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Kevin Danen
Sewer Operations Engineer
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Kevin Danen, sewer operations engineer with the city of Minneapolis Department of Public Works' Surface Water & Sewers Division, stands inside the Central City Parallel Tunnel Project. The 12-foot-diameter, 4,000-foot-long tunnel will help manage stormwater after heavy rains. (Photography by Brad Stauffer)



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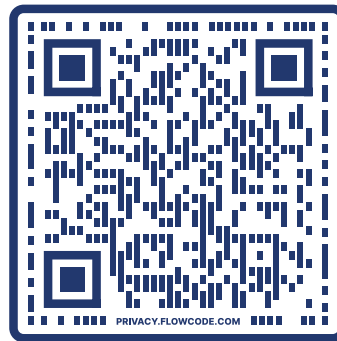


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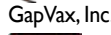
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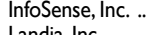


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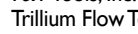
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Luke Laggis

MAKE SURE YOU'RE SERVING YOUR CUSTOMERS

Proper handling of questions and complaints is an opportunity to earn community support

I'll admit, I haven't paid a water bill in 15 years.

I live in an area that isn't served by any municipal sewer or water systems, so I rely on a well. Luckily, it's very good water. Nonetheless, I've paid plenty of utility bills in my day and I've written about municipal water systems and utility operations for quite a while now.

When I first started with *Municipal Sewer & Water*, I'd never heard of automated metering infrastructure. It didn't take long to understand all the advantages it offers. Utilities — and customers — are better able to monitor usage, less labor is required for meter reading and problems can be caught much sooner. That eliminates a lot of headaches.

Still, no metering system is foolproof.

I recently came across a news report about a family in Georgia who found that out the hard way when their water bill jumped from about \$150 to nearly \$3,000. They called their utility and then their home warranty company, which came out to investigate but found no leaks.

The next month the family's water bill came in at over \$1,150. From there it climbed above \$3,000, and came in at over \$4,900 the following month. That's

a four-month total of over \$12,000 for two retirees with no pool, hot tub or sprinkler system.

So, the family called another plumber to come out and investigate. Again, no leaks were found, but the plumber did find the water meter to be defective. When the family called the utility again to request a billing adjustment, they were denied and told no adjustment was warranted. Keep in mind this is a two-person residence using between 5 and 9 CCFs per month, but the bills in question showed spikes of up to 227 CCFs — 30 times their average monthly usage.

The family appealed to their water and sewer appeals board, according to the report, but were again denied any adjustment. And while the utility had sent someone out to check for leaks, no one from the utility had checked the meter.

When the family's bill dropped to a more regular charge of \$87 the next month, they appealed again and were again denied, with the utility saying it had checked equipment on the site and everything was working properly.

The two members of the appeals board that voted in favor of a billing adjustment noted that the massive spikes just didn't make sense to them, per the report.

As noted, I haven't had the opportunity to look at a monthly bill and track my usage in a long time. But this family's case doesn't make sense to me either. It shouldn't make sense to anyone, especially those in the water industry. There were no leaks, and the family obviously wasn't suddenly using that much water. I don't know every facet of this case, but it seems fairly obvious there was a metering problem.

Automated metering is a major step forward for the industry, no doubt about that. It's a shame that in this case those automated readings were taken as infallible when common sense clearly indicates a problem. It's also too bad this family, which has since filed a petition with the county court, has been put through this.

Water and wastewater utilities face an uphill climb in getting the funding and support they need, and cases like this don't help. A little more emphasis on customer service could have gone a long way in this instance, and it would have served both sides well. ♦

That's a four-month total of over \$12,000 for two retirees with no pool, hot tub or sprinkler system.

Comments on this column or about any article in this publication may be directed to editor Luke Laggis, 800-257-7222; editor@mswmag.com.



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The New Hampshire Department of Environmental Services started a water festival 31 years ago to engage fourth graders in learning about the role of water in their lives and how our actions affect water resources. Read more about the festival and its origins in this online exclusive article.

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EXCELLENCE FLOWS

Source Water Protection

The North Texas Municipal Water District's dedication to environmental stewardship has garnered well-deserved national recognition. The American Water Works Association recently honored NTMWD with the 2023 Exemplary Source Water Protection Award for Large Water Systems. Learn more about the district's efforts in this profile update story. mswmag.com/featured

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“Time and time again, evidence shows that the key to significantly reducing the risks associated with our industry is employee training and reinforcement through events such as the Trench Safety Stand Down.”

—*Rise in Trench Collapses Drives Urgency for NUCA's Safety Training*
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REDUCING RIVER POLLUTION

Cloud-Based AI System

A cloud-based artificial intelligence system designed to detect blockages in sewers has shown an almost 90% accuracy in a recent trial, according to Sheffield University in England. The project is part of the Pollution Incident Reduction Plan which focuses on early intervention to reduce pollution incidents across Yorkshire by 50% by 2025. mswmag.com/featured



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HANDLING HEAVIER RAINS

Minneapolis addresses stormwater problems with massive new tunnel project

By Ken Wysocky

The city of Minneapolis is in the midst of a \$57 million expansion of a downtown stormwater tunnel system that’s designed to relieve pressure on existing tunnels, reduce long-term maintenance on those tunnels and provide enough additional capacity to handle expected larger rainfalls in the years to come.

The project’s main component is a new 12-foot-diameter, 4,000-foot-long tunnel that’s being bored about 70 feet underground. It runs parallel to an existing 6-foot-diameter main tunnel that’s the backbone of what’s known as the Central City tunnel system, originally built in the late 1930s to drain stormwater into the Mississippi River, says Kevin Danen, a sewer operations engineer in the Public Works Department’s Surface Water & Sewers Division.

The new tunnel will significantly expand the capacity of the Central City tunnel system, which comprises a main line and four roughly 4-foot-diameter, horse-shoe-shaped feeder tunnels — 4 miles of tunnels in all, he says.

The project, which broke ground in November 2021, is funded with approximately \$38.6 million in bonds floated by the city and an additional \$18.4 million in state bonds.

“It’s definitely the largest and single most costly project our division has ever undertaken,” Danen says.

Officials first worked with two consultants, Barr Engineering Co. and CDM Smith, that modeled various ways to alleviate pressure on the tunnel system. Several options were presented, including building a network of rain gardens or demolishing the existing main tunnel and building a new oversized tunnel.

“But there wasn’t enough surface area available to build enough rain gardens to make a dent in the amount of rainwater going into the tunnels,” Danen reports.



