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November 2018

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to delivering the best water

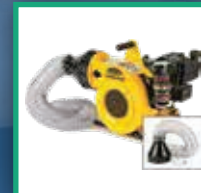
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Kathleen Cahall
City of Bremerton
Water Resources Manager
Bremerton, Washington

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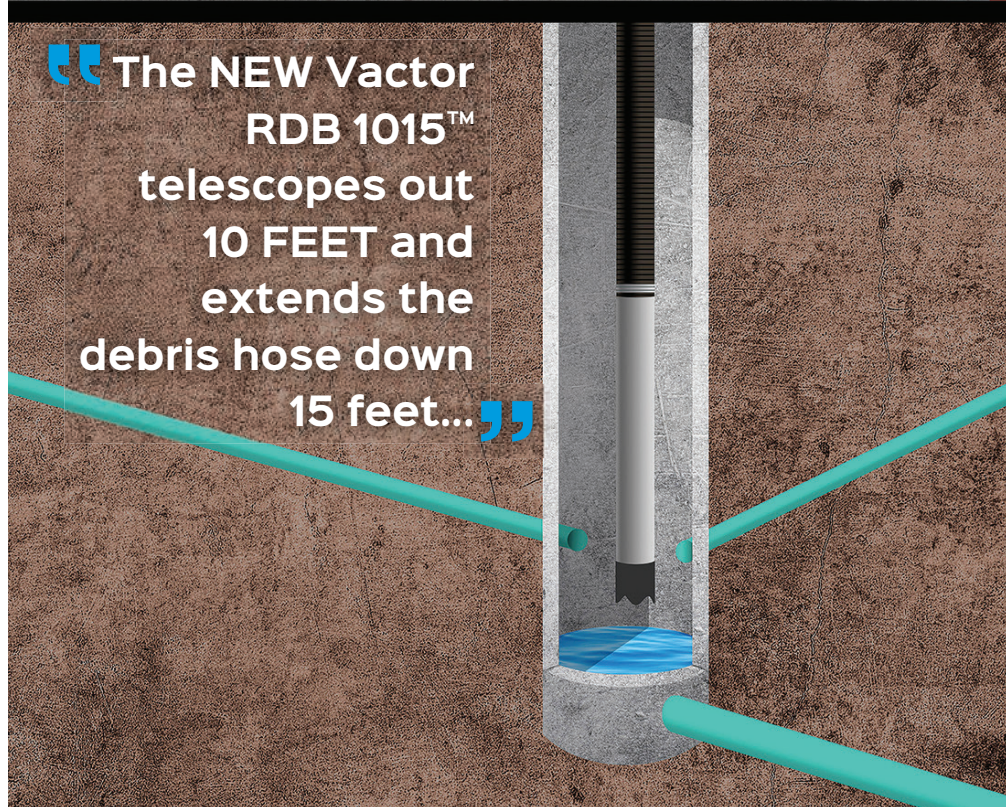
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INSIDE:

LOCATION AND LEAK DETECTION



ON THE COVER: City of Bremerton Water Resources Manager Kathleen Cahall is pictured at the base of the Casad Dam in Bremerton, Washington. (Photography by Stephen Brashear)



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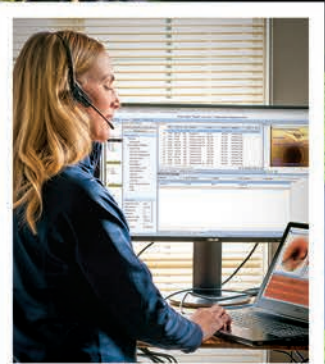
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GIMME SHELTER

Be thankful if you're safe and dry,
and your systems are running smoothly

We've all said things that are regrettable. Last month in this space I talked about stormwater and the way it impacts everyone, no matter where you live. While that is certainly true — it's an issue most of you deal with — I went on in that column to whine about how heavy rains occasionally cause minor problems at my house.

At the time, my local area was under a flood watch. There was no flooding around me; my house suffered no ill effects of the weather. But other parts of Wisconsin did. And shortly after I wrote that column, Hurricane Florence unleashed hell on North Carolina and South Carolina.

I was sitting at home watching the news reports, perfectly comfortable and dry, the night Florence made landfall. As I watched video of the storm

surge taking over towns, people and pets being rescued, and lives being washed away, that column came to mind. I immediately wished I hadn't in any way compared my situation to real stormwater issues.

In North Carolina, there were many releases of wastewater from overflowing sewer systems. A wastewater plant in Onslow County experienced a catastrophic failure. The city of Wilmington's wastewater system released 5.25 million gallons of wastewater into the Cape Fear River. And these are just a couple examples. Places that hadn't flooded in decades, if ever, were inundated with water from the storm surge and heavy rains.

In many ways, it drives home the point of last month's column. You can't escape Mother Nature, and even the best systems can suffer her wrath. Nonetheless, I'm embarrassed to have even brought up my own extremely minor issues.

We were set to profile the Lumberton (North Carolina) Municipal Utility District before Florence flooded the community for the second time in two years. Hurricane Matthew hit the city hard in 2016, destroying homes and displacing residents, in addition to knocking out the water treatment plant for almost a week. Florence brought more of the same, but while the city's water and wastewater systems weren't spared from the storm's impact, they continued running.

In the months ahead, the city — like many in the region — will face a daunting cleanup effort. Some things will likely never be the same, but the city will rebound, utilities will get back up to speed, and residents will move back in. I'm hoping we get to tell their story when things begin to return to normal. And for the sake of everyone in that area, I hope that's sooner than later.

Until then, there are some great stories in the magazine this month on the Marin (California) Municipal Water District, Bremerton (Washington) Water Department and Johnson County (Kansas) Wastewater. I hope they provide some insight and inspiration for your own operations.

Enjoy this month's issue. ♦



FROM THE EDITOR

Luke Laggis



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POPULATION GROWTH

Planning for an Influx

Population growth is a critical issue for city planners and water/wastewater utility leaders in some areas of the country. Whether it's vigilant pursuit of grant funding, changes in local regulations for new development, customer education on water conservation or embracing new technologies, municipalities dealing with exploding populations have a lot to think about. Read this online exclusive article to hear ideas from utility leaders on the front lines.

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TRADE SHOWS

Making the Most of It

Attending a trade show can provide a welcome break from the daily routine, but anyone who mistakes a trade show for a vacation isn't reaping its full benefits. Trade shows offer a wide range of resources, from new products and cutting-edge technology to educational seminars and networking opportunities. As you're looking ahead to trade shows you might attend in the coming months, we've put together some tips for you to get the most value out of them.

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OVERHEARD ONLINE

“We do a high, medium and low flow test, running water at different pressures and quantities to see how accurately they're reading.”

— *High Schoolers Get Hands-On Training at Madison Water Utility*
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FLOOD CONTROL

Building an Ecosystem

Acknowledging that it all flows downhill, engineers at the Keno Environmental Restoration Project in Southern Arizona recently decided to take what nature would offer and established an ecosystem within a flood-control basin that also provided both economic and recreational benefits. And by including a diversion channel within the 155-acre multi-use site, first-flush flood potential has been mitigated by upwards of one-third, according to project personnel. mswmag.com/featured



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LISTENING FOR LEAKS

Proactive teamwork helps California water district prioritize projects and cut water loss

By Jared Raney

Almost 30,000 gallons per day — that's how much water is saved by the leak detection team of Marin Municipal Water District. Formed in 2008, the Marin Municipal Water District leak detection team in Marin, California, is the result of a political push to formalize leak mitigation efforts that had been ongoing for decades. The team consists of two water systems technicians who survey the 887-mile system on a three-year schedule.

"The main part of the leak detection team is surveying — we pick a town, and then we just go up and down the streets, cover the whole town, and we listen to all the water services," says Julian Barrolaza, water systems technician. "That's what we do every day, and after we finish one town, we go to the next one. So then after three years or so, in theory, we have covered the whole district, and we start over again."

The district's proactive approach, in addition to a responsive unit of water systems specialists and service crews, saves a significant volume of water in addition to preventing an unknowable number of future line breaks and major leaks.

"The leak detection program is focused on the leaks that are not visible, that nobody's calling in," says Ben Bauer, leak detection field supervisor. "We don't even know they exist until we walk by and hear something."



PROFILE:
Marin Municipal
Water District, California

ESTABLISHED:
1912

POPULATION:
190,300; 61,800 service connections

SERVICE AREA:
Marin County, 147 square miles

WATER INFRASTRUCTURE:
887 miles of pipe, three water treatment plants, 97 pump stations, 128 storage tanks

LEAK DETECTION STAFF:
2 water systems technicians, 5 water systems specialists

BUDGET FISCAL YEAR REVENUE:
\$81 million (2018)

WEBSITE:
www.marinwater.org



Left: Utility systems specialist Kevin Barkdull, a member of the Marin Municipal Water District's Leak Detection Team, uses a ground mic to listen for leaks in a waterline. Above: Barkdull and water systems technician Jesse Obrochta set up SubSurface leak detection equipment. (Photography by Lezlie Sterling)

Building a team

The two-man team consists of Barrolaza, who has been part of the team since its origins, and Jesse Obrochta, who joined the team about a year ago. The other original tech was Kevin Barkdull, who is now a specialist, responding to major leaks instead of surveying.

"There are a lot of ways to find a leak, and all the technology around finding leaks is about listening," Bauer says. "Whether we do that with our naked ear, with a small metal rod, or an amplifier or a computer, it's all around the noise that the pipeline makes. The water leaks through and vibrates the pipe, and it makes a sound."

Knowledge of pipe materials is the biggest criteria for a capable leak detection crew — no small feat in a county that started laying pipe about 150 years ago, with material ranging from copper, galvanized, and cast iron pipe to asbestos cement pipe and PVC. In new construction, the district uses only welded steel and PVC.

"It's trial by fire. It's mostly learnt on the job, but my past experience has led me here," Obrochta says. "A qualified candidate knows the system, knows the pipe materials, and then works closely with the other leak detector — and you're off and running."

Obrochta and Barrolaza both started as laborers and learned the necessary skills to transition

into leak detection. "As a laborer on the service crews, you're out there fixing leaks, learning about materials," Obrochta says. "You get knowledgeable by fixing all these leaks before you can start to find them."

Marin nearly always recruits from within for the leak detection team, and it seems to be working out.

"Roughly in the last calendar year, we found 20 leaks on the residential pipelines, and we found 26 Marin Municipal Water District leaks," Bauer says. "We estimate loss, and by fixing those 26 district leaks, we think we've saved 28,800 gallons per day."

A separate water conservation department handles customer education, but the team contributes where they can.

"When we run across consumer leaks, we try to meet with those consumers and let them know what's going on," Barkdull says. "If they're not at home, we leave them a door hanger stating what's going on, and they have a number to contact us."

Survey and save

Any aboveground extension of the water system that can channel vibration is a possible listening point. From there, with the proper tools, even a dripping faucet can be detected.

"Basically you're picking a spot, and you're put-

"Roughly in the last calendar year, we found 20 leaks on the residential pipelines, and we found 26 Marin Municipal Water District leaks. We estimate loss, and by fixing those 26 district leaks, we think we've saved 28,800 gallons per day."

Ben Bauer

ting on your listening equipment; you're listening on the water meters, the water valves, hydrants, anything that you can listen on," Barkdull says. "The best way to describe it is like taking a balloon, blowing it up and letting that air squeal out the end of it. Really what you're hearing is the pressure pushing out of the pipe, out of the leak."

There are basic manual devices, like metal rods, that are essentially naked-ear listening — unassisted by technology. Beyond that, electronics like amplifiers, correlators, and leak loggers can assist in diagnosing and pinpointing tricky leaks, especially when dealing with difficult materials.

"The PVC and the plastic — they don't make the same noise as the metal pipe. Same thing with the asbestos cement pipe — they just don't have the noise," Barkdull says. "We do have sensors on

PROACTIVE AND REACTIVE

No matter how proactive your utility is about finding and stopping small leaks before they become major issues, there will always be emergency situations that crop up. That's why it's important for any leak mitigation program to have both proactive and reactive facets.

In addition to their leak detection team, Marin Municipal Water District also has water systems specialists, who are called out when a visible leak or main break occurs.

"The specialist is a first responder, so they're basically busy with big main breaks and customer complaints about water leakage," says Jesse Obrochta, one of the water systems technicians. "Then there are the two techs who are out surveying, looking for small leaks."

The district has five specialists on staff, responding to visible public leaks. They are obviously easier to find, so the specialists are in assessment mode instead of detection mode. Occasionally, though, even when water is surfacing, the source isn't immediately clear, so the detection team will be called in with its equipment to assist.

"Leak detection spends a lot more time looking for the leaks that aren't seen," says Kevin Barkdull, water systems specialist. "They're trying to pick up on leaks that are underground, that nobody knows about, that are just starting or possibly have been going for a while; whereas my job is responding to a lot of the leaks that are already showing."

That all-encompassing approach to leak mitigation has proved very effective, saving the district almost 30,000 gallons a day.



"You need to have the right tools. It is basically just listening, but you need to have really good-quality equipment. You can't scrimp on these listening devices — you need to start with the right stuff."

Julian Barrolaza

A listening device is connected to waterline as part of the leak detection process.

our correlator that are a little more sensitive, that can help us locate. It depends a lot on the ground, too. We've got a lot of adobe clay out here, and that can muffle the noise."

Amplifiers are pretty self-explanatory, but leak loggers and correlators are a little more advanced. They can be deployed for longer periods of time, so the computer program can listen for and dismiss any inconsistent sound over the deployment period, leaving only the sound of leaks.

They can also use sensors at different points along a pipeline to pinpoint a leak, essentially giving the operators a series of data points — the distance of the leak from each sensor. With multiple reference points, they can narrow the location more quickly.

Sensors like the leak loggers have the capacity for long-term deployment, but that doesn't always prove to be the best system.

"We've tried to deploy these long-term, but our biggest success has been to deploy them short-term," Bauer says. "We're able to maximize the loggers that we have, because if you put them out permanently, you need thousands of these things.

So we have a small number that we're able to deploy on a short-term basis."

When looking for leaks, there are several steps between the team and service crews. First they have to determine whether it's a consumer or district leak. Consumer leaks are obviously the homeowners' responsibility, though the team tries to identify the leak and inform the customer.

"We do our best to pinpoint where the water is coming from, whether it be groundwater or whether it be a consumer leak, a district leak," Barkdull says. Often they will shut water down on the consumer side to determine which part of the system a leak is coming from.

After that, a rating system determines the priority of the repair. Using a three-point scale, they determine if it needs to be repaired right away, by the next available crew, or if it can wait to be folded into the repair schedule.

A big asset in this process is the ArcGIS system (Esri) that the team uses to map leaks, log job information and manage the survey schedule. The custom map can be highlighted as they complete their survey, eliminating overlap and

ensuring efficiency.

“You need to have the right tools,” Barrolaza says. “It is basically just listening, but you need to have really good-quality equipment. You can’t scrimp on these listening devices — you need to start with the right stuff.”

Marin Municipal Water District uses leak detectors and correlators from SubSurface Instruments and leak loggers made by Gutermann. With such varied equipment and complex tools, it’s a lot to take on for a team of two, but they aren’t on their own.

“We work well with our distributors for our technologies, too,” Bauer says. “They’re really good about coming to Marin Municipal Water District and answering any questions, reviewing the next great thing, or if we have any questions about some of the data that we’re recovering, they can help us analyze that and use those tools to their maximum.”

Eye toward the future

Technology is constantly advancing, and the Marin Municipal Water District is committed to keeping up with industry trends to provide the best service and water conservation possible. After finding that the long-term deployment of correlator sensors was not feasible, the district looked toward advanced metering.

“The idea that the meter might be able to pick up a leak sounds great — it’s never going to replace an actual, physical investigation by an employee of the district. I don’t see that happening,” Bauer says. “We’re going to have to confirm what the data is, go out and check conditions, and then move from there.”

The Marin Municipal Water District recently installed 2,000 new automation-capable meters from Badger Meter as part of a pilot program. The meters are able to automatically and remotely report consumer water usage numbers and could be used for leak detection purposes.

Consumer usage reports are already examined by the leak detection team to determine if a potential leak is on the district or consumer side. If a spike in water usage coincides with a suspected leak, it can be a pretty good indicator of where they should look. Using the smart meters to automatically report those spikes could create efficiencies for the program, essentially taking much of the consumer-side burden off the team’s hands.

The pilot program is doing exactly that, diagnosing potential leaks and alerting customers. In addition, customers can track their own water use through the meters with an online portal.

“I will say that the leak detection program cannot be completely automated,” Bauer says. “I think the transition for a tech in the field — should we choose to go with all automated listening devices — is into retrieving and collecting all



Kevin Barkdull sets up equipment to listen for leaks at a valve pit.

“The idea that the meter might be able to pick up a leak sounds great — it’s never going to replace an actual, physical investigation by an employee of the district. I don’t see that happening.”

Ben Bauer

that data and looking at it. And so I think there’s always going to be a way for the team to continue to be a part of this leak detection program.”

The team is one part of the broader leak mitigation program under the auspices of the district, and new ways to increase efficiency are always on the horizon.

“We’re pretty happy with the results that we’re getting. I think the district needs to make a choice about how we’re going to implement the smart meters,” Bauer says. “That will drastically change the direction that we could go, but for the foreseeable future, I see this team continuing to work over the next decade.”

Worth the effort

For a district serving nearly 200,000 customers, with an average daily production of 21 mgd, 30,000 gpd may seem like a drop in the pond, but as drought conditions become more common, projects like these are essential.

“We’ve had a leak detection program informally for many years, since the drought in about 1976. It was never formalized until we had some climate changes that brought it to our attention again,” Bauer says. “We were going through a dry period in our climate. The board of directors

wanted full-time people to look for leaks, to save water, because it wasn’t raining. That was at the political level, and we’ve been going pretty strong ever since.”

Every gallon saved is money saved, and over time, it all adds up for utilities that are willing to put in the extra effort.

“As far as water conservation, I think the most cost-effective way is to send out a crew and repair pipes. That saves the most water in the most cost-effective way,” Obrochta says. “We go hand in hand with water conservation, obviously, with the amount of gallons saved through finding and repairing leaking pipes.” ♦

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EARLY BOARDING PASS

Engage new employees by making good use of that otherwise awkward silence between job acceptance and the first day on the job

By *Ken Wysocky*

It's not unusual for people to accept a new job, then experience the employment equivalent of buyer's remorse during the ensuing weeks that typically transpire before they first set foot inside their new workplace. Radio silence from the employer during that time period only promotes second-guessing that can quickly supplant a new hire's sense of excitement and enthusiasm.

It doesn't have to be that way. In fact, growing numbers of organizations are implementing pre-onboarding — or preboarding — programs. These efforts fill that time gap between acceptance and attendance with activities and events aimed at quelling those inevitable nagging doubts in new employees' minds, experts say.

This is no small thing, as workplace research indicates that nearly 90 percent of new hires decide in the first six months of employment whether or not they plan to stay long term. Moreover, other studies indicate that onboarding programs are instrumental in helping new hires decide to stay and increase productivity right out of the gate. As such, preboarding should help even more, experts note. After all, you rarely get a second chance to make that critical first impression.

"It's really important to remember to provide a touch point between a candidate's (job) acceptance and the first day on the job that's both powerful and meaningful," says Bek Chee, the head of global talent at Atlassian, a software-development company. Chee made her comments during a short podcast on the Human Capital Institute's website. "So we try to intentionally design that experience. That means looking at a candidate's journey beyond just the interviewing and the acceptance ... talking to them throughout because it's an anxiety-inducing time.

"What we want to do is maintain that excitement and reduce their anxiety — (make them) feel really bought-in on the decision they made to come to our company," she says.

Preboarding can take many forms. For starters, consider sending out an introductory companywide email to announce the new hire. Managers also could send a personal email, encouraging new hires to contact them if any questions arise. They can also ease first-day jitters by providing information about the myriad of nerve-wracking details that most new employees want to know before they arrive — things such as parking and transportation options, what time work starts and ends, workspace and restroom locations, any dress-code requirements, places to eat lunch, and any documents they'll need to bring with them on that all-important first day. This could even be done in a frequently-asked-questions format.

Managers who are inclined to provide a deeper dive could also provide a detailed job description and summary of expectations, a company and

department organizational chart (including photos of people, if possible), a workplace map, and a summary of the company's culture, mission, and short- and long-term goals.

Managers also might want to invite new hires to come to work for a tour or have lunch with members of their new team. If incoming employees are moving from out of town, managers could also ask them if they need help with apartment hunting or house hunting. They also could assign someone from the new hire's team to serve as a local ambassador of sorts to help them acclimate to their new surroundings outside of work.

To help new employees quickly get up to speed on their first day at work, think about sending paperwork ahead of time; filling out and signing forms for hours on the first day at work is a total buzzkill. Plus, it runs counter to the primary goal of those first few days at work: Put employees in a position to maximize their production and contributions as quickly as possible, which

makes them feel more comfortable and engaged.

Another effective tool is a personalized welcome gift. Here are some things to consider:

- A work calendar, perhaps company-branded, that includes team-member milestones like work anniversaries and birthdays.
- A book or two that managers feel would be great reads because their messages fit well with the company's culture and goals. Website links to relevant webinars presented by industry leaders or motivational speakers or even pertinent TED Talks can also offer an innovative touch point.
- A personalized memento, such as a coffee mug, mouse pad, or portfolio.

One more thing: Don't forget to monitor your preboarding program's effectiveness by having new employees critique it. A few weeks after they start, sit down and ask them about their experience and if there's anything that could make it better.

Of course, there are many other things companies can do to make preboarding a meaningful experience; anything is better than the silent treatment after job acceptance. And different companies certainly will employ different approaches and strategies to fit their cultures and goals.

But if there's any uncertainty about where to start, try viewing things through a new employee's eyes; much of it falls under the category of common courtesies. At the very least, consider what essential information a newbie needs to know about things such as company culture, as well as what tools and information they'll need to work most effectively. And think about what would make *you* feel welcome and enthused — what would help validate *your* decision to accept a job and get you excited to hit the ground running. ♦

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.

“What we want to do is maintain that excitement and reduce their anxiety — (make them) feel really bought-in on the decision they made to come to our company.”

Bek Chee



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Sewer root control done right.



Johnson County Wastewater staff member Tanner Shelby operates the jetter controls on a Vactor Ramjet truck while cleaning a sewer line. (Photography by Denny Medley)



SAVINGS PLAN

Data is driving Kansas utility's push for efficiency and system improvements

By Jim Force

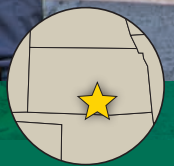
Management of the sewer system in Johnson County, Kansas, is no guessing game. Johnson County Wastewater is employing a data-based tool that enables the agency to identify and prioritize critical maintenance and repairs and to maximize the life of the pipes in its collections system. Called the Collection System Asset Management Plan, or CSAMP, the tool assimilates data collected by the division's CCTV units and delivers weekly assessments of sewer conditions, identifying critical needs, assessing risks, and assigning next actions. If a pipe needs to be repaired or replaced, CSAMP recommends the most effective solution.

Initiated in 2014, the program is now in its

fifth year and has already produced significant savings. "We're able to minimize risks and thereby minimize costs," says Patrick Beane, P.E., Johnson County Wastewater asset manager. "The more data we collect, the better we are (at doing our job)."

