiding conflict, it's undoubtedly tempting to just let things slide. After all, who wants to be perceived as that person on the office team or field crew — the one who thinks they're perfect and always calls out other people on the error of their ways?

Fortunately, however, you can have it both ways, as in speak out and hold people accountable while still maintaining good workplace relationships. The trick is to do it with the right motivation and attitude — and to hopefully work at a place where manage-

ment builds a culture where accountability is prized, says Joseph Grenny, the co-founder and co-chairman of VitalSmarts, a national leadershiptraining organization.

If you're one of those people who finds speaking out is as difficult as cleaning a sewer line with a tooth-

brush, you're not alone, notes Grenny, who's also a four-time New York Times bestselling co-author of business books. (Titles include Crucial Conversations: Tools for Talking When Stakes Are High; Crucial Accountability: Tools for Resolving Violated Expectations, Broken Commitments, and Bad Behavior; and Influencer: The New Science of Leading Change.)

"We've spent more than 30 years talking about the consequences of avoiding crucial conversations, which is absolutely ubiquitous in the workplace," he observes. "So many of the common complaints in our lives have roots in our inability to handle these crucial conversations."

## It's not easy

Why is speaking out so hard to do? Part of it stems from the way we've been hard-wired to think pessimistically about outcomes from confrontations. "That mentality served us well in prehistoric days when we were constantly faced with physical threats," he says. "But it doesn't serve us as well now, when we have to deal more with social challenges."

Moreover, the worst outcomes we can imagine rarely ever happen, he adds.

"It's not hard to create such a social contract, but very few organizations do it."

Joseph Grenny

We invite readers to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets for building and maintaining a cohesive, productive team. Or ask a question about a specific issue on which you would like advice. Call editor Luke Laggis at 800-257-7222, or email editor@mswmag.com.

In other instances, employees feel like it's not their place to tell others what to do or how to act. Or they figure it won't do any good. Or they don't know what to say or how to say it without being offensive.

But in the long run, there are downsides to ignoring such transgressions. For starters, if you don't talk things out, you'll probably act it out, creating a downward spiral of trust and repressed anger that can destroy team morale. "It all gets expressed one way or another through things like sarcasm and resentment," he says.

Second, problems avoided typically turn into chronic issues that can create damaging ripple effects in the workplace. As an example, Grenny cites hospital-acquired infections that stem from something as simple as medical personnel not washing their hands.

"It becomes a chronic problem through the unwitting consent of people around them who don't say anything," he notes.

Of course, there's always a chance things can go sideways when someone speaks out about something in the workplace. "But if you don't say anything at all, it never goes well either," he points out. "Things such as employee retention

and strong engagement are all strongly tied to workplaces where people speak up about emotionally and politically risky things."

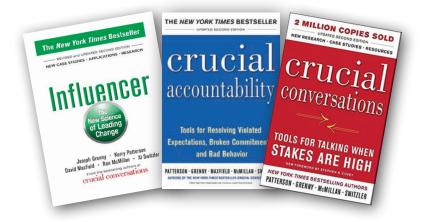
# Timing is everything

So how does one go about handling these delicate situations? First of all, don't wait and don't go to your boss first. Research performed by Vital-Smarts shows that in high-performance organizations, issues get handled at the moment they occur and between peers, Grenny says.

"Escalations (going to a supervisor) almost always end in failure," he explains. "They're unnecessary political and social behaviors that drag down the process of managing a fairly straightforward and logical process."

Also keep in mind that to achieve good results, it pays to ensure your motives are right — a mindset Grenny calls "kind to remind." In fact, Grenny says the best indicator of how a crucial conversation will go is the reason you want to have it in the first place. If you want to punish, belittle or prove you're right, expect it to go badly.

"Too often we behave in ways that prevent the outcome we want," he says.



"Don't turn it into an ego match or a test of wills. Deliver the message, and then look out for your own safety."

Joseph Grenny

In the long run, inaction is not the best option. When handled the right way, speaking out trumps silence. As Grenny points out, "The inability to do so adversely affects every workplace outcome we care about." •

On the other hand, good things happen when you speak from a sense of kindness. "Positive intent is a huge indicator of how well things will go," he explains. "Before you open your mouth, you need to pause and think about what you really want. If it's a legitimate concern, ask yourself what you want for the other person so you're not coming from a selfish place."

# **Accept complaints gracefully**

If you're on the receiving end of the criticism, it's crucial to assume what Grenny calls an "attitude of gratitude." In other words, politely accept any reminders to follow certain safety rules or office protocols and assume they're being expressed with good intent.

Organizations can help enforce this mindset by creating a culture of accountability — a place where it's the norm to say, "OK, thanks for the reminder," whenever someone speaks out about, say, a safety violation.

"When such a response becomes a cultural norm, it reduces the emotional stakes involved," Grenny explains. "It's not hard to create such a social contract, but very few organizations do it. It takes training and presentations and leaders who are willing to reinforce and model it.

"It's kind of like getting a train started," he continues. "It requires enormous energy at the beginning to get it started. But after that, it's easy to sustain."

Last but not least, after people speak up, they then need to let things go, understanding that they cannot control the colleague's response. "Don't turn it into an ego match or a test of wills," he advises. "Deliver the message, and then look out for your own safety.

"Most of us in those moments attach our selfworth to whether or not the other person agrees with us or complies," he adds. "But we don't need to do that. Just do what you're supposed to do in a graceful way and let them handle it how they handle it."

If this approach doesn't work, then it's OK to take the matter up the ladder to a supervisor or someone in human resources or a safety department — whoever has responsibility for the respective issue, he notes.



# LISTENING TO THE SYSTEM

Acoustic technology helps utility assess major transmission main and prioritize resources

By Jay Shah

The city of London, Ontario, is situated at the confluence of the Thames and North Thames rivers just above Lake Erie. The city draws 25% of its water from the lake, and maintaining the transmission system is a critical task.

London is Canada's 11<sup>th</sup> largest metropolitan area, with a population of more than 380,000 residents. The city continues to grow and develop, which has led to many transportation projects along the Elgin pipeline corridor, the large-diameter water main network that brings Lake Erie water to the city.

With the network's significance to the city's water supply, as well as the number of overlaying projects, taking a proactive approach toward maintenance has become increasingly important.

"We had some major projects, including a road widening and pipe life-cycle replacement," says Taylor Eckert, city project engineer. "By getting ahead of these projects with inspection and understanding the pipe's condition, it gave us the opportunity to piggyback on the larger transportation projects and save on replacement investment."

### **New approach**

At many municipal utilities like London's, water asset managers are adopting a pyramid approach to pipe condition assessment. On a selected group of assets, the concept uses cost-effective methods to collect information where possible and progress to high-resolution and high-cost inspection options where needed. This approach formed the structure of London's project plan for its Elgin large-diameter pipeline.

The assumption was that the pipeline was in good condition, but they needed to confirm this assumption with evidence-based information to mitigate the likelihood of failure and extend the life of these high-risk assets while at the same time meeting legislative requirements.

The City of London, Ontario, used Echologics ePulse technology to assess approximately 9 miles of largediameter PCCP mains, and used EchoWave leak detection on another 6.5 miles of large-diameter steel mains.



# "As water pipes increase in diameter, they also increase in criticality and complexity."

Alain Lalonde

Following a comprehensive evaluation process, Echologics ePulse was chosen to assess the minimum average structural stiffness of approximately 9 miles of large-diameter prestressed concrete cylinder pipe mains. Echologics EchoWave leak detection was used on 6.5 miles of large-diameter steel mains. This segment, installed in the 1990s, consisted of water mains with diameters ranging from 35 to 41 inches. The goal was to

conduct a due diligence inspection to determine the current pipe condition and put forth recommendations for the city to make evidencebased asset management decisions to replace, rehabilitate, defer or monitor specific lengths of this pipeline.

"As water pipes increase in diameter, they also increase in criticality and complexity. Transmission pipes are site-specific installations. Each transmission pipe has been designed to ensure safe operation, given local loading and operating considerations," says Alain Lalonde, regional manager of Water Management Solutions at Mueller Water Products. "Decades after a transmission pipe has been installed, design standards, actual loading

conditions and consequences of failure may change significantly. Hence, understanding the current structural state and operating requirements of each transmission pipe is a critical step toward making evidence-based asset management decisions."

The ePulse technology uses a cross-correlation methodology to combine acoustic data measured in the field with information about a pipe's construction to calculate the average minimum remaining structural pipe wall stiffness over the measured segment. As a pipe degrades, the velocity at which sound waves travel through the pipe decreases linearly, forming the basis for the technology. The pipe assessment is performed by bracketing a section of pipe between two sensors that are attached to an existing valve or exposed pipe wall. An out-of-bracket noise is then created by tapping on a valve or directly on the pipe via a daylighting pothole.

The field team measures the distance between the two sensors; and proprietary software calculates

Echologics field engineers worked with the London water engineers to rate the average remaining structural stiffness of each length of pipe tested and ensure a smooth migration of inspection data into their existing GSI database.



the time taken for the acoustic signal to propagate between the two sensors. The wall stiffness is determined using the measured sound wave propagation speed through the pipe and comparing that value to the wave speed of a new concrete pipe in perfect condition. This calculation takes into account the pipe and water properties for the specific classes of concrete pipe tested. For this particular project, all pipe properties were determined from drawings provided by the city.

"When looking into areas such as ease and resolution of inspection and low operational risk, ePulse checked all the boxes," says Michelle Morris, transportation design engineer for the city of London. "Echologics also worked with us to formulate a grading scheme to quantify the pipe's condition and detailed next steps that should be taken for segments exhibiting each particular grading.

"Having this concrete data and grade scheme in place, we can easily add this into our database, which will help with the scope of work in the future by establishing a baseline with historical data."

Echologics field engineers also worked with the city's water engineers to ensure a smooth migration of inspection data into their existing GSI database, making it more accessible and easier to understand by the asset management team.

# System analysis

For a more comprehensive assessment of the pipeline, Echologics, as the prime contractor, teamed up with several expert consultants to conduct in-depth high-resolution testing and review. The ePulse technology provided rating for the average remaining structural stiffness of each length of pipe tested and identified lengths of pipe where significant structural deterioration had occurred. These findings were paired with Simpson Gumpertz & Heger's structural evaluation and failure risk analysis results to identify at-risk sections of the pipeline.

Based on high-resolution ePulse analysis and stiffness measurements, there was sufficient data to show that close to 80% of the tested mains are in good condition and will not require further investigation, although periodic inspection and maintenance work are encouraged. The remaining 20% showed some signs of deterioration and will require attention in the future.

The added advantage of this acoustic technology is the ability to conduct leak detection simultaneously. No leaks were discovered at the time of the survey on the Elgin pipeline. The fact that no existing leaks were found on this pipeline was an early indicator that no imme-

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"Having this concrete data and grade scheme in place, we can easily add this into our database, which will help with the scope of work in the future by establishing a baseline with historical data."

### Michelle Morris

diate or emergency rehabilitation or repair actions were required.

After the six-week period, the city could move forward with peace of mind, knowing that this critical pipeline is in good condition. The successful inspection and assessment allowed the city to allocate its limited budget toward water mains that had a greater level of degradation and need for renewal. •

Jay Shah is the Echologics major projects manager for Mueller Water Products.



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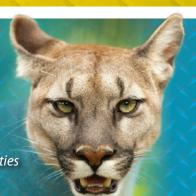
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# A SIMPLE SWAP

California utility finds a faster — and safer — way to replace old valves

By Ken Wysocky

### **BETTER MOUSETRAPS**

### PRODUCT:

Valve-Out flange spreader

### **MANUFACTURER:**

Specialty Maintenance Products 713-667-4402 www.smptools.com

### **APPLICATION:**

Replacing valves, meters

### **BENEFITS:**

Faster and safer valve replacements, less manpower

### USER

City of Palo Alto, California, Utilities Department

Prying apart flanges to replace leaking valves can be a time-consuming and risky procedure. But that's not the case at the Regional Water Quality Control Plant in the city of Palo Alto, California, thanks to an investment in a Valve-Out flange-spreading tool made by Specialty Maintenance Products.

"I saw it online and thought it was pretty cool because of the way it saves you all the time and hassle of prying flanges apart," says Aaron Miller, a senior mechanic at the plant. "I'd say we're about 75% more productive than we were before.

"The first time we used it, the guys were saying, 'This is amazing,'" he adds. "The idea is pure genius."

### **Full access**

The city of Palo Alto is about 33 miles southeast of San Francisco in Silicon Valley. The San Francisco Public Utilities Commission sup-

plies water for the city, but wastewater treatment is handled in-house. The Regional Water Quality Control Plant, which handles 20-30 million gallons of wastewater per day for several surrounding communities, purchased the tool in early 2019. It's primarily used to replace plug, butterfly and gate valves.

Made from cold-rolled steel, the tool consists of three basic components: four spreader plates; eight bolt-hole pins (two for each spreader plate) that come in various diameters and fit into the flange bolt holes; and two spacer bars, which connect the pairs of spreader plates.

"Whether it's a 20-bolt flange or an eight-bolt flange, the butterflying spreader plates can accommodate it," says Tyler Hemann, director of operations at Houston-based SMP.

Two jack bolts that connect to each of the spreader plates exert about 10 tons of pressure to pull apart the flanges on either side of a valve. This allows workers to easily slide out a damaged valve and replace it, along with any gaskets, if needed.

"You can hammer in wedges to spread the flanges, but the problem is that the wedges are then in the way," Hemann says. "This is cool because it pulls apart the flanges from the outside, leaving full access for easily swapping out the valve and replacing the gaskets without any interference. It works even in zero-gap situations."

In one instance, it took a crew at a chemical company 20 man-hours (five employees working for four hours each) to swap out a control valve. But the new valve didn't work, so the crew put in another valve, this time using the Valve-Out tool. Total job time: about 15 minutes, he says.

# Power play

After removing all of the flange bolts, crews select the appropriate-size bolt-hole pins and slide them through the spreading plates, which are essentially two pivoting arms that butterfly out to fit various bolt-hole patterns. The spreader plates are installed in pairs, one pair at the 9-o'clock position on one side of the flanges and the other pair at the 3-o'clock position.

Two bolt-hole pins secure each of the spreader plates to the flanges. The pins, which come in a variety of diameters, are secured by pushing them through the spreader plates and then into the flange bolt holes.



# "I'd say we're about 75% more productive than we were before."

**Aaron Miller** 

Spacer bars connect each pair of spreader plates at their pivot points. The spacer bars come assembled at a total length of  $11\ 1/2$  inches, which

will accommodate a 12-inch valve lay length. But the various sizes of the spacer bars — available in 2-, 4- and 6-inch lengths — allow the tool to adjust to different lay lengths.

After each of the four spreader plates is affixed to the flanges and connected by the spacer bars, the tool operator (or operators, depending on the pipe diameter) simultaneously tightens two jack bolts, one attached to each pair of spreader plates via the threaded ends of the two spacer bars. As the jack bolts turn, they slowly expand the length of the spreader bars, which in turn forces the bolted-on spreader plates to spread the flanges apart, Hemann explains.

"Some guys use a come-along (a ratcheting chain strap) to pull the flanges part," he says. "But when you do that, the flanges can go in different directions, which makes it hard to line up those bolt holes again. But our tool holds the flanges in a fixed position that maintains the bolt-hole alignments in a controlled way."

There's no need to worry about damaging the flanges; Hemann says no customer has ever reported bending a flange while using the tool.

With spacer bars and spreader plates holding the connections in place, a crew lifts an old valve out of the line.

The Valve-Out system comes in three kits. The VOC 1 kit is designed to handle any flanges with 3/4, 7/8- and 1-inch-diameter bolt holes. Aimed at bigger pipes, the VOC 2 kit is designed to handle flanges with 1 1/8-, 1-1/4- and 1 3/8-inch-diameter bolt holes. The VOC 1-2 kit includes all six of the previously mentioned bolt-hole pins.

SMP sells extra spacer bars separately to accommodate valve lay-lengths of more than 12 inches.



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# BETTER MOUSETRAPS



Two jack bolts connected to each of the spreader plates exert about 10 tons of pressure to pull apart the flanges on either side of a valve, allowing workers to easily slide out a damaged valve and replace it.

### Faster and safer

The Valve-Out system is especially useful in situations where there's no relief joint near the valve that can be opened to create enough space to insert a gasket. "The key to the whole thing is that the tool is not in the way when you're trying to install gaskets because it's grabbing the flanges and spreading them apart evenly from the outside (of the flanges)," Miller explains. "It takes a lot of the struggle out of the equation."

The tool's simplistic design makes it easy to use. Miller estimates he can teach someone to use it in about 10 minutes. Moreover, it improves employee safety because the tool does the strenuous work instead of employees.

"It's easy to get a finger pinched or strain your back when you change out valves and gaskets," he says.

The tool also reduces the number of people required to swap out valves and gaskets, which enables the division to be more productive through more efficient allocation of manpower. "Guys could even change out a valve by themselves if they had the right rigging (to lower the bad valve and raise a new one in place)," Miller says.



The Valve-Out system is especially useful when there's no relief joint near the valve that can be opened to create enough space to insert a gasket.

# "It takes a lot of the struggle out of the equation."

**Aaron Miller** 

The largest valve Miller has replaced with the Valve-Out system was a frozen 12-inch-diameter butterfly valve in a water-backwash supply pipe. The job went off without a hitch, despite the fact that there was no relief joint in the pipes.

"Without this tool, the job would've taken several hours longer than it did, not to mention all the struggling," Miller says. "We would have had to pull it from one side with a come-along, which puts a side-strain on the pipe. And putting in the new valve would've involved a lot of challenging prying and pushing.

"We use the Valve-Out tool every couple weeks or so. It turns jobs that used to be a struggle into straight-forward procedures. It's a great timesaver." •

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# GET A HANDLE ON GAS MONITORING

Hydrogen sulfide is a problem for your people and pipes

By Terry Nagy

ydrogen sulfide (H<sub>2</sub>S) is a gas commonly found in wastewater applications, resulting from the decomposition of organic matter. It is toxic, combustible and can be corrosive. Effective monitoring — and choosing the appropriate measurement system — requires an understanding of why the data is being collected and how it is being used.