PCI Roads worker Chad Alleckson builds concrete forms for the floor of the Central City Parallel Tunnel Project.

“So in 2018, we decided to increase the [main] tunnel capacity, which led to building a larger parallel tunnel about 20 feet away from the existing tunnel.”

The tunnel’s diameter is so large because officials are concerned about the trend toward larger and larger rainfalls in short periods of time. Moreover, land usage has changed over the decades, leading to more and more paved areas and rooftops that shed more and more stormwater.

“We’ve had a couple of occasions where during short but intense rainstorms — maybe 2-inch-an-hour rainfall for, say, 20 minutes or so — we’ve actually seen water ponding by curbs and gutters because the system is surcharged,” Danen says. “So we put some foresight into this project and designed a system that could accommodate a 100-year rain event.”

Stopping the surcharge

Slated for completion in June 2024, the tunnel is expected to reduce stress on the existing downtown tunnels, which typically are fully surcharged — at times under 90 feet of head pressure — and are “literally blowing themselves apart,” Danen says.

“The tunnels were made with 8-inch-thick, unreinforced concrete and weren’t designed to handle this much flow. As a result, when the tunnels reach a pressurized state, the water flow actually cracks the concrete and displaces sections of it, which allows water to get outside the tunnel and erode the surrounding sandstone.”

Sometimes highly pressurized water flow leaks through small cracks in the tunnels with such force that they act like mini water jetters, which scour the surrounding sandstone and create even larger voids than otherwise might be expected. The end result: Stretches of the tunnel no longer are reinforced by the surrounding sandstone, which leads to even further damage.

“We’ve had about a 20-foot-long-by-2-foot-tall section of concrete in a feeder tunnel literally blow apart,” Danen says. “We’ve found voids as large as 20 feet tall, 30 feet wide and 200 feet long.”

Historically, the division has repaired the tunnel walls and filled the exterior voids with grout. But the new tunnel reflects a more proactive, rather than reactive, approach by eliminating the creation of more voids.

“We decided there had to be a better way than to just keep on responding to these tunnel failures,” Danen says.

Miles of stormwater tunnels

In all, the city relies on 15 tunnel systems comprised of 16 miles of tunnels that drain about 39% of the city’s stormwater into the Mississippi. The rest of the stormwater drains either into the Mississippi or creeks, streams and small lakes via gravity-fed stormwater lines.

“We have some unique geography here because the Mississippi drops 50 feet in elevation after it flows over St. Anthony falls [located about in the middle of the city],” Danen says. “Any stormwater that falls south of the falls flows into the

“We decided there had to be a better way than to just keep on responding to these tunnel failures.”

Kevin Danen

“It’s definitely the largest and single most-costly project our division has ever undertaken.”

Kevin Danen



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SEWER INFRASTRUCTURE:

About 830 miles of sanitary sewers, 509 miles of stormwater pipes, 16 miles of deep tunnels, 31 miles of sanitary main and interceptor tunnels, roughly 18,000 storm sewer manholes; 32,000 sanitary-sewer manholes, 29,000 storm drain inlets, more than 400 outfalls to lakes, creeks and rivers.

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Kevin Danen, sewer operations engineer with the city of Minneapolis Department of Public Works’ Surface Water & Sewers Division, stands inside the city’s Central City Parallel Tunnel Project.
PHOTOGRAPHY BY BRAD STAUFFER



PCI Roads workers Rigo Munoz, Cesar Beceria and Connor Vtschinski (from left) check measurements and alignment as construction progresses in the tunnel.



Concrete forms line the walls and ceiling of the tunnel.



A cluster of pumps and hoses work to drain a settling basin where the tunnel project nears its end at the Mississippi River, with the city's old mill district in the background.

tunnels, many of which were built back in the late 1880s as combined sanitary and storm sewers, but have been separated since then.”

Furthermore, as the path taken by the Mississippi changed thousands of years ago, stretches of the old riverbed were transformed into a chain of small lakes connected by creeks. Stormwater in the western and southwestern parts of the city drain into those lakes and a large portion of the stormwater in the southeast quadrant drains into tunnels and then into the Mississippi.

The northern parts of the city drain into the Mississippi via a conventional

IN-HOUSE WORK BENEFITS FOR SEWER DIVISION

Unlike many large cities, the Surface Water & Sewers Division of the Minneapolis Public Works Department handles most of not only stormwater and sanitary sewer construction, but also maintenance and repairs — including rehabilitation of century-old stormwater tunnels that carry nearly 40% of the city’s stormwater into the Mississippi River.

“It’s a little unusual,” says Kevin Danen, a sewer operations engineer in the division. “But it’s always been that way here. City crews built those tunnels back in the 1800s and we’ve kind of hung onto that business model.”

The division employs four crews of about eight workers per crew.

To clean the city’s 831 miles of sanitary sewers, the division relies on five jetting trucks built out by Sewer Equipment on Freightliner truck chassis. The Series 800-HPR trucks feature 1,500-gallon water tanks and water pumps that generate pressure of 2,000 psi and flow of 65 gpm.

In addition, the division runs four Vactor 2100 Plus vacuum trucks, built out on Freightliner chassis with 12-cubic-yard debris bodies, 1,500-gallon water tanks and Roots blowers (Howden). Three camera trucks built by Aries and featuring Pathfinder inspection cameras round out the equipment fleet.

Danen says the division uses the camera trucks to inspect about 240,000 feet of sewer lines a year. The division also does pipe lining with a steam-cured pipe-lining system from Premier-Pipe USA and devotes one camera truck to support those efforts.

“We’re also in the juvenile stages of developing a full asset management program for our division, which will help us create a long-term plan for rehabilitation of aging infrastructure,” he notes.

Having crews that do the bulk of the division’s work provides the kind of flexibility that contractors usually can’t match, Danen notes.

“If we have a street cave-in, we can respond quickly after all lines are located,” he explains. “We can start digging within 24 hours — basically respond at the drop of a hat.

“That’s also true for maintenance,” Danen continues. “We can be out there with a jetting truck within an hour and minimize any potential damage for property owners.

“That kind of flexibility is invaluable.”

By using city employees, the division also sidesteps time-consuming things such as purchasing processes and work-order changes from contractors, the latter of which can hamper the ability to adapt to issues that emerge on job sites.

There is one downside to using city employees: difficulty in finding qualified employees.

“We do have our struggles with staffing levels,” Danen reports. “But everyone is dealing with that. “Overall, I think using our own crews makes us more efficient and it’s just as competitive [in terms of cost] as hiring contractors.”



A PCI Roads worker drives a skid-steer through the last segment of the tunnel.