The Johnson County system

The Johnson County Wastewater collections and treatment system serves more than 400,000 residents who live in 16 bedroom communities southwest of Kansas City. The system includes seven treatment plants, which together process about 50 mgd, and over 2,250 miles of gravity sewer lines, including 42 miles of force main and 32 pumping stations. There are no combined sewers.



PROFILE:
Johnson County
(Kansas) Wastewater

FORMED:
1945

AREA SERVED:
16 cities and unincorporated areas in Johnson County

SQUARE MILES:
172

POPULATION SERVED:
400,000

INFRASTRUCTURE:
7 wastewater treatment plants; 2,250 miles of gravity sewers; 32 pump stations; 55,000 manholes

ANNUAL OPERATIONS BUDGET:
\$65 million

STAFF:
Patrick Beane, P.E., asset manager; Joe Barnes, project manager

WEBSITE:
www.jocogov.org

“Our goal is to maximize our cleaning capacity, which is up to 485 miles a year — or about 20 percent of the entire system.”

Joe Barnes

The collections system consists of a mixture of pipe sizes and materials, some dating back to the early 1940s when the county chose to build its own sewer system instead of sending wastewater to Kansas City. The network developed rapidly, matching the residential growth in the area following World War II. The first treatment plant was built in 1949 and was run by one employee hired in 1947. The current Johnson County Wastewater employs 215 people. The Johnson County Wastewater collections staff numbers 53 people, and nearly all of the maintenance and operation of the collections system is done in-house.

The sewer lines primarily consist of smaller 8-, 10-, and 12-inch pipe that includes clay, PVC, and ductile iron. The larger-diameter interceptors are a mix of reinforced concrete, iron and fiberglass pipes. The system has 55,000 manholes, approximately half of which are older brick construction.

Johnson County Wastewater uses a pair of Vector jet/vac combo trucks and five additional Vector cleaning trucks to keep the lines clear and operational. Inspection is accomplished with a recently upgraded fleet of four Envirosight CCTV units that televise about 150 miles a year.

“Our goal is to maximize our cleaning capacity, which is up to 485 miles a year — or about 20 percent of the entire system,” says Joe Barnes, project manager. “We try to clean from top to bottom, pulling the material toward us.”

The crew operates on a two/four/eight-year cycle, cleaning the highest risk pipes every two years, which are primarily the oldest clay pipes. The four-year cycle includes a mix of clay and other types of pipes, and the eight-year lines are generally the newest pipes. That has replaced an old three/five/seven schedule that Barnes says, “had a lot of peaks and valleys in the amount of pipe that needed to be cleaned each year.

“Some of our pipes are lined,” he adds, and they require special attention.

The wide variety of pipe sizes and materials represents the biggest challenge for the Johnson County Wastewater collections crew.

“We have to have a variety of cleaning nozzle sizes on hand, in order to match up to the pipe size,” Barnes says.

Top to bottom: A Johnson County Wastewater technician uses a Stihl saw to cut a length of 8-inch Jetstream PVC pipe for a repair; staff members Andre Wallace (left) and Santos Ruiz prepare a spot liner for installation; Ruiz helps guide the spot liner into place.





TRANSFERRING KNOWLEDGE

The Johnson County Wastewater team includes (from left) Rusty Berry, Jim Bills, Jerry Wallander, Joe Barnes, Paul Romero, asset manager Patrick Beane, Guy Smith and Troy Young.

Training may not have been part of the initial plan, but the Collection System Asset Management Plan in place at Johnson County (Kansas) Wastewater has proved to be an excellent method for educating new employees on the ins and outs of the sewer system.

“It’s a big benefit,” says Patrick Beane, P.E., asset manager. “We have a starting point. We can bring new people up to speed.”

Beane says new hires can review the documentation on emergency, cleaning, and inspection procedures produced by the CSAMP and readily see and understand departmental procedures and priorities.

“They can see how we clean and whom to notify in certain situations.”

The system knowledge helps in turn with the agency’s public outreach. “These are the employees out in the field, in the trucks, in contact with the public,” Beane says. “They know and understand the system.”

That helps them explain field activities to property owners, Beane says, “most of whom never even think about the sewer system.”

“It’s helped us develop a long-term plan and shored up our capital improvements program. It prioritizes and details what we’re asking of our ratepayers. We try not to overburden them through our requests for repairs.”

Patrick Beane

The clay pipes require a special effort. “They normally have a 50-year anticipated life, and we’re trying to get them inspected at or before 80 percent of that — 40 years,” Barnes says. Upgrading the smaller 6-inch lines to 8-inch is another challenge.

As with most sewer systems, infiltration and inflow can be an issue. “We address I&I all the time,” Barnes says. “We keep attacking it as our lines get older.”

CSAMP to the rescue

Faced with such a far-flung sewer system, and the variety of pipe ages, sizes, and materials of construction, the CSAMP has been a godsend for Johnson County Wastewater.

It was developed five years ago by the agency in conjunction with its engineering consultant, HDR. The program pulls together all the mainte-

nance, repair, and replacement needs; prioritizes the needs based on criticality of the required work; and recommends appropriate next actions for each pipe. It features a decision-logic algorithm that matches the agency’s business logic and renewal strategies.

At the heart of the CSAMP is the data that resides on the agency’s Lucity enterprise asset management software. It’s updated on a weekly basis from the department’s collected CCTV data. The pipe condition data are uploaded, the model runs over the weekend, and it reports assess risk ratings and what actions are required. Data are coordinated with the agency’s computerized maintenance management system and GIS mapping systems.

“During the development of the CSAMP in workshops with HDR, we developed a needs list of 131 initiatives,” Beane says. “We met with all of the different groups that would be impacted to refine the approach and develop the implementation plan for those improvement initiatives. We said, ‘Here’s what we need to achieve.’ It was hard work by everybody.

“Obviously,” Beane continues, “we couldn’t do all of these at once.” But by continuing to inspect the sewers, identifying critical needs, assessing risks, and recommending next actions, the CSAMP has accomplished a lot in the last five

years — a period Beane calls a “journey.”

“Our CSAMP is not unique. All utilities from Fort Worth (Texas) to Kansas City face similar challenges,” he notes. “It’s based on our system and our specific needs. It’s a never-ending continuous improvement program of determining how we get better at what we’re doing.”

He points to a number of specific accomplishments: “It’s helped us develop a long-term plan and shored up our capital improvements program. It prioritizes and details what we’re asking of our ratepayers. We try not to overburden them through our requests for repairs.”

The CSAMP also helps in the agency’s communications with its board by identifying and justifying critical projects. Furthermore, it has helped Johnson County Wastewater modify cleaning schedules, minimize failures, track specific performance indicators, and transfer knowledge to new employees (see sidebar).

Prior to adopting the CSAMP, Johnson County Wastewater had only completed inspections on approximately 20 percent of its sewer system, concentrating on likely high-risk areas. The program has also allowed Johnson County Wastewater to validate it was in full compliance with its line cleaning risk management guidelines in 2014. And it tracks compliance each year.

Repair and replace

The CSAMP’s ability to identify and recommend specific repairs and replacements may be its most valuable feature. By analyzing thousands of observations on a weekly basis, it recommends repairs or replacements where needed, as well as the criticality of the project.

“Based on the defect and the seriousness of it, we can determine what type of repair a pipe needs — a pipe patch short liner, a full CIPP liner, or open-cut excavation,” Barnes says. “Is it a small hole, or a crack, or a defect that could lead to total collapse?”

He says patches are applied by Johnson County Wastewater staff to 5-foot sections having just one defect. His team uses trailer-mounted Trelleborg Pipe Seals liner systems to make the repairs. CIPP is also the primary repair option for longer sections of pipe. The current contractor is SAK Construction. “We bid out a five-year contract for pipe rehabilitation and typically get good pricing,” Beane says.



Sean Kelley uses an Envirosight VeriSight Pro camera to inspect a spot liner after installation.

When a pipe wall is deformed or missing and the pipe is losing capacity, the open-cut method may be called for.

Much of the repair work is done in-house, but outside firms are used when the work is too deep for Johnson County Wastewater equipment or when access to the damaged section is difficult.

The data collected through the line cleaning efforts are equally vital. “We are able to generate consistent findings on sludge, roots, what kind of material we are dealing with, and if we are on the right cleaning schedule,” Barnes says. “We don’t want to waste resources and possibly degrade the pipe by cleaning it unnecessarily.”

In other cases, the program reveals a sound pipe and puts it in a monitoring-only status.

That’s important in the overall objective of the CSAMP at Johnson County Wastewater. “We want to maximize the life of our assets, especially our old clay pipe,” Beane says. “With CSAMP, we’ve found out it’s actually in better shape than we expected. If we had TV tapes from 10 or 20 years ago, we’d have even better understanding of the risk in our system.”

Even so, Beane says the program has helped Johnson County Wastewater save money in contracted cleaning and CCTV expenses.

In the end, it’s all about cost. “When we started, we had a worst-case budgetary backlog of some \$400 million,” Beane says. “But we’ve

“We don’t want to waste resources and possibly degrade the pipe by cleaning it unnecessarily.”

Joe Barnes

actually been spending between \$5 and \$7 million a year by not doing work except when it is needed. Eventually we’ll have to renew or replace all our pipes, but not all at once.

“By having data to understand our conditions and the rate they are deteriorating, we have a high level of confidence in what we need to be spending.” ♦

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To learn more about Johnson County (Kansas) Wastewater, take a look at a video profile at www.mswmag.com.

FIGHTING WINTER'S CHILL



Ron Slade of the Cynthiana (Kansas) water distribution team demonstrates how a kerosene heater can be used to divert heat in any direction, such as to thaw out frozen meter jars.



The Cynthiana, Kentucky, team outfitted a kerosene heater with a section of stovepipe that can be rotated to direct the heat to where it is needed.

unit with a capacity of 125,000 Btu/h with a 12-inch section of 28-gauge stovepipe attached to the heater's internal frame. He then added a flexible elbow and another 18-inch stovepipe section.

"We use wooden handles to rotate the elbow and wooden knobs to fasten the removable pipe section when transporting the heater," Slade says. "It rolls on wheels. We haul it around with an electric generator, and we're in business. It's basically a portable furnace."

A cleverly rigged portable kerosene heater helps Kentucky crews handle freeze-ups in water meters and services

By *Ted J. Rulseh*

The winter of 2013-14 was brutal, even as far south as Kentucky. The winter of 2017-18 was almost as harsh.

For Ron Slade and the water distribution team in the city of Cynthiana (population 6,500), extreme cold meant freeze-ups in the system and lots of calls from customers. In 2013-14, the team thawed out frozen components using torches and heat guns, with limited efficiency. Now, they deal with freezes much more effectively using a specially rigged kerosene heater.

In the vortex

"The winter of 2013-14 was the worst I've seen in 23 years," recalls Slade, assistant supervisor of maintenance. "The polar vortex came through here, and we had 118 customer service calls for frozen meters and services.

"We've used any number of systems over the years to deal with freezes. The biggest problem was getting heat, which rises, down into our underground pits and trenches. We would rig cardboard chutes and plywood walls trying to deflect the elusive heat to where we needed it."

After the winter of 2013-14, Slade turned to a kerosene-fueled heater (a type often called salamander or torpedo heaters). He rigged a DuraHeat

Delivering the heat

The pipe carrying the heat can be rotated 360 degrees so that crew members can easily force heated air down into leak sites and underground pits. "Whether dealing with water leaks or frozen meters, we can deal with

"Whether dealing with water leaks or frozen meters, we can deal with the pipe work and keep the area warm for our mechanics as well."

Ron Slade

the pipe work and keep the area warm for our mechanics as well," Slade observes. "The rig has been most useful over the last few years, and we've had rave reviews from all who have used it or seen it in action."

Earlier this year, the heater came in handy in dealing with a freeze-up in a pump room at the water treatment plant, but most of the time, the unit is used out in the field. It came in handy on many January days this year when temperatures dropped into the single digits.

"Workers at other water utilities might enjoy the concept of heat control during cold weather," Slade says. "I tell my guys that we will always examine good ideas, even if in the end we don't use them." ♦

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STRAIGHT FROM THE SOURCE



Washington utility takes an unfiltered approach to delivering the best water

By Giles Lambertson



PROFILE:
Bremerton
(Washington)
Water Department

CUSTOMERS:
56,000 customers in city/county

SERVICE AREA:
30-plus square miles

WATER VOLUME:
6.5 mgd processed

INFRASTRUCTURE:
300 miles of water mains

EMPLOYEES:
38 (12 in water resource division)

WEBSITE:
www.ci.bremerton.wa.us/218/public-works-utilities

People stay in certain places for all kinds of reasons. For Kathleen Cahall, it's all about the water.

But it's not the beauty of Puget Sound that has kept Cahall in Bremerton, Washington, for nearly three decades, but rather the pure, unadulterated supply of freshwater that flows into the community.

Cahall became city water resources manager in 1991 and just retired at the end of June.

"I do like to stay in places for a while, and I

was hoping it would be the kind of work that I could do for a long time," she says. "But, really, Bremerton has remarkable water, which really is why I stayed. Lots of people worked very hard over the years to protect this water."

What makes Bremerton's water special is that it is delivered to customers unfiltered. Only a handful of U.S. water suppliers have regulatory permission to distribute water to customers without first running it through a filtration plant. Bremerton qualifies principally because the city



City of Bremerton Water Resources environmental technician Lisa Campbell takes a water sample from the Union River Reservoir near Casad Dam with a Van Dorn sampler. (Photography by Stephen Brashear)



City of Bremerton Water Resources Manager Kathleen Cahall tests water at the Advanced Water Treatment Facility.

the city. The water's only treatment is in facilities that disinfect it using chlorine and ultraviolet light. Cahall has described the city's tap water supply as "basically just drinking the rainwater."

To accomplish this state of "filtration avoidance," city police officers rigorously patrol the 3,000-acre watershed immediately surrounding the reservoir. The city owns that immediate watershed acreage and some 5,000 contiguous acres, an acquisition effort dating to the 1920s. Surveillance cameras keep watch in the area nearest the reservoir for trespassers, such as bikers, hikers, and hunters. Prosecution is a very real possibility for anyone who enters the area.

"We want the best water quality we can achieve by protecting the watershed," Cahall says. In recent years, water quality has dropped in some other Washington communities, falling to a level requiring filtration. "We have that in our thoughts. Right now we can meet the regulations for quality. Sometime in the future there likely will be a treatment plant, but we want to avoid that for as long as we can."

In 2017, the American Water Works Association recognized the water utility's accomplishment and gave the city its Exemplary Source Water Protection Award. Cahall says that the city's ownership of the watershed "is one of the most important investments the city has made to ensure the vitality of the community."

This long-term investment is what has allowed the city to avoid building a multimillion-dollar filtration plant. Not building such a plant is one reason that water rates in Bremerton have remained relatively low. Construction and operation of a treatment facility certainly will mean

"We want the best water quality we can achieve by protecting the watershed."

Kathleen Cahall

higher rates to pay for it. In fact, a study some years ago estimated that rates could double if a plant becomes part of the system. Currently, residential water users in Bremerton pay \$2.34 per hundred cubic feet. The Seattle residential rate is on top of \$5 per hundred cubic feet.

Rates have risen gradually over the years, of course. "We want to have as little impact as we can on our customers," Cahall says, so incremental increases are the rule along with customer education. "Working with our public is a priority, using social media as effectively as we can. We prepare video programming about the water system for showing on local television. Our latest video highlights the watershed."

Managing infrastructure

The absence of a filtration plant might seem a bit precarious. But even a sudden and large-scale contamination of the reservoir wouldn't leave Bremerton without water. Cahall says ultraviolet and chlorine treatment facilities would be the first line of defense in such an emergency. While three-quarters of daily water use in the Bremerton system is pulled from the reservoir, the city has 13 active wells and three more in development. In the event of a dramatic increase in turbidity, supply would be temporarily switched from the reservoir to the wells. "We are constantly monitoring the water supply so we would have some early

has arduously protected the watershed around its primary water source.

Source protection

Three-quarters of the city's potable water flows into the system from a 1.4 billion-gallon reservoir behind Casad Dam, which was erected in 1957 across the Union River. The imposing concrete arched structure is 600 feet higher in elevation than Bremerton, which sits near sea level, so the 6.5 million gallons released daily is gravity fed to

“Working with our public is a priority, using social media as effectively as we can. We prepare video programming about the water system for showing on local television.”

Kathleen Cahall



The City of Bremerton Water Resources staff includes (from left) environmental technician Teresa Smith, senior water operator Forrest Duthie, utility instrumentation and control specialist Tom Baker, environmental technician Lisa Campbell, manager Kathleen Cahall, lead operator Chad Hantelman, water operator Camellia McCool, water operator Kari Sweeney, senior water operator Robb Short, and stormwater permit coordinator Chance Berthiaume at the McKenna Falls Intake Facility.

ROLLING WITH NEW REGULATIONS

Kathleen Cahall says the biggest change over her decades of work for the city of Bremerton, Washington, has been the volume of red tape. “I would say the biggest difference between 1991 and now is the complexity of the regulations,” she says.

Cahall spent 27 years as the city water resources manager in Bremerton and retired from the position in June 2017.

When she began working in Bremerton in 1991 after 11 years in wastewater treatment positions in Kitsap County and elsewhere, the federal EPA had been on the books for 21 years. The Safe Drinking Water Act was already 17 years old and the Clean Water Act in place for 14 years. “But a lot of water treatment regulations were just starting, some new rules just implemented,” she says. “They have been building in their complexity ever since. It has been a challenge to be in compliance, because the regulations sometimes conflict.”

New regulations in 1991 included the Surface Water Treatment Rule, the Total Coliform Rule, and the Lead and Copper Rule. “These regulations led Bremerton to make improvements in the early 1990s to our surface water system, to enhance already-strict watershed restrictions so we could remain unfiltered, and to evaluate and install corrosion control, which was completed in 1999.” In subsequent years, several generations of federal amendments and additions followed, including Stage 1 and 2 Disinfection Byproduct Rules and Consumer Confidence Reporting.

She describes one of her management tasks as “coordinating compliance.” Yet Cahall does not express impatience with her profession’s highly regulated environment. “I understand why it is that way,” she says. “But the measure of our job has become more complex.”

An outsider might wonder if the strict oversight from state and federal agencies has, in fact, impeded the work of people trying to keep water safe for drinking. Cahall doesn’t think so. “I think we understand the issues more and more and appreciate the regulations that protect public health and make our water even better.”

“We are very fortunate. We are located far from any influence of urban areas. There is no influence of urbanization on our water source, the headwaters of the Union River.”

Kathleen Cahall

warning of a catastrophe.”

The water system serves 56,000 customers in and around the city, about a third of Kitsap County’s residents. Some 300 miles of water mains distribute the resource across a service area of about 35 square miles. A year ago, the Bremerton water system celebrated a century of service, its earliest waterlines being fabricated of wood. Today the average age of water pipe in the ground is 42 years and 45 percent of it is cast iron.

The city’s water and wastewater infrastructure was expanded and upgraded in the 1940s when the city’s population shot from 10,000 to 80,000 in a matter of months. Employment at Bremerton’s Puget Sound Naval Shipyard had quickly ratcheted up in support of World War II military efforts. At war’s end, the city’s population contracted to less than 30,000 residents before settling in at about 40,000. The population decline eased some of the strain on the underground water infrastructure. Cahall says most waterline replacement work today is done in conjunction with street repair and replacement projects, with city crews installing mains and meters.

Unique identity

Bremerton is located west of Seattle across Puget Sound on the Kitsap Peninsula. The Port Washington Narrows runs through the city. Surface water is therefore plentiful in the urban area. The Naval shipyard employs 12,000 civilians and the facility is the major user of city water. The yard does maintenance work on U.S. Navy surface ships and submarines and other tasks that together utilize about a million gallons of water each day out of a daily flow of 6.5 million gallons. The water system has enough capacity in reserve, according to Cahall, to accommodate another high-water volume industry should it come to town.

Two ferries operate across the Puget Sound between Bremerton, the largest city in Kitsap County, and much-larger Seattle. There is “a fair amount” of commuting between the cities, Cahall says. “Bremerton is not necessarily a suburb. We have a separate identity from Seattle. There are a lot of jobs here locally.”

Bremerton’s proximity to Seattle is not at all evident in the condition of its water supply. The city has insulated itself — so far — from the effects of Seattle’s urban traffic and population density and contaminant potential. “We are very fortunate,”



Senior operator Harry Repine checks flow meter readings on 24-inch pipes at Bremerton’s Advanced Disinfection Facility.



Utility instrumentation and control specialist Tom Baker cleans a fiber optic cable in a utility room next to the Casad Dam.

Cahall says. “We are located far from any influence of urban areas. There is no influence of urbanization on our water source, the headwaters of the Union River.”

The visionary decision by the city’s founders — notably, C.C. Casad, for whom the city’s dam is named — to incrementally buy thousands of acres of undeveloped land surrounding the river and then to build the dam that harnessed all that protected water continues to pay dividends. “It was his planning and foresight that led to the construction of the dam and protection of the watershed,” Cahall says. “Not many cities own their own large dam.”

Cahall and the 11 other professionals in the

city’s water resources division are building on the legacy of Casad and other city leaders — though actual building is at a low point. Six years ago, the city built an advanced disinfection facility using funds from the Obama administration’s stimulus fund. A year ago, the city installed a \$1.5 million cover on a 10-million-gallon treated water reservoir, the city’s largest, with the state picking up the tab.

“We’re in a good place right now in terms of infrastructure,” Cahall says. “We’ve done a lot of projects in the last decade, especially adding disinfectant activity. The city has done a good job of keeping up.” ♦

GET INVOLVED

NASSCO's online tool makes contacting your congressional leaders fast and easy

By Sheila Joy

Back in July we shared information regarding President Donald Trump's proposed infrastructure package. Designed to generate \$1.5 trillion in new infrastructure investments, only \$200 billion will come from federal funding sources. The remaining will be funded from state, local and private sources.

In response to this plan, NASSCO has identified three main areas of focus:

1. Strengthen asset management requirements and funding.
2. Maintain regulatory compliance enforcement.
3. Increase funding for collections and conveyance infrastructure.

You may be wondering how you can personally get involved. You may also be wondering how to quickly identify your congressional leaders and know what to say to provide valuable (and convincing) information. You are not alone, so NASSCO has made it easy for you:

1. Visit www.nassco.org, and select the "Government Relations" option under "Get Involved."

2. Click the TAKE ACTION button.
3. Enter your home address and zip code.
4. Complete all required contact information.
5. You will see the names and photos of your representatives. The letter has been written for you and will pre-populate with each representative's name, as well as yours, before sending each email. You have the option to change the contents of the letter if you so desire, but for most it's good to go as is.
6. Click the SEND button and your emails will be on their way!

This online tool also has a "Bills" tab where you can learn more about key congressional legislation, find upcoming elections in your state, read NASSCO's Policy Position Document, find your elected officials, and so much more. Please join us as our industry comes together to have a voice for our communities and the need to fund the rehabilitation and repair of aging underground infrastructure. ♦

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

Sheila Joy is executive director of NASSCO. She can be reached at director@nassco.org.