Hydrogen sulfide is a colorless gas that is often described as having the odor of rotten eggs when present in low concentrations. It is flammable and releases sulfur dioxide ( $SO_2$ ) when burned. It can be toxic at concentrations above approximately 300 ppm and is also corrosive to metals and concrete, in addition to other materials.

# **Origins**

Hydrogen sulfide can be found in natural sources such as petroleum, natural gas and some well water, as well as industrial settings such as refineries, steel mills and wastewater treatment plants. In addition, it can be produced through the decomposition of organic materials by naturally occurring

# There are a variety of methods to detect the presence of hydrogen sulfide.

bacteria in areas with low oxygen concentrations, such as swamps, or underground through a process known as anaerobic digestion.

In wastewater collections systems and treatment plants,  $H_2S$  is produced when anaerobic bacteria digest sulfates and organic material via the reduction reaction:

SO<sub>4</sub><sup>-2</sup> + organic material -> H<sub>2</sub>S + CO<sub>2</sub>

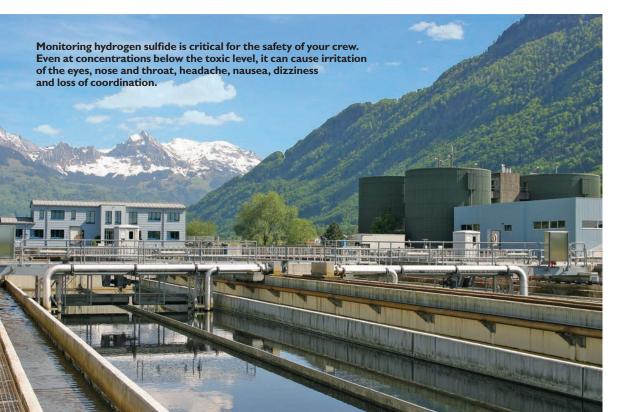
If oxygen is present, there is a balancing reaction by aerobic bacteria to oxidize the  $H_{\nu}S$ :

$$H_{9}S + 2O_{9} -> H_{9}SO_{4}$$

## **Potential problems**

There are three important reasons to monitor H<sub>o</sub>S:

- 1. Health and safety issues As mentioned, hydrogen sulfide can be toxic at concentrations above 300 ppm and is flammable; at higher concentrations, a mixture of H<sub>2</sub>S and air can be explosive. Even at concentrations below the toxic level, it can cause irritation of the eyes, nose and throat; headaches; nausea; dizziness; and loss of coordination. It is also heavier than air and can pose a hazard if it is allowed to accumulate in pits and other poorly ventilated places.
- 2. Public nuisance complaints The rotten egg smell that accompanies H<sub>2</sub>S can often lead to complaints from residents near manholes, discharge points, treatment plants, landfills and other types of processing and manufacturing facilities.
- 3. Infrastructure damage  $H_2S$  is corrosive and can lead to the degradation of pipes, manholes, lift stations and pumping equipment.



A good rule of thumb is that the sensor needs to spend an amount of time in the normal environment equal to the amount of time in the monitored environment to fully recover.

# Eliminating H,S

The main principles for eliminating  $H_2S$  revolve around the management of the anaerobic sulfate-reducing bacteria, or SRB, that are the source.

First, there is a competing reaction that depends on oxygen to convert the hydrogen sulfide to sulfuric acid. Increasing the oxygen level via aeration can reduce the anaerobic reaction, enhance the competing reaction and reduce H<sub>9</sub>S levels.

Another method is to reduce the presence of the SRB via a biocide such as chlorine, alkalis or nitrites. The introduction of nitrates or anthraquinone can change the behavior of the SRB and reduce the formation of  $H_2S$ . Finally, modifying the operation of the system (for example, introducing other friendly bacteria or speeding up flow rate) can suppress the activity of SRB.

# **Monitoring**

There are a variety of methods to detect the presence of hydrogen sulfide. The simplest is the sense of smell. It's actually possible to smell  $\rm H_2S$  at levels of less than 1-10 ppm; however, you would not want to be any place where the level was greater than 20 ppm for any period of time.

There are several methods for chemical detection of  $\mathrm{H_2S}$  including lead-acetate-coated test strips, colorimetric tubes and the Tutwiler method, which uses chemical titration. One of the most accurate methods is gas chromatography, but this requires a relatively large and expensive piece of equipment and may not be practical for use in the field.

Finally, there are electronic monitors that use small electrochemical sensors to detect  $\rm H_2S$ . These sensors use a specially treated sensing electrode along with an electrolyte; the incoming gas undergoes a chemical reaction at the sensing electrode that generates an electrical signal. These sensors typically employ a counter and/or reference electrode to provide a differential output signal that is only based on the concentration of the specific gas being measured.

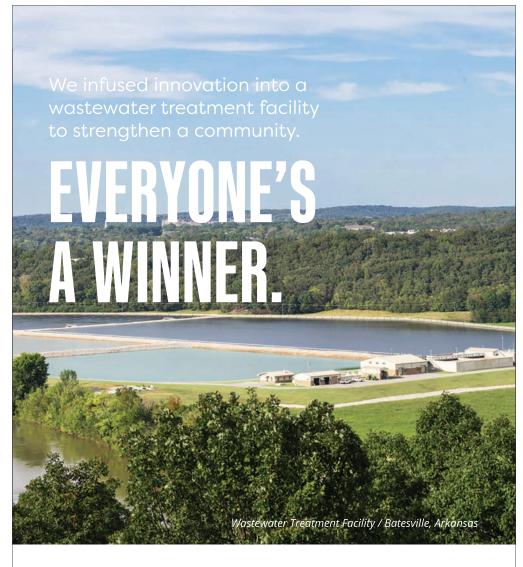
One important consideration when using these sensors is that they have a finite operating time when used in the presence of hydrogen sulfide. Since they depend on an electrochemical reaction, there is an electrolyte that is converted as part of the reaction. Eventually, once all of the electrolyte is converted, the sensor can lose its ability to respond to H<sub>2</sub>S. When this happens, the sensor has to be regenerated by removing it from the monitoring location and placing it in a normal environment to allow it to

recover. A good rule of thumb is that the sensor needs to spend an amount of time in the normal environment equal to the amount of time in the monitored environment to fully recover.

## Selecting a monitoring system

When choosing a system to monitor  $H_2S$  gas levels for a semipermanent installation (as opposed to a personal protective monitoring unit), there are several considerations to take into account:

1. What is the application and associated measurement range?



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- e. Corrosion management
- f. Treatment/remediation management

In general, odor control applications, such as monitoring along a fence line or at the output of a scrubber, require the ability to measure at low levels, typically less than 5 ppm.

- 2. How often will a measurement be taken?
- 3. How long does the unit need to be left in place?
- 4. How much onboard data does the unit need to store?
- 5. What is the environment like?
- 6. Does the unit need a real-time display?
- 7. How will the data be retrieved?
- 8. Does the unit need any alarm output?
- 9. Does the unit need any real-time output?

In general, odor control applications, such as monitoring along a fence line or at the output of a scrubber, require the ability to measure at low levels, typically less than 5 ppm. Sample rates from once every 10 minutes to once per hour are commonly used. These are often temporary installations that may last a week or two and require storage for a few thousand data points.

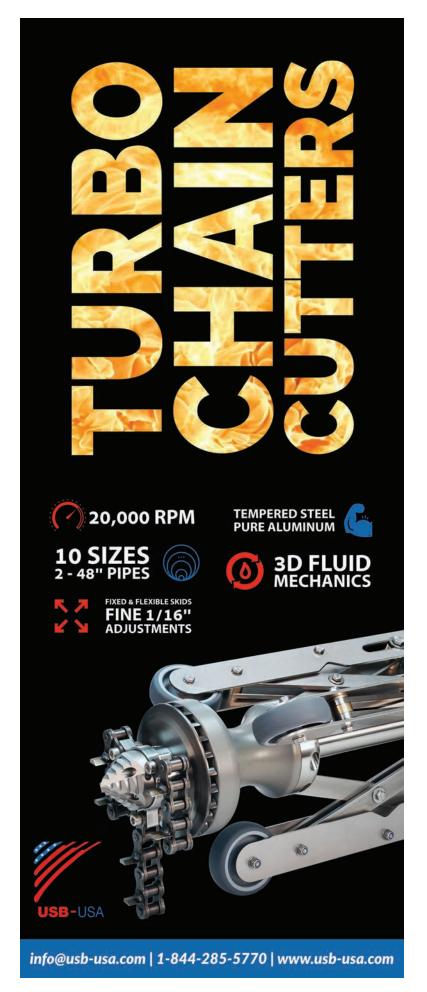
Systems intended for health and safety monitoring would typically need a range up to 100-200 ppm — OSHA has set a ceiling of 20 ppm continuous with a maximum peak of 50 ppm for a maximum of 10 minutes during an eight-hour shift. This type of application would almost certainly require a real-time display and alarm with a sample rate of one to 10 minutes.

For longer-term projects such as monitoring for corrosion management or treatment, the ability to sense over a wider range, up to several thousand parts per million, may be required. These applications can involve monitoring in harsh, wet or high-humidity corrosive environments that require a robust instrument package with O-ring seals. Since these units could be left in place for long periods of time, large internal memory and battery life are required to allow extended operation.

To facilitate data retrieval, a wireless interface such as Bluetooth can make it possible to easily download data to a mobile device rather than relying on a hard-wired connection to a PC. For unattended data retrieval, a device with an internal cellular modem can automatically push data and alarms to eliminate the need to physically access the logger. Also, these longer-term installations will usually require multiple loggers so that they can be swapped in or out of service to allow recovery after extended use times.

Finally, some applications, such as dosing of a chemical to eliminate the SRB that generate  $H_2S$ , will require an output signal to connect to an existing system. An  $H_2S$  data logger that can provide an industry-standard 4-20mA current output allows the unit to provide a real-time output that can be tied into a SCADA system for equipment control, alarm activation and long-term historical data recording.  $\spadesuit$ 

Terry Nagy is the engineering manager at CAS DataLoggers with more than 20 years of experience in measurement and instrumentation systems.





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# GOOD ACOUSTICS

InfoSense provides tools to enable a more effective and efficient condition-based maintenance strategy

By Luke Laggis

nderstanding collections system condition is critical to maintaining performance. Video inspection is a key piece, but it's not the whole puzzle.

Active acoustic inspection technology, specifically the Sewer Line Rapid Assessment Tool from InfoSense, can provide a quick picture of which lines are flowing properly and which need further inspection. Most important for system operators, it does the job quickly and is inexpensive.

Municipal Sewer & Water recently spoke with Alex Churchill from InfoSense to discuss the SL-RAT and the company's new Sewer Line Data OrGanizer, or SL-DOG, platform.

#### MSW: How did InfoSense get its start in the industry?

**Churchill:** In 2005, Ivan Howitt, Ph.D., then a faculty member at UNC Charlotte, started researching technologies to solve a problem brought



"The SL-RAT is extremely simple to use. It is on the order of 10 times faster and 10 times cheaper than <a href="CCTV">CCTV</a> or cleaning."

**Alex Churchill** 

forth by Charlotte Water in North Carolina. Staff members there knew their time-based cleaning program was inefficient. They wanted to move to a condition-based maintenance strategy that saved money and reduced sanitary sewer overflow risk. Howitt's exten-

sive research led to the development of active acoustic inspection and the founding of InfoSense. The technology was patented and further developed into the Sewer Line Rapid Assessment Tool, or SL-RAT, with the help of an NSF grant, and it was awarded Water Environment Federation's Innovative

Technology Award in 2012. Today, we have more than 375 utilities around the world using the SL-RAT to inspect their collections systems.





#### MSW: How did development of the technology evolve?

**Churchill:** The idea for the SL-RAT came from a problem that is now well recognized in the industry: How can utilities better understand where blockage conditions exist in their underground network, and how can they use that information to clean more efficiently and reduce risk? Howitt developed a proof of concept for using acoustic technology to screen a utility's

collections system. Used as a first step in the maintenance process, he discovered this tool was significantly faster and cheaper for providing initial blockage assessments in small-diameter gravity sewers than existing inspection or cleaning tools. The city of Charlotte worked closely with Howitt to validate and improve the initial concept, inspecting more than 1 million feet with several field prototypes. Since then, hundreds of SL-RATs in the field have inspected well over 200 million feet of pipe.

# MSW: What challenges have you faced in gaining acceptance of the SL-RAT's value and effectiveness?

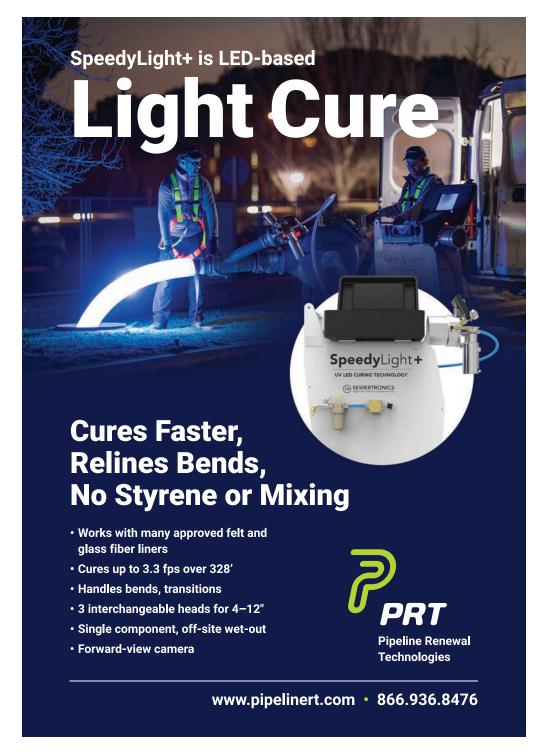
Churchill: We experienced two primary challenges. The first was acceptance of a new technology that was vastly different in approach, appearance and operation than anything our industry had seen before. Initially, utilities needed to gain trust in this new technology. To do this, many conducted their own pilot studies to validate and understand what the acoustic scores meant for them. A formal EPA report that demonstrated the tool's cost savings and timesavings was published in 2014. Today, the SL-RAT is a trusted technology that has been widely accepted for use by regulators and insurers and as part of an ASTM standard for prioritizing sewer pipe cleaning operations, which was published in 2017.

The second challenge is the phase we are in now, which is moving to a programmatic use of the SL-RAT technology as a collections system screening tool that enables the transition from a time-based to a more effective and efficient condition-based maintenance strategy. Most utilities are using a time-based protocol for maintaining their collections systems. Shifting from a time-based approach to one that deploys resources based on condition requires adjustments in the utility operator's work management processes, which requires management effort to implement. Additionally, inspecting tens of thousands of feet of pipe per day means generating a lot of valuable data that needs to be managed, and which requires effective teamwork.

However, the transition is worth the effort. We are seeing that on average 70% or more of the pipes in most municipal systems do not need immediate attention. Utilities using the SL-RAT are able to cost-effectively assess their entire systems on a one- to three-year programmatic basis, improving awareness of the system's condition, reducing unnecessary cleaning and improving system performance.

# MSW: What differentiates the SL-RAT from other inspection technology?

**Churchill:** The SL-RAT's patented innovation is the use of transmissive acoustics: A transmitter sits on a manhole and sends a known acoustic signal through the free space above the flow in the pipe and a receiver listens for that known signal in the adjacent manhole. Based on how damp-



# THE SUPPLY SIDE



ened or degraded the signal is, the SL-RAT uses a pattern-matching algorithm to provide a score for each test based on a scale of zero to 10, where zero is a blocked pipe and a 10 represents a pipe with significant capacity for additional flow.

The SL-RAT is extremely simple to use. It is on the order of 10 times faster and 10 times cheaper than CCTV or cleaning. The test takes only three minutes per segment and has no flow contact.

These operating characteristics make it an attractive first screening step in a collections system maintenance program and an excellent accompaniment to existing inspection and cleaning activities.

# **MSW:** Is acoustic inspection an alternative or complement to CCTV?

**Churchill:** Acoustic inspection certainly complements CCTV operations by helping to prioritize pipes that need further investment from other maintenance activity. The SL-RAT is 10 to 20 times faster and 1/10 to 1/20 the operating cost of CCTV. That being said, it does not provide the same level of detail as CCTV and is focused more on blockage condition than pipe wall condition. Think of the SL-RAT providing the first-pass screening of your collections system — fast, low cost and low resolution. The information it provides helps to identify quickly where more expensive resources, such as CCTV, should be deployed, saving time and resources in the process.

# MSW: How does this technology help municipal wastewater operators run their systems more efficiently?

**Churchill:** I'm drawn to use a quote from Greg Ramon of Little Rock (Arkansas) Water Reclamation Authority that ran in your sister magazine, Inflow & Infiltration: "I think rodding pipes every day for the sake of rodding is the old way of doing things. ... Not only is acoustic monitoring cost-

effective, but it's environmentally responsible as well. Do we really want an additional 15 trucks out there, spewing smoke and causing congestion?" Bottom line: The SL-RAT helps improve efficiency, saves money and reduces risk in your collections by focusing cleaning efforts on the right pipe at the right time. What utility director in today's environment wouldn't jump all over a solution that offers those benefits and an investment payback period of weeks or months?

# MSW: The SL-DOG platform is a newer offering. Can you give us an overview?

**Churchill:** The SL-DOG was specifically designed to help SL-RAT users get maximum benefit from their acoustic data. SL-DOG is intended to optimize acoustic inspection programs by facilitating data collection, management and visualization. By uploading measurements to this portal, the information is archived for future access in a secure, cloud-based portal. The users can quality-control their data while enhancing and editing it, which is an essential part of complying with the ASTM standard for acoustic pipe inspection.

Additionally, the SL-DOG mobile app is a free application available for iOS or Android devices. The app helps operators add notes in the field to attribute asset IDs and other field observations to the acoustic measurements, and it automatically syncs to the portal.

# MSW: Does the SL-DOG mesh with other asset management platforms?

**Churchill:** This is a pertinent question and one we have begun hearing more in the past few years. And that is the reason why we developed the SL-DOG ecosystem in the first place.

The SL-RAT inspection data can be easily exported into all the industry standard formats through a few clicks in the SL-DOG system. After export, the end user can re-import the file into their system of choice for further processing.