Remnants of the original 1883 storm sewer outlet frame a network of hoses working to clear a settling basin where the tunnel nears its end at the Mississippi River.



Key leaders in the Minneapolis Surface Water & Sewers Division include (from left) Sean Oberg, sewer maintenance supervisor; Kevin Danen, sewer operations engineer; Curtis Stallings, sewer construction general foreman; and Joe Klejwa, P.E.

system of storm sewers.

In total, the city relies on about 830 miles of sanitary sewers, 509 miles of stormwater lines that drain 57 square miles of land, 31 miles of sanitary mains and interceptor lines and more than 400 outfalls. Stormwater is treated with above-ground methods such as grit chambers and rain gardens, Danen notes.

Wastewater from more than 100,000 buildings in Minneapolis is handled at the Metropolitan Wastewater Treatment Plant, which is operated and maintained by Metropolitan Council Environmental Services in neighboring St. Paul. The city of Minneapolis pays fees to MCES, which pay for maintenance of its regional collection system and the direct costs of wastewater treatment.

Monitoring the results

The tunnel project also includes enlarging the last 400 feet of an outlet into the Mississippi, where the new tunnel, the old main tunnel and another tunnel converge. A local contractor, PCI Roads, is doing the tunneling work.

When the project is completed, stormwater from the northernmost of the four feeder tunnels will flow directly into the new tunnel, while the remaining three feeder tunnels will still transport water into the old main tunnel, Danen explains.

When the old main tunnel fills up to a certain height, stormwater will travel into the new tunnel via cross connections between the two channels.

After the new tunnel goes online, officials will rely on 11 pressure meters — two in each feeder tunnel and three in the old main tunnel — to monitor if the system works as designed, Danen says.

“That will tell us how successful we’ve been in alleviating pressure in the feeder tunnels,” he notes.

More work to do

Efforts to rehabilitate the feeder tunnels, which have been suspended during the project, will resume when the new tunnel is finished. Danen says that since around 2008, the city has spent millions of dollars repairing the tunnels.

“We’re about halfway through with our rehab program,” he says.

About 18,000 feet of two feeder tunnels, each located in tunnel systems aside from the Central City system, have been completely rehabbed. Rehabilitation of another roughly 17,000 feet of tunnels in other tunnel systems are scheduled to be completed during the next five to 10 years.

In the end, officials hope the new tunnel will significantly reduce the need for more tunnel repairs and rehab work.

“We’re definitely moving from a reactive position into a more proactive position,” Danen says. “We’re going through the city step by step and assessing the various needs of our stormwater system.

“We’re not only rehabbing existing tunnels. We’re also adapting the system to new conditions that are much different than when the stormwater system first was built out. And this parallel tunnel is the largest step we’ve taken so far.”

It’s possible another large tunnel will be required in the years ahead.

“At this point, it’s too early to tell. But we’ll keep modeling and assessing things and adjust to what we see.” ♦

“We’re definitely moving from a reactive position into a more proactive position.”

Kevin Danen

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GIVING OLD INFRASTRUCTURE A LIFT

Colorado community's proactive approach eliminates potential problems with major lift station and sewer line

By Thomas Renner

Wastewater lift stations aren't designed to last forever, and there are plenty of examples of communities suffering the consequences of delayed improvements.

For one Colorado community, failure was not an option. The city of Northglenn recognized a major lift station was in serious need of an overhaul.

Along with the lift station, the city also replaced its biggest sewer line. All told, the combined cost of the projects reached \$26 million and required nearly 18 months to complete. The lift station replacement cost \$10 million.

"The biggest driver on this project was to replace the existing lift station," says David Campbell, the construction manager on the project for Filanc Construction. "It was old and pretty much at the end of its anticipated service life."

Complete overhaul

Northglenn sits about 25 miles north of Denver, includes approximately 38,000 residents and more than 500 acres of park systems, hiking trails and magnificent lakeside vistas. Locales such as Northglenn and all they offer are part of the reason the state's population has surged 34% since 2000, according to data from USAFacts.

The construction of Lift Station A in Northglenn, a 4.5 million gpd station, included four submersible pumps located in a dual chamber, cast-in-place concrete wet well.

A prefabricated electrical and controls building houses switch gears, variable-frequency drives and controls. An emergency backup generator — a must-have for any lift station — can provide full electrical loads.

Valve and metering vaults, 8- to 24-inch ductile iron pipes, buried site piping and fittings, and surge/transient mitigation equipment were also included in Filanc's scope of work.

While no project is routine, Filanc has extensive experience in constructing and expanding wastewater facilities. Since its founding in 1952, the company has completed more than 300 projects in California and the Southwest.

"We did increase capacity to a degree, but for the most part it was about replacing the station," Campbell says.

Digging deep

Lift stations require deep excavation to establish wet wells, which are a holding zone for the wastewater collections system. The lift station pump continuously lifts the sewage through a pressurized sewer force main. The force main elevates the wastewater to a higher elevation and pushes it along to the treatment plant.

One of the biggest challenges for the Northglenn project, however, was a 54-foot vertical excavation for the wet well on a very tight geographical footprint.

"Shoring up the excavation and the excavation itself was difficult on this project," Campbell says. "Then we had to complete extensive ground dewatering. Otherwise, it was a straightforward project."

Accessing equipment

One essential piece of lift station construction requires access doors to maintain equipment. Filanc installed 14 doors that provide safe access to pumps, process pipes and grinders for routine service and maintenance. "They met the specifications for this project," Campbell says. "BILCO doors are the industry standard are used frequently in projects of this scope."

The doors feature stainless steel construction with a channel frame. They are commonly used in exterior applications where there is concern of water or other liquids entering the access opening. The doors include engineered lift assistance for one-hand operation. The corrosion-resistant materials were an important consideration in the wastewater environment.



“Big infrastructure replacements are messy and disruptive ... and also important.”

Michael Roman

The pumps, which serve as the heartbeat of the lift station, must be inspected a minimum of four times a year. Grinders have also become increasingly important and require regular inspection and service. Flushable and sanitary wipes have become a major issue for wastewater treatment plants. Grinders reduce pump clogging, improve sludge processing and protect downstream equipment.

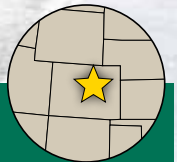
Down the line

Northglenn selected another industry veteran for sewer pipe installation.

BT Construction has supported construction projects and completed more than 1,500 of them in

The replacement of Lift Station A in Northglenn, Colorado, was part of a larger project that included replacing the city's largest sewer line. The combined project cost \$26 million and took almost 18 months to complete.