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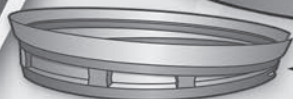
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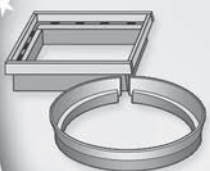
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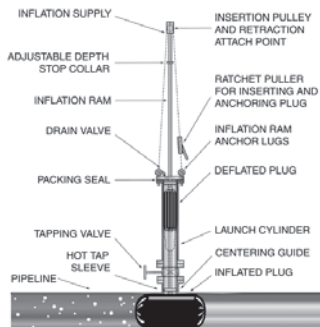
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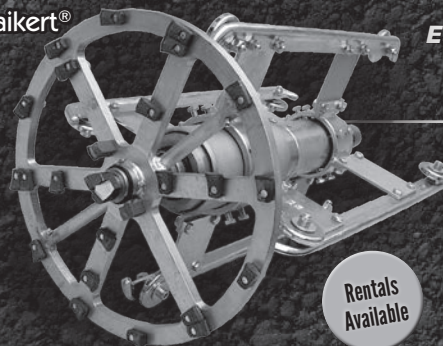
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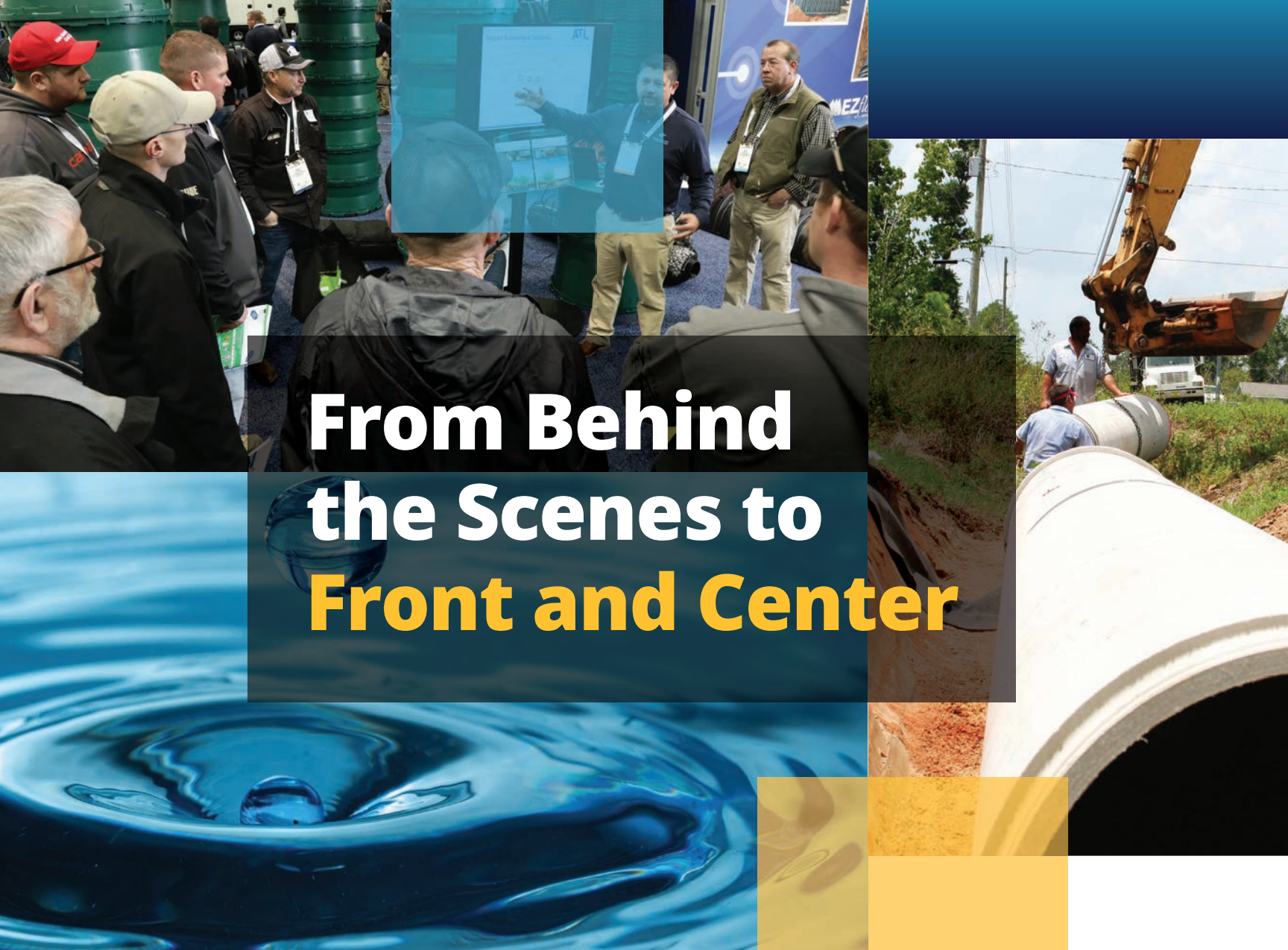


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This Dual-Engine Combo Truck Is Making Waves in the Industry



Vac-Con knows a thing or two about innovation. Since 1986, the Vac-Con team has kept the industry on its toes with evolving products that push the envelope. Just this year, Vac-Con released its Titan Dual Engine Combination Machine with a product launch to the market at the 2018 WWETT Show in Indianapolis. The key drivers behind this design were all about efficiency and power — two components any operator would consider critical on the job.

The upgrades featured on the Titan revolutionize the standard dual-engine combination machine, offering averages of 44 percent fuel savings and 16 to 30 percent more horsepower.

The Titan dual-engine drive system is equipped with the Aeroboost Q Drive, which lowers noise emissions and substantially reduces fuel consumption without sacrificing power. Enhanced twin cyclonic separators — one located on each side of the truck — optimize efficiency and filtration, while the Aeroboost three-stage fan balances airflow resulting in less turbulence and more power.

The Omnibus Precision Power control system provides operators with a wireless remote that performs all machine functions with the press of a button, improving usability and efficiency.

“The Titan is designed to bring a new kind of power to users,” says company President Darrell LeSage. “Streamlined features engineered for optimal efficiency ensure that the power of our systems is elevated, while boasting a drastic decrease in noise emissions and reduction in fuel consumption.”

PUTTING THE TITAN TO THE TEST

The Titan has been well received by operators who were ready to put the machine to the test in its natural habitat, according to LeSage. One of these customers, Carthage Water & Electric Plant in Carthage, Missouri, bought its Titan at just the right time.

CW&EP has become very active in the maintenance and rehabilitation of its collections systems that provide service to over 14,000 residents. The Titan will take center stage as CW&EP begins to develop and implement these programs across its facilities.

“The capabilities of the Titan will play a critical role in these programs along with its many other uses,” says Jason Choate, director of water services. “I’m amazed at how much this truck has improved our overall efficiency in all aspects of our operation.”

The dual-engine design and upgraded components that maximize fuel savings were an important purchase point, according to distribution/collections manager Cecil Howard. “I preferred the Vac-Con combo truck to others in the industry because of its 50 gpm at 3,000 psi pump. This lets our crews spend more time jetting sewer lines and less time filling up the truck. While you are jetting, the chassis motor is turned off, and you use the auxiliary motor to run the jetter. This lets you stand in front of the machine without all of the excessive noise, while realizing a significant fuel savings.” ♦



Vac-Con has manufactured more than 8,100 custom-built, truck-mounted machines to serve public and private environmental markets globally since its

inception in 1986. Located in Green Cove Springs, Florida, it is one of the largest producers of sewer-cleaning equipment in North America. Vac-Con employs more than 300 people at its single location and is 100 percent employee-owned, enabling a focused work environment, onsite feedback, and around-the-clock innovation and testing.

904-284-4200 | vns@vac-con.com | www.vac-con.com

Luckinbill's Adaptable CCTV Skills Serve Communities Large and Small

A sewer drainage issue is the last thing you want in a surgical center. When Carl Fielder, video inspection coordinator for Luckinbill Inc., visited a clinic to inspect its drain system, his team was asked to wear paper coats, booties, goggles and hair caps. The team's ROVER X inspection crawler received a deep clean and was covered in plastic wrap.

Luckinbill hadn't been the clinic's first call. A local plumber had already broken a snake in the problem pipe. But Fielder, his expert team and their nimble ROVER X were up to the task. They soon found the snake, and further down the line they located the source of all their problems: A broken pipe.

ONE COMPANY, MANY SOLUTIONS

This kind of project is all in a day's work for the Luckinbill Inc. team. Established in 1939, the company provides a variety of commercial HVAC and plumbing; electrical and mechanical contracting; utility work; industrial coatings; and building-control systems services to Oklahoma and surrounding states.

Their motto is "one company, many solutions," and the firm's versatility depends on the cooperation and adaptability of its team.

"The guys here, we're all cross-trained," says Fielder. "Even Dennis — the company owner whose father founded it nearly 80 years ago — will go out in a hard hat and yellow vest."

In addition to helping larger towns and cities, Luckinbill provides services to Oklahoma's small communities, says Fielder. "Some of these little towns have only two people on staff — the city manager is also the local police officer, who's also reading water meters. They don't get to have these things done often. We find ways to make inspection services available to them."

EXPECTING THE UNEXPECTED

The company runs two camera systems full time, and Fielder's friendly with EnviroSight's service team as well as the experts at Key Equipment, EnviroSight's regional sales partner.

"I've seen other systems out there, and they're just not user-friendly," says Fielder. "It's great to take ROVER to an area where they're running something else. They see us pop on the ROVER X's wheels, lower it down, and they just stand there in amazement."

While he liked the VC200, the updated VC500 controller changed everything. "It's really effortless."

Fielder and his team work a lot of straight contract jobs, and they coordinate with the Luckinbill jetter team to ensure pipe cleanliness. Not all their work is run-of-the-mill sewer CCTV though. One trip brought them to a grain silo, where the owners needed assistance finding a crack in the wall of a holding area.

Once, in a panhandle town, they opened a sewer and discovered the flow was cotton-candy pink and smelled terrible. "The fire department came out in full gear," Fielder says. "They thought we'd been contaminated with meth residue, but finally realized a hardware store was dumping old paint and lacquers. You haven't lived until you've been quarantined for three hours because of a sewer camera."



SERVICE ABOVE ALL

Whether they're helping small towns ensure residents have safe wastewater systems or providing CCTV in an unlikely environment, Fielder's crew provides the best possible service. Its ability to adapt to unique circumstances, and its passion for the communities they serve, has ensured it will continue to expand its reach in Oklahoma and beyond. ♦

EnviroSight

EnviroSight LLC of Randolph, New Jersey, provides sewer cameras and other pipeline inspection solutions to municipalities, contractors, departments of transportation and civil/environmental engineers.

866-936-8476 | mail@envirosight.com | www.envirosight.com

Recycle JetVac Tackles Municipality's Major Grease Problem

What can you do when you've got a problem like a Southern California municipality recently faced, where numerous sanitary lines were plagued by a considerable amount of grease? Grease is a hard problem to keep up with, especially with build-up over time, requiring more frequent cleaning than nongreasy sanitary lines.

The amount of time it takes to ensure proper line cleaning limited this municipality from properly maintaining the remaining lines in its area. Traditional combo sewer trucks ran out of water within 20-25 minutes. Refilling the truck several times makes the job more demanding and labor intensive — not to mention the overwhelming amount of water used in the process.

A SOLUTION TO THE PROBLEM

GapVax has partnered with a German-based company, Wiedemann Enviro-Tec, to bring a revolutionary technology to the United States. This technology is in the form of a water recycling truck that has the ability to handle routine grease and grit applications.

The system is built around a nine-stage recycling system that allows the unit to reuse the existing recovered water in the sanitary or storm lines for cleaning.

It uses cyclone filtration along with sedimentation to remove grease, grit and debris from the existing recovered water. The recycling process physically cleans the water, allowing for the reuse of the water through a high-pressure system. With this ability, there are no existing filters that can be clogged or damaged during the recycling process.

THE RESULT

The GapVax-Wiedemann Recycle JetVac tackled the Southern California job head-on with its ability to continuously jet heavily greased lines without any blockages within its system. The nonstop operation allowed the crew to work until the line was fully cleaned.

There was no need to find a water source and no need to refill. After running the line and cleaning it thoroughly, the operators from the municipi-



ality were impressed with the cleaning capability of the GapVax. Their lines were free from grease in much less time than they had anticipated.

The cleanup at the end of the day on the truck was easy. The recycling system broke down the grease and no build up was left behind in either the water tanks or debris tank. ♦



GapVax Inc. is a leading manufacturer of industrial and municipal vacuum equipment. Founded in 1989, GapVax specializes in custom-built equipment that is easy to operate and maintain. Superior performance and high-quality components are priorities for the company, which is located in Johnstown, Pennsylvania, with a secondary location in Deer Park, Texas, and a nationwide dealer network.

888-442-7829 | www.gapvax.com

Perma-Liner Launches New CIPP Resin

Durability, corrosion resistance and toughness are paramount in the CIPP industry, which is why the newest resin in Perma-Liner's catalog, Vinyl Ester, focuses on those very same qualities. The product is a result of industrial market demand and was launched by Perma-Liner in July.

When it comes to certain specific applications where fluid temperature is relatively higher, resin has an advantage over epoxy. The demanding needs of many applications including high-pressure or corrosive environments are also met with the Perma-Liner Vinyl Ester.

Its molecular architecture delivers a number of benefits, including superior mechanical properties and excellent catalyzed pot life. The Vinyl Ester also meets the requirements of the California Greenbook picklejar test. Another key benefit is its low cost.

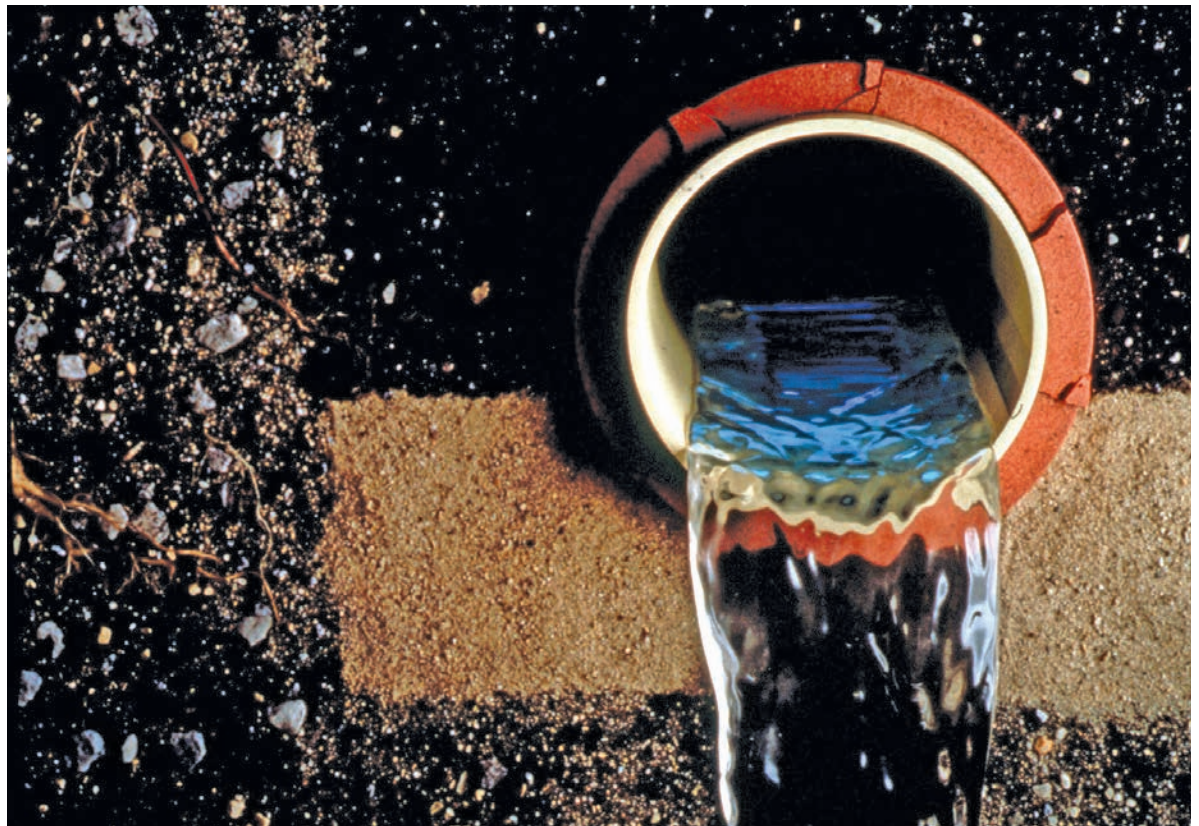
Perma-Liner's Hybrid Vinyl Ester resin is an eco-friendly option with a high-rigid polymer backbone. Some key features to this resin include snap cure, good catalyzed stability, high-temperature performance, and resistance to sag and draining around vertical surfaces and reinforcement. It has no styrene and no volatile organic compounds.

Perma-Liner's proprietary two-part silicate resin system is highly chemical and heat resistant and self-extinguishing. This resin can be used in critical areas such as the chemical industry, airports, tunnels, municipal utilities, sewer laterals and more.

While this silicate resin can be used in a wide range of ambient temperatures with predictable and consistent cure times, it also has negligible shrinkage and superior bonding.

All three resins listed above cure in under three hours and have a pot life of 25 minutes, or can be adjusted as per project requirements. With their quick cure time, it's possible for crews to complete multiple repairs in a single day.

Perma-Liner materials have been tested to an installed 50-year life and come with a 10-year manufacturer's warranty. With Perma-Liner's trenchless rehabilitation equipment and materials, the benefits to a community or homeowner — as well as to contractors and government officials — are greater than a typical dig and replace, according to a company spokesperson.



EVOLUTION OF TRENCHLESS TECHNOLOGY

For nearly 20 years, Perma-Liner Industries has developed and evolved trenchless technology and materials to benefit municipalities and contractors. The company has a large distribution network of certified installers nationwide and is a leader in the 2- to 54-inch CIPP industry.

“Our experience in the CIPP industry has allowed us to design, patent and manufacture state-of-the-art technology,” says the company spokesperson. “Based on the design of the equipment and materials, Perma-Liner has the ability to offer compact, user-friendly systems while providing hands-on training and 24/7 support throughout the business partnership.”

The company's products range from liner material and spot-repair system to heat-assist equipment and lining systems, according to the spokesperson. “Another material we offer is our aforementioned resin, particularly our environmentally friendly Vinyl Hybrid Snap Cure system, high-performance Vinyl Ester and styrene-free silicate.” ♦



Perma-Liner Liner is a leading manufacturer and supplier of trenchless pipeline rehabilitation equipment and materials in North America. Since 1999, the company has developed systems to rehabilitate existing sewer systems without excavation. **1-866-336-2568 | www.perma-liner.com**

Vactor 2100i Combo Sewer Cleaner Delivers Highly Connected Operator Experience

Built around the operator and designed for public utilities and professional contractors cleaning wastewater and sanitary systems, the Vactor 2100i combination sewer cleaner features an intuitive one-touch control system; superior vacuum performance; a high level of operator comfort and control; and good fuel, air routing and filtration efficiency.

INTUITOUCH CONTROLS MAXIMIZE EFFICIENCY

The successor to the popular Vactor 2100 Plus combination sewer cleaner, the 2100i redefines simplicity with Vactor's exclusive IntuiTouch control system that delivers advanced, yet intuitive controls designed to maximize operator efficiency. The IntuiTouch system includes both the in-cab and operator's stations.

The in-cab one-touch engagement activates the PTO and transfer case, allowing the operator to quickly gain control of all operating systems with the simple push of a button.

The operator control station design allows the operator to easily focus on the work at hand. All controls are intuitively placed to provide the operator with easy reach to boom, hose reel, water pressure and other system functions. A 7-inch dashboard displays data on water pressure and flow, hose footage, chassis rpm, vacuum, and water and debris tank level. The articulating controls adjust to the desired location for the operator's optimal placement.

BOOM OPTION IS A TIMESAVER

Available as an option, the RDB 1015 rapid-deployment boom telescopes 10 feet out and extends the debris hose down 15 feet into catch basins, manholes or lift stations, speeding work. In many cases it eliminates the need to assemble and disassemble additional debris tubes. Without the added physical exertion and time-consuming setup and teardown steps, the operator is more productive on the job.

The RDB 1015 boom can also maintain a lower profile, which allows the combination sewer cleaner to clear low overhead obstacles and still reach needed depths. The rapid-deployment boom can stow with the catch basin tube attached on the truck, making it even easier to begin work immediately.



OTHER FEATURES

The dual-action, single-piston Vactor Jet Rodder water pump is available with up to 3,000 psi. The only pump originally designed and perfected over 50 years for sewer cleaning, the Vactor Jet Rodder delivers powerful "jackhammer" action for difficult blockages and steep climbs.

Designed for pulling material long distances, the Vactor 2100i is available in a positive displacement configuration with blower offerings providing inlet volumes in excess of 5,000 cfm and 18 Hg vacuum.

Vactor's fan system is designed for all-around sanitary and storm sewer cleaning. Whether equipped with a single- or dual-fan system, the lightweight aluminum fan provides superior performance to handle the toughest jobs. The unique system also minimizes energy consumption while maximizing performance. ♦



Vactor Manufacturing is based in Streator, Illinois. The company is an industry leader in sewer and catch basin cleaners, vacuum excavators and industrial vacuum loaders featuring innovative technology and custom configurable designs. **815-672-3171 | www.vactor.com | sales@vactor.com**

Effortless Integration and Customer Support Drive Success for OWASA

The Orange Water and Sewer Authority had never been satisfied by its sewer assessment and asset management program. As a special purpose government commission, it relies on service fees, not tax dollars, to provide water, sewer and reclaimed water services to select parts of Orange County, North Carolina, including the University of North Carolina at Chapel Hill. The organization manages a complex infrastructure, including 343 miles of sewer pipe and some 22,000 water connections serving a population of approximately 80,000 people.

Without adequate tools, OWASA's experienced team struggled to maintain this network, and its software didn't fit the group's work style. OWASA's leadership was ready to take a hard look at its assessment system and find new ways to improve workflow. The utility's needs were specific — it was heavily invested in its GIS system, and it would have to find a tool that would seamlessly integrate with Cityworks. When the OWASA team saw a live demo of WinCan's versatility and effortless integration at a Cityworks conference, they knew they had their answer.



SUPPORT FROM THE START

The WinCan service group communicated clearly with the team in North Carolina to ensure it had everything it needed to optimize WinCan VX's effectiveness. The thorough preparation meant that when WinCan pros arrived in North Carolina for the implementation, they could get to work rather than sit in a conference room tinkering with the back end.

"Not all vendors do that," says Ryan Byars, database administrator at OWASA. "It takes time to make sure everything is set first. But it meant that the WinCan reps could really get in front of the end users once they were here."

OWASA also procured a new purpose-built van and camera to launch with the new software.

REACHING A NEW STANDARD OF PERFORMANCE

OWASA's camera operators were quick to share their satisfaction with the new tools. The software was intuitive and the integration smooth. Cityworks CCTV inspection records were automatically populated with data from WinCan, and the system wrote file paths to media stored on the network drive. In the past, the team had had trouble meeting reporting metrics and goals, but a recent review revealed they are currently ahead of schedule.