We recognized early on that it did not make sense to try replicating or overlapping with the excellent enterprise software packages that so many others had already developed. We wanted to develop a system that could help our wide range of customers manage

their SL-RAT data, but then also export it to these other systems and use that information to automate cleaning and inspection work order processing for

example. That is why we allow for the enhancement

major solution providers to participate more tightly

in their technology partner programs and we have

a number of tighter integration projections we are

working on with key clients. Our overall goal with

this is to help our customers have a more turnkey

road map and tools for data integration if they chose

That all being said, we are working with several

The SL-RAT provides a fast, first-pass screening of collections systems.

to integrate the SL-RAT program more tightly with their other business processes and systems.

#### MSW: Anything else you'd like to address?

**Churchill:** We're just excited to be a part of this industry and able to help improve the communities and environment where our technology is used. ◆



# Vanair® puts the AIR in excavation

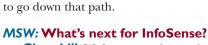
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and export of the data in so many ways.

**Churchill:** We have a continuous improvement culture so there are constant changes being made in our processes and in our products to make them better. And we are also customer-centric so we use feedback from our customers to prioritize where we are heading.

Currently, we are focusing most of our product development resources on adding additional features and enhancements to the SL-DOG portal and to the mobile app. That's where our customers are pointing us — using the data to make decisions and





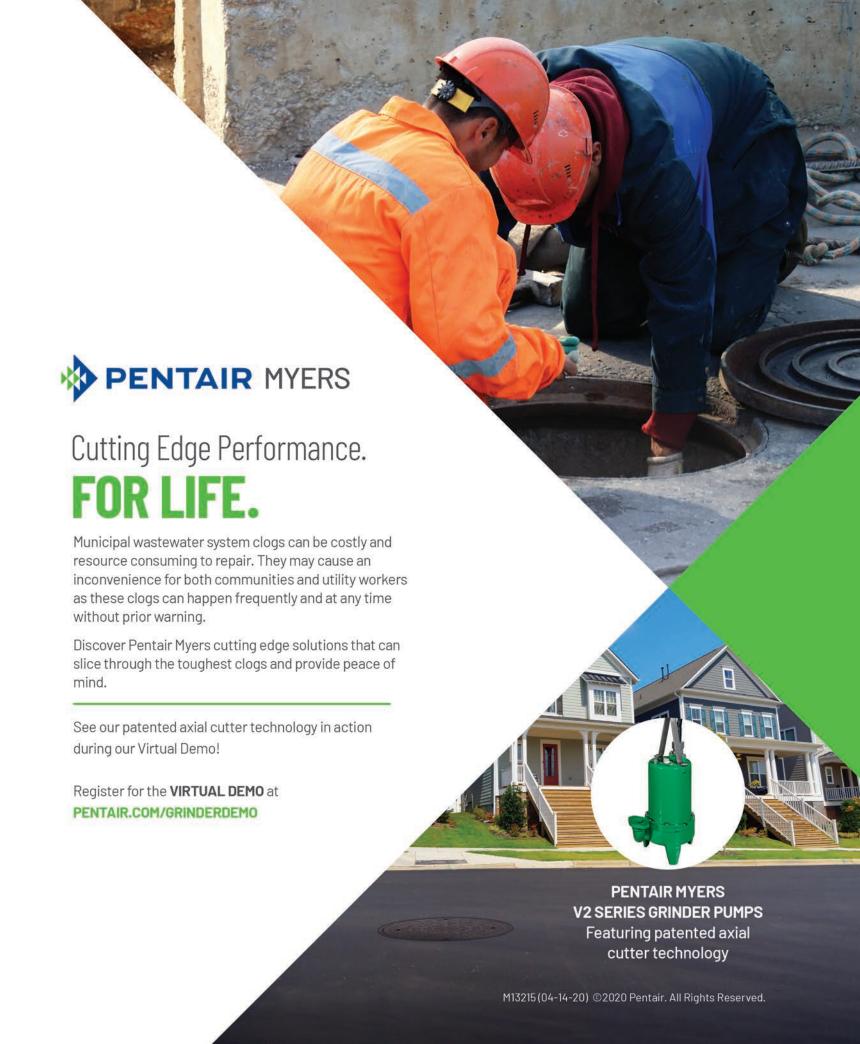
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# NEW TECHNOLOGY SLATED FOR WEFTEC CONNECT

By Craig Mandli

FFTEC, the Water Environment Federation's annual Technical Exhibition and Conference, offers municipal and industrial water and wastewater professionals from around the world exposure to the newest products, as well as opportunities for professional development. This year's virtual event,

WEFTEC Connect, will be live Oct. 5-9 and features an exhibitor showcase, education and networking components of the WEFTEC experience. Below is a preview of some of the latest offerings from exhibitors who would have displayed them in person, as well as products that will be highlighted at the 2020 virtual event.

#### Aerzen Rental temporary oil-free blowers

Aerzen Rental provides temporary oil-free blower packages engineered for aggressive rental environments with onboard variable-frequency drives, remote monitoring and outdoor builds with sound-attenuating enclosures. The rental units are available for immediate deployment in the event of a production failure or short-



fall to longer-term operational leasing and rent to own. 844-400-2379; www.aerzenrentalusa.com.

#### Alfa Laval Aldec G3 VecFlow

Alfa Laval's Aldec G3 VecFlow decanter centrifuge offers high performance and low operating cost. The unique feed zone minimizes turbulence, resulting in exceptional separation and 30% lower power consumption versus traditional decanters. It also offers the flexibility to optimize the process by minimizing polymer consumption, increasing cake dryness or boosting capacity, all based on your unique conditions. Plants can often realize a full return on their investment in less than



a year due to its high separation performance and low power consumption. Meet Alfa Laval at WEFTEC Connect to discuss if VecFlow is the right solution for your dewatering and thickening process. **866-253-2528**; www.alfalaval.us.

#### AllMax Software Antero CMMS version 7

Antero CMMS version 7 from AllMax Software includes asset mapping, asset criticality scoring, improved workflow and work order management, and procedure scheduling for detailed plant inspections and rounds. Improvements have been made to the reporting, calendar and equipment sections, ensuring users have access to their most



critical asset and maintenance information in order to make informed, data-driven decisions. It accurately tracks maintenance data, allowing the user to streamline his or her maintenance program to save time, effort and

money, all while providing the peace of mind that the equipment is being maintained efficiently and effectively. **800-670-1867**; www.allmaxsoftware.com.

#### Applied Felts CIPP liners

Using only the highest-quality raw materials available, **Applied Felts** manufactures world-class CIPP liners based on unique job requirements. Their vertically integrated offering of classic felt liners include flame-bonded or sewn-seamed,



highly durable, polyurethane- and polypropylene-coated liners for more extreme environmental and installation requirements. They also provide maximum flexibility in the field. The fiberglass-reinforced liners provide a strong, robust liner for gravity sewer, pressure pipe and potable water applications. 276-656-1904; www.appliedfelts.com.

#### Aqua-Aerobic Systems OxyStar

The OxyStar aerator from Aqua-Aerobic Systems has been a leading aspirating aeration technology for 50-plus years and has effectively aerated and mixed more than 4,000 municipal and industrial wastewater treatment systems across the globe to introduce oxygen into



lagoons, equalization basins, aerobic digesters, sludge holding basins and/or activated sludge systems. Known for its efficient oxygen transfer and intense directional mixing pattern, which results from its three-blade helical propeller, the aspirating aerator is a suitable solution to improve aeration systems in aerated lagoons, oxidation ditches and other activated sludge processes, equalization basins and aerobic digesters. 815-654-2501; www.oxystaraerator.com.

#### Atlas Copco ZS

The **ZS** blower range from **Atlas Copco** is designed to guarantee a continuous, long-term supply of oil-free air. The models in the range provide reliable, energy-efficient packages, which are suitable for a wide array of wastewater applications, ensuring low-operating costs and max-



imizing your total cost of ownership. Maintenance costs and downtime are

minimized due to the innovative technology of the screw blower. The range also boasts low noise levels, meaning they can be installed at the point of use. The flow range is 120 to 5,500 cfm, with a pressure range of 0-22 psig. **866-546-3588**; www.atlascopco.com.

#### Badger Meter Dynasonics TFX-5000

The **Dynasonics TFX-5000** ultrasonic clampon meter from **Badger Meter** uses transit time technology to accurately measure the volumetric flow of clean liquids and those with small amounts of suspended solids. It is suitable for water and wastewater applications, such as lift



stations, booster pump stations and water mains. Designed to clamp onto the outside of pipes, it doesn't contact the internal liquid, allowing for installation without shutting down operations in new and retrofit applications. It is equipped with an internal clock and built-in 8 GB data-logging capabilities to log water flow down to one second. 877-243-1010; www.badgermeter.com.

#### BDP Industries 3DP belt press

The **3DP** belt press from **BDP** Industries is designed to provide high discharge cake solids at high flow rates. It has a 25-year track record of low operation and maintenance costs while providing suitable performance. It has been continually improved with the latest features and



automation and is a rugged, durable machine designed to provide years of reliable service. With its history of dewatering aggregates and minerals, as well as wastewater treatment plant solids, it is also especially suited for water treatment plant residual dewatering. 518-695-6851; www.bdpindustries.com.

# Bright Technologies, Division of Sebright Products, belt filter press

The compact 0.6-meter skid-mounted belt filter press from **Bright Technologies**, **Division of Sebright Products**, has stainless steel frame



and roller construction, as well as radius wedge zone and wing roller for sludge dewatering. Components include a sludge pump, polymer system and wash-water booster pump. Options include a sludge flowmeter, air compressor and discharge conveyors. The compact walkaround skid design can be utilized in as little as a 10-by-20-foot floor area. Rates of 25 to 50 gpm make it ideal for small applications or when a processor has outgrown dewatering containers. 800-253-0532; www.brightbeltpress.com.

#### Centrisys/CNP THK

The Centrisys/CNP THK sludge thickener is engineered for high-performance biosolids thickening. Compared to other centrifugal sludge thickening technologies, it uses 50% less power and dramatically reduces or even eliminates the need for polymer conditioning. Thanks to these



savings, it represents a low total cost of ownership. With an all-cylindrical design for maximum capacity, it has a small footprint for its throughput. Air injection for precise control of sludge thickness makes operation easy and reliable. It is an enclosed system, allowing for safe, hygienic operation and simple cleaning. 262-654-6006; www.centrisys-cnp.com.

#### Cretex Specialty Products LSS Internal Manhole Chimney Seal

Cretex Specialty Products LSS Internal Manhole Chimney Seal is a mechanical seal installed on the frame and grade ring sections of sanitary sewer manholes. These seals eliminate and prevent manhole frame-chimney inflow. During wet weather, clearwater (inflow) enters manholes through deteriorated and broken



frame-chimney joints, which may burden the collections system. Each seal is made up of a high-grade rubber sleeve and stainless steel expansion bands, which can be easily removed and reinstalled to allow for future manhole adjustments. The chimney seal has a 50-year design life and is available in four widths, allowing complete chimney coverage of up to 24 vertical inches with a single seal. **800-345-3764**; www.cretexseals.com.

#### CUES GraniteNet WebInspect

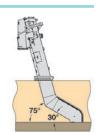
**GraniteNet WebInspect** from **CUES** is a browser-based inspection app designed to perform inspections and collect information about municipal assets, such as manholes, including Manhole Assessment and Certification Program v7 Level 1, hydrants, lift stations, grease traps,



light poles and signage. It can be used to help perform and track tasks such as valve turning, smoke tests, brush cutting and snowplowing. It allows the tech to collect GPS points, water-quality samples, flow tests and assess sewer backups, as virtually any type of asset assessment or task can be quickly deployed for the organization, with or without existing GIS maps. All that's needed is an internet connection and virtually any device with a browser, such as a mobile phone or tablet. There's no software to install on any user device. 800-327-7791; www.cuesinc.com.

#### **Enviro-Care FSM**

The **FSM** multiangle, perforated-plate belt filter screen from **Enviro-Care** increases the flow capacity by almost 100% while maintaining the original channel footprint. The first section of the screen sits at a 30-degree angle that doubles the wetted screen area while reducing the velocity through the screen. The screen then transitions into a 75-degree transport area. It can be the



solution to upgrading to a high-capture screen and handling more flow in an existing channel. 815-636-8306; www.enviro-care.com.

#### FerraTex Solutions wet-out liners

**FerraTex Solutions** provides CIPP wet-out liners and services for demanding trenchless pipe rehabilitation projects, reducing time and costs for CIPP installers. With six locations across the U.S., they offer logistic advantages and customer service throughout the U.S., Canada and parts



of Mexico. Each wet-out liner undergoes a rigorous ISO 9002 certified quality-assurance inspection. Once resin impregnation is completed, the resinsaturated liner is loaded into a climate-controlled trailer for delivery and is tracked through GPS. **844-433-7728**; www.ferratex.com.

(continued)



Go to MSWmag.com to view these products.

#### Flomatic Valves Model 745 AIS

The **Flomatic Valves Model 745 AIS** swing check valve has a valve body with full flow area equal to nominal pipe diameter and a 45-degree angle seat providing short disc travel with faster closure for nonslam performance. An EPDM molded one-piece disc has an integral molded



O-ring on the seating surface, which is reinforced with steel. It is available with accessories such as a backflush device, position indicator and limit switch. It has NPT threaded and plugged side ports for easy installation of gauges or accessories. It is designed and manufactured according to the ANSI/AWWA C508 Standard. 800-833-2040; www.flomatic.com.

#### Force Flow Drumm-Scale

The **Drumm-Scale** from **Force Flow** is a simple and reliable way to accurately monitor the amount of polymer fed from a day tank, and it enables accurate compliance with government-required documentation of chemical use. It helps maximize solids yield with minimal polymer use. The low-profile Tuf-Coat steel plat-



form permits easy on-loading and offloading of tanks without the need to pit-mount the scale. The unit is available with any of the company's indicators, including the economical SOLO G2, advanced multichannel Wizard 4000 and rugged Century hydraulic dial. **800-893-6723**; www.forceflowscales.com.

#### Gorman-Rupp Integrinex Advanced

Gorman-Rupp's Integrinex Advanced lift station controls are custom-engineered to meet unique system requirements. When equipped with FloSmart technology, the control system can detect a pump obstruction. Upon detection, the device initiates a cleaning operation without inter-



fering with the operation of the pump station. When the cycle is complete, the pump is ready to return to normal operation. If the clog remains, the cleaning sequence repeats until the blockage is cleared. FloSmart helps maximize uptime while reducing maintenance costs. 419-755-1011; www.grpumps.com.

#### Hach EZ Series online analyzers

**EZ Series** online analyzers from **Hach** provide a solution for continuously monitoring parameters that are critical to risk mitigation, compliance, safety and process uptime. They offer five different technologies: titration, colorimetry, chemiluminescence, ion-selective electrode and voltammetry. They include a wide analytical range; a variety of measurance of the selection o



ing ranges, multistream capabilities and multiple parameter options; and reliable monitoring of remote locations or unmanned plants, which allows staff to focus on other tasks. 800-227-4224; www.hach.com.

#### Hayward Flow Control HLS Series level sensor

The **HLS Series** level sensor from **Hayward Flow Control** provides a broad chemical resistance to acids, bases and oxidizers, like sodium hypochlorite, with its CPVC body and construction. It is typically placed at the bottom of a liquid storage tank or sump where the hydrostatic pressure is sensed and converted to an ana-



log output signal (4-20mA). Pressure level sensors are not affected by liquid surface conditions like waves or foam or tank headspace conditions like

vapors or thermal layers. No stilling well is required for accurate measurements. The sensors are provided in two measurement ranges: 0-15 and 0-33 feet of water column. Controllers and indicating transmitters for the unit are also available. 888-429-4635; www.haywardflowcontrol.com.

#### Keller America Econoline

The **Econoline** pressure transmitter from **Keller America** combines a media-isolated piezoresistive silicon sensor with signal conditioning electronics to provide a compact pressure transmitter with less than plus or minus 1% total error band accuracy over 32 to 122 degrees F. The industry-standard 4-20mA analog output is compatible with most existing monitoring infrastructure and SCADA systems and provides meaningful output in ranges from 30 to 10,000 psi. The design makes it suitable



for use under harsh environmental conditions, including those with high levels of electromagnetic radiation and/or those involving aggressive media where small size, low weight and reasonable cost are required. Modular production provides short lead times and maximum versatility for customerspecific applications. 877-253-5537; www.kelleramerica.com.

#### Komline-Sanderson Biosolids Drying System

Biosolids Drying Systems from Komline-Sanderson are capable of handling in excess of 1,000 tons of wet cake per day. Excess heat from combustion engines or turbines can be used to heat thermal fluid or produce steam. The dryer's shaft, hollow paddles and trough are all heated. The robust design and low speed with minimal rotating parts result in reduced maintenance costs. Indirect drying using the airtight dryer results in minimal offgas volume, which allows simplified odor control systems and



safe operation resulting in reduced disposal costs for the beneficial reuse of biosolids as fertilizer and green fuel. 800-225-5457; www.komline.com.

#### Lakeside Raptor FalconRake bar screen

Protecting downstream equipment in municipal and industrial applications, the **Raptor FalconRake** bar screen from **Lakeside** achieves high removal efficiency and low headloss, without the need for lower bearings, sprockets, bushings or guides that could foul or jam conditions in the channel. The all stainless steel, cor-



rosion-resistant construction is designed with multiple rakes that continuously remove captured material. It is available in a range of bar shapes and depths so that it can create an efficient, durable and dependable rapid debris removal system for a range of applications. In addition, its design and construction means a low horsepower, energy-efficient drive system. 630-837-5640; www.lakeside-equipment.com.

#### Lovibond PTV Series

The **Lovibond PTV Series** of process turbidimeters is optimized for drinking water applications. They include a long-lasting LED light source and bubble exclusion system that deliver accurate and ultrastable measurements. Combined with the heated optical assembly, the chance for condensation and fogging is eliminated. The low-volume flow body provides faster response to turbidity spikes and uses far less water and calibration standards. It is easy to clean and can be easily drained with quick-connect fixtures. The instruments meet Environmental Protection Agency and ISO regulatory requirements. **941-756-6410**; www.lovibond.com.