PHOTOGRAPHY BY JENN BAKKER



PROJECT:
Lift station and force
main replacement

UTILITY:
City of Northglenn

TIME TO COMPLETE:
Approximately 18 months

COST:
\$26 million



The 4.5 mgd lift station collects nearly all of Northglenn's sewage and pumps it 11 miles through a 27-inch force main to the wastewater treatment plant.



One of the biggest challenges for the Northglenn project was a 54-foot vertical excavation for the wet well on a very tight geographical footprint.



The construction of Lift Station A included four submersible pumps located in a dual-chamber, cast-in-place concrete wet well.



Fourteen BILCO doors provide safe access to pumps, process pipes and grinders for routine service and maintenance.

the Northglenn Water Treatment Facility is transferred to the Wastewater Treatment Plant for processing and return to the watershed. The town is in the midst of a 3-year, \$6 million project to improve its handling of solids.

Each year, the town sets funds aside to replace sections of water distribution lines throughout the community. Much of the city infrastructure was installed in the 1960s, and proactive measures will reduce the number of waterline breaks, emergency repairs and interrupted water service.

While the costs for wastewater infrastructure improvements are pricey, the consequences of delays are severe. Northglenn took important steps to ensure its community has safe and reliable solutions for managing its wastewater and avoid a messy situation that has impacted many other municipalities. ♦

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Colorado since 1980. BT worked with Northglenn officials to blunt impact within the community.

“Big infrastructure replacements are messy and disruptive ... and also important,” civil engineer Michael Roman said in a message to the community. “Frequent sewer line breaks due to aging sewer lines are a lot more disruptive, though, so we really need to get this replacement done.”

The work was done in sections and took about 10 months to complete. Lift Station A collects nearly all sewage from Northglenn and pumps it through the line, called Force Main A, to a wastewater treatment plant. The 27-inch force main runs 11 miles from Lift Station A to the plant, where it is treated before being discharged into Big Dry Creek and Bull Canal for agricultural irrigation. About three blocks along Force Main A required a new sewer line.

Down and dirty

A lift station can fail by either a force main break, power outage or pump failure. They are also susceptible to clogs from fats, oils and greases generated by restaurants and businesses.

When the system fails, wastewater collects in the lift station wet well and backs up into the collections system. The result is sewer backups into homes or overflow from the lift station into the surrounding environment.

Most failures are due to age or lack of maintenance. The new lift station and force main are part of Northglenn’s goal to keep its infrastructure operating at peak performance, but the community is not stopping there.

About 40 to 60 million gallons of water per year at

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CHOOSING CIPP RESINS

Good project planning requires a knowledge of styrenes, epoxies and coatings

By Giles Lambertson

Cured-in-place pipe lining has been around for more than 50 years. However, fumes emanating from styrene-based resins in the linings have concerned installers and some public health officials for just as long. The good news is that municipal leaders favoring a CIPP solution for their aging infrastructure have ways to mitigate the emissions.

The culprit is styrene, a liquid compound utilized in synthetic rubber and plastic. More to the point, styrene is in the resins that cure, harden and adhere lining to pipe interiors. Because styrene resins work well and are relatively inexpensive, probably half or more of all CIPP installations employ material containing the petroleum product.

Yet the fumes remain a problem. They are emitted during the CIPP installation process and, if they are inhaled in sufficient amounts, they can affect the inhaler's balance, concentration, color vision and reaction times. Anything that thus impairs workplace performance becomes a health and safety issue, in a municipal setting or anywhere else.

The rest of the story is that the emissions usually are a momentary event. If a resin, for some reason, is incompletely cured during the lining process, there is a chance for lingering fumes, but that's not the rule. That may be small comfort to pipe lining crews smelling it in real time.

Styrene emissions must be present in concentrations more than a thousand times greater than found in the natural environment to pose a threat, according to a U.S. Department of Health and Human Services report. So, the fumes emitted during installation mostly are noisome. Still, it is recommended that total exposure of laborers be kept below EPA-recommended levels.

Be that as it may, the stuff smells. That alone is nettling to contractors, property owners, and municipal managers, some of whom worry about adjacent populations being exposed to threatening concentrations of the gas. What can be done?

One solution is to use epoxy resins, which don't contain styrene. Problem solved! Nonstyrene resins have been available and in use for two decades. Unfortunately, there are other considerations with that choice, perhaps the main one being cost. Resins without styrene can cost considerably more.

There are additional considerations. Different CIPP resins vary in their mechanical properties — things like a cured lining's hardness, flexibility and corrosion resistance. Different resins also respond differently to curing methods — that is, to hot water, steam or ultraviolet light. So, curing speed and the ultimate properties of the cured lining are factors to consider in looking at nonstyrene lining agents.

A second solution to reducing vapors is to employ a so-called "barrier product," a coating that seals the styrene odor in a liner so it can't migrate into ambient air — neither during installation of the liner nor afterward.

To test the performance of the barriers, an industry study was undertaken recently. It drew upon the fact that styrene fumes are most noticeable during the insertion process and when refrigerated trucks containing infused liners are opened at the job site.

In the study, some trucks were loaded with styrene-infused lining and some with identical lining that had been coated by the barrier product.



When the trucks were unsealed, their relative concentrations of styrene fumes were detected and recorded.

"It was a night-and-day difference," says Lance Cullen, new markets business development manager at Haartz. The study concluded that opened trucks with unblocked lining recorded between 200 and 300 parts per million of styrene fumes, while trucks containing the coated lining registered less than 0.30 ppm. "That's a drop of more than 99%. People standing there with me didn't believe there was styrene in the trucks at all."

Cullen would, of course, tout the success of the barriers. Among the lineup of products at his company are styrene-barrier coatings. Haartz has a hundred years of specialty automotive fabric experience in which coatings and adhesives are an integral feature. The company had its CIPP barrier products under development for five years and began marketing them two years ago.

Other companies also produce barrier products and the effectiveness of such coatings is widely acknowledged. They can be designed to be compatible with particular curing methods and are durable enough to withstand an abrasive flow of liquids through a pipe. Cullen says Haartz barriers, for example, have been tested for adhesion and durability and are deemed able to support the 50-year design life of lining.

Cullen advises project owners that carrier coatings should be capable of withstanding the CIPP inversion process and be flexible enough to "dimple" when the lining passes an intersecting line, so that the covered opening can subsequently be found and reinstated.

He also strongly recommends using two barriers — one affixed to the wall of the pipe

The bottom line: Municipal managers preferring a CIPP solution to aging infrastructure have choices.



before the lining is inserted, the other on the interior of the lining so the lining is sandwiched between the barriers. However, the pre-liner barrier is considered optional.