The new software has also made collaboration easier. OWASA relies on contractors for some of its CCTV operations. Previously, the OWASA team

manually entered inspection information from contractors, but now the data is submitted via WinCan. And because the software aligns neatly with Cityworks, integrating that information into larger infrastructure records is just as easy.

Customer service continues to stand out as a highlight of OWASA's engagement with WinCan. As Byars explains, WinCan is unique among his vendors. "WinCan's team shared their business cards, so I can call a specific person to ask a question or get an update. When we were working to meet our prerequisites, we scheduled a session with a developer and fixed the problem on the spot. They're hands on, and that's how you get things done."

As a nonprofit agency, OWASA's small tech team has a long list of responsibilities. In the best possible way, says Byars, "WinCan has just faded into the background. It just works." ♦



WinCan was the original pipe inspection and asset management software when it entered the market in 1990. WinCan transforms raw inspection data into the intelligence municipalities and contractors need to make critical maintenance decisions.

877-626-8386 | www.wincan.com

Rugged Tuff-Tube Withstands Vacuum Excavation Work in Severe Conditions



Whether it's sewer cleaning, industrial applications or hydroexcavation, Tuff-Tube vacuum tubing manufactured by American Sewer Parts and Cleaning performs well in difficult applications. Built in the U.S., the Tuff-Tube is constructed using American-made extruded 6063-T6 aluminum alloy, ensuring good resistance to wear and dents.

It is now produced in 3-, 4-, 6- and 8-inch sizes and numerous configurations, including Bandlock, flanged, camlock, catch basin and hydroexcavation ends. The 3- and 4-inch options are ideal for valve box cleaning and other hard-to-reach places.

PERFORMANCE IN HIGHLY ABRASIVE ENVIRONMENTS

The Tuff-Tube vacuum tube is used to vacuum sand, pieces of pipe, grit, rocks, water, concrete, dirt and organics. This mixture is very abrasive to the interior of the vacuum tube, to say the least, not to mention the bumping and banging the tube receives on a steel manhole frame when entering a manhole.

In wear- and dent-resistance tests, the Tuff-Tube displayed an ability to withstand highly abrasive environments for longer periods of time than 0.072-inch and 0.090-inch 3004-H22 irrigation tubing.

Tuff-Tube also is heat-treated, which means that over time, it becomes work-hardened, prolonging its time in the field.

It has a material hardness of C15 to C16 on a Rockwell scale and a tensile strength of 35 KSI, which helps provide better ovality. In keeping the integrity of the tubing round, the Tuff-Tube helps ensure good airflow and vacuum efficiency.

HYDROEXCAVATION JOBS

The company's Zip Tube is a rugged hydroexcavation nozzle. It's built out of the same material as the Tuff-Tube with an external stainless steel water ring with 10 (6-inch model) or 12 (8-inch model) stainless steel replaceable jets that pulverize soil with water pressure. Soil is then removed by vacuum suction through the tube.

Zip Tube is available with a Vector-style 6-inch or 8-inch flange, Super Products, Bandlock, or Aquatech connection options. Features include an adjustable handle with a rubber bump stop tube inside the water ring. The bump stop protrudes forward to help safeguard the water ring jets against abrasion from rocks, debris and underground services. There is also a rubber safety tube that is attached to the exterior of the water ring that helps control the spray. ♦



American Sewer Parts and Cleaning Inc. is a leading manufacturer of pipeline cleaning, parts and equipment. The company produces

quality innovative products. A customer-focused global provider of industry-leading sewer cleaning accessories and parts, the company's product offerings have stood the test of time over its 40-plus years in business.

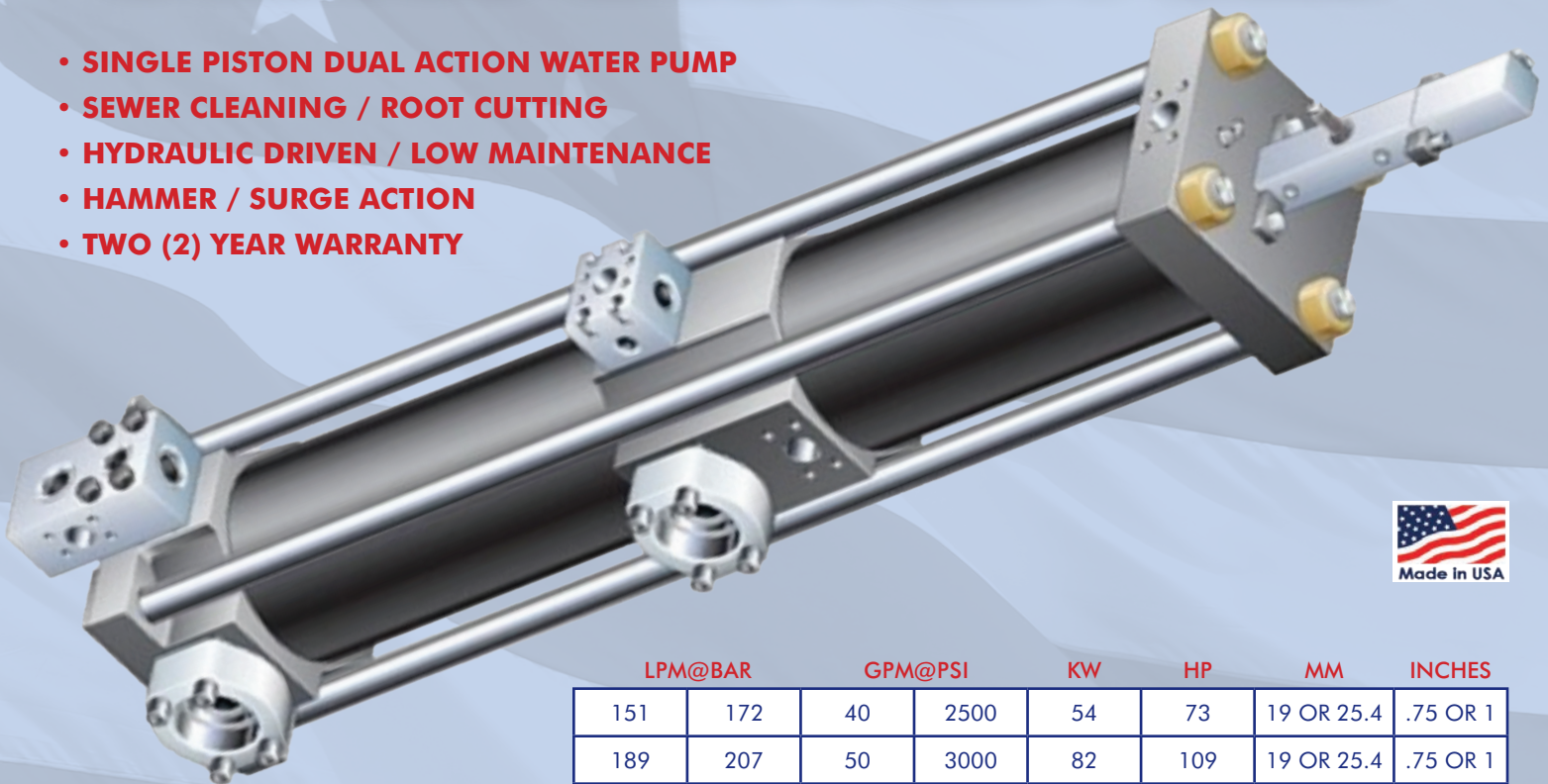
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- SINGLE PISTON DUAL ACTION WATER PUMP
- SEWER CLEANING / ROOT CUTTING
- HYDRAULIC DRIVEN / LOW MAINTENANCE
- HAMMER / SURGE ACTION
- TWO (2) YEAR WARRANTY



SPECIFICATIONS

- WEIGHT: 347 KG / 765 LBS BARE PUMP
- HTS CODE: 8413.50.0070 PCF: 18.68
- BORE: 20.396 CM / 8.03"
- STROKE: 39.37 CM / 15.5"
- DISPLACEMENT: 12.86 LITERS / 785³ INCHES
- STROKES PER MINUTE: 24 @ 303 LPM @ 138 BAR
24 @ 80 GPM @ 2000 PSI

| | LPM@BAR | GPM@PSI | KW | HP | MM | INCHES | | |
|--|---------|---------|-----|------|-----|--------|------------|----------|
| | 151 | 172 | 40 | 2500 | 54 | 73 | 19 OR 25.4 | .75 OR 1 |
| | 189 | 207 | 50 | 3000 | 82 | 109 | 19 OR 25.4 | .75 OR 1 |
| | 227 | 138 | 60 | 2000 | 65 | 88 | 25.4 | 1 |
| | 227 | 172 | 60 | 2500 | 82 | 109 | 25.4 | 1 |
| | 265 | 207 | 70 | 3000 | 114 | 153 | 25.4 | 1 |
| | 303 | 138 | 80 | 2000 | 87 | 117 | 25.4 | 1 |
| | 379 | 138 | 100 | 2000 | 109 | 146 | 31.75 | 1.25 |
| | 454 | 138 | 120 | 2000 | 131 | 175 | 31.75 | 1.25 |

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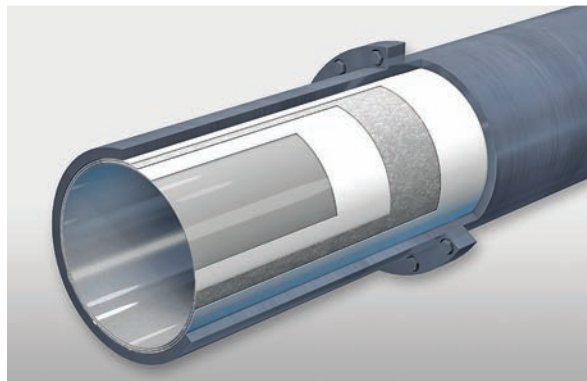
Applied Felts Now Offers Fiberglass-Reinforced Hybrid Liners

The market's ongoing demand for Applied Felts' classic felt liners has led the company's research and development team to stay a step ahead in CIPP hybrid solutions for gravity, pressure pipe and potable water systems. Using the same process to design and manufacture its classic felt liners, Applied Felts now reinforces quality felt materials with fiberglass in its new hybrid liners to add significant strength for both internal and external loads.

By combining fiberglass reinforcement with traditional felt liner material, the unique properties of each are blended and fully integrated to provide strong, robust liners. These new hybrid products perform and install in the same manner as non-reinforced liners, using similar procedures, equipment and techniques.

The benefits of fiberglass-reinforced liners include a matrix that reduces the thickness of liners, delivering significant resin savings and, therefore, overall lower material costs.

These liners typically weigh less, making transportation, handling and installation faster and easier. Stretching up to 10 percent to the existing pipe wall, Applied Felts hybrid liners ensure a close fit with faster impregnation rates and reduced installation times. Providing excellent chemical resistance against sewer effluent elements when combined with polyester, vinyl ester or epoxy resin systems, fiberglass-reinforced liners also provide superior physical and mechanical properties that meet or exceed ASTM testing.



locations in China, India, the United Kingdom and the United States, the company understands unique project requirements as well as cultural, geographic and installation challenges.

The Applied Felts technical support team works with customers in the lab, throughout the manufacturing process and on the job site to ensure all its products meet rigorous standards. Helping installers succeed in the field is paramount, and the company prioritizes

paying close attention to details, sourcing quality raw materials, using state-of-the-art manufacturing equipment, and rigorously testing with a 28-stage QA/QC program. Applied Felts also offers technical support and wet-out liners in some markets. ♦

A CLASSIC SOLUTION

Applied Felts' cornerstone products – custom-made CIPP felt liners – have been installed successfully around the world for nearly 50 years and continue to be a definitive solution for the rehabilitation of gravity sewer pipes.

The decades-long history of extending the life of sewer pipes using rigorously-tested Applied Felts CIPP liners has propelled the continued evolution of this product to meet today's demanding requirements. Using high-quality raw materials, products such as Applied Felts' flame-bonded, durable PU-coated felt liners accommodate the most demanding installation requirements while providing greater flexibility in the field.

The key to Applied Felts' ongoing classic felt liner evolution, however, comes directly from working with CIPP installers around the world. With



Applied Felts is best known for manufacturing sewer mainline rehabilitation products, understanding that unless an entire system is rehabilitated using a complete approach,

underground infrastructure will continue to fail. To address the rehabilitation of lateral lines, a major contributor to inflow and infiltration in a sewer system, Applied Felts has taken its decades of experience in supporting successful CIPP applications in mainlines to provide that same high-level quality in the manufacture of products for lining lateral and vertical pipes with multiple bends and diameter changes. Over the years, its hundreds of crews around the globe have successfully installed more than 200 million feet of quality liners.

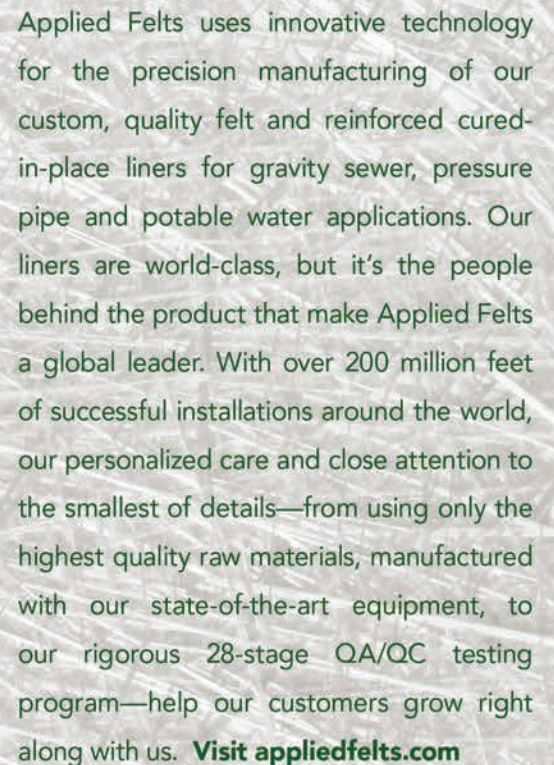
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WITH PERSONAL CARE.



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Applied Felts uses innovative technology for the precision manufacturing of our custom, quality felt and reinforced cured-in-place liners for gravity sewer, pressure pipe and potable water applications. Our liners are world-class, but it's the people behind the product that make Applied Felts a global leader. With over 200 million feet of successful installations around the world, our personalized care and close attention to the smallest of details—from using only the highest quality raw materials, manufactured with our state-of-the-art equipment, to our rigorous 28-stage QA/QC testing program—help our customers grow right along with us. **Visit appliedfelts.com**



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YOUR SUCCESS IS OUR SUCCESS™



A Cost-Saving Solution for Clogging Problems

The city of St. Marys (Georgia) Public Works Department was spending more than \$500 per month on maintenance and repair of some of its solids-handling pumps, which were experiencing ongoing clogging issues.

The site of the problem was Lift Station No. 42 — one of the city's 78 lift stations that serve a population of 18,000 people. The city's treatment plant has a 4 mgd capacity.

The lift station in question is a duplex station which serves a hospital, restaurants and nearby residences. It equips 15 hp pumps that move sewage to Lift Station No. 6 at 400 gpm. Lift Station No. 6 is another duplex station equipping 60 hp solids-handling pumps.

Built in the 1970s, Lift Station No. 42 saw the worst of the city's clogging.

Hairnets, fishing lines, rags and debris clogged the solids-handling pumps every week, costing the city time and money.

CHOPPER PUMPS TO THE RESCUE

Eager to find a permanent solution to this clogging problem, George Nettles, wastewater maintenance supervisor, worked with Pump & Process Equipment, Crane Pumps & Systems' channel partner, to install two 15 hp Barnes Sithe chopper pumps.

These pumps have been in operation for more than eight months and haven't once clogged, according to Nettles. In fact, the 60 hp pumps in Lift Station No. 6 which had to be de-ragged every month haven't clogged since Sithe pumps were installed in No. 42, either.

Equipped with state-of-the-art hardened stainless steel chopping mechanism and superior solids-handling capability, Barnes Sithe was not only successful in eliminating clogs at the station, but also downstream of it.

"When we installed Sithes at Lift Station No. 42, we did not consider the assistance at Lift Station No. 6," says Nettles. "We did not believe that it could do what was promised. Barnes Sithe is a problem-solver."

The city of St. Marys will see an estimated cost savings of more than \$10,000 annually from reduced service calls to clean out both stations and de-rag the pumps, according to Nettles. ♦



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The Barnes family of pump products by **Crane Pumps and Systems** provides versatility, high performance and good value. For more than a century, design and specifying engineers, plumbing contractors and end-users including homeowners have relied on Barnes pumps for reliability and durability. From essential applications like municipal sewage and wastewater to decorative fountain pumps, Barnes pumps deliver innovative, cost-effective solutions with speed and accuracy.

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SITHE

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Sithe submersible chopper pumps designed to chop and macerate solids in extremely challenging waste water applications.

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Compact SPiDER Scanner Offers Manhole Inspections on Difficult Sites

Utilities looking for a wireless color manhole inspection technology in a lightweight, compact form should consider using the SPiDER Scanner by CUES. The SPiDER collects millions of 3D measurements during each manhole inspection, ensuring the manhole is measured to less than 5 mm accuracy.

Weighing in at less than 30 pounds, the SPiDER can be hand-carried to easements or other difficult sites. This portability is possible because the processing computer and battery supply are integrated into the unit itself. Additionally, SPiDER does not require an inspection truck or other piece of equipment (other than the included tablet) for operational use.

MULTIPURPOSE TOOL

The SPiDER Scanner can calculate its position in a manhole shaft by using its sensor data to measure its incremental motion. The raw data is automatically post-processed to a 3D point cloud that provides engineering and survey quality information on manhole geometry and condition that can be used for structural assessment, pre- and post-rehabilitation analysis, hydrological surveys and general condition assessment.

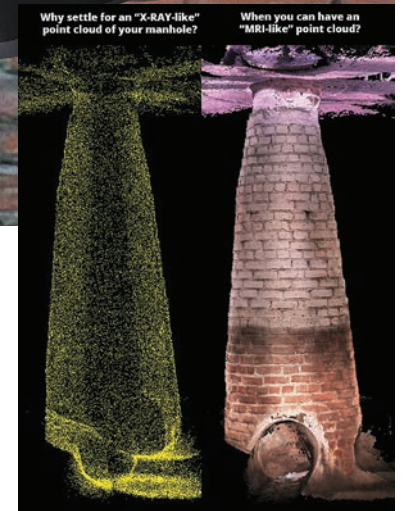
The SPiDER also provides a live video stream and records video making it an ideal tool for inflow and infiltration studies which depend on live video to detect moving water.

According to Pierre Mikhail, CUES manhole inspection division director, the SPiDER scanner will provide a new outlook on how manhole data is collected and applied.

“CUES has a long-standing reputation for innovation and excellence in manhole and pipeline inspection and rehabilitation technology,” says Mikhail. “It currently offers a range of tools from wireless handheld pole-mounted units to automated truck-mounted units that provide excellent productivity in manhole inspection and measurement. The SPiDER scanner is the future of making intelligent choices and prioritizing investment decisions.”

CUES is a leading manufacturer of CCTV inspection, rehabilitation and pipe-profiling equipment, as well as pipeline inspection and asset management software. The equipment is designed for use in sanitary and storm sewers, industrial process lines and waterlines.

Headquartered in Orlando, Florida, the company dedicates 70,000 square feet and more than 230 full-time employees to serve and support customers.



Additional facilities with stocking warehouses and service personnel are located in southern and northern California, Georgia, Wisconsin, Oregon and Toronto. ♦



"The Standard of the Industry"

CUES warehouses stock more than \$10 million worth of inventory to support its customers and production requirements, resulting in reduced lead times for spare parts and completed systems. All systems and repairs are completed under strict quality-control standards, facilitating continuous improvement for all equipment.

800-327-7791 | salesinfo@cuesinc.com | www.cuesinc.com

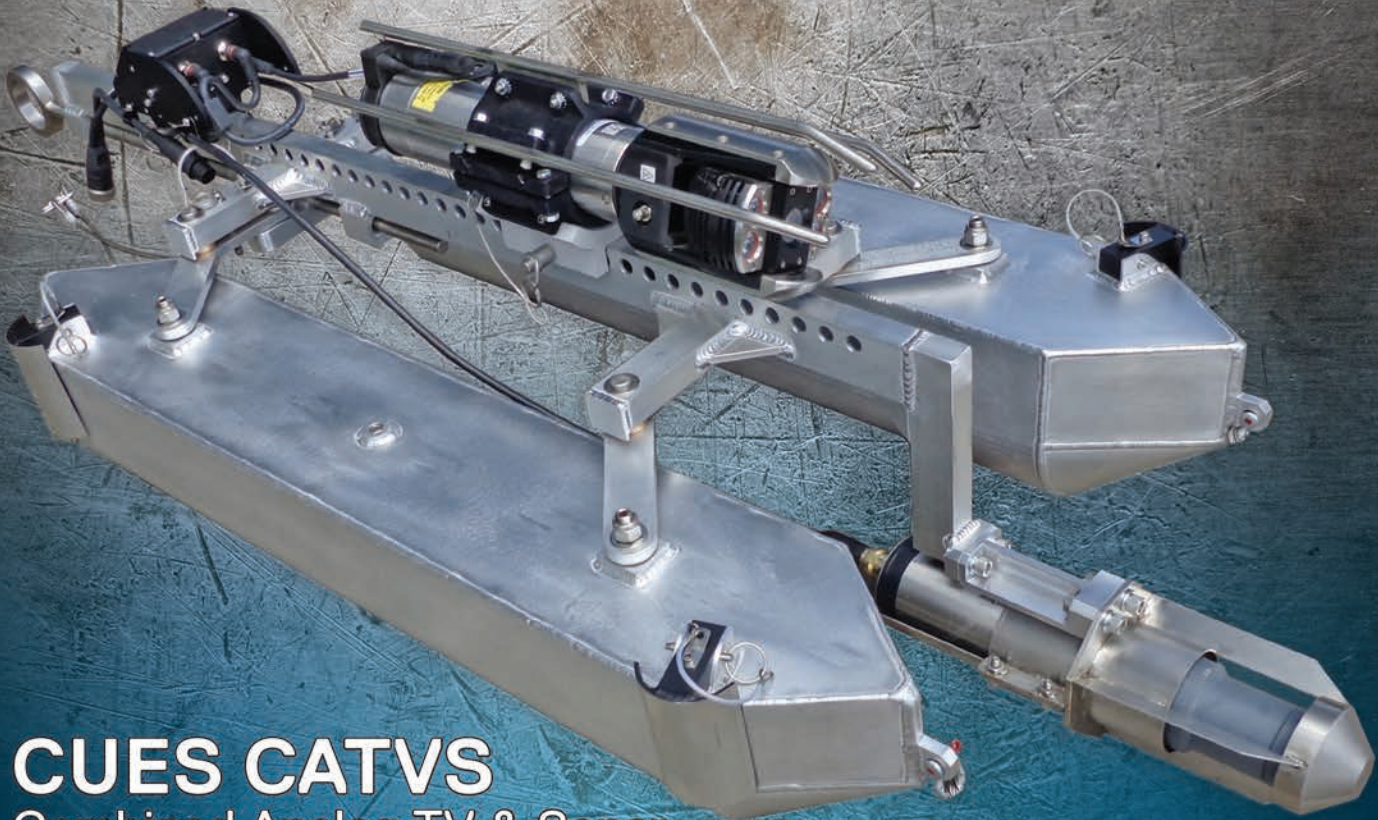
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CUES CATVS

Combined Analog TV & Sonar



CATVS on a CUES Steerable Mudmaster



CATVS on a CUES Steerable Pipe Ranger



CATVS Installed on a Single Rack in the Control Room

The CUES CATVS system is a TV & sonar sewer and storm inspection system that transmits both video and sonar on a single multi-conductor cable. This system is designed to work with the OZII camera and Marine Electronics Sonar using a standard CUES gold cable. It can be adapted to multiple CUES platforms including: TV/Sonar Float, Sonar-only Float, Steerable and Non-steerable Pipe Ranger transporters, and the Mudmaster transporter. CATVS is Ideal for partially and fully-charged pipelines, including difficult-to-inspect siphons. [Contact CUES today for a free demo!](#)

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HammerHead's Simple Point Repair Solution Is a Timesaver

Municipal sewer and water infrastructure directors and private contractors have an easy-to-use, economical alternative to open-cut replacement of storm and wastewater drainage systems. HammerHead CIPP point repair packages offer a cost-effective, environmentally friendly trenchless point or sectional repair solution for sewer and stormwater pipes having a circular or oval cross section 3 to 48 inches in diameter.