#### MaxLiner USA MAX CalTube

MAX CalTubes from MaxLiner USA provide optimum flexibility and durability. The yellow version is engineered from ultraflexible, lightweight polyethylene fabric with PVC coating that is closed with a high-frequency welded overlap. It is intended for use in open-end liner and pull-in-place applications. They



are ideal for lower pressure and heat curing up to 135 degrees F unsupported. **877-426-5948**; www.maxlinerusa.com.

#### Park Process Big Tipper

The **Big Tipper** from **Park Process** allows the user to mount dewatering boxes on a permanent stand and eliminates hauling the containers to the landfill where they can become damaged in transit and when emptying. Having the containers dump into a containment area also allows for extra drying



of the filter cake. Using more than one dewatering container allows the units to handle a continuous flow of wastewater. While one container is filling, the other one is sitting idle and draining. Units are available in a multitude of capacities and tipping heights and come complete with handrails, walkways and stairs and/or ladders. 855-511-7275; www.parkprocess.com.

#### Penn Valley Pump double disc pumps

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#### Sealing Systems Flex-Seal 2.0

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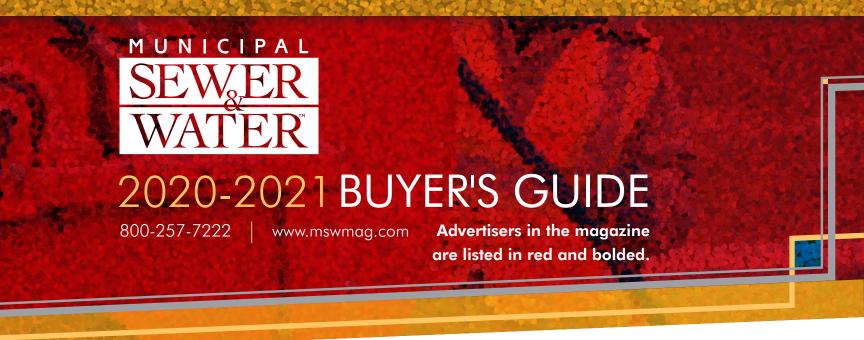


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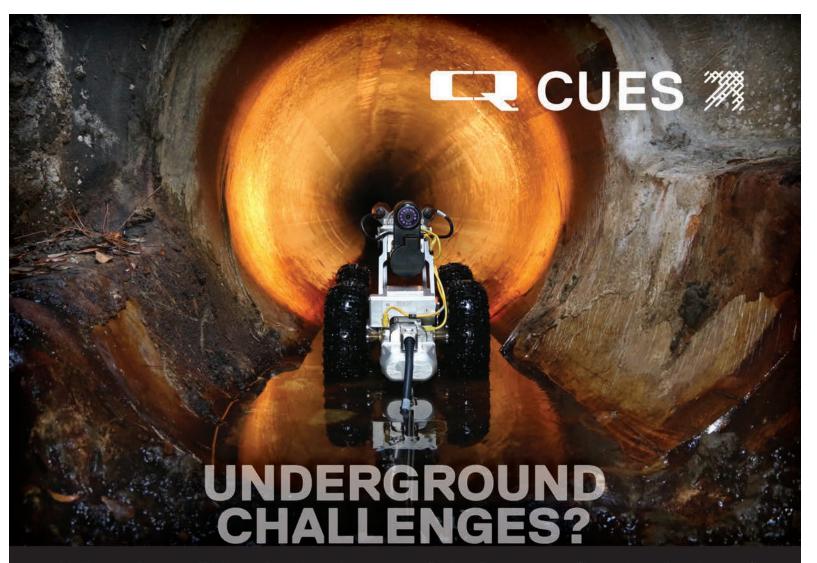
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#### **CHEMetrics**

Midland, VA 800-356-3072 • 540-788-9026 • Fax: 540-788-4856 marketing@chemetrics.com

#### **Cortec Corporation**

St. Paul, MN 651-429-1100 productsinfo@cortecvci.com www.cortecvci.com

#### Hach

Loveland, CO 800-227-4224 • Fax: 970-669-2932 sales@hach.com www.hach.com Ad on page 37

#### **CIPP Equipment and Materials**



#### Applied Felts, Inc.

Martinsville, VA 276-656-1904 info@appliedfelts.com www.appliedfelts.com

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St. Paul. MN 651-429-1100 productsinfo@cortecvci.com www.cortecvci.com

# THE SHOOTER

### **Emagineered Solutions, Inc.**

541-504-0416 ext: 6 ray.i@emagineered.com www.theshootercipp.com

# Fast Pipe Lining Inc. & Pipevision Products, Inc.

815-220-1919 • Fax: 815-220-1918 sales@fastpipelininginc.com www.fastpipelininginc.com

#### FerraTex Solutions, Inc.

Martinsville, VA 844-433-7728 justing@ferratex.com www.ferratex.com

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#### **HammerHead Trenchless**

Lake Mills, WI 800-331-6653 • 920-648-4848 • Fax: 920-648-1781 www.hammerheadtrenchless.com Ad on page 55

#### Linabond, Inc.

Camarillo, CA 805-484-7373 info@linabond.com www.linabond.com

#### Logiball, Inc.

Quebec, QC Canada 800-246-5988 • 418-656-9767 • Fax: 418-653-5746 info@logiball.com www.logiball.com

#### OceanQuip Connectors, LLC

Harvey, LA 504-738-7833 • Fax: 888-979-8195 info@oceanquipconnectors.com www.oceanquipconnectors.com



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# Pipeline Renewal

#### **Pipeline Renewal Technologies**

Randolph, NJ 866-936-8476 • 973-252-6700 • Fax: 973-252-1176 mail@pipelinert.com www.pipelinert.com

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#### **Prime Resins**

Conyers, GA 800-321-7212 • Fax: 770-388-0936 info@primeresins.com www.primeresins.com

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#### **REED Shotcrete Equipment & Mixers**

Chino, CA 888-779-7333 • 909-287-2100 • Fax: 909-287-2140 mike.newcomb@reedmfg.com www.reedpumps.com



#### Reline America

Saltville, VA 866-998-0808 • 276-496-4000 www.relineamerica.com Ad on page 15

#### SAERTEX multiCom LP

Huntersville, NC 704-584-4059 multiComUSA@saertex.com www.snertex-multicom.com



#### Source One Environmental

Davison, MI 810-412-4740 info@s1eonline.com www.sleonline.com

#### Vanguard Pathogen Defense Systems

Englewood, CO 800-781-3164 • 303-884-7552 www.vanguard-systems.us



#### Thermoform

#### Warrior Trenchless Solutions

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#### CIPP Wet-Out

#### FerraTex Solutions, Inc.

Martinsville, VA 844-433-7728 justing@ferratex.com www.ferratex.com Ad on page 25

# Clothing/Workwear

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Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com www.milwaukeerubber.com

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#### TST Sweden AB

SE-504 64 BORAS, Sweden 632-020-5880 info@tst-sweden.com www.tst-sweden.com

#### Coatings/Linings/Sealants

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Georgetown, SC 800-373-2478 • 843-546-0600 • Fax: 843-546-0516 salesmkg@agruamerica.com www.agruamerica.com

#### **Cortec Corporation**

St. Paul. MN 651-429-1100 productsinfo@cortecvci.com www.cortecvci.com

#### **Environmental Coatings LLC**

Mesa, AZ 480-984-7608 info@sewershield.com www.sewershield.com

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#### **Hy-Flex Corporation**

Knightstown, IN 866-849-6246 • 765-571-5125 • Fax: 765-571-5167 customerservicepumps@hyflexcorp.com www.hyflexcorp.com

#### Infrastructure Repair Systems, Inc.

St. Petersburg, FL 727-327-4216 irsi@irsi.net www.irsi.net

#### Linabond, Inc.

Camarillo, CA 805-484-7373 info@linabond.com www.linabond.com

#### Parson Environmental Products, Inc.

Wernersville, PA 800-356-9023 • 610-582-6060 • Fax: 610-582-6064 in fo@parson environmental.comwww.parsonenvironmental.com

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2107 E. Rockhurst St. Springfield, MO 65802 800-688-6221 • 417-866-5592 • Fax: 417-866-5593 sales@rhomar.com www.rhomar.com

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#### Sauereisen, Inc.

Pittsburgh, PA 412-963-0303 • Fax: 412-963-7620 info@sauereisen.com www.squereisen.com

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#### Sealing Systems, Inc.

800-478-2054 • 763-478-2057 • Fax: 763-478-8868 pam@ssisealingsystems.com www.ssisealingsystems.com

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#### Source One Environmental

Davison, MI 810-412-4740 info@s1eonline.com www.sleonline.com

#### Titus Industrial Group Inc.

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#### Communication Equipment



Lake Oswego, OR 800-833-4558 • 503-684-7080 • Fax: 503-620-2943 sales@soneticscorp.com https://www.soneticscorp.com Ad on page 9

#### Computer Software

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Kenton, OH 800-670-1867 • 419-673-8863 • Fax: 419-673-8864 sales@allmaxsoftware.com www.allmaxsoftware.com

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### WIN-911 Software

Austin, TX 512-326-1011 sales@win911.com www.win911.com

#### Consulting/Engineering

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KEG Technologies, Inc.

Spartanburg, SC 866-595-0515 • 864-804-6637 sales@kegtechnologies.net www.kegtechnologies.net

**Kohler Power Systems** 

Kohler, WI 800-544-2444 • 920-457-4441 www.kohlerpower.com

Olsson

Lincoln, NE 402-474-6311 www.olsson.com Ad on page 33

# TESTI CONTROLS, INC.

Tesco Controls, Inc.

Sacramento, CA 916-395-8800 sales@tescocontrols.com https://tescocontrols.com

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Creefree, AZ 407-928-9339 gary@tritonpipe.com www.tritonpipelining.com

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Fort Collins, CO 970-498-1698 info@gtmolecular.com www.gtmolecular.com Ad on page 81

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#### Hurco Technologies, Inc.

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#### PRIMEX

Detroit Lakes, MN 218-847-1317 • Fax: 218-847-4617 info@primexcontrols.com www.primexcontrols.com

#### WIN-911 Software

Austin, TX 512-326-1011 sales@win911.com www.win911.com

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#### **Hermann Sewerin GmbH**

33334 Gutersloh, Germany 888-592-9916 sewerin-usa@sewerin.net www.sewerin.com

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www.rkiinstruments.com

RKI Instruments, Inc.
Union City, CA
800-754-5165 • 510-441-5656 • Fax: 510-441-5650
orders@rkiinstruments.com

#### SubSurface Instruments, Inc.

De Pere, WI 855-422-6346 • 920-347-1788 • Fax: 920-347-1791 joe.weiland@ssilocators.com www.ssilocators.com

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#### Universal Flow Monitors, Inc.

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#### Centrisys/CNP

Kenosha, WI 262-654-6006 info@centrisys-cnp.com www.centrisys-cnp.com

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grsales@gormanrupp.com
www.GRpumps.com
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#### Hastings Irrigation Pipe Co.

Hastings, NE 800-759-8823 • 402-463-6633 • Fax: 402-463-4355 www.hastingsirrigation.com

#### Komline-Sanderson

Peapack, NJ 800-225-5457 • 908-234-1000 • Fax: 908-234-9487 info@komline.com www.komline.com

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#### RecoverE LLC

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#### Smith & Loveless, Inc.

Lenexa, KS 800-898-9122 • 913-888-5201 • Fax: 913-888-2173 answers@smithandloveless.com www.smithandloveless.com

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#### **NV Mechanics Design Ltd**

Burnaby, BC Canada 604-250-3375 sales@mechanicsdesign.com www.mechanicsdesign.com Ad on page 92

#### **Ductile Iron Pipe Accessories**

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#### 3T Equipment Co. Inc.

Santa Rosa, CA 707-543-8555 • Fax: 707-543-8558 tk3tequip@aol.com www.3tequipco.com

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#### MTech

Cleveland, OH 440-646-0996 sales@mtechcompany.com www.mtechcompany.com

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#### Sewer Equipment Dixon, IL

888-477-7611 sales@sewerequipment.com www.sewerequipment.com

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# Education

### **Back Municipal Consulting**

Cincinnati, OH 513-702-8534 justine@backmunicipalconsulting.com www.backmunicipalconsulting.com Ad on page 5

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#### **Enclosures**

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Baltimore, MD 800-231-2258 • 410-483-5600 pbinfo@pritchardbrown.com www.pritchardbrown.com Ad on page 85

#### **Epoxy Coatings**

#### **Environmental Coatings LLC**

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St. Petersburg, FL 727-327-4216 irsi@irsi.net

#### Linabond, Inc.

Camarillo, ĆA 805-484-7373 info@linabond.com www.linabond.com

#### Sauereisen, Inc.

Pittsburgh, PA 412-963-0303 • Fax: 412-963-7620 info@sauereisen.com www.sauereisen.com

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#### Source One Environmental

Davison, MI 810-412-4740 info@s1eonline.com www.s1eonline.com

#### Triton Lining Systems LLC

Creefree, AZ 407-928-9339 gary@tritonpipe.com www.tritonpipelining.com

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#### Advanced Drainage Systems, Inc.

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sales@hi-vac.com www.hi-vac.com

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Vermeer MV Solutions Okahumpka, FL 352-728-2222

#### Filters - Wastewater

#### Harrington

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#### **Komline-Sanderson**

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#### Orenco Systems, Inc.

Sutherlin, OR 800-348-9843 • 541-459-4449 info@orenco.com www.orenco.com

#### Simple Solutions Distributing LLC

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#### Smith & Loveless, Inc.

Lenexa, KS 800-898-9122 • 913-888-5201 • Fax: 913-888-2173 answers@smithandloveless.com www.smithandloveless.com

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#### Advanced Drainage Systems, Inc.

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#### AGRU America, Inc.

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#### American Highway Products Ltd.

Bolivar, OH 888-272-2397 **Ad on page 91** 

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Grand Prairie, TX 800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalspc.com www.dallasspecialty.com



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#### Vacuum Sales, Inc.

Lindenwold, NJ 800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com

#### Fittings - Vacuum

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#### Blue-White Industries

Huntington Beach, CA 714-893-8529 • Fax: 714-894-9492 sales@blue-white.com www.blue-white.com



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Tatamy, PA 855-871-6091 inquiry@flows.com www.flows.com

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#### WIN-911 Software

Austin, TX 512-326-1011 sales@win911.com www.win911.com

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#### Milwaukee Rubber Products, Inc.

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#### MTech

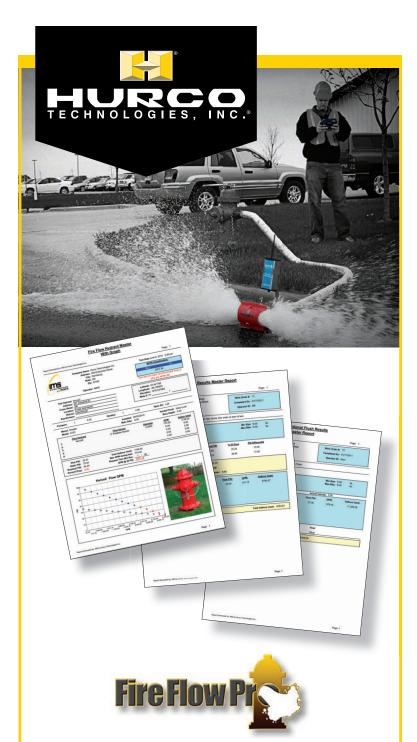
Cleveland, OH 440-646-0996 sales@mtechcompany.com www.mtechcompany.com Ad on page 96

#### RKI Instruments, Inc.

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#### **VANAIR**

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# **Grease Handling Equipment**

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#### Boerger, LLC

Chanhassen, MN 612-435-7300 america@boeraer.com www.boerger.com

#### **Bright Technologies,** Division of Sebright Products, Inc.

800-253-0532 • 269-793-7183 • Fax: 269-793-4022 julie@brightbeltpress.com www.brightbeltpress.com

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RecoverE LLC Plainwell MI 269-370-3165 sales@recovere.biz www.recovere.biz

#### **Grease Interceptors**

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#### Best Management Products, Inc.

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#### **Ground Penetrating Radar**

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#### **Subsite Electronics**

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#### Aries Industries

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#### **Prime Resins**

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Convers GA 800-321-7212 • Fax: 770-388-0936 info@primeresins.com www.primeresins.com

#### **REED Shotcrete Equipment & Mixers**

Chino, CA 888-779-7333 • 909-287-2100 • Fax: 909-287-2140 mike.newcomb@reedmfg.com www.reedpumps.com

#### Sauereisen, Inc.

Pittsburgh, PA 412-963-0303 • Fax: 412-963-7620 info@sauereisen.com www.sauereisen.com

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### Sealing Systems, Inc.

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#### **Guided Boring Machines**

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Grand Prairie, TX 800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalspc.com www.dallasspecialty.com

#### Patterson Manufacturing

Pittsburgh, PA 412-322-2012 • Fax: 412-322-2785 info@pattersonmfg.com www.pattersonmfg.com

#### Southland Tool Mfg. Inc.

Anaheim, CA 714-632-8198 • Fax: 714-632-8228 sales@southlandtool.com www.southlandtool.com Ad on page 27

# **T&T TOOLS**

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#### **Horizontal Directional Drillina**

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#### **Vermeer MV Solutions**

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Schaumburg, IL 847-755-0360 • Fax: 847-885-0996 sales@kuriyama.com www.kuriyama.com

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#### **Piranha Hose Products**

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#### Infrastructure Repair Systems, Inc.

St. Petersburg, FL 727-327-4216 irsi@irsi.net www.irsi.net

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Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com www.milwaukeerubber.com

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St. Paul. MN 800-328-8170 • 651-222-1738 • Fax: 651-222-1739 mytana@mytana.com www.mytana.com

#### **Root Rat**

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www.rootrat.net Ad on page 96

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#### Hydraulic Parts and Components

#### **Aarcomm Systems Inc.**

Coquitlam, BC Canada 800-604-9218 sales@aarcomm.com www.aarcomm.com Ad on page 18

#### Hydraulic Specialty

Fridley, MN 844-282-1060 www.hydraulicspecialty.com

#### Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com www.milwaukeerubber.com

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#### **Hydroexcavation Equipment**

#### 3T Equipment Co. Inc.

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**GPM Truck Center** Crystal Lake, IL 630-543-7373 sales@thesewerduck.com www.thesewerduck.com

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#### Hi-Vac Corporation

Marietta, OH 800-752-2400 sales@hi-vac.com www.hi-vac.com

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Harrisburg, SD 800-888-1436 • 605-743-2466 info@hurcotech.com www.hurcotech.com

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### Hydra-Flex, Inc.