The bottom line: Municipal managers preferring a CIPP solution to aging infrastructure have choices. They can stipulate in a contract that a nonstyrene resin be used in the lining, or that a barrier product be affixed to the lining. Depending on the size of a project and lining material selected, using a barrier could be less expensive than lining a pipe with a nonstyrene resin.

Yet there is more to selecting a CIPP solution than how to handle fumes. Cullen advises that municipalities consider both products and people in evaluating a CIPP contract. “They should look at the track record of a lining installer,” he says. “How long has the contractor been doing it? We know things can go wrong in coating. Are high-quality materials used by the contractor?”

He also notes that the federal infrastructure bill passed in 2021 will help fund water system assessments and system repairs through 2026. The bill appropriated some \$50 billion for just such programs, which means it might be a good time for municipal leaders to weigh their cured-in-place pipe repair options. ♦



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A DEADLY PHRASE

Don't let a dismissive attitude lead to workplace injuries

By **Ronnie Freeman**

We've probably all heard or used the phrase, "It's no big deal," in regard to safety concerns. Basically, a hazard isn't a big deal as long as no one gets injured. Until someone does get injured and then it becomes a big deal. Then we are getting a lot of people involved, there's investigations, there's medical involvement to deal with the injury and worst case there could be liability issues involving managers, lawyers, etc. So, how often does this phrase get used at your workplace?

Usually when this phrase gets used it means something has happened but it's not something that requires a lot of action or even getting excited about. It usually amounts to nothing and that's why we say, "It's no big deal."

How many times during a normal workday have you walked right past a hazard and kept on walking? You knew it was a hazard such as an unrolled electrical cord, an unsafe trench, a spilled chemical, unlabeled containers, damaged equipment, etc., but you made the decision to ignore it with the hope someone else would address it. Perhaps you were too busy at the moment and forgot about it later on. Maybe you didn't see the seriousness of the hazard. Or have you become complacent with having hazards around?

How many times during a normal workday have you walked right past a hazard and kept on walking?

There are some other common phrases and excuses that contribute to this phenomenon. They include, but are not limited to:

"It's not my job." Perhaps it's not, but it's worth speaking up about to avoid getting someone injured.

"It will be OK; someone will deal with it." If we all think that way, nothing will get done and the hazard will continue to exist.

"It's one of those things that has been that way for a long time." There's no time like the present to correct a hazard to avoid an injury.

"I don't have the time to deal with it right now." But do you have the time to deal with an injury?

"I don't want to cause trouble if I speak up." If you don't speak up, how will you feel if someone is injured?

"It's no big deal." Hazards are always a big deal, and this can be reflected in your company's safety culture.

Bottom line, hazards are a big deal and can lead to serious injuries to employees. We have all seen a hazard that didn't get addressed, and we know they are work-

place injuries waiting to happen. Knowing what needs to be done and doing the right thing can be two different things. Let's make them one by doing the right thing in speaking up about hazards and getting them corrected before they become a really big deal! ♦



CASE STUDIES

LOCATION AND LEAK DETECTION

By Craig Mandli

Sewer inspection system helps city reduce inflow and infiltration



Problem:

About 10 years ago, the city of Bedford, Indiana, struggled to maintain its stormwater and sewer systems. Many of Bedford's pipes were defunct or filled with debris and addressing overflows and I&I were major challenges. The Indiana Department of Environmental Management threatened to ban Bedford from adding new pipes to its systems if action wasn't taken to repair its failing infrastructure.

Solution:

The city purchased a ROVER X sewer inspection crawler from Enviro-sight and soon invested in additional equipment, including the Quick-view airHD zoom camera, a second ROVER X crawler, a ROVER X SAT lateral launch system, and a custom-designed inspection vehicle. The department also put together a monitoring system to keep its maintenance crew on track. The crew divided 79 miles of pipe into two sections. Every day they pick up where they left off, documenting defects and other issues.

RESULT:

With the new equipment at its disposal and a monitoring system in place, the city could identify areas in serious need of repair or rehab work. "In these last few years, they have basically been going line by line televising, doing reports, repairs and just getting everything lined out," says Charles Parsley with Best Equipment, Enviro-sight's regional sales partner. "Bedford is a small community, yet they bought this box truck with everything. It's Middle America and everyone has the same problems they do, but they are acting on it and getting the work done." 866-348-6071; www.envirosight.com ♦

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

SETTING LOFTY GOALS

NASSCO has its sights set on key objectives to help move the trenchless industry forward

By *Sheila Joy*

Through the development of specification guidelines, technical manuals, webinars, videos and other resources, NASSCO committees are making a major impact in setting standards for the assessment, maintenance and rehabilitation of underground infrastructure. Below is a list of NASSCO committee-set goals for delivery in 2023/2024.

GOVERNMENT RELATIONS

1. Advance NASSCO's federal policy recommendations through meetings and other communications with congressional leaders and federal agencies
2. Conduct one in-person and three virtual D.C. Fly-In events
3. Create an infrastructure package funding roadmap
4. Establish government relations in Canada

HEALTH AND SAFETY

1. Develop safety video on the topic of styrene-monitoring equipment
2. Develop safety video on the topic of confined-space entry as it pertains to sanitary sewer manholes
3. Manage third-party study on styrene levels in cured-in-place-pipe cure water as it relates to any impact to municipal secondary treatment systems

INFRASTRUCTURE CONDITION ASSESSMENT

1. Launch PACP Version 8.0
2. Launch "PACP for Asset Management – Evaluating Condition Grades" online course
3. Launch "PACP for Asset Management – Assessing Risk" online course
4. Create an ADR support work group

INFILTRATION CONTROL GROUTING

1. Present a two-part test cell webinar
2. Design course and related materials for self-paced, online ITCP grouting course
3. Develop specification for manhole grouting
4. Review/update grouting specifications
5. Research root inhibitor additive for acrylamide grout and determine requirements for applicators

INTERNATIONAL BUSINESS

1. Translate PACP Version 8.0 into Spanish and Portuguese
2. Conduct two technical webinars in Spanish
3. Deliver first PACP class in Portuguese
4. Translate ITCP-CIPP manual into Spanish
5. Deliver first ITCP-CIPP certification course in Spanish

LATERAL AND BUILDING PIPE

1. Update lateral and building pipe specification guideline
2. Complete Lateral Manual of Practice
3. Launch NASSCO's "Building Sewer and Drain Inspection" program