HammerHead point repair systems give contractors more time to work, boasting a short cure time on its silicate-based resin for quick, permanent repair.

Point repair greatly enhances maintenance budget and scheduling flexibility. Open-cut replacement or repairs disrupt daily routines at the surface and detour traffic for extended periods around demolition, excavation and restoration phases. In many cases, one- or two-point repairs can return a pipe to service in as little as a day, minimizing cost, labor, time and overall impact on the community.

A SIMPLE SYSTEM

The method is straightforward and easy-to-learn. No additional, specialized equipment is required since point repair packages come directly from the factory with everything necessary to make the repair.

A basic starter package contains four or more point repair solutions, a packer matched to the repair requirements, an air regulator, flex adapters and push rods and even the tarp used while applying resin to the repair liners.

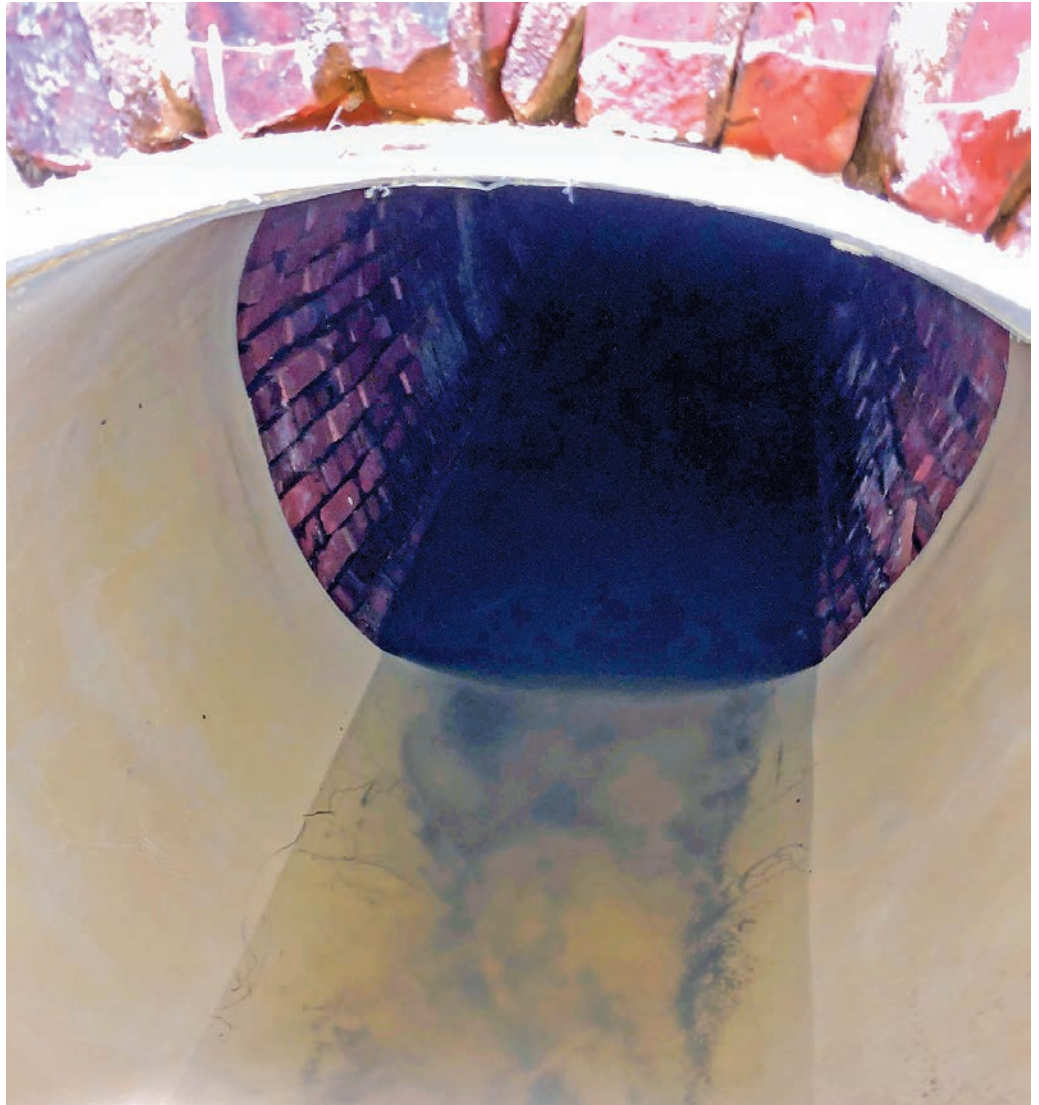
A CASE STUDY

The city of Litchfield, Illinois, used point repair on a 48-inch combination sewer and storm-sewer main constructed of double-wall brick. The aging wall had moved over time. It was out of round, widening in places to 52 inches. A 14-foot deep, 15-foot by 15-foot wide sinkhole had formed next to the line. Excavation was not an option.

Wet-out of the 56-inch by 48-inch fiberglass liners for this job was performed at the surface, loaded onto a pillow packer and lowered 22 feet down to the pipe through a manhole using a skid-steer with an electric winch. Inflating the packer perfectly conformed the wet-out liner to the pipe and held it there until it cured. An air line and a retrieval cable were fed to the packer through an upstream stormwater inlet.

Due to extraordinarily severe ground conditions surrounding the pipe at this great depth, the installation team performed two installations of three overlapping liners for added structural support.

It was the installer's first experience with the application. Under the guidance of HammerHead's Aidan Kelly, on-site application expert for this job, the installation took just two days to perform from start to finish. The repair carries HammerHead's 50-year warranty.



HAMMERHEAD UNIVERSITY

Proper application of HammerHead point repair systems can now be learned and practiced at newly founded HammerHead University. It's the world's first hands-on trenchless laboratory for trenchless applications — including point repair — free from the distraction of unforeseen obstacles or consequence of failure. Instruction can be adapted to duplicate a unique site's conditions and requirements to practice in advance. ♦



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Foreman Chance Barnes applies hydraulic cement before installing a WEKO-SEAL



After a successful air test, foreman Jeremy Kieninger screws in the test port plug.

Miller Pipeline's WEKO-SEAL Fixes Problem Pipe 50 Feet Beneath Interstate

Forty-five feet below the surface, under a major U.S. interstate in America's heartland, sat a 65-foot-high vault hidden away from the public eye containing a complex system of pipes, valves and infrastructure for drinking water. For years it worked like a well-oiled machine — until it didn't.

Under immense pressure, one of the 36-inch L-shape joints of a water main suffered a leak. General contractors attempted quick fixes on the exterior of the pipe — first with an external clamp that broke (twice), then by trying to reweld the clamp onto the outside of the pipe. Nothing they tried kept the leak at bay for long, and repeated repairs were stressing the cast iron, concrete-lined pipe. The option of shutting the line down was too costly and affected too many customers, and because of the 90-degree angle of the elbow, lining wouldn't have worked. The pipe needed a long-lasting solution.

That's where Miller Pipeline's own internal joint seal, WEKO-SEAL, came into play. Confined-space-certified WEKO-SEAL foreman Patrick Whitehead reported to the site and did his usual prejob safety checks, daily huddle toolbox talk with the on-site contractors, walked the job site, and assessed the situation. Although he would have to venture nearly 50-feet underground, he was unfazed.

"There wasn't much surface prep because the elbow had a mastic liner," Whitehead says. "I could immediately see where it was leaking because the old weld was rusted."

He prepped the concrete with quick-curing hydraulic cement and applied a 14-inch WEKO-SEAL before conducting a successful air test. With the seal in place, he applied stainless steel retaining bands to complete the NSF-compliant installation.

SAVING THE CUSTOMER'S MONEY

Had the customer been forced to replace that segment of leaking pipe, it would have taken days. From start to finish, installing a WEKO-SEAL — guaranteed to be bottle tight — took just over four hours, creating huge cost savings for the customer. Residents weren't without water for more than a few hours.

"A lot of companies don't even know that going into a pipe and fixing it from the inside is a viable option. Not only is it possible, but it can save them money and time," says Whitehead, adding that Miller Pipeline's WEKO-SEAL technicians are all confined-space trained and ready for emergency repair jobs.

The WEKO-SEAL teams work with customers to repair any type of pipe (including compound angles) carrying a product. Miller Pipeline can custom-create a WEKO-SEAL for almost any pipe, and the seal works with a wide variety of pipe shapes.

Leaks are sealed permanently, and in nearly all cases, no further work will be needed, according to Miller Pipeline. The seals are backed with a guarantee that they'll be installed correctly every time if they're installed by Miller Pipeline technicians. ♦



Miller Pipeline was founded in 1953 and has grown to provide a comprehensive range of pipeline contracting and rehabilitation services for natural gas, liquids, water and wastewater pipelines. **800-428-3742 | www.millerpipeline.com**

FAILURE IS NOT AN OPTION.

After 250,000 installations over 40 years, you could say we've perfected the internal joint seal. Our own WEKO-SEAL® is the industry standard internal joint seal for pipelines of any kind, sizes 18"-216" and larger. When you need the job done right the first time, trust WEKO-SEAL® by Miller Pipeline.



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Reliable Inspection Equipment Is a Must

We've all done it — bought something on the cheap and regretted it later. Price is a huge factor, but it is not the only thing worth considering when choosing your inspection equipment. What you really need is a piece of equipment that is going to last, a system that is going to perform to your requirements and keep you productive.

Cheap equipment that breaks down often or doesn't work properly to begin with isn't a bargain; it is a drain on your resources and time, according to a spokesperson from RapidView. "We don't rely on off-the-shelf consumer products that may be discontinued next month. IBAK manufactures over 85 percent of our product components so we can guarantee quality, reliability and availability of spare parts 10 years down the road."

QUALITY CONSULTATION MATTERS

Municipalities looking to improve their cities with cost-effective equipment or contractors looking for reliable fleets to keep business moving can consider RapidView a partner. "As professionals and industry leaders, we and our dealers provide expert consultations regarding your goals and help you choose a trenchless technology to meet your needs and budget," says the spokesperson.

Since inventing pipeline cameras in 1957, IBAK has grown to be one of the largest and most technically sophisticated manufacturers in the industry, specializing in high-production sewer pipeline inspection equipment, including push cameras, mainline, lateral launch, high-definition, 3D mapping, 360-degree pipe and manhole cameras, portable systems and fully converted

vehicles with complete system mounts.

"IBAK was first to market almost all the technology that our industry relies on every day, including the first camera, first color camera, first camera tractor, first pan-and-tilt camera, first data-logging software, first lateral launch, and the revolutionary 360-degree PANORAMO technology," says the spokesperson.

The company distributes those products through an extensive and knowledgeable dealership network committed to providing quality customer service. "We understand that time lost due to repairs or poor training are detrimental to your productivity and bottom line," the spokesperson says. "We offer a variety of completely free training programs for our customers throughout the year and provide you with the training, tools and support to conduct many repairs yourself. When faced with a more complicated repair, you can be assured that our service techs and regional service centers will repair your equipment quickly and have it back to you as soon as possible." ♦



RapidView was originally founded in 1991 as R&R Visual. The company then began developing and providing unique inspection solutions to the nuclear, petrochemical, industrial and municipal sewer industries.

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Public Health a Primary Concern for SmartCover Systems

“Can’t sleep? Take two and call me in the morning,” says Greg Quist, president and CEO of SmartCover Systems LLC. The protection of public health is a daunting responsibility for anyone. It’s made even more challenging by the fact that one of the main sources of that protection — sanitary sewer systems — are uncontrolled, unmonitored and out of sight.

Everything and anything can end up in sewer systems — fats, oils, greases, tree roots, nondegradable wipes, stormwater, you name it.

The trouble is, you don’t know what people will throw into the system, and by the time you do, there’s a public health concern flowing right down the street. When it reaches the river or soaks into the ground, it becomes an environmental concern too.

SEWER OVERFLOW PROBLEMS

The U.S. EPA estimates approximately 75,000 sanitary sewer overflows occur annually in the country, resulting in the discharge of about 900 billion gallons of untreated wastewater. That’s a lot of sewage in our environment. The result is exposure to contaminated recreational waters from sanitary sewer overflows and combined sewer overflows contributes to up to 3,700 illnesses a year.

And it’s getting worse, according to Quist. “Our aging sewer infrastructure is straining under the increased demands of population growth and increasingly severe storm events. It’s enough to keep anyone up all night.”

Fortunately, he says, there is a prescription. “Advances in monitoring and communications technologies are now affordably available to offer insight into our sewer collection systems.

At SmartCover Systems we combined robust sensing devices and satellite communication capability with analytics and event-notification platforms to give you peace of mind about the real-time condition of your sewer system.”

With strategically placed SmartCover System sensors, utility workers can get a real-time view into the status of this vital network in a city, identifying blockages before they overflow onto the street, detecting stormwater infiltration before it overwhelms defenses, and locating surging sewers before they back up into customers’ homes.

“By truly understanding the dynamic conditions existing in your sewer systems, you can make more informed, proactive, data-driven decisions to maximize the capacity of your built infrastructure to protect public health,” says Quist.



ADVANCING TECHNOLOGY

The recent EPA report titled “Smart Data Infrastructure for Wet-Weather Control and Decision Support” highlights the potential for advances in smart-data infrastructure to leverage hardware, communication and management analytics to provide real and tangible benefits to utilities.

More than 350 communities around North America have joined this data-driven movement and are now taking control of their collections systems, according to Quist.

The simplicity of strategic monitoring of critical areas has yielded significant results. For example, in Hawthorne, California, using its two-man crew combined with SmartCover Systems’ real-time monitoring technology covering 2.5 percent of the manholes has virtually eliminated sewer overflows in its collections system, saving an estimated \$2 million in fines and mitigation costs since 2006.

“Wrap yourself in the SmartCover Systems security blanket and rest easy,” says Quist. “Get a good night’s rest. We’ve got you covered.” ♦

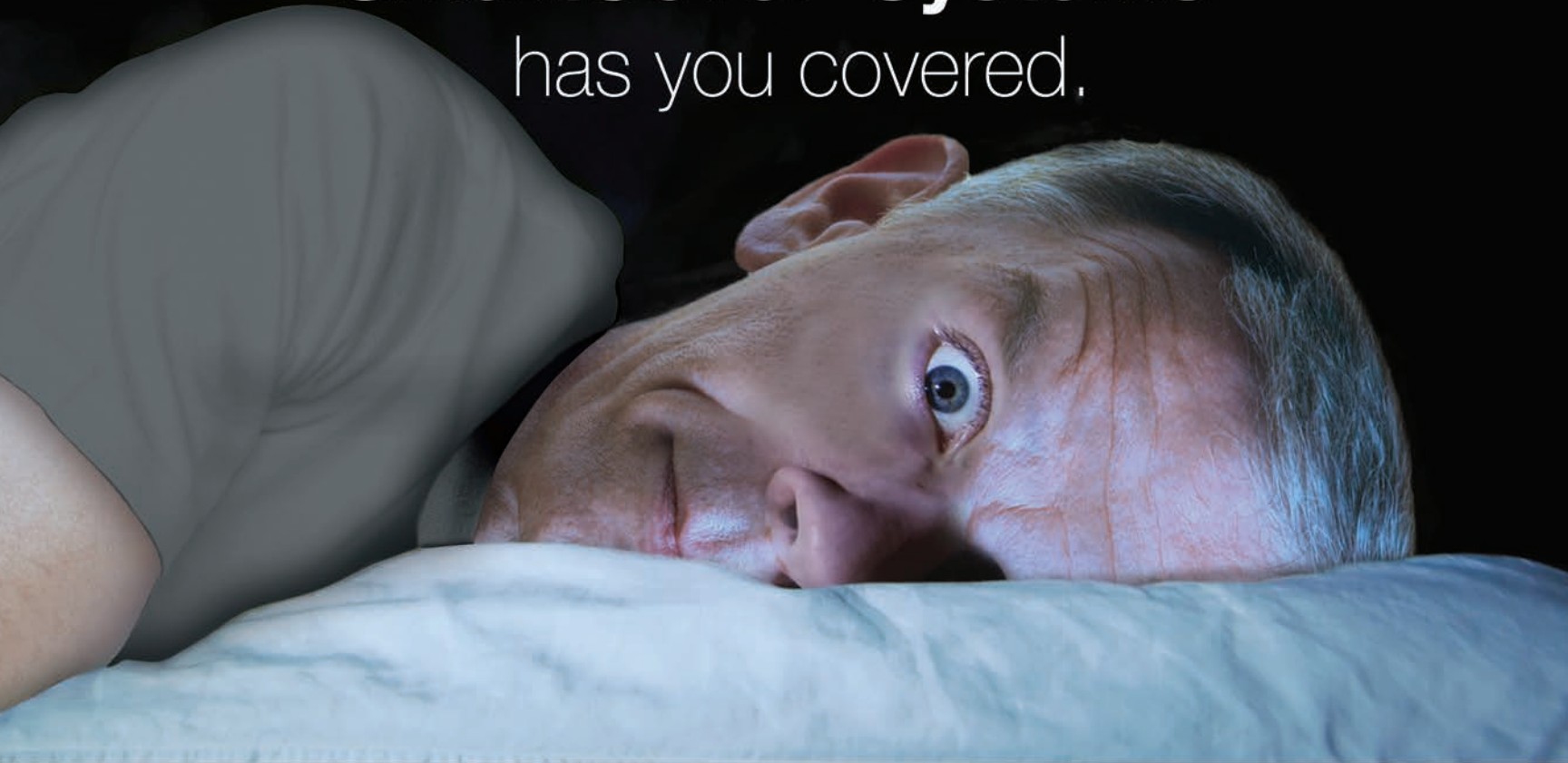
**SMARTCOVER®
SYSTEMS™**

SmartCover Systems is a leader in providing monitoring solutions for water and wastewater applications. With a focus on customers gaining collections system visibility, the company’s Internet of Things solutions are achieved with remote sensor systems continuously measuring, acquiring and communicating data via advanced satellite communications.

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Integrated Wireless Communication Delivers Results for Drilling Contractors

Every drilling project presents a unique set of challenges. In order to effectively deal with changing site conditions, maintain safety and meet deadlines, drilling crews must communicate in real time. Without it, delays and misunderstandings can lead to mistakes and accidents.

COMMUNICATION VS. HEARING PROTECTION

Communicating on a job site involves two opposing needs: being able to communicate properly, and protecting ears from the noise of dangerously loud equipment. There are a number of partial solutions that address only half of this dilemma.

PARTIAL SOLUTIONS

Hearing protectors like earmuffs or earplugs block out noise, but make it impossible to communicate effectively. Removing hearing protection to enable communication can lead to hearing damage.

Communicating with hand signals can be easily misinterpreted and is dependent on line of sight, which is difficult to achieve around equipment and traffic. Meanwhile, continued shouting is stressful and fails if it isn't heard.

Two-way radios require removing your hand from controls to press and hold the push-to-talk button. Cellphone use distracts operators when their eyes move away from gauges and attention wanders from the task at hand.

None of these traditional communication methods provide hearing protection for crew members in high-noise environments.

What about shutting down loud equipment? This solves noise and communication problems when workers are close by. However, distance remains a limiting factor. Also, frequent work stoppages lower productivity, efficiency, and increase wear and tear on machinery.

It's a catch-22 scenario: How can operators and locators communicate clearly while wearing effective hearing protection?

BENEFITS OF INTEGRATED WIRELESS COMMUNICATION

Sonetics' portable wireless communication systems combine hands-free, full-duplex communication with advanced hearing protection to let drilling crews communicate clearly and easily while protecting their hearing.

The Sonetics DECT7 provides instant, simultaneous two-way communication — just like a mobile conference call — for crews of up to 20. The voice microphone is continuously live with no need to press and hold a push-to-talk button. Noise cancellation technology and automatic adjustments prevent background sound from being heard by other team members.

Both the headsets and the portable ComHub are wireless, allowing crews to move freely around the work zone without being tethered to equipment.



Components are battery operated and provide up to 24 hours of talk time.

With a 24 dB noise-reduction rating, Sonetics wireless headsets lower all outside sound to safe levels, preventing hearing damage and the risk of permanent hearing loss.

Many workers refuse to wear effective hearing protection due to fear of isolation. Sonetics wireless headsets feature stereo listen-through microphones, providing users with situational awareness and hearing protection at the same time by combining outside sound with voice communication.

“Drilling contractors are looking for every advantage to help them deliver the highest quality results on or ahead of schedule,” says Julie Steding, Sonetics marketing manager. “Sonetics’ unique combination of hands-free, wireless communication and hearing protection helps crews be more productive, operate at a higher level of safety and reduce the stress that comes with daily high-noise exposure.” ♦

Sonetics®

Sonetics Corp. creates wireless communication solutions that enable natural conversation in challenging environments. Building on a platform of collaboration and rugged performance, Sonetics’ team communication systems deliver a work experience that is productive, safe and enjoyable. With 35 years’ experience, Sonetics Corp. and its Sonetics, Flightcom and Firecom product brands deliver innovative solutions to customers, transforming the way they work.

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Hear what's important.

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Advanced Kinetics Hydraulic Root Cutters Getting Good Feedback

Southland Tool Mfg. has reported a positive response to its new Advanced Kinetics corrosion-resistant motors for hydraulic root cutters. The AK is the company's flagship motor built from the same platform as its S906 that customers have seen painted white.

The new AK motors are painted silver and feature an upgraded internal process that makes it silky smooth to turn. The internal process improves hydraulic performance and eliminates internal corrosion, while the finish improves the friction coefficient, allowing parts to run smoother to reduce drag, save water and increase productivity.

The new internal process makes the metal more dense to ward off corrosion and wear. "In testing and in use, these units have sat for weeks in water without oil and did not show signs of corrosion," says a company spokesperson. "Great for recyclers and areas with sediment in hydrant water."

CAPABLE OF HANDLING HIGH-PRESSURE FLOWS

The company provides the motors with tail nozzles in ¾-, 1-, 1.25- and 1.5-inch sizes. Designed for pipes from 6 to 30 inches, they can handle flows to 170 gpm and pressure up to 3,000 psi.