Savage, MN 952-808-3640 sales@hydraflexinc.com www.hvdraflexinc.com

#### KEG Technologies, Inc.

 ${\sf Spartanburg,\,SC}$ 866-595-0515 • 864-804-6637 sales@kegtechnologies.net www.kegtechnologies.net

#### Milwaukee Rubber Products, Inc.

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1230 Flight-Way Dr. De Pere, WI 54115 855-422-6346 • 920-347-1788 • Fax: 920-347-1791 ioe.weiland@ssilocators.com www.ssilocators.com

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#### United Plastic Fabricating, Inc.

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#### Vacuum Sales, Inc.

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Delphos, OH 419-741-9075 • Fax: 419-692-1600 sales@mrmanhole.com www.mrmanhole.com

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#### **Subsite Electronics**

Perry, OK 800-846-2713 info@subsite.com www.subsite.com Ad on page 35

#### **Superior Signal Company LLC**

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#### Titus Industrial Group Inc.

Prineville, OR 877-582-9899 • 541-389-1975 www.titusig.com

#### **Warrior Trenchless Solutions**

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#### Whirlygig, Inc.

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St. Paul, MN 800-328-8170 • 651-222-1738 • Fax: 651-222-1739 mytana@mytana.com www.mytana.com

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#### Pow-R Mole Trenchless Solutions

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#### Ad on page 100 Ratech Electronics, Ltd.

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#### **Subsite Electronics**

Perry, OK 800-846-2713 info@subsite.com www.subsite.com

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# Ad on page 100 Ratech Electronics, Ltd.

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#### Whirlygig, Inc.

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#### **Inspection - Water Lines**



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americas@vega.com
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#### WIN-911 Software Austin, TX

512-326-1011 sales@win911.com www.win911.com

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#### Hi-Vac Corporation

Marietta, OH 800-752-2400 sales@hi-vac.com www.hi-vac.com

#### **HotJet USA**

Riverton, UT 800-624-8186 • 801-545-0777 sales@hotjetusa.com www.hotjetusa.com

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#### **MTech**

Cleveland, OH 440-646-0996 sales@mtechcompany.com www.mtechcompany.com Ad on page 96

#### MyTana LLC

St. Paul, MN 800-328-8170 • 651-222-1738 • Fax: 651-222-1739 mytana@mytana.com

## www.mytana.com

NV Mechanics Design Ltd Burnaby, BC Canada 604-250-3375 sales@mechanicsdesign.com www.mechanicsdesign.com

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#### **Piranha Hose Products**

Cadillac, MI 800-250-5132 • 231-779-4390 • Fax: 231-779-4399 sales@piranhahose.com www.piranhahose.com

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Dixon, IL 888-477-7611 • Fax: 815-284-0453 sales@sewerequipment.com www.sewerequipment.com

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#### Sonetics

Lake Oswego, OR 800-833-4558 • 503-684-7080 • Fax: 503-620-2943 sales@soneticscorp.com https://www.soneticscorp.com

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#### **Super Products LLC**

Mukwonago, WI 800-837-9711 • 262-784-7100 info@superproductsllc.com www.superproductsllc.com

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#### **USB-USA LLC**

Douglasville, GA 678-214-7965 info@usb-usa.com www.usb-usa.com

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### Vactor Manufacturing

Streator, IL 800-627-3171 • 815-672-3171 sales@vactor.com www.vactor.com Ad on page 31

#### Vacuum Sales, Inc.

Lindenwold, NJ 800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com www.vacuumsalesinc.com

#### Vanguard Pathogen Defense Systems

Englewood, CO 800-781-3164 • 303-884-7552 www.vanguard-systems.us

#### **Vermeer MV Solutions**

Okahumpka, FL 352-728-2222

#### **Jetters - Portable**

#### **American Jetter**

Knoxville, TN 866-944-3569 • 865-524-4647 • Fax: 865-247-5105 office@americanpridedist.com www.americanjetter.com Ad on page 96

#### . •





**Cam Spray** 

800-648-5011 • 641-648-5011 • Fax: 641-648-5013

sales@camspray.com www.camspray.com

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Enz USA Inc.

Aurora, IL 877-362-8721 • 630-692-7880 • Fax: 630-692-7885 salesusa@enz.com

www.enz.com

Ad on page 18



General Pipe Cleaners,

div. of General Wire Spring

McKees Rocks, PA

800-245-6200 • 412-771-6300

info@drainbrain.com

www.drainbrain.com

**HotJet USA** 

Riverton, UT

800-624-8186 • 801-545-0777

sales@hotjetusa.com www.hotjetusa.com

Ad on page 97

MyTana LLC

St Paul MN

800-328-8170 • 651-222-1738 • Fax: 651-222-1739

mytana@mytana.com

www.mvtana.com

**NV Mechanics Design Ltd** 

Burnaby, BC Canada

604-250-3375

sales@mechanicsdesign.com

www.mechanicsdesign.com

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**Petersen Products** 

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com

www.petersenproducts.com

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**Pipeline Renewal Technologies** 

866-936-8476 • 973-252-6700 • Fax: 973-252-1176

mail@pipelinert.com www.pipelinert.com

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**Root Rat** 

Bolivar, OH 800-288-7873 • 330-874-4300 • Fax: 330-874-4448

kelly@chempure.com www.rootrat.net

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**Vermeer MV Solutions** 

Okahumpka, FL 352-728-2222

Jetters - Truck & Trailer

3T Equipment Co. Inc.

Santa Rosa, CA 707-543-8555 • Fax: 707-543-8558

tk3tequip@aol.com www.3tequipco.com

Ad on page 77



**Aarcomm Systems Inc.** 

Coquitlam, BC Canada 800-604-9218

sales@aarcomm.com www aarcomm com

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**American Jetter** 

Knoxville, TN 866-944-3569 • 865-524-4647 • Fax: 865-247-5105

office@americanpridedist.com

www.americanjetter.com

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**Cam Spray** 

800-648-5011 • 641-648-5011 • Fax: 641-648-5013

sales@camspray.com

www.camspray.com

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**Enz USA Inc.** 

Aurora, IL

877-362-8721 • 630-692-7880 • Fax: 630-692-7885

salesusa@enz.com

www enz com

Ad on page 18



GapVax, Inc.

Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617

inquiry@gapvax.com

www.gapvax.com

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General Pipe Cleaners, div. of General Wire Spring

McKees Rocks, PA 800-245-6200 • 412-771-6300

info@drainbrain.com

www.drainbrain.com

**GPM Truck Center** 

Crystal Lake, IL 630-543-7373

sales@thesewerduck.com

www.thesewerduck.com

Ad on page 48

Hi-Vac Corporation

Marietta, OH 800-752-2400 sales@hi-vac.com www.hi-vac.com

**HotJet USA** 

Riverton, UT

800-624-8186 • 801-545-0777

sales@hotjetusa.com

www.hotjetusa.com Ad on page 97

MTech

Cleveland, OH 440-646-0996

sales@mtechcompany.com

www.mtechcompany.com

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MyTana LLC

St. Paul. MN

800-328-8170 • 651-222-1738 • Fax: 651-222-1739

mytana@mytana.com

www.mytana.com

**NV Mechanics Design Ltd** 

Burnaby, BC Canada

604-250-3375

sales@mechanicsdesign.com www.mechanicsdesign.com

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**Piranha Hose Products** 

Cadillac, MI

800-250-5132 • 231-779-4390 • Fax: 231-779-4399

sales@piranhahose.com www.piranhahose.com

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Sewer Equipment

Dixon, IL

888-477-7611

sales@sewerequipment.com

www.sewerequipment.com

Ad on page 3

**Super Products LLC** 

Mukwonago, WI

800-837-9711 • 262-784-7100

info@superproductsllc.com

www.superproductsllc.com

Ad on page 19

United Plastic Fabricating, Inc.

North Andover, MA 800-638-8265

info@unitedplastic.com

www.unitedplastic.com

Vactor Manufacturing

Streator, IL 800-627-3171 • 815-672-3171

sales@vactor.com www.vactor.com

Ad on page 31

Vacuum Sales, Inc.

Lindenwold, NJ

800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com

www.vacuumsalesinc.com

Vanguard Pathogen Defense Systems Englewood, CO

800-781-3164 • 303-884-7552

www.vanguard-systems.us

**Vermeer MV Solutions** Okahumpka, FL

352-728-2222

#### Jump Starters

VANAIR

Michigan City, IN

800-526-8817 • Fax: 219-879-5800 marketing@vanair.com

www.vanair.com

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#### **Laboratory Equipment/Supplies**

Universal Flow Monitors, Inc.

Hazel Park, MI

888-569-3090 • 248-542-9635 • Fax: 248-398-4274

sales@flowmeters.com

www.flowmeters.com

#### **Lagoon Products**

American Pleasure Products, Inc.

Rose City, MI

989-685-2697 • Fax: 989-685-8484 aquacycleusa@gmail.com

www.aguacycleusa.com Ad on page 79

#### **Laser Profiling**

**Envirosight LLC** 

Randolph, NJ 866-936-8476 • 973-252-6700 • Fax: 973-252-1176

office@envirosight.com

www.envirosight.com Ad on page 2

RapidView IBAK North America

Rochester, IN

800-656-4225 • 574-224-5426 • Fax: 574-223-7953

sales@rapidview.com

www.rapidview.com Ad on page 100

# **Leasing/Financing Services**

Akkerman

Brownsdale, MN

800-533-0386 • 507-567-2261 akk@akkerman.com

www.akkerman.com

**Bucher Municipal North America** 

Mooresville, NC 704-658-1333

www.buchermunicipal.com

Lift Stations/Wet Wells

**Environmental Coatings LLC** 

Mesa, AZ 480-984-7608 info@sewershield.com

# www.sewershield.com Liberty Pumps

**Liberty Pumps** 

Bergen, NY 800-543-2550 • 585-494-1817 • Fax: 585-494-1839

www.LibertyPumps.com Linabond, Inc. Camarillo, CA

Liberty@LibertyPumps.com

805-484-7373 info@linabond.com

www.linabond.com

#### **Patterson Manufacturing**

Pittsburgh, PA 412-322-2012 • Fax: 412-322-2785 info@pattersonmfg.com www.pattersonmfg.com

#### **PRIMEX**

Detroit Lakes, MN 218-847-1317 • Fax: 218-847-4617 info@primexcontrols.com www.primexcontrols.com

#### Sauereisen, Inc.

Pittsburgh, PA 412-963-0303 • Fax: 412-963-7620 info@sauereisen.com www.sauereisen.com Ad on page 77

#### SmartCover

Sindreover Escondido, CA 760-291-1980 • Fax: 760-291-1982 sales@smartcoversystems.com www.smartcoversystems.com



#### Smith & Loveless Inc.

Smith & Loveless, Inc.
Lenexa, KS
800-898-9122 • 913-888-5201 • Fax: 913-888-2173
answers@smithandloveless.com
www.smithandloveless.com

#### Titus Industrial Group Inc.

Prineville, OR 877-582-9899 • 541-389-1975 www.titusig.com

#### **VEGA Americas, Inc.**

Cincinnati, OH 800-367-5383 • 513-272-0131 • Fax: 513-272-0133 americas@vega.com http://www.vega.com

#### Ad on page 49

#### **Liquid Level Indicator**

#### Harrington

Chino, CA 800-877-4472 info@hipco.com www.harringtonplastics.com

#### **PRIMEX**

Detroit Lakes, MN 218-847-1317 • Fax: 218-847-4617 info@primexcontrols.com www.primexcontrols.com

#### **VEGA Americas, Inc.**

Cincinnati, OH 800-367-5383 • 513-272-0131 • Fax: 513-272-0133 americas@vega.com http://www.vega.com Ad on page 49

#### Locators - Electronic

#### **Dynamic Repairs**

Lodi, NJ 973-478-0893 • Fax: 973-478-0895 dynamiccablerepairs@yahoo.com www.dynamicrepairs.biz

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#### **Envirosight LLC**

Randolph, NJ 866-936-8476 • 973-252-6700 • Fax: 973-252-1176 office@envirosight.com www.envirosight.com

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#### General Pipe Cleaners,

#### div. of General Wire Spring

McKees Rocks, PA 800-245-6200 • 412-771-6300 info@drainbrain.com www.drainbrain.com

#### Hermann Sewerin GmbH

33334 Gutersloh, Germany 888-592-9916 sewerin-usa@sewerin.net www.sewerin.com

#### Ad on page 42

# Pow-R Mole Trenchless Solutions Lancaster, NY

800-344-6653 • 716-683-2486 www.powrmole.com

#### RapidView IBAK North America

Rochester, IN 800-656-4225 • 574-224-5426 • Fax: 574-223-7953 sales@rapidview.com

www.rapidview.com

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#### Ratech Electronics, Ltd.

Vaughan, ON Canada 800-461-9200 • 905-660-7072 • Fax: 905-660-1519 sales@ratech-electronics.com

#### **Subsite Electronics**

Perry, OK 800-846-2713 info@subsite.com www.subsite.com

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#### SubSurface Instruments, Inc.

De Pere, WI 855-422-6346 • 920-347-1788 • Fax: 920-347-1791 joe.weiland@ssilocators.com www.ssilocators.com

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#### SubSurface Locators, Inc.

Indine Village, NV 775-298-2701 • Fax: 775-298-2703 h2osave@comcast.net www.subsurfaceleak.com

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www.CometPump.com

CometPump@CometPump.com

800-864-1649

#### **Vermeer MV Solutions**

Okahumpka, FL 352-728-2222

#### Locators - Pipe/Leak/Valve/Sewer

#### **CPI Products / Cavallero Plastics**

Pittsfield, MA 413-443-0925 • Fax: 413-443-9586 mtucker@cplas.com www.cplasproducts.com

#### **Dynamic Repairs**

Lodi, NJ 973-478-0893 • Fax: 973-478-0895 dynamiccablerepairs@yahoo.com www.dynamicrepairs.biz Ad on page 97

#### General Pipe Cleaners,

#### div. of General Wire Spring

McKees Rocks, PA 800-245-6200 • 412-771-6300 info@drainbrain.com www.drainbrain.com

#### **Hermann Sewerin GmbH**

33334 Gutersloh, Germany 888-592-9916 sewerin-usa@sewerin.net www.sewerin.com

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#### MTech

Cleveland, OH 440-646-0996 sales@mtechcompany.com www.mtechcompany.com

#### Ad on page 96

#### MyTana LLC

St. Paul, MN 800-328-8170 • 651-222-1738 • Fax: 651-222-1739 mytana@mytana.com www.mytana.com

#### Pow-R Mole Trenchless Solutions

Lancaster, NY 800-344-6653 • 716-683-2486 www.powrmole.com

#### Ratech Electronics, Ltd.

Vaughan, ON Canada 800-461-9200 • 905-660-7072 • Fax: 905-660-1519 sales@ratech-electronics.com www.ratech-electronics.com

#### **Subsite Electronics**

Perry, OK 800-846-2713 info@subsite.com www.subsite.com Ad on page 35

#### SubSurface Instruments, Inc.

De Pere, WI 855-422-6346 • 920-347-1788 • Fax: 920-347-1791 joe.weiland@ssilocators.com www.ssilocators.com

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#### **SubSurface Locators, Inc.**

Incline Village, NV 775-298-2701 • Fax: 775-298-2703 h2osave@comcast.net www.subsurfaceleak.com Ad on page 8

#### **Superior Signal Company LLC**

Old Bridge, NJ 800-945-8378 • 732-251-0800 • Fax: 732-251-9442 info@superiorsignal.com

#### Ad on page 97

#### **Vactor Manufacturing**

www.SuperiorSignal.com/cleaner

Streator, IL 800-627-3171 • 815-672-3171 sales@vactor.com www.vactor.com Ad on page 31

#### Locators - Smoke/Dve



#### **Hurco Technologies, Inc.**

Harrisburg, SD 800-888-1436 • 605-743-2466 info@hurcotech.com www.hurcotech.com

### Superior\* SMOKE

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#### **Superior Signal Company LLC**

Old Bridge, NJ 800-945-8378 • 732-251-0800 • Fax: 732-251-9442 info@superiorsignal.com www.SuperiorSignal.com/cleaner

#### Ad on page 97

#### Manhole Grade Rinas

#### **Cretex Specialty Products**

Waukesha, WI 800-345-3764 • 262-542-8153 • Fax: 262-542-0301 info@cretexseals.com www.cretexseals.com

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#### Manhole Inserts

#### **Cretex Specialty Products**

Waukesha, WI 800-345-3764 • 262-542-8153 • Fax: 262-542-0301 info@cretexseals.com www.cretexseals.com

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#### Dallas Specialty & Mfg. Co.