LEADERSHIP

1. Participate in ongoing discussions amongst NASSCO members on the challenges and opportunities in managing people.

OPERATIONS AND MAINTENANCE

1. Develop siphon cleaning and assessment guidelines
2. Update 2014 NASSCO Sewer Pipe Cleaning Specification Guideline
3. Update 2014 NASSCO CCTV specifications
4. Develop Content for bypass pump online training
5. Launch drain cleaning certification program

PIPE REHABILITATION

1. Deliver a white paper on features and benefits of varying pipeline rehabilitation technologies
2. Develop an educational video on spray-applied pipe liner
3. Update section on UV curing in CIPP specifications

PRESSURE PIPE

1. Present pressure pipe assessment webinar
2. Develop pressure pipe rehabilitation video
3. Develop pressure pipe assessment video
4. Produce a webinar on pressure pipe cleaning using a pigging process

SEWER STRUCTURE REHABILITATION

1. Complete update of the 2013 Manhole Rehabilitation Performance Specification Guideline
2. Continue updates to ITCP manhole rehabilitation document
3. Develop guidance document on surface prep for brick sewer structure rehabilitation

SOFTWARE

1. Roll out PACP Version 8.0 data dictionary and documentation
2. Complete PACP certification tool
3. Develop PACP Version 6.0 to Version 7.0 and Version 7.0 to Version 8.0 mapping to assist those transitioning from one version to the next

WORKFORCE DEVELOPMENT

NASSCO has paused the Workforce Development Committee temporarily as it works to build partnership with other organizations and associations to have a greater impact on filling the skilled trades gap.

If you would like to have a voice in developing these resources, please get involved! Visit nassco.org to learn more. ♦

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Nov. 7, 8 am Eastern

Winchester, Indiana

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Trainer: Jerry Weimer

Nov. 7, 8 am Eastern

Virtual

Includes PACP, LACP, MACP
Trainer: Paul Booth

Nov. 8, 8 am Mountain

Virtual

Includes PACP
Trainer: Brandon Conley

Nov. 15, 8 am Eastern

Virtual

Includes PACP, LACP, MACP
Trainer: John Jones

Nov. 15, 8 am Pacific

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Trainer: Brandon Conley

Nov. 29, 8 am Eastern

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Dec. 6, 8 am Eastern

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Trainer: John Jones

Dec. 6, 8 am Central

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Dec. 13, 8 am Pacific

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Dec. 27, 8 am Eastern

Virtual

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Trainer: Brandon Conley

ITCP Training

Nov. 7, 8 am Eastern

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Nov. 28, 8 am Central

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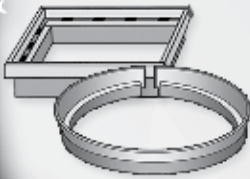
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BRINGING WATER THROUGH A MOUNTAIN

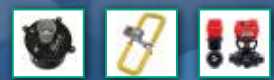
Arkansas pipeline project features the longest tunnel bore of its kind in North America

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Timmy Ledbetter
City of Hot Springs Utilities Director
Hot Springs, Arkansas

PRODUCT FOCUS:
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At *Municipal Sewer & Water*, we're looking for sewer and water departments with an interesting story to tell. If you'd like to share your story, send us a note at editor@mswmag.com.



MUNICIPAL INNOVATIONS '23

Water and wastewater utilities are always on the lookout for ways to boost efficiency and reduce costs. Municipal Innovations is a special section dedicated to companies providing solutions to the problems your utilities face everyday.

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GapVax VHX Series With Increased Performance Is Ready for Hydroexcavation



The GapVax VHX series delivers optimum weight distribution, improved safety features and increased performance.

The debris body is 7.5 cubic yards, offering a 15,000-pound payload. The low-profile (12 feet, 2 inches) overall height makes it the ideal solution for all-around hydroexcavation projects. The superior vacuum system with single-mode wet/dry filtration is quiet, reliable and simple.

VHX SPECS

The VHX includes a 4,000 cfm positive displacement blower, 600 hp transfer case with air-shift engagement and specially designed ultra-quiet air injection and discharge silencers. This filtration design includes a top-loading debris tank; 14-inch stainless steel float ball shut-off, efficient centrifugal cyclone separators and long-lasting filter bags. The VHX is equipped with a powerful combination of 12 gpm, 3,000 psi water system with optional 200 cfm air compressor system. The poly water tanks hold 750 gallons of water.

The GapVax standard full tilting debris body with a more than 45-degree dump angle and full opening tailgate allow for fast unloading and easy cleanout. The 8-inch telescoping VHX boom is ideal for hydroexcavation and offers a 22-foot reach with 15 degrees of downward pivot.

OPTIONAL FEATURES

Options include stainless steel debris body, full-sized vertical heated cabinet and onboard scales, water heater options of 400,000 Btu and 575,000 Btu, glycol injection, as well as various storage and lighting packages. ♦



GapVax Inc. evolved from its sister company, GAP Pollution & Environmental Control Inc., was founded after the 1977 Johnstown Flood. Gary A. Poborsky saw a need to help with the flood cleanup around the city and he got to work with a used vacuum truck. From that point forward

Poborsky's business kept growing. Learning from the service company and operators what was needed to get the job done, Poborsky set out to build his own equipment, thus creating GapVax Inc. GapVax began custom building industrial and municipal vacuum equipment in 1989 and has continued to grow and become a leading manufacturer in the industry.

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Vactor's New Combination Sewer Cleaner Packs a Mighty Punch

Built with the same emphasis on performance and reliability as larger Vactor sewer cleaners, the iMPACT offers outstanding versatility and the ability to maneuver through tight spaces. With a more compact, economical design, the iMPACT can handle tight spots like alleys for emergency applications or for regular upkeep.

A large benefit of the iMPACT is its ability to handle tough jobs without a big impact on budgets. As a more affordable option that delivers greater economy and maneuverability, the iMPACT is ideal for municipalities needing a fast-response emergency backup vehicle, small communities looking to keep up regular maintenance and stormwater line problems, and contractors and utilities who prioritize versatility and a lower purchase price.

For example, its multiflow system offers operation at lower rpm for better fuel economy without sacrificing performance. That system also decreases component wear for greater product life.

UNIT FEATURES

The new combination sewer cleaner boasts many features that enable it to handle tough jobs. Its low-maintenance Jet Rodder Water Pump provides smooth continuous flows and optional “jackhammer” action for breaking up tough blockages. Also, its Modul-Flex design provides for maximum capacities and optimum weight distribution on every truck. The iMPACT also features high-strength aluminum water tanks that maximize capacity and come with a 10-year, corrosion-resistance warranty. A baffled cylindrical shape adds high strength and durability while the position at the frame rail allows for the best weight distribution.