They're ideal for contractors cutting taps in larger sizes, as they're rated to a maximum of 288 foot-pounds of torque and 220 foot-pounds on continuous operation.

MORE THAN MOTORS

Southland Tool Mfg. is a supplier of a complete line of sewer rodding tools, jetting and vacuum accessories, manhole traps, debris-extraction tools, and accessories for sale worldwide. Working through a network of local, knowledgeable distributors who are familiar with the needs in their marketplace and those of their clients, the company is able to provide each customer with the right product necessary to do the job.

"Our customers always receive the right tool made to the highest quality, delivered on time at a fair price," says the company spokesperson. "Our staff is friendly and knowledgeable as we are truly concerned about your needs and our willingness to go above and beyond insures your satisfaction. We welcome new ideas and accept most design requests and expedited shipping when needed."

Each order, no matter how small or large, is given a priority to make sure it's right in quantity, finish and packaging, according to the spokesperson. "We maintain a 100 percent satisfaction warranty and back it up with performance. We make your customers happy, and we pride ourselves



on getting product out quickly, as most items in our vast lineup of specialty tools are in stock and ready to go." ♦



Southland Tool Mfg. Inc. provides specialized sewer cleaning tools for cities through a network of sales distributors across the United States. The company's founder, David Pryor, has more than 30 years' experience in the design, marketing and manufacturing of sewer cleaning equipment.

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Harmon Pipe Service LLC – Finding a Niche and the Right Equipment to Service It



OFF-ROAD JOBS

HPS specializes in inspecting outfalls and other assets that require off-road access. Harmon runs two Cobra Model 800 crawlers, two V5 cameras and a pan-tilt-zoom camera on a UTV unit for off-road applications.

“Most of my calls were for off-road jobs,” he says. “The big vans couldn’t get video equipment to these places. I knew that carving out a niche for myself in the local market was a good positioning strategy, and I saw one in being able to get where they couldn’t. That’s what made me successful.”

So, in 2000, Harmon approached Cobra Technologies saying he didn’t want a van, but he wanted their equipment on a UTV. He specified what he wanted, and Cobra built him a UTV-based inspection system.

“These UTV-mounted systems are basically intended to get our equipment out where the landscape is more rural, and there just aren’t many wide, well-maintained roads,” Harmon says. “All sewer lines leave the road eventually. Some go through the woods, down to these outfalls in more distant and less-travelled areas. That’s what I specialize in. That’s where I go with the UTV.”

USER-FRIENDLY SOFTWARE

One of the most important pieces of his inspection technology array is AssetDMS, a new and powerful software packed with features from Cobra/Trio-Vision. Using an intuitive, operator-friendly touch screen interface, AssetDMS makes collecting and analyzing pipe survey data second nature. The data collection process is simple and streamlined,

with built-in user prompts that ensure critical information isn’t missed and is captured accurately.

Compatible with a wide range of manufacturers’ CCTV systems, it allows for import/export from any certified PACP/LACP/MACP database, and PACP reference photos are included to eliminate the need to memorize all the codes and rules.

A comprehensive reporting suite provides easy-to-understand analysis reports that help Harmon’s clients make well-informed decisions regarding the health and rehabilitation requirements of their underground infrastructure systems. ♦

Terrell Harmon runs Harmon Pipe Service LLC (HPS) in Rockmart, Georgia, and serves metro Atlanta. In business for six years, the company handles mostly new construction in residential subdivisions.

At its peak, HPS ran a crew of six doing testing, pipe cleaning and video inspection. These days, Harmon is alone in the field, with a part-time office employee. After experiencing many facets of the business, he has found the work he most enjoys, and which generates the greatest return on investment: video inspection.

HPS primarily subcontracts to larger pipeline contractors on big commercial jobs. With this single revenue stream, it’s critical that his equipment work every time, keeping him efficiently productive. He says he’s used Cobra CCTV pipeline inspection equipment since he started in the business.

“It’s a great product line — simple to operate — and it’s a great product for a fair price. It’s a great fit for me because the company is local, and their after-sales service is great,” Harmon says.



Cobra/Trio-Vision backs its software with robust, real-world field and classroom training and support programs tailored to fit individual customer needs.

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Get Superior Pump Protection With Wilo Ceram

Sewage and sewage treatment plant pumps are constantly being exposed to aggressive fluids while in service. Corrosion and abrasion, UV light, heat, cold, salt, condensate and alkalinity are all elements that influence the surfaces and material structures of the units, sometimes with considerable impairment to performance.

This can significantly reduce the hydraulic efficiency of a pump and not only results in higher energy consumption, but also leads to a greatly reduced service life due to the displacement of the load locus for the motor and hydraulics.

RESISTING DESTRUCTIVE ELEMENTS

Wilo Ceram is a sprayable, solvent-free, two-component polymer coating material reinforced with aluminum oxide for corrosion protection against aggressive media that is available exclusively for Wilo submersible pumps and mixers.

Thanks to its increased resistance to potentially destructive elements, it effectively prevents wear and chemical degradation, ensuring optimal functionality and performance. Wilo pumps and units with Ceram coating are designed to experience less maintenance-related downtime and have a long service life.

A specific case study uses the example of an impeller coated with Ceram versus a standard, uncoated cast iron impeller to illustrate the performance and the associated potential for cost savings. In a processing plant for kaolin — a type of clay — the fluid is so abrasive due to the large amount of small-grain sand that a cast iron impeller, which normally has an operating time of about 100,000 hours with no problems, had to be replaced after just 500 hours' operation. In a test period of 15 months, a total of four cast iron impellers were replaced.

The replacements resulted in acquisition costs, loss in performance efficiency, increased energy costs and downtime due to removal and installation.

“Comparatively, under the same conditions in exactly the same time period, an impeller coated with Ceram was used,” says a company spokesperson. “After approximately 2,000 hours of operation, the impeller finally needed to be replaced. The coating allowed the impeller to remain in operation four times as long as the uncoated impeller.”

Ceram is used both for the outer coating as well as for the interior coating of Wilo submersible pumps and mixers and is applied using an airless method in one layer with a thickness of 0.4 mm. Wilo Ceram offers all-round protection for all unit components, whether they are inside or on the surface.

Wilo USA is a subsidiary of Wilo SE, which is headquartered in Dortmund, Germany. Wilo is one of the leading manufacturers of pumps and pump systems for heating, cooling and air-conditioning technology for water supply and for sewage and drainage. The company is represented worldwide in over 90 countries by more than 60 subsidiaries, including 21 production sites, and employs more than 7,700 people globally. ♦



In March 2017, **Wilo USA** acquired US pump manufacturers Scot Pump and Weil Pump, and component manufacturer Karak Machine Corp., now named Wilo Machine. The three companies have headquarters and production facilities in Thomasville, Georgia; Cedarburg, Wisconsin; and Ft. Lauderdale, Florida.

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Wilo-FA submersible wastewater pumps have a reputation in the industry as the toughest, most durable option for sewage disposal and treatment due to the engineering inside the pump. Features include the largest diameter shafts with the lowest overhangs in the industry, a stainless steel enclosed block seal and a highly efficient closed-loop cooling system with heat exchanger.

The optimal engineering isn't limited to the mechanical components. Our proprietary 2-part Ceram® coating is a solvent-free, polymer material with corrosion-resistant aluminum oxide. Thanks to its increased resilience to abrasion and weathering, it effectively prevents mechanical and chemical wear for long-lasting protection. Ceram® can also be used on volutes and impellers. That's what we call Pioneering for You.



Wilo-FA



Solid Impeller

Pioneering for You



Arkansas City Builds Largest MBBR System in the U.S.



When the wastewater treatment system in Batesville, Arkansas, reached the end of its life span, city officials made a bold decision. Rather than simply patching and expanding the 30-year-old system or replacing it with something similar, they decided to infuse innovation into the city's vital infrastructure.

The city worked closely with Olsson to design and engineer a moving bed biofilm reactor wastewater treatment system — the largest MBBR system in the U.S. It delivers a flexible, cost-effective, easy-to-operate system that can be quickly expanded as needed.

“The MBBR wastewater treatment system uses a more sophisticated process that treats a higher capacity of water in a smaller footprint of space,” says Jim Ulmer, engineering technical leader at Olsson, who served as project manager.

HIGH-QUALITY EFFLUENT

The MBBR treats wastewater through an organic process by applying vigorous aeration to the wastewater system tanks, which contain millions of small plastic media. The plastic media create an enhanced environment, which in turn improves the efficiency of the treatment process.

The plant's discharge goes directly into the White River, and the system works so well that it discharges a much higher quality than that required by the permit. The amounts of ammonia and nitrogen have been reduced

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to nearly immeasurable amounts.

“We are leaps and bounds below our permitted levels, and we reached those levels with minimal effort,” says Damon Johnson, Batesville's city engineer. “Very few plants come online and work instantly like our wastewater treatment did. It's a good plant, and we're very happy with it.”

Olsson provided the project's engineering and design work, devised the facility plan process, and secured environmental permits. ♦

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When Grout's Not Enough, Fix Defects and Infiltration With Quick-Lock



In sewers, structural defects and groundwater infiltration go hand-in-hand. Fixing one means fixing both. Too often, active infiltration disqualifies grout and CIPP methods, and grout is unable to restore structural integrity. The Quick-Lock point repair sleeve offers an alternative.

For standalone point repair — or for pre-lining under high infiltration — the Quick-Lock sleeve offers a fast, economical and easy way to fix failing pipes. It restores strength with heavy-gauge 316L stainless steel and seals out infiltration with a one-piece vulcanized EPDM rubber gasket. Suitable for sewer, water and industrial applications, Quick-Lock installs in minutes and boasts a service life equivalent to CIPP.

EASY INSTALLATION

To install Quick-Lock, use your CCTV crawler to push the sleeve into place on a wheeled flow-through packer. Once in position, the packer expands and locks the sleeve against the pipe wall to provide structural reinforcement and stop infiltration.

Quick-Lock sleeves address a variety of common pipe problems, including infiltration, longitudinal and circumferential cracks, root intrusion, holes, leaks, offset joints, and abandoned laterals. They come in diameters ranging 6 to 28 inches. Multiple sleeves can be combined to perform longer repairs.

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That Solves
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Pushed in by your crawler and expanded with air, a Quick-Lock sleeve delivers structural trenchless sewer repair with heavy-gauge stainless steel and stops infiltration with a one-piece rubber gasket. It installs in minutes with two people and minimal equipment.

Quick-Lock is also offered as an end sleeve to protect installed CIPP liners.

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infiltration • offsets • roots • abandoned laterals • holes • cracks

Unlike grout and CIPP point repair, Quick-Lock installs rapidly — often in under 30 minutes — with minimal training and investment. It requires no bypass pumping, resin or digging. Many cities stock Quick-Lock sleeves as an affordable way to address infiltration and localized defects on an as-needed basis. ♦



Pipeline Renewal Technologies is an Envirosight company focused exclusively on the pipeline rehabilitation market. The company delivers innovative technology for no-dig structural lateral renovation, drain and mainline cutting, durable point repair, video drain flushing, and process management. 866-936-8476 | www.pipelinert.com

Real-Time Visibility Pays Off for La Mesa's Ongoing Sewer Maintenance

The City of La Mesa, California, has a rigorous cleaning maintenance program to cover its 155 miles of gravity sanitary sewers. All pipes are cleaned annually and the city also has 100 sites that — due to issues such as root intrusion — are cleaned monthly. The work is performed in house by an efficient eight-person staff split equally between scheduled annual cleaning and monthly hot spots.

The city has an excellent track record of preventing sanitary sewer overflows (SSOs). However, it recognized that regular, high-frequency pipe cleaning is damaging the system, particularly in parts of the city with older, high-risk segments. As a result, La Mesa looked for a new approach to reduce operational demands, alleviate premature pipe wear and continue to prevent overflows.

REMOTE SITE MONITORING

Using continuous remote site monitoring, ADS Environmental Services

worked with the La Mesa to determine when and where to clean. The city selected 10 monthly sites and deployed advanced level monitors at each site. Water levels were monitored for changes, and low-flow and high-flow alarms were configured for each site to ensure SSOs were prevented.

In the first three months, only one of the 10 sites was impacted. That location had a water level increase greater than 10 percent when compared to the starting baseline and that site's depth-over-diameter ratio was only 0.24. As a result, no cleaning was required at that site, resulting in a 100 percent reduction for the three-month period.

The city and ADS Environmental Services continue to work together to generate additional data for each of the 10 sites to determine the best cleaning frequency. ♦



ADS Environmental Services offers flow information from real-time flow data to temporary flow monitoring reports.

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Cam Spray to Highlight Sewer Jetting System at WWETT Show



Cam Spray has responded to customer needs for more than 47 years. The company's product evolution is a mix of an old-school, keep-it-simple design while focusing on the latest technology to give customers products that do their work effectively, efficiently and safely.

Keeping in line with that philosophy, Cam Spray plans to highlight its TT20540HZ-750 Sewer Jetting System at the 2019 WWETT Show, offering operators technology and safety benefits usually only offered on higher priced systems.

POWER AND CONVENIENCE

Featuring the latest technology in diesel engine power, the system boasts a 74 hp Turbo Intercooled Hatz Diesel engine designed for quiet operation, fuel efficiency and EPA Tier 4 final compliance. It drives a pump system producing 40 gpm at 2,500 psi.

The sewer jetting system also comes equipped with a new wireless remote engineered from the ground up with exceptional distance control in real-world applications. At the touch of a button, users can control start/stop, throttle up/down and water flow.

A hydraulic powered swivel reel, over-center clutch, 500-foot by 3/4-inch hose and 700-gallon tank capacity add to the draw of the TT20540HZ-750 Sewer Jetting System. ♦



Cam Spray is a small, family-owned company based out of Iowa Falls, Iowa, specializing in pressure washers, drain and sewer jetters, and accessories. The company started in 1963 when John and Jim Campbell purchased a local supply business known as The Manning Howell Co. that specialized in farm and industrial supplies. **800-648-5011 | www.camspray.com**



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- Produces 25 Gallons Per Minute at 4000 PSI
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Bucher RECyler Boasts Fully Continuous Recycling System, Fuel-Saving Technology

Operating all over the world in the most extreme conditions, Bucher RECyler units have proven themselves as powerful and sustainable sewer cleaners. Available in two different sizes — RECyler 208 and RECyler 315 equipped with an 8-cubic-yard tank and 15-cubic-yard tank, respectively — the versatile Bucher RECyler units enable customers all over the world to increase productivity in any circumstance.

The fully continuous water recycling system — which Bucher representatives tout as highly efficient and easy to maintain — has been produced and developed since the 1980s. The five-step system protects the tank, pumps and sewer lines from damage by removing particles, giving the units a longer operating life and a high residual value.

WORKING IN CHALLENGING CONDITIONS

The two Bucher RECyler units also ensure operators can work in difficult urban areas or in remote locations. Equipped with a moveable partition providing flexibility in tank size — and thereby flexibility of applications and volume — operators don't need to know how much water and sludge they need from the start.

Combined with the fully continuous recycling system and the moveable partition, an automatic fuel-saving technology shuts down the vacuum pump once it detects enough vacuum in the tank and reduces the revolutions of



The Bucher RECyler 315.

the engine and pumps to the minimum level required for each specific job. This helps lower water and fuel consumption.

Bucher RECyler units are available in winter and summer editions. The winter edition is capable of operating fully in even the most challenging temperatures down to negative 20 degrees F. ♦

BUCHER Bucher Municipal is an international manufacturer of sewer cleaning units. Globally, its product range encompasses sweepers, sewer cleaning equipment, winter equipment, and vehicles for refuse collection.
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Rex: A New Breed of Multifrequency Pipe and Cable Locator


Since launching in 2017, Rex — a multifrequency locator — has been hot on the trail of underground utilities like water, sewer, electric, telecom, oil and gas. With a price tag comparable to single-frequency locators, Rex boasts a smoothly designed transmitter that is less than 2 inches thick and weighs less than 3 pounds.

A pistol-grip receiver extends for greater sensitivity and retracts for easier carrying and storage. At slightly over 7 pounds, the entire system fits nicely into a custom shoulder bag. Rex is ruggedly built, carrying a three-year warranty.

COMBO KIT

Schonstedt is also offering Rex as a multipurpose combo kit (MPC-Rex). The first of its kind, this kit includes a GA-92XTd magnetic locator and a Rex multifrequency pipe and cable locator. Purchased as a kit, the two-locator bundle offers even more savings.

Schonstedt Instrument Co. began making magnetic locators for land surveyors in the 1970s and introduced a line of pipe and cable locators in 2002. Schonstedt pipe and cable locators broke ground by offering improved ergonomics, portability and ease of use. Schonstedt is a subsidiary of SPX Corp., and is part of SPX's Radiodetection business unit.

SCHONSTEDT  **SPX Corp.** is a supplier of highly engineered products and technologies, holding leadership positions in the HVAC, detection and measurement, and engineered solutions markets. Based in Charlotte, North Carolina, SPX Corp. had approximately \$1.4 billion in annual revenue in 2017 and more than 5,000 employees in 14 countries.

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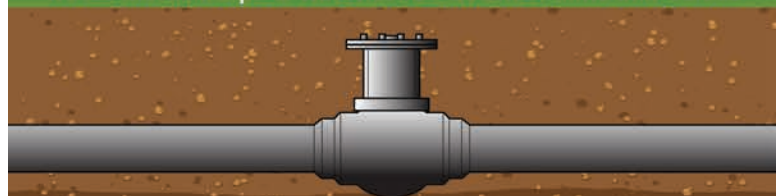


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* Rex Pipe & Cable Locator also sold separately

Elastec PACS: Big Power in a Small Package

By Brian Cook, *Elastec Creative Services Manager*

“I don’t think the vac truck can get there” is a phrase that is uttered in frustration too often. Vacuum trucks are large and powerful, but they aren’t always the best option for the job. The Elastec PACS line of trailer-mounted vacuum systems fills the void where vacuum trucks can’t reach.

PACS vacuum systems were designed for off-road oil field work and feature a heavy-duty trailer, a 1,000-gallon dumping tank, and a range of engine and vacuum options. Over the past 20 years, the PACS line has evolved from a down-and-dirty beast of burden to a well-refined municipal machine. With vacuum packages ranging from 230 to 2,000 cfm, there is a PACS vacuum for every scenario.

“The biggest benefit of a PACS system is how simple it is to operate,” says Shon Mosier, Elastec sales manager. “They also require very minimal expense for maintenance and insurance.”

The most common customer for a PACS unit is the person that is tired of paying for vacuum truck service for routine jobs, but doesn’t have the budget or impetus to purchase his or her own truck.

“The Elastec PACS is the perfect vacuum system for this scenario,” says Mosier. “Each system can be towed with a 1-ton pickup truck and provides



mobility that is unmatched by larger vacuum trucks.” ♦



Elastec offers a full line of vacuums and accessories as well as other municipal maintenance products including drug

and medical incinerators, turbidity curtains, marine debris containment systems and workboats. Established in 1990, Elastec has grown into a global leader in the manufacture of pollution control systems with sales in over 155 countries.

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Small and Handy Meets Premium Microphone Technology

The Aquaphon water-leak detection system's A 150 receiver paired up with the market-tested microphone technology of the Aquaphon A 200 system allows professional prelocation and precise pinpointing of leaks.

The receiver's clever, compact design and carrying comfort contribute to its first-class feel. Connected to high-end microphones and wireless headphones, the A 150 offers good reproduction quality. In addition, noises are visualised on the display so they can be reliably and uniquely evaluated. Thanks to adjustable filters and automatic frequency scanning, frequency ranges can be individually adapted to a user's hearing. Influences from sound interference are minimal, and the sound quality is optimised for reliable evaluation of the leak situation.

COMFORTABLE TO CARRY

Its practical dimensions and light weight make the compact A 150 receiver perfect for everyday use. Instead of using the carrying strap, it can be conveniently clipped onto the wearer's belt. For users, this means effortless carrying and greater freedom of movement, as there is nothing to get in the way of leak detection.

One of the particularly practical features is a display with an optimised tilt angle, which makes it consistently easy to read. The screen automatically



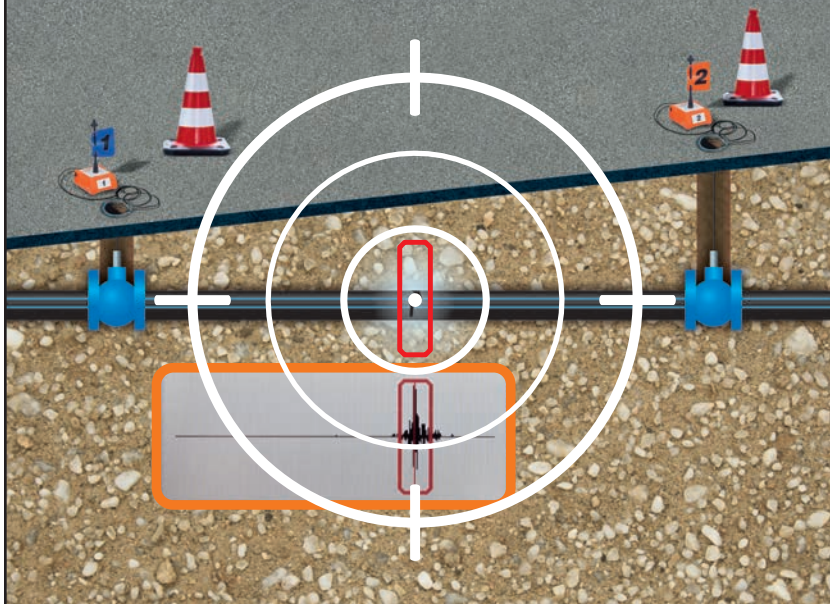
rotates 180 degrees depending on how it is carried. The TS 150 carrying rod offers convenience and speed when it comes to changing the microphone. The Aquaphon A 150 can be effortlessly adapted to all kinds of conditions and requirements. ♦



Sewerin is an international, family-owned company with headquarters in Gütersloh, Germany. The company is a leader in the gas and water supply industry with 85 years' experience in the development of measuring devices.
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Utility Barges From American Pleasure Products Provide Operator Stability

When it comes to maintenance work or routine inspections on treatment ponds, lagoons or reservoirs, utility service barges from American Pleasure Products provide a safe, stable working environment for operators. The Aqua Cycle 8-by-12 utility service barge offers stability thanks to two 12-foot-long by 23-inch-diameter pontoons. The barge includes aluminum-frame construction with stainless steel hardware and the deck is covered with a nonslip nickel-plate vinyl for stability and easy cleaning.



Keeping employee safety in mind, a heavy-duty protective handrail is included. To maneuver the barge, the company provides an outboard motor mount for small gasoline or electric motors.