Grand Prairie, TX 800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalspc.com www.dallasspecialty.com

#### **JPCI Services**

Mesa, AZ 480-986-1212 info@jpciservices.com www.jpciservices.com

#### Mr. Manhole

Delphos, OH 419-741-9075 • Fax: 419-692-1600 sales@mrmanhole.com www.mrmanhole.com

#### Parson Environmental Products, Inc.

Wernersville, PA 800-356-9023 • 610-582-6060 • Fax: 610-582-6064 info@parsonenvironmental.com www.parsonenvironmental.com



#### Rainstopper

Shreveport, LA 800-483-4950 • 318-687-4330 rainstoppers.info@gmailcom www.rainstopper.us

#### Sealing Systems, Inc.

Loretto, MN 800-478-2054 • 763-478-2057 • Fax: 763-478-8868 pam@ssisealingsystems.com www.ssisealingsystems.com

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#### **Sewer Shield Composites LLC**

Mesa, AZ 480-830-9537 info@sewershieldcomposites.com www.sewershieldcomposites.com

#### **Simple Solutions Distributing LLC**

West Milford, NJ 866-667-8465 • 973-846-7817 • Fax: 973-858-0219 sales@industrialodorcontrol.com www.industrialodorcontrol.com

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Whirlygig, Inc. Caldwell, ID 800-307-4263 info@wgig.us www.wgig.us

#### Manhole Parts/Components

#### American Highway Products Ltd.

Bolivar, OH 888-272-2397

#### Ad on page 91

#### Composite Access Products (CAP)

McAllen, TX 844-344-2271 • 956-331-8232 wcnunnery@compositeap.com www.justcapthat.com

#### Ad on page 36

#### **Cretex Specialty Products**

Waukesha, WI 800-345-3764 • 262-542-8153 • Fax: 262-542-0301 info@cretexseals.com www.cretexseals.com

#### Ad on page 16

#### Dallas Specialty & Mfg. Co.

Grand Prairie, TX 800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalspc.com www.dallasspecialty.com

#### H2TR

East Lansing, MI 517-204-2121 cam.howie@h2tr.com www.H2TR.com

#### Ad on page 97

#### Halliday Products, Inc.

Orlando, FL 800-298-1027 • 407-298-4470 armond@hallidayproducts.com www.hallidayproducts.com Ad on pages 59 and 71

#### Mr. Manhole

Delphos, OH 45833 419-741-9075 • Fax: 419-692-1600 sales@mrmanhole.com www.mrmanhole.com

#### Parson Environmental Products, Inc.

Wernersville, PA 800-356-9023 • 610-582-6060 • Fax: 610-582-6064 in fo@parson environmental.comwww.parsonenvironmental.com

#### Titus Industrial Group Inc.

Prineville, OR 877-582-9899 • 541-389-1975 www.titusig.com

#### Whirlygig, Inc.

Caldwell, ID 800-307-4263 info@wgig.us www.wgig.us

#### Manhole Rehabilitation

#### Adaptor Inc.

West Allis, WI 414-764-6733 • Fax: 414-764-1494 www.adaptorinc.com

#### American Highway Products Ltd.

Bolivar, OH 888-272-2397 Ad on page 91

#### Avanti International

Webster, TX 800-877-2570 • 281-486-5600 • Fax: 281-486-7300 sales@avantigrout.com www.avantigrout.com

#### **CCI Piping Systems**

Breaux Bridge, LA 337-349-7280 claire@ccipipe.com Ad on page 83

#### **Composite Access Products (CAP)**

McAllen, TX 844-344-2271 • 956-331-8232 wcnunnery@compositeap.com www.justcapthat.com Ad on page 36

#### **Cretex Specialty Products**

Waukesha, WI 800-345-3764 • 262-542-8153 • Fax: 262-542-0301 info@cretexseals.com www.cretexseals.com Ad on page 16



#### CUES, Inc.

800-327-7791 • 407-849-0190 • Fax: 407-425-1569 salesinfo@cuesinc.com www.cuesinc.com

#### Ad on page 57

**Environmental Coatings LLC** Mesa, AZ 480-984-7608 info@sewershield.com www.sewershield.com

#### H2TR

East Lansing, MI 517-204-2121 cam.howie@h2tr.com www.H2TR.com

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**Hy-Flex Corporation** 

Knightstown, IN 866-849-6246 • 765-571-5125 • Fax: 765-571-5167 customerservicepumps@hyflexcorp.com www.hyflexcorp.com

#### Infrastructure Repair Systems, Inc.

St. Petersburg, FL 727-327-4216 irsi@irsi.net www.irsi.net

#### **JPCI Services**

Mesa, AZ 480-986-1212 info@jpciservices.com www.jpciservices.com

#### Linabond, Inc.

Camarillo, CA 805-484-7373 info@linabond.com www.linabond.com

#### Logiball, Inc.

Quebec, QC Canada 800-246-5988 • 418-656-9767 • Fax: 418-653-5746 info@logiball.com www.logiball.com

#### Mr. Manhole

Delphos, OH 419-741-9075 • Fax: 419-692-1600 sales@mrmanhole.com



#### Parson Environmental Products, Inc.

Wernersville, PA 800-356-9023 • 610-582-6060 • Fax: 610-582-6064

info@parsonenvironmental.com
www.parsonenvironmental.com

#### **Petersen Products**

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com www.petersenproducts.com

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#### **Prime Resins**

Conyers, GA 800-321-7212 • Fax: 770-388-0936 info@primeresins.com www.primeresins.com

#### Ad on page 97



#### Rainstopper

Shreveport, LA 800-483-4950 • 318-687-4330 rainstoppers.info@gmailcom www.rainstopper.us

#### Sauereisen, Inc.

Pittsburgh, PA 412-963-0303 • Fax: 412-963-7620 info@sauereisen.com www.sauereisen.com Ad on page 77

#### Sealing Systems, Inc.

Loretto, MN 800-478-2054 • 763-478-2057 • Fax: 763-478-8868 pam@ssisealingsystems.com www.ssisealingsystems.com Ad on page 79

#### Source One Environmental

Davison, MI 810-412-4740 info@s1eonline.com www.s1eonline.com

#### Southland Tool Mfg. Inc.

Anaheim, CA
714-632-8198 • Fax: 714-632-8228
sales@southlandtool.com
www.southlandtool.com
Ad on page 27

#### Sprayroq, Inc.

Irondale, AL
205-957-0020 • Fax: 205-957-0021
info@sprayroq.com
www.sprayroq.com
Ad on page 53



#### The Strong Company, Inc.

Pine Bluff, AR 800-982-8009 • 870-535-7617 • Fax: 870-850-6933 info@strongseal.com www.strongseal.com

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#### USB-USA LLC

Douglasville, GA 678-214-7965 info@usb-usa.com

# www.usb-usa.com **Ad on page 34**

#### Whirlygig, Inc.

Caldwell, ID 800-307-4263 info@wgig.us www.wgig.us

#### **Manhole Vacuum Testing**

#### Mr. Manhole

Delphos, OH 419-741-9075 • Fax: 419-692-1600 sales@mrmanhole.com www.mrmanhole.com

#### **Petersen Products**

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com www.petersenproducts.com

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#### Whirlygig, Inc.

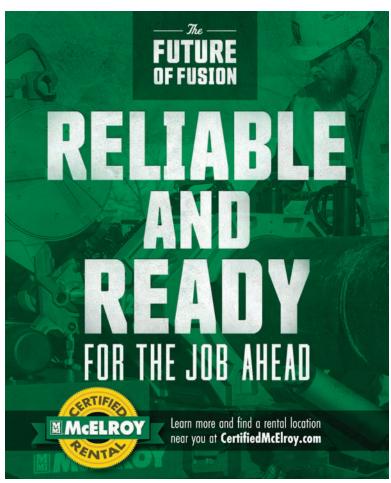
Caldwell, ID 800-307-4263 info@wgig.us www.wgig.us

#### Meter Boxes/Components

#### A.Y. McDonald Mfg. Co.

Dubuque, IA 800-292-2737 • 563-583-7311 sales@aymcdonald.com www.aymcdonald.com





#### Dallas Specialty & Mfg. Co.

800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalspc.com www.dallasspecialty.com

#### Flows.com

Tatamy, PA 855-871-6091 inquiry@flows.com www.flows.com

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#### Meters - Sewer/Flow

#### Hach

Loveland, CO 800-227-4224 • Fax: 970-669-2932 sales@hach.com www.hach.com

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#### **SmartCover**

Escondido, CA 760-291-1980 • Fax: 760-291-1982 sales@smartcoversystems.com www.smartcoversystems.com

#### Meters - Water/Flow

#### **Blue-White Industries**

Huntington Beach, CA 714-893-8529 • Fax: 714-894-9492 sales@blue-white.com www.blue-white.com

#### **CHEMetrics**

Midland, VA 800-356-3072 • 540-788-9026 • Fax: 540-788-4856 marketing@chemetrics.com www.chemetrics.com



#### Flows.com

Tatamy, PA 855-871-6091 inquirv@flows.com www.flows.com

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#### Hach

Loveland, CO 800-227-4224 • Fax: 970-669-2932 sales@hach.com www.hach.com

#### Ad on page 37

#### Universal Flow Monitors, Inc.

Hazel Park, MI 888-569-3090 • 248-542-9635 • Fax: 248-398-4274 sales@flowmeters.com www.flowmeters.com

#### Mobile Communications

#### **Aarcomm Systems Inc.**

Coquitlam, BC Canada 800-604-9218 sales@aarcomm.com www.aarcomm.com

#### Ad on page 18

#### Kohler Power Systems

Kohler, WI 800-544-2444 • 920-457-4441 www.kohlerpower.com

#### Sonetics

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#### WIN-911 Software

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#### Monitoring Equipment

#### **Aarcomm Systems Inc.**

Coquitlam, BC Canada 800-604-9218 sales@aarcomm.com www.aarcomm.com

#### Ad on page 18

#### **CHEMetrics**

Midland, VA 800-356-3072 • 540-788-9026 • Fax: 540-788-4856 marketing@chemetrics.com www.chemetrics.com

#### **GT Molecular**

Fort Collins, CO 970-498-1698 info@gtmolecular.com www.gtmolecular.com Ad on page 81

#### Hach

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#### **Kohler Power Systems**

Kohler, WI 800-544-2444 • 920-457-4441 www.kohlerpower.com

#### **PRIMEX**

Detroit Lakes, MN 218-847-1317 • Fax: 218-847-4617 info@primexcontrols.com www.primexcontrols.com

#### RKI Instruments, Inc.

Union City, CA 800-754-5165 • 510-441-5656 • Fax: 510-441-5650 orders@rkiinstruments.com www.rkiinstruments.com

#### **SmartCover**

Escondido, CA 760-291-1980 • Fax: 760-291-1982 sales@smartcoversystems.com www.smartcoversystems.com

#### Universal Flow Monitors, Inc.

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Austin, TX 512-326-1011 sales@win911.com www.win911.com

#### Nozzles - High Pressure

#### 3T Equipment Co. Inc.

Santa Rosa, CA 707-543-8555 • Fax: 707-543-8558 tk3tequip@aol.com

#### www.3tequipco.com Ad on page 77

#### **American Jetter**

Knoxville, TN 866-944-3569 • 865-524-4647 • Fax: 865-247-5105 office@americanpridedist.com www.americanjetter.com

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#### **Arthur Products Co.**

Medina, OH 800-322-0510 • 330-725-4905 • Fax: 330-722-2698 apc@apclsq.com www.arthurproducts.com

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#### **Bucher Municipal North America**

Mooresville, NC 704-658-1333 www.buchermunicipal.com

#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

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#### Enz USA Inc.

Aurora, IL 877-362-8721 • 630-692-7880 • Fax: 630-692-7885 salesusa@enz.com www.enz.com

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#### GapVax, Inc.

Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617 inquiry@gapvax.com

#### www.gapvax.com

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#### General Pump

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#### Giant Industries, Inc.

Toledo, OH 800-633-4565 • 419-531-4600 • Fax: 419-531-6836 giantsales@giantpumps.com www.giantpumps.com

#### **GPM Truck Center**

Crystal Lake, IL 630-543-7373 sales@thesewerduck.com www.thesewerduck.com Ad on page 48

#### **HotJet USA**

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#### Hydra-Flex, Inc.

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#### KEG Technologies, Inc.

Spartanburg, SC 866-595-0515 • 864-804-6637 sales@kegtechnologies.net www.kegtechnologies.net

#### Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com

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#### **MTech**

Cleveland, OH 440-646-0996 sales@mtechcompany.com www.mtechcompany.com

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#### MyTana LLC

St. Paul, MN 800-328-8170 • 651-222-1738 • Fax: 651-222-1739 mytana@mytana.com www.mvtana.com

#### **Root Rat**

Bolivar, OH 800-288-7873 • 330-874-4300 • Fax: 330-874-4448 kelly@chempure.com www.rootrat.net

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#### SewerProShop, LLC

Marietta, GA 877-864-9394 • 470-592-1717 • Fax: 770-984-2802 info@sewerproshop.com www.sewerproshop.com

#### Southland Tool Mfg. Inc.

Anaheim, CA 714-632-8198 • Fax: 714-632-8228 sales@southlandtool.com www.southlandtool.com

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#### **Suttner America Company**

Dubuque, IA 800-831-0660 sales@suttner.com www.suttner.com



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#### Vacuum Sales, Inc.

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#### Nozzles - Shotcrete

#### **REED Shotcrete Equipment & Mixers**

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#### **Odor Control Products/Equipment**

#### **Anue Water Technologies**

Tucker, GA 760-727-2683 bnegley@anuewater.com www.anuewater.com

#### Bionetix International

Sainte-Anne-de-Bellevue, QC Canada 514-457-2914 • Fax: 514-457-3589 info@bionetix.ca www.bionetix-international.com

#### Harrington

Chino, CA 800-877-4472 info@hipco.com www.harrinatonplastics.com

#### Parson Environmental Products, Inc.

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#### **Simple Solutions Distributing LLC**

West Milford, NJ 866-667-8465 • 973-846-7817 • Fax: 973-858-0219 sales@industrialodorcontrol.com www.industrialodorcontrol.com

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#### **Superior Signal Company LLC**

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#### Titus Industrial Group Inc.

Prineville, OR 877-582-9899 • 541-389-1975 www titusia com

#### Oil Spill Recovery/Clean-up

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#### Pipe - Concrete

#### REED Shotcrete Equipment & Mixers

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#### Pipe - Fiberglass

#### SubSurface Instruments, Inc.

1230 Flight-Way Dr. De Pere, WI 54115 855-422-6346 • 920-347-1788 • Fax: 920-347-1791 joe.weiland@ssilocators.com www.ssilocators.com

#### Pipe - Polyethylene

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Hilliard, OH 800-821-6710 • Fax: 614-658-0204 info@ads-pipe.com www.ads-pipe.com

#### AGRU America, Inc.

Georgetown, SC 800-373-2478 • 843-546-0600 • Fax: 843-546-0516 salesmkg@agruamerica.com www.agruamerica.com

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#### Pipe - Polypropylene

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#### Harrington

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#### **Pipe - Vitrified Clay**

#### National Clay Pipe Institute

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#### **Pipe Bursting**

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Lake Mills, WI 800-331-6653 • 920-648-4848 • Fax: 920-648-1781 www.hammerheadtrenchless.com

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#### **Pow-R Mole Trenchless Solutions**

Lancaster, NY 800-344-6653 • 716-683-2486 www.powrmole.com

#### Pipe Fusion

#### McElroy Manufacturing, Inc.

Tulsa, OK 918-836-8611 • Fax: 918-831-9285 smcelroy@mcelroy.com www.mcelroy.com

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#### **Pow-R Mole Trenchless Solutions**

Lancaster, NY 800-344-6653 • 716-683-2486 www.powrmole.com

#### Pipe Parts -**Fittings & Components**

#### A.Y. McDonald Mfg. Co.

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#### Advanced Drainage Systems, Inc.

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#### AGRU America, Inc.

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#### Harrington

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#### Hastings Irrigation Pipe Co.

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#### **Total Piping Solutions, Inc.**

Olean, NY 716-372-0160 • Fax: 716-372-1767 sales@tps.us

#### www.tps.us Ad on page 63

#### Pipe Plugs

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Santa Rosa, CA 707-543-8555 • Fax: 707-543-8558 tk3tequip@aol.com www.3tequipco.com



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#### Cherne Industries Inc.

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Grand Prairie, TX 800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalspc.com  $www. dall \dot{a} sspecial ty. com$ 

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Quebec, QC Canada 800-246-5988 • 418-656-9767 • Fax: 418-653-5746 info@logiball.com www.logiball.com

#### **Petersen Products**

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com www.petersenproducts.com Ad on page 92

#### **Warrior Trenchless Solutions**

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#### General Pipe Cleaners,

div. of General Wire Spring

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#### Akkerman

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#### Applied Felts, Inc.

Martinsville, VA 276-656-1904 info@appliedfelts.com www.appliedfelts.com

#### Avanti International

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#### **Cortec Corporation**

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THE SHOOTER

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Redmond, OR 541-504-0416 ext: 6 ray.i@emagineered.com www.theshootercipp.com

#### Fast Pipe Lining Inc. & Pipevision Products, Inc.

La Salle, IL 815-220-1919 • Fax: 815-220-1918 sales@fastpipelininginc.com www.fastpipelininginc.com

#### FerraTex Solutions, Inc.

Martinsville, VA 844-433-7728 justing@ferratex.com www.ferratex.com Ad on page 25

#### **HammerHead Trenchless**

Lake Mills, WI 800-331-6653 • 920-648-4848 • Fax: 920-648-1781 www.hammerheadtrenchless.com

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#### Infrastructure Repair Systems, Inc.

St. Petersburg, FL 727-327-4216 irsi@irsi.net www irsi net

#### Linabond, Inc.

Camarillo, CA 805-484-7373 info@linabond.com www.linabond.com

#### Logiball, Inc.

Quebec, QC Canada 800-246-5988 • 418-656-9767 • Fax: 418-653-5746 info@logiball.com www.logiball.com

#### Parson Environmental Products, Inc.

Wernersville, PA

800-356-9023 • 610-582-6060 • Fax: 610-582-6064 info@parsonenvironmental.com www.parsonenvironmental.com

#### **Petersen Products**

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com www.petersenproducts.com

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#### **Pipeline Renewal Technologies**

866-936-8476 • 973-252-6700 • Fax: 973-252-1176 mail@pipelinert.com www.pipelinert.com

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#### **Pow-R Mole Trenchless Solutions**

Lancaster, NY 800-344-6653 • 716-683-2486 www.powrmole.com

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Conyers, GA 800-321-7212 • Fax: 770-388-0936 info@primeresins.com www.primeresins.com

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#### **Reline America**

Saltville, VA 866-998-0808 • 276-496-4000 www.relineamerica.com Ad on page 15



#### SAERTEX multiCom LP

Huntersville, NC 704-584-4059 multiComUSA@saertex.com www.saertex-multicom.com



#### Source One Environmental

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#### Sprayroq, Inc.