The powerful positive displacement vacuum blower on the iMPACT is able to pull material long distances. Powered by the chassis engine, the blower is driven hydrostatically, allowing independent control of speed while boosting productivity and reliability.

The iMPACT's ability to handle tough jobs doesn't diminish its ability to enhance operator comfort. Engineered for optimal operator comfort and control, the iMPACT is also configurable as a non-CDL unit. Some features for operator comfort include quieter engine design, high ground clearance, lower water fill point and optional wireless controls that



include an updated belly pack and hand-held remotes with two-way data transmission and multiple control functions.

IN-CAB CONTROL

One of the iMPACT's key features is IntuiTouch one-touch in-cab controls for PTO activation at the touch of a button. This allows for operators to gain control of all operational systems. The adjustable IntuiTouch control panel combines all cleaning system functions into one rotating control panel with up/down adjustments for maximum comfort. The operator is able to engage road, combo and recirculation mode with single push-button ease.

The iMPACT also has a boom joystick with a telescoping feature built in that gives the operator full mobility with multiple direction boom movement for quicker setup. The patent-pending Hands-Free Accessory Light Option (HALO) also brings a new level of safety and efficiency to every job site.

The iMPACT is fully customizable. With an array of precision-engineered enhancements, those who are interested can choose what works best for their operation. A cold weather recirculation system, debris flush-out system, work-zone lighting package, low-water alarm, and turn and hose reel mounted cameras are just some of the enhancements available. ♦



Vactor created the first combination sewer cleaner. With a commitment to improving productivity and safety while also saving communities' money, Vactor develops and manufactures efficient and versatile sewer cleaning equipment.

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Installed in Minutes, Quick-Lock Sleeves Restore Structural Strength and Seal Out Infiltration

For stand-alone point repair, or for pre-lining under high infiltration, Quick-Lock sleeves offer a rapid, easy-to-install and economical way to repair failing pipe. They restore the host pipe's strength with heavy-gauge 316L stainless steel and seal out infiltration with a single-piece EPDM rubber gasket. Suitable for sewer, water and industrial applications, a Quick-Lock sleeve installs in minutes with minimal manpower and no resin.

HOW THEY WORK

Quick-Lock sleeves are positioned inside the host pipe on a wheeled packer pushed by any standard CCTV crawler (or a pushrod in lines as small as 4 inches). Once in position, air pressure supplied by the packer expands the sleeve against the pipe wall. The sleeve has a patented locking system that once expanded ensures it stays permanently in position. It has its own static capability and absorbs the natural tectonic movements of the pipes. The rubber gasket provides infiltration abatement. Both sleeve and gasket are chemically resistant against sewage, thinned acids, lye and aromatic and chlorinated hydrocarbons.

Liner end seals are also available and strengthen a CIPP liner at its most vulnerable points — the ends. Stronger and easier to install than other end caps, they're an insurance policy for installed CIPP.

Quick-Lock minimizes diameter loss and outlasts any other rehab, according to the manufacturer. The product's lack of resin means no cure time or resin washout. They address a variety of common pipe

Trenchless, mechanical pipe repair and liner end seals

Quick-Lock

Seal live infiltration, cover abandoned lateral connections and add structural stability. NO RESIN NEEDED.

- Install with minimal manpower in under 30 minutes
- Can be lined through or removed
- For 4"-72" lines



Complete training and support • Unmatched knowledge base

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problems, including infiltration, longitudinal and circumferential cracks, root intrusion, holes, leaks, offset joints and abandoned laterals. Multiple sleeves can be interleaved to per-

form longer repairs. Sleeves are available in diameters ranging 4 to 72 inches. The design meets ASTM F3110-14 for mechanical trenchless point repair. ♦



Pipeline Renewal Technologies delivers innovative technologies for trenchless pipeline renovation, reinstatement cutting and durable point repair. A strong emphasis on training and support makes PRT a partner of choice in the industry.

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Introducing EnviroCure by Applied Felts: Your Answer to CIPP Styrene Emissions

After five years of investing extensive resources into research and development, Applied Felts has developed a solution to address the CIPP market's concern about the safety of styrene emissions in the CIPP process.

EnviroCure is a heat-cured, styrene-impermeable, polymer-coated, multilayer all-felt or felt/fiberglass hybrid fabric that vastly reduces if not eliminates styrene emissions and odor on the job site before, during and after your installations, taking away the significant cost and unpredictability of styrene-free resin systems.

Reducing on-site styrene emissions to less than 1 ppm, job sites report no detectable odors in trucks when doors are opened, or in steam flumes or manholes, according to an IUPUI independent study.

EnviroCure provides a safer and less expensive option versus more costly styrene-free resins for all mainline CIPP installations that typically use styrenated resin systems.



50 YEARS OF INSTALLATIONS

Applied Felts' proven, decades-long history of extending the life of sewer and water pipes using its rigorously-tested, 100% in-house, vertically integrated manufacturing processes has allowed Applied Felts CIPP felt and hybrid liners to be a leader in the trenchless pipeline rehabilitation market since the company's close involvement with the invention of CIPP liners in the 1970s.

Using the same process as its felt liners, Applied Felts reinforces its hybrid liners with highly engineered flexible fiberglass, adding significant strength for both internal and external load applications.

Using high quality raw materials, products such as Applied Felts' flame- or stitch-bonded liners allow for greater flexibility in the field. Innovations include lateral liners and in-house applications — dependable, small-diameter liner ranges; and a wide range of Duraflex liners to accommodate varying bends, lengths and diameter changes.

These single-layer felt liners — with an array of polymer choices for your particular resin system — are best suited for on-site, vacuum impregnation in plumbing applications. These heat- or ambient-cured liners are highly flexible and available in custom lengths.

PVC FlexLiner is a polyester fiber, flexible liner made with a styrenated resin-resistant PVC coating

to accommodate the requirement for liners of varying thicknesses and up to 45-degree bends.

SuperFlex is a polyurethane coated fleece liner for use in pipes with up to 90-degree bends.

WovoLiner is a circular-knitted PE fiber, uniquely bonded to a seamless, impermeable polyurethane coating. This extremely flexible liner is ideal for use on multiple bends up to 90 degrees with minimal wrinkling and a wide range of diameter transitions such as 4- to 6-inch.

WovoGlass is the company's latest innovation with improved dynamic flexibility for relining diameter changes with improved physical property strength.