The standard features include lifting crane with 1,000-pound capacity, a life ring and weld-on lifting eyes on each corner. The company also offers custom manufacturing for unique needs. ♦



American Pleasure Products Inc. provides American-made paddleboats, rafts and service barges. The Michigan-based company produces its own tubing using 5052-H32 aluminum. **989-685-2697 | aquacycleusa@gmail.com | www.aquacycleusa.com**



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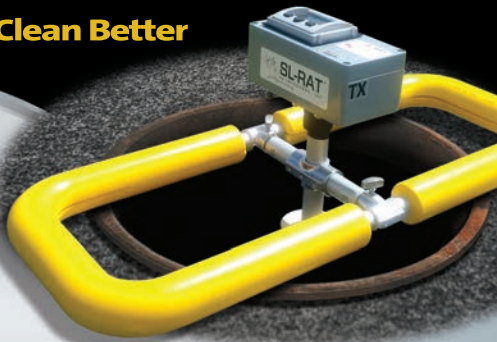
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One way to focus your collections resources and avoid cleaning pipes that are already clean is to use the Sewer Line Rapid-Assessment Tool by InfoSense.

More than 250 utilities worldwide are using InfoSense's award-winning acoustic technology as the first step in their workflow to screen 6- to 8-inch gravity-fed sewers for blockages. Results from over 100 million feet of screening show that 65 to 90 percent of pipes in the average utility don't need to be cleaned, according to InfoSense representatives.

This allows SL-RAT users to prioritize cleaning resources to areas that need it most. With the capability to assess 10,000 to 20,000 feet per day at one-tenth or 1/20th the cost of cleaning or CCTV, acoustic inspection can be a great preliminary screening tool that generates substantial cost savings. The highly portable SL-RAT requires no flow contact and is GPS enabled. ♦



InfoSense Inc. is based in Charlotte, North Carolina, and is the sole manufacturer of the SL-RAT. Contact the company to schedule a free demo. **877-747-3245 | achurchill@infosense.com | www.infosense.com**

Full Range of Configuration Options Available for vLoc3-Pro Utility Locator

The vLoc3-Pro utility locator by Vivax-Metrotech Corp. introduces new innovative tools for locating buried utilities, assuring damage prevention while gathering information for analysis. With two sets of screened 3D antennas, signal distortion is easily detected and displayed on a bright full-color display.

OPERATING MODES

Along with classic locate screens, the vLoc3 series offers new perspective screens, including Vector Locate for fully automatic nonwalkover locating; Transverse Graph showing both peak and null while providing immediate measurement of signal distortion; Plan View showing the relative orientation of the cable at any angle; and a new graphical Sonde screen with guidance arrows leading to the sonde location even if it's vertical.

USER CONFIGURATION

The vLoc3 series is user configurable, containing eight passive locate modes, fault-find mode, SD (showing direction of outgoing current), and a range of frequencies from 16 Hz to 200 kHz.

Audio and mechanical vibration alerts also can be programmed by the user to provide warnings for shallow depth, overload, overhead cables and excessive swinging.

Plug-in-play options for the receiver include an optional Bluetooth module useable with external GPS devices, the Marker Locator Adapter EMS foot to locate buried markers, and an A-frame cable sheath fault locator.

FLEET MANAGEMENT

Manage a fleet of utility locators with the free MyLocator PC software. Users can configure a fleet of locators by turning on or off features, selecting which frequencies the user has access to and creating custom startup screens. The MyLocator software also will transfer data from the locator to a host computer, perform software updates and save the locator's settings. ♦



**VIVAX
METROTECH**

1-800-446-3392 | info@vxmt.com | www.vxmt.com

Vivax-Metrotech Corp. is a worldwide leader in the manufacturing of buried utility locators and video inspection cameras.



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- 9.7" HD Display
- 1TB Hard-drive
- 1080 HD Cameras
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- Locatable Pushrod



vCamMX-2 Mini Inspection System

- 512Hz Sonde
- Locatable Pushrod
- High Resolution Cameras
- Direct USB Recording



vLoc3-Cam Sonde and Utility Locator

- Directional arrow guidance
- Locates sondes and pushrod
- Graphical user interface
- Optional Bluetooth connectivity
- 4.3" Full-color display

Call us for your no obligation on-site demonstration!

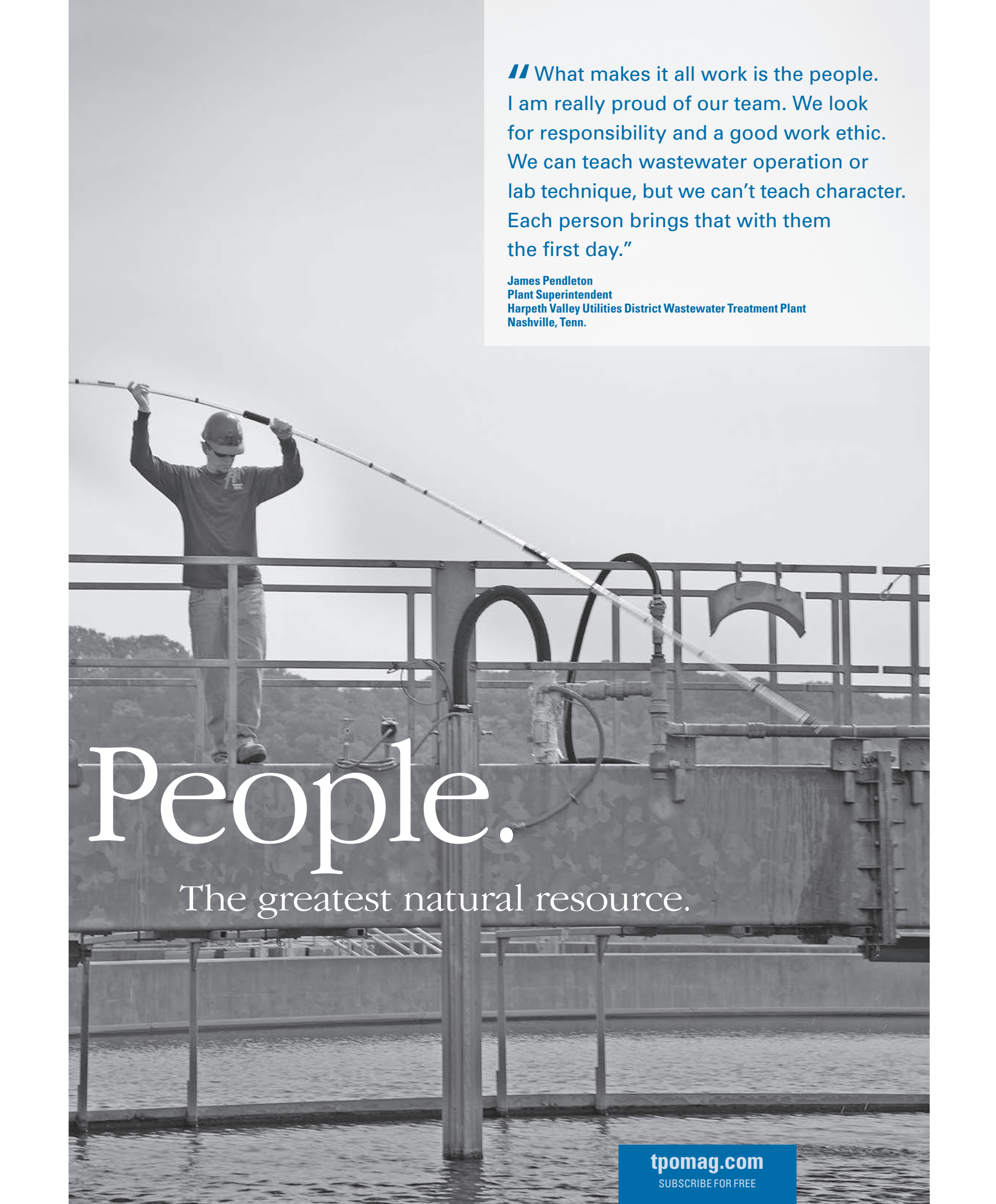
Vivax-Metrotech Corporation

3251 Olcott Street, Santa Clara, CA 95054, USA

Toll Free: 800-446-3392 Phone: +1-408-734-1400

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// What makes it all work is the people. I am really proud of our team. We look for responsibility and a good work ethic. We can teach wastewater operation or lab technique, but we can't teach character. Each person brings that with them the first day."

James Pendleton
Plant Superintendent
Harpeh Valley Utilities District Wastewater Treatment Plant
Nashville, Tenn.

People.

The greatest natural resource.

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Rudy Tool Offers Safe, Ergonomic Removal of Box Covers

The Rudy Tool, manufactured by T&T Tools, was first suggested by a customer named Rudy who wanted help with the removal of cast iron water valve box and sewer clean-out box covers. The idea was to increase safety by reducing the need for screwdrivers and other prying tools.

Another benefit of the Rudy Tool is giving users the ability to open covers while standing upright, resulting in less bending and less back strain. The integrated lifting handle creates the gripping force making an easy-to-use and safe tool.

The Rudy Tool measures 23.5 inches overall and features a scissors-style lifter that removes and reinstalls the lids while users stand in a safe, upright position. ♦



T&T Tools Inc. makes subsurface hand tools primarily for the municipal sewer and water industry. Workers who are looking for underground utilities, valve boxes, meters, waterlines and septic tanks make use of the company's Mighty Probe, Soil Probes, Water Probes and Hammer Probes.
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Wiedemann's Super 2000 Cleaner Represents 40 Years' Experience

The house of Wiedemann invented the first sewer-cleaning vehicle with water recycling in 1977, marking the beginning of a revolution in the market. Since then, the company has committed itself to providing environmentally friendly and sustainable vehicles.

Representing 40 years of experience, Wiedemann's main product, the Super 2000, is designed with a fully automatic water recycling system, which cleans water by physical processes instead of filtering it. This allows operators to work continuously without refilling the water tank.

Wiedemann's recycling technology ensures operators can work without interruptions or breakdowns from grease, sand or paper. Based on a two-tank configuration, it offers high-quality water recycling and increased truck stability, along with optimum load distribution and maximum tank volume on a shorter wheelbase. ♦



Go Green with our SUPER 2000 Recycler



Sewer cleaning with water recycling

- approved since 40 years -



180° boom rotation
4 ft boom extension



45° dumping angle

- 1500 gal stainless steel water tank
- 10 1/2 cu. yd. debris tank
- 590' - 1 1/4" hose on rotating reel
- 325' - 1/2" lateral hose
- operations at sub-zero temps through working with wastewater
- work without interruptions or breakdowns, even within grease accumulates inside the drain pipe
- up to 100% more work capacity every day through continuous operation
- save up to 6.4 million gallons of potable water per year
- no driving times to a source of water



Wiedemann enviro tec is partnered with GapVax for distribution in the U.S. It's system is approved for use worldwide. To reach GapVax about a Wiedemann vehicle, call 814-535-6766 or email inquiry@gapvax.com.

1-877-864-9394 | info@wieviro.com | www.wieviro.de



Contact: Wiedemann enviro tec GmbH & Co. KG, www.wieviro.com, info@wieviro.com
 US Contact: Reinhart Laimer, SewerProShop LLC, 1061 Triad Court, Suite 1, Marietta, GA 30062
rlaimer@sewerproshop.com, +1 877-864-9394

LOCATION AND LEAK DETECTION

By Craig Mandli

DYE

1. BRIGHT DYES - Division of Kingscote Chemicals inspection dye

Concentrated leak inspection dyes from **BRIGHT DYES - Division of Kingscote Chemicals** dissolve rapidly in water and provide a vivid fluorescent color detectable in murky water, sewage or effluent. They can be used to validate sanitary and septic hookups; identify leaks, infiltration, and exfiltration in plumbing connections; and perform septic inspections to identify leachfield issues, as well as sources of contamination in wells. They are safe, nontoxic, biodegradable, and certified by NSF International to NSF/ANSI Standard 60 for use in and around drinking water. They are available in fluorescent yellow/green, red and orange, and nonfluorescent blue. They come in tablet, liquid or powder form. **800-394-0678; www.brightdyes.com.**

ELECTRONIC LEAK DETECTION

2. AMETEK Arizona Instrument Jerome J605

The **Jerome J605** from **AMETEK Arizona Instrument** is designed to detect hydrogen sulfide at concentrations as low as 3 ppb with a resolution of 20 ppt. It has a survey mode that allows the user to continuously draw in samples of air in order to sweep an area for hydrogen sulfide hot spots or leaks so corrective action can be taken. Its wide detection range makes it

useful for multiple applications, including regulatory compliance and odor control at wastewater and landfill facilities, scrubber efficiency testing, and monitoring corrosion in control rooms. **602-529-3723; www.azic.com.**

3. Fluid Conservation Systems MultiLog LX-2

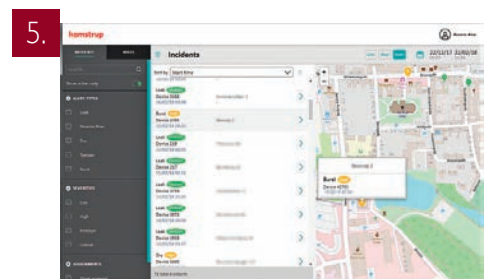
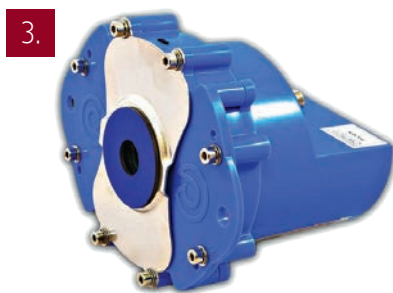
The **MultiLog LX-2** from **Fluid Conservation Systems** is a battery-powered, multiple-channel data logger for flow and pressure monitoring in water distribution networks. The device builds upon its predecessor with the addition of remote data transfer and upgraded processing abilities. The LX-2 also has a serial input that enables it to connect to a wide range of leak noise and ultrasonic level sensors and water meters. It is designed to fit inside very shallow valve box installations and is IP68-rated fully waterproof. **800-531-5465; www.fluidconservation.com.**

4. Hermann Sewerin GmbH SeCorrPhon AC 200

The **SeCorrPhon AC 200** from **Hermann Sewerin GmbH** combines the characteristics of a correlator with acoustic water leak detection to provide pre-location, pinpointing and correlation in one single system. It is based on the proven housing and hardware concept of the AQUAPHON A 200 by Sewerin. Each is ideal for use for leak detection across all sections, materials, diameters and lengths of pipelines. Numerous additional functions are also available for complex location scenarios, regardless of leak detection requirements. **888-592-9916; www.sewerin.com.**

5. Kamstrup Water Metering Water Management & Incidents

The **Water Management & Incidents** analytics platform from **Kamstrup Water Metering** can help utilities beat water loss and secure revenue. The analytics toolkit together with smart meters enables utilities to unlock the full potential of their meter data and detect leaks easily. It gives you a complete overview of a distribution network split into districts and automatically organizes, visualizes, and analyzes the data. It provides detailed information on inlet flow, consumption, night flow and water loss. The Incidents feature



shows the different digital events in a network and the tools to prioritize and handle them. Events include alarms and info codes on bursts and leaks from your smart meters shown on a map clearly indicating their location and status. This enables utilities to better target their efforts and manage events quickly and effectively. **404-835-6716; www.kamstrup.com.**

6. MSA Safety TriGas Monitoring System

The **TriGas Monitoring System** with Ultima X3 technology from **MSA Safety** delivers a total safety solution for reliable protection against confined-space oxygen deficiency, hydrogen sulfide leaks and combustible gases. Its three sensors are housed in a rugged NEMA 4X stainless steel enclosure. The system is ideal for areas of wastewater treatment plants that are subject to flooding, such as wet wells. It meets NFPA 820 fire protection in wastewater treatment plants, OSHA 29 CFR Part 1910.148 confined space and ANSI 2117.1-1989 safety requirements. It detects O₂ (0 to 25 percent range) and hydrogen sulfide levels in three optional ranges (0 to 10, 0 to 50, and 0 to 100 ppm), while an infrared sensor detects combustible gases including methane at the lower explosive limit range of 0 to 100 percent. **800-672-4678; www.msasafety.com.**

7. RKI Instruments GX-6000

The **GX-6000** from **RKI Instruments** simultaneously monitors up to six gases, including combustibles, oxygen, carbon monoxide, and hydrogen sulfide. Two smart sensor slots accept PID, infrared or other toxic gas sensors. It includes an internal sample pump, man-down and panic alarm, LED flashlight, and large auto-rotating LCD display. It operates as a single-gas PID unit or a multifunctional tool utilizing all six channels. The PID sensor comes equipped with a library of over 600 VOC gases and can personalize a favorites list of 30 commonly used VOCs, as well as a list of eight of the most recently used VOCs. A benzene-specific PID sensor is also available. **800-754-5165; www.rkiinstruments.com.**

8. SubSurface Locators LD-18

The **LD-18** digital water leak detector from **SubSurface Locators** reduces ambient, intermittent noises from dogs barking, cars passing by, footsteps, and people talking. Its digital electronics sample the sounds every few thousandths of a second, and if it detects an intermittent sound, it suppresses it instantly. Water leak sounds are almost always continuous noises, and the unit can identify continuous leak sounds, even in difficult conditions like busy streets. **775-298-2701; www.subsurfaceleak.com.**

ELECTRONIC LINE LOCATORS

9. Forbest Products FB-R2013A

The **FB-R2013A** multifrequency underground pipe locator from **Forbest Products** allows users to locate the pipeline and measure the depth. It comes with four frequency options: 512 Hz, 1 K, 33 K and 83 kHz. A variety of measurement modes for pipeline positioning (Valley Mode, Peak Mode, Broad Peak Mode, Peak Arrow Mode) can verify each other to ensure the accuracy of pipeline positioning. The built-in GPS helps to generate the pipeline drawing automatically. It also detects depth to 6 meters. It displays on a 3.5-inch LCD with backlight. The built-in rechargeable battery can last over 10 hours. **877-369-1199; www.forbestusa.com.**

10. IDS GeoRadar Stream C

Stream C from **IDS GeoRadar** is a compact array solution for real-time 3D mapping of underground utilities and features. Thanks to the increased level of accuracy and efficiency provided by a massive antenna array, it can detect pipes and cables automatically with the optional automatic pipe detection software. With a roughly 3-foot-wide swath collecting data in both horizontal and vertical orientation, there is no need to grid to capture full 3D coverage. It is comprised of 32 vertical and horizontal 600 MHz antennas. The unit can be towed with an optional tow package or pushed and driven by



(continued)

the motorized front wheel. Data can either be viewed in OneVision acquisition software on site for instant 3D analysis or in provided GRED HD 3D post-processing software. **303-232-3047; www.idsgeoradar.com.**

11. MyTana Mfg. RL8873

The **RL8873** multifrequency locator from **MyTana Mfg.** pinpoints cameras and any other device equipped with a sonde that transmits at standard frequencies of 512 Hz, 640 Hz, 8 kHz and 33 kHz. It works through any pipe material, even cast iron. With continual depth readout and directional indicators, this locator offers intuitive operation and a wide range of functionality. It's easy to transport, has a long battery life, and offers 10-minute auto shut-off for even longer battery life. Pairing it with MyTana Mfg.'s RT8872 transmitter allows the user to extend its capabilities. To trace gas lines, power lines, or any other conductive utility line, use the locator with the transmitter and locate in line mode. **800-328-8170; www.mytana.com.**

12. Radiodetection RD8100

The **RD8100** cable locator from **Radiodetection** is engineered to deliver high precision for damage prevention when locating buried cables and pipes. This advanced range of underground utility locators offers optional integrated GPS and usage logging. Containing an arrangement of five custom-manufactured, precision ground antennas, it allows the user to choose the best method to locate specific pipes and cables. Integrated GPS and usage-logging options automatically generate data for customer reports or in-house quality and safety audits to promote the best working conditions. **877-247-3797; www.radiodetection.com/en-us.**

13. Schonstedt Instrument Rex

The **Rex** (Receiver + Xmitter) multifrequency locator from **Schonstedt Instrument** is less than 2 inches thick and weighs less than 3 pounds. The pistol-grip receiver extends for greater sensitivity and retracts for easier carrying and storage. At slightly over 7 pounds, the entire system fits easily into

a custom shoulder bag. The Multi-Purpose Combo Kit (MPC-Rex) includes a GA-92XTd magnetic locator and a Rex multifrequency pipe and cable locator. **800-999-8280; www.schonstedt.com.**

PUSH TV CAMERA SYSTEMS

14. CPI Products TrapMaster roller skid

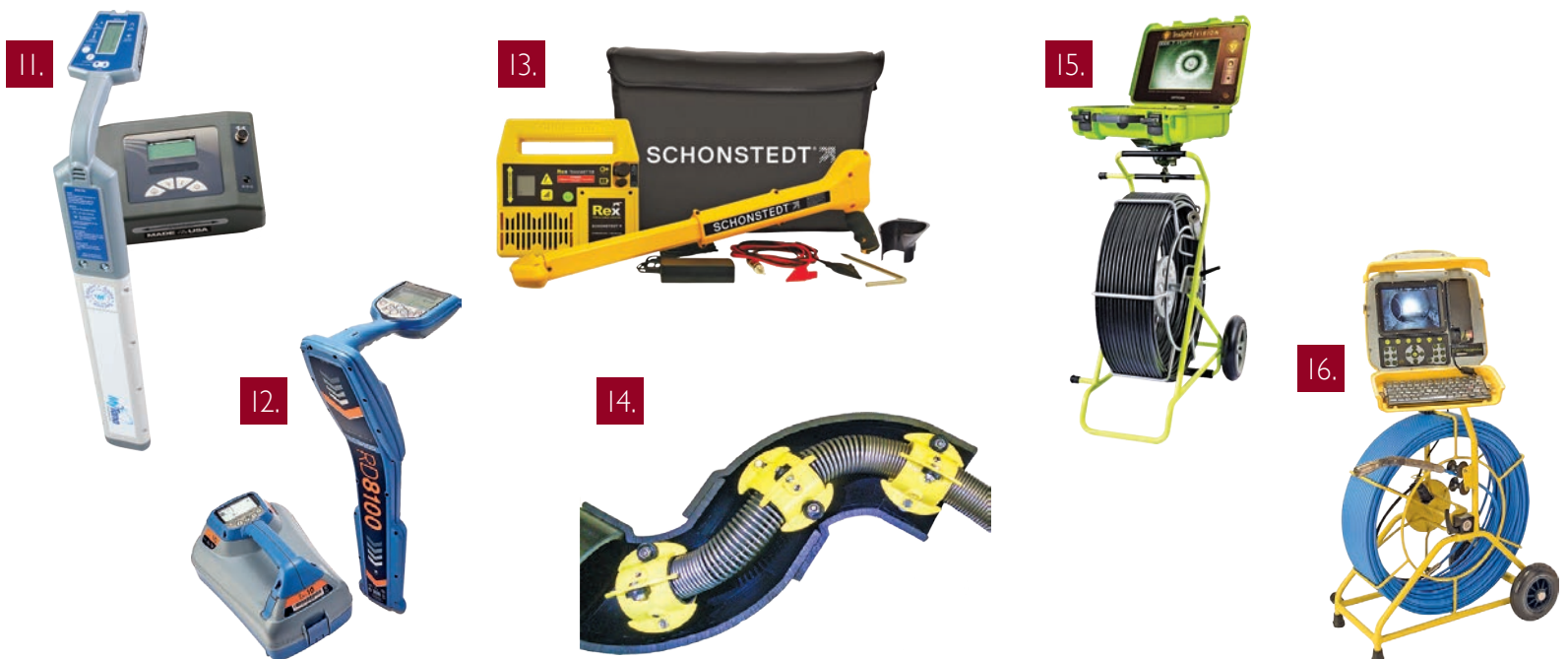
The two-piece **CPI Products TrapMaster** centers the push cable, aligning it while the radius of the seam leapers help turn the camera, allowing it to easily navigate the trap. It also centers the camera while protecting it from impacting and grinding against the walls of the pipes. It enables most push cameras to easily go through the trap, allowing the operator to see beyond the trap and know exactly what the problem is, saving time and money while reducing the chance of damaging the camera. **413-443-0925; www.cplproducts.com.**