Irondale, AL 205-957-0020 • Fax: 205-957-0021 info@sprayroq.com www.sprayroq.com

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#### **Superior Signal Company LLC**

Old Bridge, NJ 800-945-8378 • 732-251-0800 • Fax: 732-251-9442 info@superiorSignal.com www.SuperiorSignal.com/cleaner

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#### Titus Industrial Group Inc.

Prineville, OR 877-582-9899 • 541-389-1975 www.titusig.com

#### Triton Lining Systems LLC

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#### **Total Piping Solutions, Inc.**

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#### Ad on page 63

#### Pipeline Surveying & Mapping (GPS/GIS)

#### **Envirosight LLC**

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#### Hurco Technologies, Inc.

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#### InfoSense, Inc.

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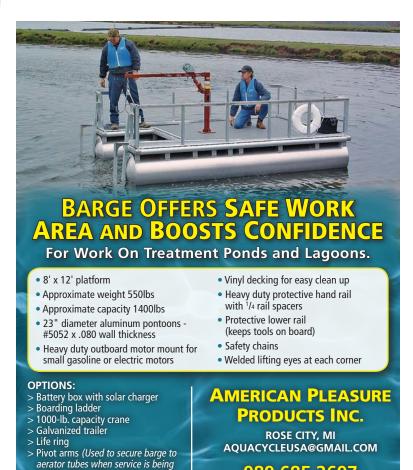
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#### Vacuum Sales, Inc.

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#### Potable Water Truck Filling Stations

#### Flows.com

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800-648-5011 • 641-648-5011 • Fax: 641-648-5013 sales@camspray.com www.camspray.com

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#### **HotJet USA**

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#### **Root Rat**

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#### **AMT Pump Company**

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#### Cornell Pump Company

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#### General Pump

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#### **GPM Truck Center**

Crystal Lake, IL 630-543-7373 sales@thesewerduck.com www.thesewerduck.com

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#### **Industrial Flow Solutions**

New Haven, CT 860-631-3618 sales@flowsolutions.com www.flowsolutions.com

#### Milwaukee Rubber Products, Inc.

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#### **Petersen Products**

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com www.petersenproducts.com

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#### **PRIMEX**

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#### Smith & Loveless, Inc.

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Leneva KS 800-898-9122 • 913-888-5201 • Fax: 913-888-2173 answers@smithandloveless.com

www.smithandloveless.com

#### Pumps - Aeration

#### **Gorman-Rupp Company**

Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com Ad on page 7

#### Pumps - Centrifugal

#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com Ad on page 42

#### **Gorman-Rupp Company**

Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com Ad on page 7

#### Vertiflo Pump Company

Cincinnati, OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### Pumps - Dewatering/Bypass

#### A.Y. McDonald Mfa. Co.

Dubuque, IA 800-292-2737 • 563-583-7311 sales@avmcdonald.com www.aymcdonald.com

#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com

#### Ad on page 42

**Cornell Pump Company** Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com

#### General Pump

Mendota Heights, MN 888-474-5487 • 651-454-6500 • Fax: 651-454-8015 sales@gpcompanies.com www.generalpump.com

#### **ØGLOBAL PUMP**

#### Global Pump

Davison, MI 866-360-7867 • 810-653-4828 • Fax: 810-658-0632 sales@globalpump.com www.globalpump.com

#### **Gorman-Rupp Company**

Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com

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#### Industrial Flow Solutions

New Haven, CT 860-631-3618 sales@flowsolutions.com www.flowsolutions.com

#### **Komline-Sanderson**

Peapack, NJ 800-225-5457 • 908-234-1000 • Fax: 908-234-9487 info@komline.com www.komline.com Ad on page 69

# **LOBELINE**<sup>™</sup>

#### Swaby LOBELINE

Chicago, IL 773-626-1400 • Fax: 773-626-3646 mok@swabypump.com www.lobelinepump.com

#### Vaughan Company, Inc.

Montesano, WA 888-249-2467 • 360-249-4042 • Fax: 360-249-6155 info@chopperpumps.com www.chopperpumps.com Ad on page 29



Cincinnati, OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### Pumps -Effluent/Sewage/Sump

#### A.Y. McDonald Mfg. Co.

Dubuque, IA 800-292-2737 • 563-583-7311 sales@aymcdonald.com www.aymcdonald.com

#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com

#### Ad on page 42

#### Boerger, LLC

Chanhassen, MN 612-435-7300 america@boerger.com www.boerger.com

#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

#### Ad on page 73

#### **Cornell Pump Company**

Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com

#### **Dultmeier Sales**

Omaha NF 800-228-9666 • 402-333-1444 • Fax: 402-333-5546 dultmeier@dultmeier.com www.dultmeier.com

#### **©GLOBAL PUMP**

#### Global Pump

Davison, MI 866-360-7867 • 810-653-4828 • Fax: 810-658-0632 sales@alobalpump.com www.globalpump.com

#### **Gorman-Rupp Company**

419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com

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#### **Industrial Flow Solutions**

New Haven, CT 860-631-3618 sales@flowsolutions.com www.flowsolutions.com

#### Liberty Pumps

#### Liberty Pumps

800-543-2550 • 585-494-1817 • Fax: 585-494-1839 Liberty@LibertyPumps.com www.LibertyPumps.com

#### Orenco Systems, Inc.

Sutherlin, ÓR 800-348-9843 • 541-459-4449 info@orenco.com www.orenco.com

#### Smith & Loveless, Inc.

800-898-9122 • 913-888-5201 • Fax: 913-888-2173 answers@smithandloveless.com www.smithandloveless.com

#### Swaby LOBELINE

Chhicago, IL 773-626-1400 • Fax: 773-626-3646 mok@swabypump.com www.lobelinepump.com

#### Vaughan Company, Inc.

Montesano, WA 888-249-2467 • 360-249-4042 • Fax: 360-249-6155 info@chopperpumps.com www.chopperpumps.com

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#### Vertiflo Pump Company

Cincinnati OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### Pumps - Grinder

#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com

#### Ad on page 42

#### Boerger, LLC

612-435-7300 america@boerger.com www.boerger.com

#### Industrial Flow Solutions

New Haven, CT 860-631-3618 sales@flowsolutions.com www flowsolutions com



#### Liberty Pumps

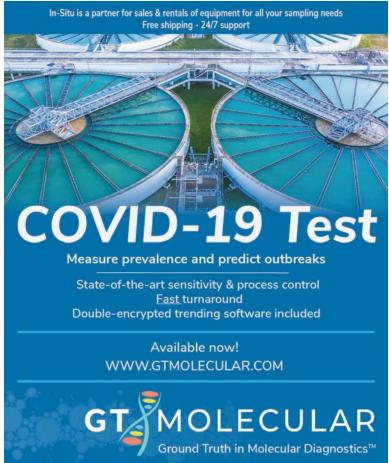
800-543-2550 • 585-494-1817 • Fax: 585-494-1839 Liberty@LibertyPumps.com www.LibertyPumps.com

# PENTAIR

#### **Pentair**

Ashland, OH 855-274-8948 • Fax: 419-281-9980 myersashland@pentair.com www.pentair.com Ad on page 43





#### Vertiflo Pump Company

Cincinnati, OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### **Pumps - High Pressure Water**

#### A.Y. McDonald Mfg. Co.

Dubuque, IA 800-292-2737 • 563-583-7311 sales@aymcdonald.com www.aymcdonald.com

#### **American Jetter**

Knoxville, TN 866-944-3569 • 865-524-4647 • Fax: 865-247-5105 office@americanpridedist.com www.americanjetter.com

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#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com

#### Ad on page 42

#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

#### Ad on page 73

#### **Cornell Pump Company**

Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com

#### **Dultmeier Sales**

Omaha, NE 800-228-9666 • 402-333-1444 • Fax: 402-333-5546 dultmeier@dultmeier.com www.dultmeier.com

#### General Pump

Mendota Heights, MN 888-474-5487 • 651-454-6500 • Fax: 651-454-8015 sales@gpcompanies.com www.generalpump.com

#### Giant Industries, Inc.

Toledo, OH 800-633-4565 • 419-531-4600 • Fax: 419-531-6836 giantsales@giantpumps.com www.giantpumps.com

#### **©GLOBAL PUMP**

#### Global Pump

Davison, MI 866-360-7867 • 810-653-4828 • Fax: 810-658-0632 sales@globalpump.com www.globalpump.com

#### **Gorman-Rupp Company**

419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com

#### Ad on page 7

#### **GPM Truck Center**

Crystal Lake, IL 630-543-7373 sales@thesewerduck.com www.thesewerduck.com Ad on page 48

#### **Industrial Flow Solutions**

New Haven, CT 860-631-3618 sales@flowsolutions.com www.flowsolutions.com

#### **Komline-Sanderson**

Peapack, NJ 800-225-5457 • 908-234-1000 • Fax: 908-234-9487 info@komline.com www komline com

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**Root Rat** Bolivar, OH

800-288-7873 • 330-874-4300 • Fax: 330-874-4448 kellv@chempure.com www.rootrat.net

#### Ad on page 96

#### **Sonetics**

Lake Oswego, OR 800-833-4558 • 503-684-7080 • Fax: 503-620-2943 sales@soneticscorp.com https://www.soneticscorp.com

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#### Swaby LOBELINE

Chhicago, IL 773-626-1400 • Fax: 773-626-3646 mok@swabypump.com www.lobelinepump.com

#### Vacuum Sales, Inc.

Lindenwold, NJ 800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com www.vacuumsalesinc.com

#### Vaughan Company, Inc.

Montesano, WA 888-249-2467 • 360-249-4042 • Fax: 360-249-6155 info@chopperpumps.com www.chopperpumps.com

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#### **Pumps - Metering**



#### Blue-White Industries

Huntington Beach, CA 714-893-8529 • Fax: 714-894-9492 sales@blue-white.com www.blue-white.com

#### Pumps - Solids/Sludge

#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com Ad on page 42

#### **Gorman-Rupp Company**

Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com Ad on page 7

#### **Komline-Sanderson**

800-225-5457 • 908-234-1000 • Fax: 908-234-9487 info@komline.com www.komline.com Ad on page 69

#### Vertiflo Pump Company

Cincinnati, OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### Pumps - Stormwater

#### **AMT Pump Company**

Roversford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com

#### www.amtpump.com Ad on page 42

#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

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#### Cornell Pump Company

Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com

#### **@GLOBAL PUMP**

#### Global Pump

Davison, MI 866-360-7867 • 810-653-4828 • Fax: 810-658-0632 sales@globalpump.com www.globalpump.com

#### **Gorman-Rupp Company**

Mansfield, OH 419-755-1011 • Fax: 419-755-1251 qrsales@gormanrupp.com www.GRpumps.com

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#### Swaby LOBELINE

Chhicago, IL 773-626-1400 • Fax: 773-626-3646 mok@swabypump.com www.lobelinepump.com



#### Vertiflo Pump Company

Cincinnati, OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### Pumps - Submersible

#### **Gorman-Rupp Company**

Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com Ad on page 7

#### Pumps - Test



#### Cherne Industries Inc.

Minneapolis, MN 952-933-5501

https://www.oatey.com/brands/cherne

#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

#### Ad on page 73

#### General Pump

Mendota Heights, MN 888-474-5487 • 651-454-6500 • Fax: 651-454-8015 sales@gpcompanies.com www.generalpump.com

#### Hurco Technologies, Inc.

 ${\it Harrisburg,\,SD}$ 800-888-1436 • 605-743-2466 info@hurcotech.com www.hurcotech.com Ad on page 65

#### Pumps - Vacuum Pressure

#### **Dultmeier Sales**

Omaha, NE 800-228-9666 • 402-333-1444 • Fax: 402-333-5546 dultmeier@dultmeier.com www.dultmeier.com

#### GapVax, Inc.

Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617 inquiry@gapvax.com www.gapvax.com

#### Ad on page 99

#### Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com www.milwaukeerubber.com

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#### **Petersen Products**

Fredonia, WI 800-926-1526 • 262-692-3100 • Fax: 262-692-2418 salesinfo@petersenproducts.com www.petersenproducts.com

#### Ad on page 92

#### Vacuum Sales, Inc.

Lindenwold, NJ 800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com www.vacuumsalesinc.com

#### Pumps - Vertical/Lift Station

#### Boerger, LLC

Chanhassen, MN 612-435-7300 america@boerger.com www.boerger.com

#### **Cornell Pump Company**

Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com



Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com

www.GRpumps.com
Ad on page 7

#### Patterson Manufacturing

Pittsburgh, PA 412-322-2012 • Fax: 412-322-2785 info@pattersonmfg.com www.pattersonmfg.com



#### Smith & Loveless Inc.

#### Smith & Loveless, Inc.

Lenexa, KS 800-898-9122 • 913-888-5201 • Fax: 913-888-2173 answers@smithandloveless.com www.smithandloveless.com

#### Swaby LOBELINE

Chhicago, IL 773-626-1400 • Fax: 773-626-3646 mok@swabypump.com www.lobelinepump.com

#### Vaughan Company, Inc.

Montesano, WA 888-249-2467 • 360-249-4042 • Fax: 360-249-6155 info@chopperpumps.com www.chopperpumps.com

#### Ad on page 29

#### Vertiflo Pump Company

Cincinnati, OH
513-530-0888 • Fax: 513-530-0893
sales@vertiflopump.com
www.vertiflopump.com

#### Pumps - Washdown

#### **AMT Pump Company**

Royersford, PA 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com

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#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

#### Ad on page 73

#### Cornell Pump Company

Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com

#### **Dultmeier Sales**

Omaha, NE 800-228-9666 • 402-333-1444 • Fax: 402-333-5546 dultmeier@dultmeier.com www.dultmeier.com

#### GapVax, Inc.

Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617 inquiry@gapvax.com www.gapvax.com Ad on page 99

#### General Pump

Mendota Heights, MN 888-474-5487 • 651-454-6500 • Fax: 651-454-8015 sales@gpcompanies.com www.generalpump.com

#### Giant Industries, Inc.

Toledo, OH 800-633-4565 • 419-531-4600 • Fax: 419-531-6836 giantsales@giantpumps.com www.giantpumps.com

#### Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com www.milwaukeerubber.com

#### Ad on page 97

#### Vertiflo Pump Company

Cincinnati, OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### Pumps - Water

#### A.Y. McDonald Mfg. Co.

Dubuque, IA 800-292-2737 • 563-583-7311 sales@aymcdonald.com www.aymcdonald.com

#### **AMT Pump Company**

Royersford, PÅ 888-268-7867 • 610-948-3800 • Fax: 610-948-5300 sales@amtpump.com www.amtpump.com

#### Ad on page 42

#### **Comet Industrial Pumps**

Paynesville, MN 800-708-1894 • 952-707-1894 • Fax: 952-707-1895 cometpump@cometpump.com www.cometpump.com

#### Ad on page 73

#### Cornell Pump Company

Clackamas, OR 503-653-0330 • Fax: 503-653-0338 muni@cornellpump.com www.cornellpump.com

#### GapVax, Inc.

Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617 inquiry@gapvax.com www.gapvax.com

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#### General Pump

Mendota Heights, MN 888-474-5487 • 651-454-6500 • Fax: 651-454-8015 sales@gpcompanies.com www.generalpump.com

#### Giant Industries, Inc.

Toledo, OH 800-633-4565 • 419-531-4600 • Fax: 419-531-6836 giantsales@giantpumps.com www.giantpumps.com

#### **Gorman-Rupp Company**

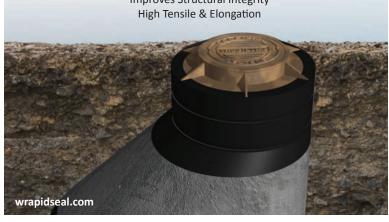
Mansfield, OH 419-755-1011 • Fax: 419-755-1251 grsales@gormanrupp.com www.GRpumps.com Ad on page 7

# ries, Inc.



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#### Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • Fax: 262-781-1742 sales@milwaukeerubber.com

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#### Swaby LOBELINE

www.milwaukeerubber.com

Chhicago, IL 773-626-1400 • Fax: 773-626-3646 mok@swabypump.com www.lobelinepump.com

#### Vertiflo Pump Company

Cincinnati. OH 513-530-0888 • Fax: 513-530-0893 sales@vertiflopump.com www.vertiflopump.com

#### **PVC Sewer Couplings**



#### Dallas Specialty & Mfg. Co.

Grand Prairie, TX 800-222-5644 • 972-641-8444 • Fax: 972-641-8488 ds@dalsnc.com www.dallasspecialty.com

#### Reinstatement Cutters



Aries Industries

Waukesha, WI 800-234-7205 • Fax: 262-896-7099 sales@ariesindustries.com www.griesindustries.com



#### **CUES, Inc.**

Orlando, FL 800-327-7791 • 407-849-0190 • Fax: 407-425-1569 salesinfo@cuesinc.com www.cuesinc.com

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#### Enz USA Inc.

Aurora, IL 877-362-8721 • 630-692-7880 • Fax: 630-692-7885 salesusa@enz.com www.enz.com

#### Ad on page 18

#### **HammerHead Trenchless**

800-331-6653 • 920-648-4848 • Fax: 920-648-1781 www.hammerheadtrenchless.com

#### Ad on page 55



#### RapidView IBAK North America

Rochester, IN 800-656-4225 • 574-224-5426 • Fax: 574-223-7953 sales@rapidview.com www.rapidview.com

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#### Source One Environmental

Davison, MI 810-412-4740 info@s1eonline.com www.sleonline.com

#### **Subsite Electronics**

Perry, OK 800-846-2713 info@subsite.com www.subsite.com Ad on page 35

#### **TruGrit Traction Inc.**

Winter Park, FL 407-900-1091 info@trugrittraction.com www.TruGritTraction.com Ad on page 96

#### **Warrior Trenchless Solutions**

Lancaster, NY 716-601-7760 www.warriornodig.com

#### **Rental Equipment**

#### **Bright Technologies, Division of Sebright Products, Inc.**

Hopkins, MI 800-253-0532 • 269-793-7183 • Fax: 269-793-4022 julie@brightbeltpress.com www.brightbeltpress.com

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#### Centrisys/CNP

Kenosha, WI 262-654-6006 info@centrisys-cnp.com www.centrisys-cnp.com

#### **Dynamic Repairs**

Lodi, NJ 973-478-0893 • Fax: 973-478-0895 dynamiccablerepairs@yahoo.com www.dynamicrepairs.biz Ad on page 97

#### **Envirosiaht LLC**

Randolph, NJ 866-936-8476 • 973-252-6700 • Fax: 973-252-1176 office@envirosight.com www.envirosiaht.com

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#### Fast Pipe Lining Inc. & Pipevision Products, Inc.