15. Insight Vision Cameras Opticam

With the **Opticam** from **Insight Vision Cameras**, the technician is ready to start inspecting in a matter of seconds by simply plugging in the video interconnect cable and plugging in power from AC, DC or battery. A large, 10.4-inch LCD screen allows the user to see in vivid detail and move videos or pictures of inspections onto a USB drive with one-touch recording or snapshot including audio with speaker and microphone. They can also stream an inspection to an iPhone or Android device. A QWERTY keypad lets the user type in pipe issues such as cracked pipe and roots. They can also enter information about the company and project. It comes with a modular 1.3-inch self-leveling color camera head with 12 super-bright LED lights. **800-488-8177; www.insightvisioncameras.com.**

16. Pearpoint/SPX P342

The **Pearpoint/SPX P342** with the Plumbers add-on is a combination of convenience and performance, giving users the ability to have one system for confined work areas and enabling ease of use in congested work sites. This



equipment requires just one universal command module to operate and offers an option of a 1- or 2-inch camera. The 2-inch camera is self-leveling, always keeping the video picture upright when navigating pipes. **800-688-8094; www.pearpoint.com.**

17. RapidView IBAK North America ORPHEUS HD

The **ORPHEUS HD** inspection camera from **RapidView IBAK North America** offers full 1920 x 1080 resolution, providing clean, crisp HD video along with high-resolution pictures. It is ideal for large-diameter pipelines 6 inches and up, and it offers pan-and-tilt capabilities, 10 times optical zoom and 12 times digital zoom, laser measurement, autofocus, and powerful LED lighting. The camera uses lights set into the camera head at an angle that specifically illuminates inside pipe joints and gaps, allowing the user to see clearly without obscuring shadows. With its higher resolution, the user can zoom closer and inspect up into laterals while maintaining high picture quality. **800-656-4225; www.rapidview.com.**

18. Ratech Electronics Pan n' Tilt push camera

The **Pan n' Tilt** push camera from **Ratech Electronics** can be used for pipes and drains as small as 4 inches in diameter. It can be used as a retrofit to existing systems or as a stand-alone unit. It rotates fully 360 degrees and 210 degrees up and down, allowing users to view the pipe condition easier and in greater detail. An optional, steerable gooseneck can assist. Combining this camera to a control unit such as the Elite SD enables recording capability using SD/USB drives and allows MPEG video capture and JPG image capture of pipe inspections. Also included is a 512 Hz sonde, an on-screen text display overlay system, electronic distance counter, time, date and eight pages of memory. It comes with 200 to 400 feet of Gel Rod cable. **800-461-9200; www.ratech-electronics.com.**

19. Spartan Tool Traveler 2.0

The **Traveler 2.0** from **Spartan Tool** is a self-contained, closed-reel, suitcase-style camera system. It has a waterproof, self-leveling camera head with sapphire glass lens and a 200-foot pushrod with woven fiber jacket. It offers a removable pushrod reel, allowing the technician to quickly and easily swap reels in the field. If a pushrod is kinked in the field, the users can just switch out the reel and be back to work. **800-435-3866; www.spartantool.com.**

20. SubSurface Instruments pipe inspection cameras

Small pipe inspection cameras from **SubSurface Instruments** fit down a 1-inch diameter pipe. They are available in 1/4- (IC6) or 1/2-inch (IC12) camera heads. These small camera heads have been used in large cities for identifying the pipe composition of water service lines. They can be inserted in the waterline at or in the house and pushed down the service line looking for lead pipes or inserts in the line all the way to the water main with virtually no excavating, saving time and making it easy to determine if and where there is lead in the service line. **920-347-1788; www.ssilocators.com.**

21. Trojan Worldwide CI00-512SL

The **CI00-512SL** self-leveling color camera system from **Trojan Worldwide** is a lightweight, easy-to-operate system designed for 1 1/2- to 4-inch lines. It has a 1-inch, self-leveling waterproof color camera head with adjustable LED lights. The 512 Hz sonde transmitter is built into the spring of the camera, which allows more flexibility when maneuvering around sharp turns, and also creates a stronger signal for locating. The system has a 115-foot durable pushrod and a built-in footage counter. The display screen is a 7-inch LCD with DVR, with SD card recording and a built-in microphone for voice recording. The built-in battery offers seven hours of runtime and has an AC adapter for charging or direct power. Also included is the SD card, USB adapter for the SD card, protective visor, two skids and a waterproof case for the entire system to fit in for easy transportation. **800-392-4902; www.trojanworldwide.com.**



22. Vivax-Metrotech Type-CP

The **Type-CP** inspection system from **Vivax-Metrotech** has 200-, 300- or 400-foot reels with stiff pushrod that's flexible enough for easy entry and turns. The 1.6-inch D34-CP self-leveling camera provides 700 pixels of resolution to inspect up to 6-inch pipes. It includes the vCam-5 control module with an 8-inch color LCD; transmitting sonde; full-function keyboard; internal microphone; AC/DC power; rechargeable batteries; distance counter; camera LED brightness control; and digital recording to the USB thumb drives, SD cards, or internal hard drive. The control module ships ready to use with LACP software such as POSM, WinCan or MuniXS. **800-446-3392; www.vivax-metrotech.com.**

SMOKE LOCATORS

23. Hurco Technologies Power Smoker 2

The **Power Smoker 2** from **Hurco Technologies** quickly locates leaks in new and existing plumbing systems. The machine is connected to a clean-out, and smoke is sent through the system to reveal any problem areas. The system uses LiquiSmoke, a laboratory-tested safe smoke that costs cents per minute to use and has an indefinite shelf life. When the test is complete, the smoke dissipates without leaving an odor or residue. **800-888-1436; www.hurcotech.com.**

24. Superior Signal Smoke Generator

Smoke Generators from **Superior Signal** locate sources of surface inflow resulting in wet-weather sanitary sewer overflows. A fast, inexpensive, and easy way to find leaks and faults in collections systems, smoke candles provide visible smoke to detect more faults at longer distances in sizes to meet any need. Smoke candles, blowers and fluid systems for smoke testing are available. **800-945-8378; www.superiorsignal.com.**

25. TURBO FOG Division of Kingscote Chemicals M-45

The **TURBO FOG Division of Kingscote Chemicals M-45** is a versatile, lightweight, portable, self-contained smoke generator that's capable of producing dense white smoke using leak-proof liquid smoke cartridges. Each cartridge can be replaced in seconds, even while the unit is operating, for uninterrupted smoke production. No additional smoke bombs or pump garden sprayers are needed for additional test time. The Briggs & Stratton-powered, turbine-type blower weighs 45 pounds and creates a discharge velocity of over 75 mph and 2,000 cfm. It continues to work under pressure in up to 5.75 inches of water. It is available with a plumbing conversion kit. **800-394-0678; www.turbo-fog.com.**

TRANSMITTER

26. RIDGID NaviTrack Line Transmitter

The **RIDGID NaviTrack Line Transmitter** is the ideal solution for tracing buried cable, TV lines, phone lines and other metallic lines that carry an electromagnetic signal. With up to 10 watts of power output, the transmitter pairs well with NaviTrack II and NaviTrack Scout locators, and it has adjustable frequencies, including 128 Hz, 1 kHz, 8 kHz, 33 kHz, 200 kHz, and 262 kHz. A sturdy conductive ground rod with molded grip stores conveniently in the case, while two 25-foot coiled connectors allow for reaching distant connection points. A carrying strap allows for easy transport and for more complicated line sweeping. In addition, an optional inductive signal clamp pairs with the transmitter to make it easy to apply signals to lines with inaccessible conductors. **800-769-7743; www.ridgid.com. ♦**



City deploys permanent leak detection to keep aging assets in check

Problem:

The Environmental Utilities department in Medicine Hat, Alberta, wanted to move from reactive leak detection to a proactive solution that would be reliable and noninvasive and offer permanent live monitoring.



Solution:

The utility chose **Echologics EchoShore-DX**, a permanent leak-monitoring platform that uses acoustic sensors and processing algorithms to detect and pinpoint the source of faint noises emitted by pipeline leaks. Battery-powered monitoring nodes are built into fire hydrant pumper nozzle caps. The acoustic nodes are linked using a wireless network that allows rapid deployment of the platform and a quick search for leaks upon system activation. Medicine Hat opted for the Leak Operations Center that monitors and notifies the utility when a leak is detected. Almost immediately, the LOC detected three acoustic leak locations. Two of the three were confirmed leaks, but the third location turned out to be an anomaly that demonstrated the sensitivity and accuracy of the technology. Upon field inspection, it was determined that a pressure zone boundary valve was partially open, causing a pressure leak. Closing the valve eliminated the leak and decreased pumping and energy waste.

RESULT:

Medicine Hat plans to expand its current leak detection coverage to include their entire metallic and asbestos cement water distribution pipe assets over the next three years. **866-324-6564; www.echologics.com.**

Leak detection system saves money for Texas school

Problem:

A leak beneath Anna Middle School in Anna, Texas, caused water to surface in the parking lot. The problem presented potentially costly demolition and repairs.

Solution:

The school called Spencer Plumbing, and a technician used a **Gen-Ear LE** water leak detection system from **General Pipe Cleaners/General Wire Spring**. Compact and lightweight, the unit uses an advanced acoustical leak detection system to quickly and accurately locate leaks in cast iron, copper, steel and PVC lines. The equipment quickly found two distinct problems. “We fixed the small inside leak without major disruption,” says Bryan Spencer, owner of Spencer Plumbing. He then showed how the serious outside leak actually channeled water down a ditch to where it was surfacing in the parking lot.

RESULT:

“We pinpointed problems so clearly and quickly that the customer saved thousands in unnecessary demolition and repair work,” Spencer says. And the new equipment’s learning curve proved surprisingly short. “Once we learned to identify different types of leak sounds, we began using the system immediately.” **800-245-6200; www.drainbrain.com.** ♦



Product Spotlight



Sealing in potable water applications

By Craig Mandli

Municipal pipeline system owners are under increasing pressure to repair aging and failing pipelines while both minimizing the impact on their community and maintaining cost-efficiency.

Previously reserved for wastewater systems, pipe lining is steadily on the rise in potable water applications. Due to the high pressure of the water travelling through the pipes, a more resilient solution is required as there is a risk of water getting between the liner and the pipe. To answer that need, Trelleborg Pipe Seals offers the lead-free, NSF-approved I-Lock-P mechanical seal and L-Lock-P liner end seal.

“Besides being suitable for high-pressure and potable water, the seals are durable and robust,” says Livia van Uitert, global marketing and communications manager for Trelleborg Pipe Seals. “They can be built up with extensions to repair damages of different lengths, giving ample flexibility of use. The expansion band mechanism and hydraulic expansion tool are designed to make the installation as simple as possible.”

Specifically developed for high-pressure potable water pipe lining, the seals provide a watertight seal for most types of pipe including steel,

cast iron, concrete and plastic. Both are easily installed using a high-force hydraulic expansion tool and are available in multiple diameters. The L-Lock-P is a rubber liner end seal with stainless steel expansion bands, designed to keep the liner firmly in place. The I-Lock-P is a mechanical seal applied without a liner to repair sections of cracked or damaged pipe. They are designed to a pressure rating of 290 psi.

“The primary engineering challenge was to manufacture the seal in the NSF-approved EPDM 70 Shore A rubber,” van Uitert says. “Extensive work also came with the development of the hydraulic expansion tool, especially for small diameters where there are space constraints.”

So far, customers have seen many benefits of using the seals on their potable water systems. “They’ve told us that the install tool will be much easier to carry through the pipe with one hand and to disconnect from the pump and hose,” van Uitert says. “They also like that our seal spacers are locked into place with an I-beam design, where others they have used sometimes pop out of place because the spacers are not fixed. We are excited to see where we can go with this new line of products.” **800-626-2180; www.trelleborg.com/pipe-seals.**

American Augers T14-54 trencher

American Augers' new T14-54/617 trencher features a 64 hp Tier 4 Final emissions-compliant engine and a 54-inch-wide maximum-cut capability. The T14 offers an electronics package that includes a digital operator display in the cab, upgraded software and a telematics package. The telematics enables the rig to gather, log, and transmit real-time operating data used for predictive maintenance, reporting requirements, or overall optimization of trenching operations. The Mercedes engine runs low and quiet and generates torque rated up to 2,139 ft-lbs at 1,300 rpm. Safety enhancements include a new digging drive brake and optional cameras in the cab that increase operator visibility. **800-324-4930; www.americanaugers.com.**

Vac-Tron Equipment six-way hydraulic boom

Vac-Tron Equipment's new six-way hydraulic boom design for its trailer vacuum excavation equipment and industrial vacuum equipment maximizes job performance by supporting the weight of the vacuum hose. The design features increased boom length, full six-way hydraulic function, 5-inch hose, curved end with oversized rollers, wireless remote control, vacuum valve function operated from remote, wired harness, remote storage location, forward stored boom in front of the engine compartment, 330-degree swing, quick-connect 4-inch tooling, easily connected additional section hose, water jet clean-out in boom, and easily accessible clean-out port. **352-728-2222; www.vactron.com.**

InfoSense Sewer Line Data OrGanizer iOS and Android app

InfoSense's SL-DOG iOS and Android app helps field operators manage acoustic inspection data collected by the Sewer Line Rapid Assessment Tool. The SL-DOG app allows field operators to add asset IDs and field notes in real time while conducting acoustic inspections, then automatically syncs with the SL-DOG cloud-based portal to ensure easy integration with back-office data management. **877-747-3245; www.infosense.com.**

GSSI drill hole feature for StructureScan Mini XT

Geophysical Survey Systems Inc. (GSSI) added a new drill hole feature to the StructureScan Mini XT — the all-in-one concrete inspection ground-penetrating radar system. The drill hole feature is a 3D data processing detection algorithm. The algorithm evaluates a user-chosen cylindrical area that represents a potential or planned coring location. It scans and looks for targets that may interfere with a proposed coring location. The drill hole indicator is designed for concrete coring applications, and in slab situations, the drill hole feature can help determine the safest location for coring concrete. **800-524-3011; www.geophysical.com.**

Ditch Witch HT275 heavy-duty trencher

The HT275 heavy-duty trencher from Ditch Witch has a Cummins 275 hp T4 engine and a hydrostatic trencher-chain drive with a variable displacement motor, allowing operators to match chain speeds to soil conditions. The trencher can do installations up to 10 feet deep and 26 inches wide, and it has four hydraulic quick-disconnect blocks that reduce the time it takes to change attachments. The suspension mounts to the center of each track frame, providing the ability to float each track independently, taking stress off the main frame. **800-654-6481; www.ditchwitch.com.**

Flowline EchoTouch reflective ultrasonic liquid level sensors

Flowline's EchoTouch reflective ultrasonic level sensors work in condensation. By orienting the transducer vertically, condensation runs off the unimpeded transducer face to deliver reliable level measurement. EchoTouch reflective ultrasonic level transmitters are offered in small and bulk tank versions with optional push button display or software configuration and HART communication. **562-598-3015; www.flowline.com.** ♦



Trencor T14



Vac-Tron Boom



InfoSense App iOS and Android



StructureScan Mini XT



Ditch Witch HT275

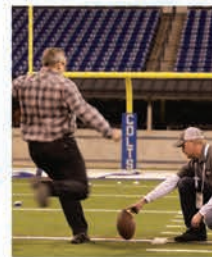


Flowline EchoTouch



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GSSI announces new technical applications specialist

Geophysical Survey Systems Inc. (GSSI) announced Brett Caldwell has joined the team in the position of technical applications specialist supporting the geophysical, geotechnical, environmental and academic markets. After serving in the U.S. Army's 10th Mountain Division Core Air Defense Element as an assistant operations sergeant, Caldwell worked in a variety of customer-facing positions, including sales, coaching, and management positions in the automotive and athletic apparel industries. Caldwell then studied geology at Towson University before beginning his work for Penhall Technologies, first as a ground-penetrating radar analyst and then as a field supervisor, in which he managed all aspects of GPR activities for Penhall Technologies in the central U.S. region.

Wastequip chief financial officer honored as CFO of the Year

Wastequip announced that Steve Klueg was awarded the 2018 CFO of the Year in the mid-sized private company category by the *Charlotte Business Journal*. The award highlights Klueg's role in significantly improving the company's financial position, culminating in its recent successful acquisition by H.I.G. Capital. Nominations were evaluated by an independent panel of judges, facilitated by researchers from Wake Forest University, who selected the finalists and winners of each category based on a variety of factors, including accomplishments, civic involvement, leadership, and contributions to corporate success.



Steve Klueg

RIDGID announces new marketing director of underground technologies

Tim Dunphy was named marketing director of underground technologies for RIDGID. In this role, Dunphy will manage new product development, partner relations, and new business opportunities for the RIDGID line of diagnostics, inspection, locating, and drain cleaning products. He has over 20 years' experience in consumer-packaged goods and durables marketing, and he holds a Bachelor of Science degree in marketing from the University of Florida.



Tim Dunphy

EPIPE names Jason Houck as national sales director

EPIPE announced Jason Houck as its new national sales director. He will oversee all sales facets of the organization, working closely with the residential and commercial business development teams, ACE DuraFlo licensing and LeadSmart sales departments. A graduate of Northern Illinois University, he started in business development in Arizona and gained valuable experience on the operational side before moving into sales management positions in Florida and Southern California.

Jason Worley joins Felling Trailers as sales manager

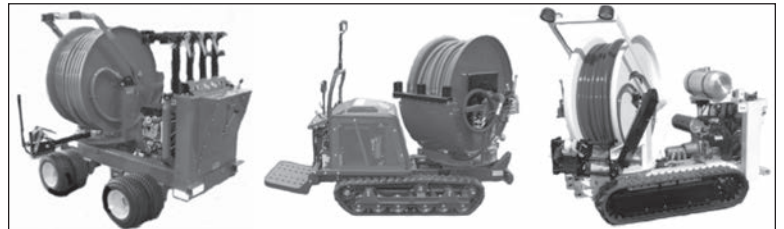
Felling Trailers hired Jason Worley as the new regional sales manager for the Southeast. In this role, he will be responsible for all sales development, activity, and dealer support within Tennessee, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia. Worley brings several years' experience in the underground horizontal directional drilling equipment and environmental products industry where he held the role of a territory manager.



Jason Worley

Utilis opens doors to San Diego office

Utilis Corp. officially opened its new U.S.-based subsidiary, Utilis Inc., in San Diego. An event was held in August where guests moved between five stations covering a short presentation about the company's history and mission, an overview of its patented technology, previous case studies in the U.S., and debuting an upcoming pilot project for the city of San Diego. ♦



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

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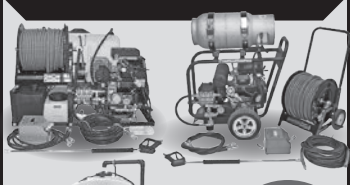


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PEOPLE/AWARDS

The **Town of Leet** (Pennsylvania) received a \$2,000 grant from the Allegheny County Department of Economic Development to formulate a new stormwater management plan.

The **City of Kitchener** (Ontario) received a \$750,000 grant to build stormwater management features into the community's new RBJ Schlegel Park. The grant was provided as part of the Municipalities for Climate Innovation Program administered by the Federation of Canadian Municipalities. Highlights of the stormwater management include rain gardens in the parking areas, infiltration galleries under the artificial turf playing fields, bioswales and oil/grit separators to remove debris and treat road runoff, and a rock infiltration trench located under a dry retention pond.

The **Worcester Polytechnic Institute's Massachusetts Water Resource Outreach Project Center** received a Meritorious Service Award from the New England Chapter of the American Public Works Association for the work that students, professors and researchers have been doing to assist communities in ensuring the availability of clean water.

Stan Polivick was named public works director for the City of Cape Girardeau, Missouri. Polivick, who had been serving as assistant public works director, replaces Steve Cook, who retired after working for the city for more than four decades.

Exploration Green Nature Park, a multifaceted project to help reduce flooding and provide recreation for thousands of residents of Clear Lake City, Texas, received the 2018 Excellence in Green Infrastructure Award from the Excellence in Green Infrastructure awards program. The program is a partnership between the U.S. Environmental Protection Agency and National Association of Flood and Stormwater Management Agencies.

The **Town of Milton** (Massachusetts) received a \$56,860 grant from the state's Office of Coastal Zone Management's Coastal Pollutant Remediation program to reduce polluted stormwater runoff and protect coastal water quality and habitat.

Floren Poliseo was named director of public works for the Town of Jackson, Wyoming. Poliseo replaces Larry Pardee, who became the town manager.

The **City of Lenoir**, in partnership with **North Carolina State University**, received a \$240,000 grant from the U.S. Environmental Protection Agency to remake the path that water takes through J.E. Broyhill Park near downtown. The goal is to decrease erosion and help water drain from the park better.

The Maryland Department of Natural Resources awarded grants to two Cecil County stormwater management projects that will achieve the same goal: improving water quality. The **Cecil Land Trust** and the **Cecil County Department of Public Works' Stormwater Management Division** projects received the grants from the DNR's Chesapeake and Atlantic Coastal Bays Trust Fund, which supports projects that improve the health of local waterways and the Chesapeake Bay. ♦

CALENDAR

Nov. 4-8

American Water Resources Association Annual Conference, Marriott Inner Harbor at Camden Yards, Baltimore. Visit www.awra.org.

March 5-8

American Water Works Association and Water Environment Federation Utility Management Conference, Renaissance Nashville Hotel, Nashville, Tennessee. Visit www.awwa.org.

March 14-16

National Utility Contractors Association Annual Convention & Exhibit, Naples Grande Beach Resort, Naples, Florida. Visit www.nuca.com.

March 17-21

North American Society for Trenchless Technology's No-Dig Show, Donald E. Stephens Convention Center, Chicago. Visit www.nodigshow.com.

March 23-27

American Water Resources Association Spring Specialty Conference: Setting Conditions for the Success of Integrated Water Resources Management, Embassy Suites by Hilton, Omaha, Nebraska. Visit www.awra.org.

May 19-22

American Public Works Association North American Snow Conference, Salt Lake City. Visit www.apwa.net.

June 9-12

American Water Works Association ACE19 Annual Conference & Exposition, Denver. Visit www.awwa.org.

June 16-19

American Water Resources Association Summer Specialty Conference: Improving Water Infrastructure Through Resilient Adaptation, Nugget Casino Resort, Sparks, Nevada. Visit www.awra.org.

July 7-10

American Society of Agricultural and Biological Engineers Annual International Meeting, Boston Marriott Copley Place, Boston. Visit www.asabe.org.

Sept. 9-11

National Rural Water Association WaterPro Conference, Nashville, Tennessee. Visit www.nrwa.org.

Oct. 9-13

American Society of Civil Engineers Annual Conference, Miami. Visit www.asce.org.

Nov. 3-7

American Water Resources Association Annual Water Resources Conference, Sheraton Hotel, Salt Lake City. Visit www.awra.org.

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