815-220-1919 • Fax: 815-220-1918 sales@fastpipelininginc.com www.fastpipelininginc.com

#### FerraTex Solutions, Inc.

Martinsville, VA 844-433-7728 justing@ferratex.com www.ferratex.com Ad on page 25

#### **©GLOBAL PUMP**

#### Global Pump

Davison, MI 866-360-7867 • 810-653-4828 • Fax: 810-658-0632 sales@globalpump.com www.globalpump.com

#### **Industrial Flow Solutions**

New Haven, CT 860-631-3618 sales@flowsolutions.com www.flowsolutions.com

#### InfoSense, Inc.

Charlotte, NC 877-747-3245 • 704-644-1164 • Fax: 704-930-0145 sales@infosense.com www.infosense.com

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#### KEG Technologies, Inc.

Spartanburg, SC 866-595-0515 • 864-804-6637 sales@kegtechnologies.net www.kegtechnologies.net

#### Kohler Power Systems

Kohler WI 800-544-2444 • 920-457-4441 www.kohlerpower.com

#### **NV Mechanics Design Ltd**

Burnaby, BC Canada 604-250-3375 sales@mechanicsdesign.com www.mechanicsdesign.com Ad on page 92

#### Ratech Electronics, Ltd.

Vaughan, ON Canada 800-461-9200 • 905-660-7072 • Fax: 905-660-1519 sales@ratech-electronics.com www.ratech-electronics.com

#### **Sewer Equipment**

Dixon, IL 888-477-7611 sales@sewerequipment.com www.sewerequipment.com

#### Ad on page 3

#### **Subsite Electronics**

Perry, OK 800-846-2713 info@subsite.com www.subsite.com Ad on page 35

#### **Super Products LLC**

Mukwonago, WI 800-837-9711 • 262-784-7100 info@superproductsllc.com www.superproductsllc.com Ad on page 19



#### The Plug Hug LLC

Bellville, OH 719-313-2791 • Fax: 719-213-2000 douglasmarshall@theplughug.com www.theplughug.com Ad on page 89

#### Vactor Manufacturing

Streator, IL 800-627-3171 • 815-672-3171 sales@vactor.com www.vactor.com Ad on page 31

#### Vacuum Sales, Inc.

Lindenwold, NJ 800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com www.vacuumsalesinc.com

#### Repair/Rebuilding Equipment

#### Centrisys/CNP

Kenosha, WI 262-654-6006 info@centrisys-cnp.com www.centrisys-cnp.com

#### **Cretex Specialty Products**

Waukesha, WI 800-345-3764 • 262-542-8153 • Fax: 262-542-0301 info@cretexseals.com www.cretexseals.com

#### Ad on page 16

#### **Dynamic Repairs**

973-478-0893 • Fax: 973-478-0895 dynamiccablerepairs@yahoo.com www.dynamicrepairs.biz Ad on page 97

#### Fast Pipe Lining Inc. & Pipevision Products, Inc.

815-220-1919 • Fax: 815-220-1918 sales@fastpipelininginc.com www.fastpipelininginc.com

#### Hydraulic Specialty

Fridley, MN 844-282-1060 www.hydraulicspecialty.com

#### Infrastructure Repair Systems, Inc.

St. Petersburg, FL 727-327-4216 irsi@irsi.net www.irsi.net

#### Ratech Electronics, Ltd.

Vaughan, ON Canada 800-461-9200 • 905-660-7072 • Fax: 905-660-1519 sales@ratech-electronics.com www.ratech-electronics.com



#### The Plug Hug LLC

Bellville, OH 719-313-2791 • Fax: 719-213-2000 douglasmarshall@theplughug.com www.theplughug.com Ad on page 89

#### **Vactor Manufacturing**

Streator, IL 800-627-3171 • 815-672-3171 sales@vactor.com www.vactor.com Ad on page 31

#### Vacuum Sales, Inc.

Lindenwold, NJ 800-547-7790 • 856-627-7790 • Fax: 856-627-3044 sales@vacuumsalesinc.com www.vacuumsalesinc.com

#### **Rodding Machines**

#### General Pipe Cleaners, div. of General Wire Spring

McKees Rocks, PA 800-245-6200 • 412-771-6300 info@drainbrain.com www.drainbrain.com

#### **Sewer Equipment**

Dixon, IL 888-477-7611 sales@sewerequipment.com www.sewerequipment.com Ad on page 3



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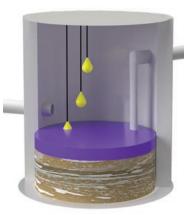
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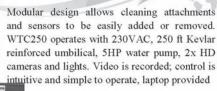
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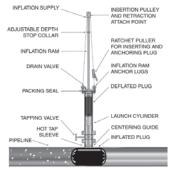
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# **CONSISTENT QUALITY**

NASSCO wants your help in updating PACP quality control document

By Sheila Joy

**Association of Sewer** Service Companies) is located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104; 410-442-7473; www.nassco.org

**NASSCO** (National

Sheila Joy is executive director of NASSCO. She can be reached at director@nassco.org.

here is a little-known resource on www.nassco.org that deserves to be brought to the attention of our industry: the NASSCO PACP Quality Control document.

The important information contained within this resource is designed to fulfill the industry's need for quality control of PACP data with a procedure that is easy to apply and audit. According to the document:

"CCTV contracting companies should have a Random Number Quality Control procedure in place that is then audited by the client. A random number is one of a series of numbers that have no detectable pattern so that each and every item in a known population has an equal chance of being selected based upon the random number. The client can carry out their own Q/C, but it must be based upon the random sampling system so that discrepancies about the method of choice of the inspections to be quality-controlled disappear. The intent is for the client to actually audit the CCTV contractor's Q/C procedure rather than performing their own Q/C. If there is doubt about the results, then the client can ask for another, differing set of random numbers to be created and applied to the CCTV operator in question, thereby generating another, different set of inspections to be checked. A Q/C history must be created for each CCTV operator and not created for each contract."

The document goes on to explain the general method, provides help in understanding the need for a population, details how to generate random numbers, discusses the selection of inspections to be checked and summarizes quality control of an inspection.

In partnership with the Water Research Centre, NASSCO has recently revived this document to assist in the development of a PACP rating system for new artificial intelligence software being developed for the assessment of conditions in underground pipes. In doing so, NASSCO's Infrastructure Assessment Committee has identified the need to update the document, originally published in 2006, to add more value to our industry.

We would like to hear from you as we update the NASSCO PACP Quality Control document, which may be obtained by visiting www.nassco.org/ content/pipeline-assessment-pacp.

If you have suggestions or ideas, email me at director@nassco.org. ◆

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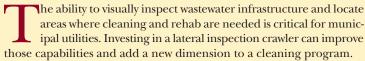
# OTHER CLASSES

Contact one of the trainers listed above if you are interested in having a class at your facility or in your area.

# Product Spotlight

Lateral launch crawler designed to increase productivity

By Tim Dobbins



The ROVVER X SAT II lateral launch crawler from Envirosight is designed to track down the origin of illicit flows and provide visual inspections to ensure infrastructure meets required specifications. They are also useful for determining the location of sewer laterals before gas lines are installed.

"The ROVVER X SAT II has a long list of capabilities," says Jake Wells, director of marketing at Envirosight. "It's the only lateral crawler with steerable eight-wheel drive. Half the challenge of lateral launch inspection is navigating down the mainline to a launch point, but with its unique traction and maneuverability, this system can climb over offsets, power through sludge and avoid debris."

To make deploying in a manhole easier, the crawler was designed with a hinged midsection so it can bend through the transition between manhole and mainline. It is also equipped with quick-change wheels and launch chutes, allowing for fast, toolless modifications to the wheel setup and launch chute length to accommodate mainlines ranging from 6 to 80 inches in diameter.

The ROVVER X SAT II has three onboard cameras. "Launching in



large lines requires precision aiming," Wells says. "To improve accuracy, we added a 5-megapixel digital pan-tilt-zoom aiming camera. With it, you can see exactly where you are launching in any size pipe and at any position." Along with the aiming camera, the crawler has a pan and tilt launch camera and backup camera.

"Speed and range are critical to being productive when you perform lateral launch inspections," Wells says. "The ROVVER X SAT II travels 984 feet in mainlines at up to 98 feet per minute and launches 147 feet into laterals at 23 feet per minute."

The ROVVER X SAT II also features a push mechanism to deliver powerful force while inflicting practically no wear on the pushrod, reducing downtime and maintenance costs. "We spent hundreds of hours testing it under all kinds of conditions to make sure it would live up to its promise," Wells says. "We introduced grease and sediment into the mechanism, launched it at every clock position and pushed it through all kinds of bends and branches."

Wells says feedback has been glowing, with people saying the power, maneuverability and reliability of the new push system helps avoid downtime and complete more launches. 866-936-8476; www.envirosight.com.

#### SPECIAL REPORT



#### Patterson davit cranes

New davit cranes are available from corrosive-environment and safety expert, Patterson. Give your operations a lift with models in 1/2- and 1-ton capacities. The cranes exhibit the company's hallmark safety, simplicity and durability, with key features such as a reliable brake with long life and readily available parts, a hot-dipped galvanized finish, and no plastic sheaves or pulleys. They put safety and simplicity within your reach with

a low-maintenance, easy-to-assemble design that is made in the U.S. For more than 160 years, Patterson has been a trusted supplier of winches, rigging, fittings and custom products for lifting applications in the marine, construction and mining markets. These davit cranes continue to deliver on the company's promise of helping businesses run safer, easier and faster. 800-322-2018; www.pattersonmfg.com/davit-cranes.







**General Pipe Cleaners** AutoCutPL tubing cutter



Max-Life grit catcher



Gradall fixed-thumb grapple attachments

#### Reed L4N1XP ratchet wrench

Reed's L4N1XP Thru-Bolt ratchet wrench features sealed ratchets for best performance and extra protection for job site conditions. The four dog-bone-configuration sockets are designed to stay on the handle, meaning no loose sockets, and the length and shape of the handle yield maximum leverage. Plus, a rugged grip handle provides a secure hold. It includes 1 1/4, 1 1/8-, 1 1/16- and 15/16-inch sizes and replaces the need for multiple wrenches and sockets. 800-666-3691; www.reedmfgco.com.

#### Sewer Equipment 800 Series IV truck jet

The 800 Series IV truck jet from Sewer Equipment offers several features designed for cold-weather applications. The rear door can close completely with the hose reel fully extended, providing maximum heat retention inside the environmental enclosure where water components are stored. A new feature gives up to 20 gpm of hot water to feed the washdown reel, lateral reel and jetting circuits during cold-weather operations. A lack of PTO engagement allows for wintertime recirculation of the water system at highway speeds as a standard feature, saving the time otherwise spent blowing down the entire water system between job sites. The addition of a centralized water drain makes winterization easy, as there is only one drain to blow down, and a retractable canopy adds protection from the weather. 888-477-7611; www.sewerequipment.com.

#### General Pipe Cleaners AutoCutPL tubing cutter

The AutoCutPL plastic tubing cutter from General Pipe Cleaners offers a fast, easy way to cut PEX and CPVC-CTS plastic tubing. Compact and convenient, the AutoCutPL produces clean, uncrushed, square cuts with less effort. Great for use in tight spaces, the AutoCutPL lets you cut plastic tubing with less than 1 inch of clearance in as little as one rotation. The blade is easy to replace, and the blade guard protects the blade — and fingers — from workplace and toolbox damage. AutoCutPL comes in three sizes: 1/2, 3/4 and 1 inch for PEX and CPVC-CTS tubing. 800-245-6200; www.drainbrain.com.

#### Max-Life grit catcher tool

The grit catcher from Max-Life has a shovellike design that helps the tool act as a debris catcher, grit catcher and debris scooper all in one. The debris scooper can be attached to fiberglass poles and rope to reach deeper pipe. This system reduces wobble while cleaning the line, stabilizing it while raising and lowering the catcher in a manhole. The tool is gold plated to extend service life. Current sizes are for 4-, 6-, 8-, 10-, 12-, 15-, 18- and 24-inch pipe. Custom sizes can be made upon request. 714-898-4830; www.maxlifemfg.com.

#### Gradall fixed-thumb grapple attachments

Fixed-thumb grapple attachments from Gradall expand the capabilities of Gradall excavators in emergency applications after severe weather, as well as during routine job site cleanup and demolition. The fixed-thumb grapple is a primary attachment for Gradall Storm Recovery Series models — wheeled excavators designed to provide emergency response in the aftermath of hurricanes, tornadoes and other natural disasters. The grapple attachments can be used to reach out and remove brush, debris and tree limbs. The highway-speed model can be driven at 60 mph to address blocked roadways and provide access for other first responders. 800-445-4752; www.gradall.com.

# Krausz USA HYMAX Digital Application Selection

The HYMAX Digital Application Selection Guide from Krausz USA is a web-based app that enables users to find the right HYMAX product for any water or wastewater pipe repair. Searches can be done according to the field situation of the repair, such as a crack or hole in the pipe; the application, such as if a pipe needs to be connected or restrained; and the HYMAX product name. The HYMAX digital Application Selection Guide is an effective tool for installers in the field, operations directors and superintendents, purchasing directors and warehouse managers, and engineers. 855-457-2870; www.krauszusa.com. ♦





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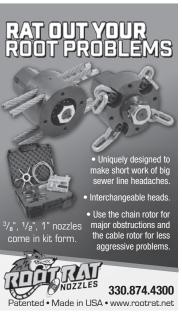
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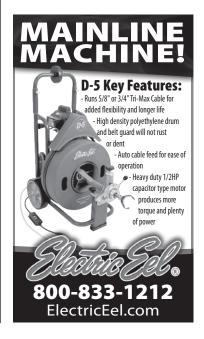
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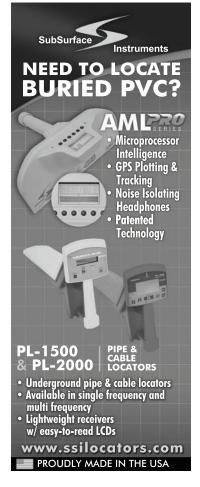
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# Sewer Equipment announces new dealers

Sewer Equipment announced its newest full-line dealers: Brown Equipment Co. in Indiana, Ohio and Kentucky and MSC Equipment in Virginia. Since 1968, Brown Equipment has been a knowledgeable resource for sales, parts and service in both the government and private sectors, focusing on street and sewer maintenance equipment. With a history dating back to 1934, the Municipal Sales Co., now MSC Equipment, operates a full-service center with in-stock parts and accessories in Oilville, Virginia.

#### ClearSpan offers cooperative purchasing

ClearSpan is a contract holder of Sourcewell and offers its municipal customers cooperative purchasing. With Sourcewell, municipalities work directly with ClearSpan through a simple purchase order process while satisfying all local and state procurement regulations. This allows local governments to get a structural solution quickly and when they need it most.

#### Thompson Pump celebrates 50th anniversary in 2020

Thompson Pump is celebrating its 50th anniversary in business in 2020. The company was founded in Port Orange, Florida, in 1970 by George A. Thompson and his sons Bill and George M. At the time of its inception, George A. had been working as an operating engineer in NASA's Apollo program, Bill had just finished college and the younger George had recently completed high school. From its beginnings as a dewatering contractor, Thompson Pump soon turned its focus to making and selling the pumps they had been using as a subcontractor. The company now serves the pumping and dewatering needs of more than 6,000 national and international clients.

#### Mueller Water Products launches new international website

Mueller Water Products announced the launch of the Mueller International website, www.mueller-international.com. The website showcases a broad product and service portfolio with a friendly user experience, designed to meet the needs of the global market. Specifics include newly developed data sheets and detailed regional information about a wide range of solutions, including engineered valves, fire hydrants, metering products and systems, leak detection and pipe condition assessment. +



#### PEOPLE/AWARDS

Brown and Caldwell, an environmental engineering and construction firm, appointed Adam Evans as vice president and area leader for its Texas business. Evans will oversee projects involving stormwater, municipal water and wastewater.

The First Team Volkswagen project received a Stormwater Clean Award from Roanoke County (Virginia). County officials say First Team and its grading contractor, Jeff Holt of Holt, took the land-disturbing activities seriously on the project by properly installing and maintaining the required erosion and sediment controls and stormwater management measures.

Partners for Places announced a grant award of \$54,240 for the city of Newport (Rhode Island) to support residents in the North End neighborhood with tools to participate in critical municipal discussions that affect the neighborhood. The primary focus of the project will be to engage residents to discover nature-based solutions to flooding caused by stormwater runoff.

The Arbor Day Foundation presented the Upper Susquehanna Coalition (New York) with a 2020 Arbor Day Award. The coalition was honored for planting more than 10,000 native trees in northern Pennsylvania and southern New York in one year, thus slowing the flow of stormwater and catching sediment and nutrients before they wash downstream.

Advanced Drainage Systems (Ohio) received a Drainage Division Project of the Year award from the Plastics Pipe Institute for its work at the Hugh K. Leatherman Sr. Terminal in North Charleston (South Carolina). ◆

#### **CALENDAR**

#### Sept. 14-16

California Stormwater Quality Association Annual Conference, virtual. Visit www.casqa.org.

#### Oct. 5-9

Water Environment Federation Technical Exhibition and Conference, virtual. Visit www.weftec.org.

#### Oct. 7-9

Southeast Stormwater Association Regional Stormwater Conference, Hilton Head Marriott Hotel, Hilton Head Island, South Carolina. Visit www.seswa.org.

#### Oct. 20-22

New Jersey Water Association Management and Technical Conference, Golden Nugget hotel, Atlantic City, New Jersey. Visit www.njwater.org.

#### Oct. 28-31

American Society of Civil Engineers Convention, virtual. Visit www.asce.org.

American Water Resources Association Annual Conference, virtual. Visit www.awra.org.

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