There is also a wide range of CalTubes calibration tubes for your lateral installation needs. Applied

Felts' single-layer, PVC-coated, PE CalTubes are made in your choice of stitched or innovative high-frequency seamed options. The 2- to 12-inch diameter CalTubes can be used in inversion, pull-in and "blind-shot" installations.

And, to make your job even easier, you can streamline your next job with pre-impregnated liners from anywhere in North America with Applied Felts' five strategically located regional wet-out facilities at FerrateX Solutions.

MaxLiner allows users to install with confidence in vertical and small diameter lateral applications.

Finally, coming soon, Applied Felts is set to release its innovative Ghostliner UV system. ♦



APPLIED FELTS
YOUR SUCCESS IS OUR SUCCESS

Applied Felts is a world-class CIPP manufacturer, pioneering the way forward by innovating solutions for trenchless pipeline repair industry-wide for over 40 years. The company produces superior quality felt and fiberglass CIPP

liners suitable for many applications, including potable water, pressure pipe and gravity sewer lines.

Applied Felts: 276-656-1904 | appliedfelts.com

FerrateX Solutions: 844-433-7728 | ferratex.com

MaxLiner: 877-426-5948 | maxlinerusa.com

Introducing **EnviroCure**[®]

Let the Liner Do the Work.

Your answer to CIPP styrene emissions

The Global Leader in CIPP Liners Introduces Groundbreaking Benefits to the Mainline CIPP Industry.

Applied felts proprietary multi-layer felt or hybrid liner coated with a styrene barrier vastly reduces if not eliminates styrene odors and emissions on the jobsite before, during and after your installations - taking away the significant cost and unpredictability of styrene-free resin systems.

Advancing the CIPP Industry Since the 1970s

It's even easier with FerraTex!

Streamline the job with pre-impregnated liners from our regional wet-out facilities at FerraTex Solutions.

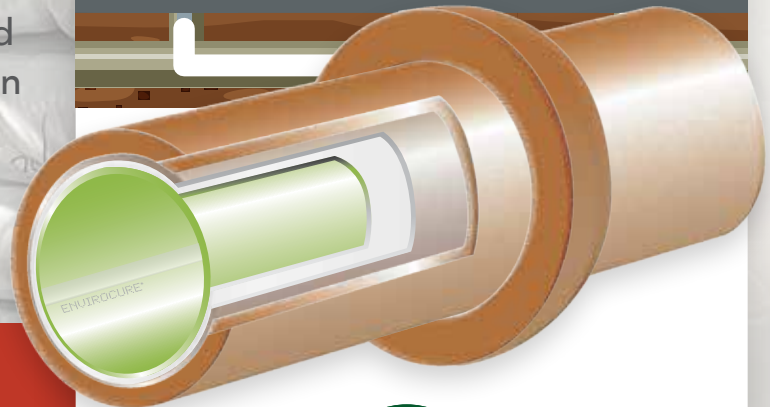
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EnviroCure[®]

A heat-cured STYRENE IMPERMEABLE polymer coating that eliminates styrene emissions and odor.

EnviroCure reduces on-site styrene emissions to less than 1 part per million*



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AppliedFelts.com

*IUPUI Test, Oct. 2021

CUES Develops QZ3 Advanced Portable Inspection Camera



CUES has developed an advanced model of its lightweight, portable, HD wireless video inspection pole camera — the QZ3 Advanced — which can be operated by one person using any tablet.

The new QZ3 Advanced is designed to provide safe-viewing in industrial or environmental areas with no man entry. Perform swift inspections and surveys of pipelines, wet wells, manholes, sewer treatment plants, steam generators, tanks, vessels and other areas that are difficult to reach. The QZ3 Advanced can also be used to locate lateral services or to identify blockages at manholes, access ports or other entry points without entering the line or structure. Added features over the basic model include motorized height and tilt, in addition to laser distance measurements, making the QZ3 Advanced another great addition to your inspection equipment.

STANDARD FEATURES

Like the basic model, QZ3 Advanced is mounted on a lightweight, telescopic carbon fiber pole that can extend up to 24 feet (an optional 34-foot pole is available). The 1080p camera features a 360:1 zoom with built-in image stabilization, automatic focus, distance-to-defect measurement and self-contained waterproof Multiple Aspheric Projection lighting. The lighting includes six LED spotlights working in pairs and focused at different lengths to provide enhanced, detailed viewing of cracks, breaks, pipe separations, scale and various defect conditions. The QZ3 Advanced also includes two diffused flood LED lights for evenly lit manhole inspections.

OTHER OPTIONS

Apart from the standard functions and equipment, many options are provided to enhance the utility of the QZ3 Advanced model. Options include a dual-purpose bipod/tripod support, ruggedized tablet, tablet holders for mounting to the pole or as a wearable harness, pole mounted Wi-Fi Repeater to extend range up to 150 feet from the manhole, and a panning accessory designed for use with the SPiDER scanner's tripod or with truck mounted deployment systems. This enables the QZ3 Advanced to have 360-degree panning in addition to its standard plus or minus 30-degree tilt for precise positioning, which is especially useful for pipeline inspections. Contact CUES for additional information and a demonstration. ♦



CUES is a leading manufacturer of water, wastewater and stormwater inspection equipment. The company provides the necessary tools for both pipeline inspection and repair. For 50-plus years, CUES has manufactured rugged and reliable sewer inspection cameras and equipment.

800-327-7791 | www.cuesinc.com

ADVANCED TECHNOLOGY

FOR FAST, SINGLE-PERSON INSPECTIONS

Introducing the new CUES QZ3 Advanced Portable Inspection Camera! The QZ3 Advanced includes the same great features as the basic model, but with more advanced technology:

- Simple to use and light-weight
- Single-person operation; Fast-look inspections
- Zoom: 30x optical; 360 with digital
- 1080p HD Video Camera
- Lightweight, carbon-fiber, adjustable telescopic pole that can extend up to 24' (optional 34' pole is available).
- On-screen menu for easy set-ups
- Motorized height and tilt adjustments to allow for smooth and precise positioning of the camera head to locate lateral services or to identify a blockage at a manhole, access port, or other entry point without entering the line or structure.
- On-board laser distance finder provides measurements to within an inch of accuracy (approximately 25mm). Get full HD views of cracks, breaks, pipe separations, scale, and various defect conditions from up to 200 feet away!
- Optional Wi-Fi Range Extender (pictured right) mounts to the top of the telescoping carbon fiber pole to extend the wireless range of the camera up to 150' away from the manhole.
- Coming soon: QZ3 Advanced Panning Accessory (for use with the SPiDER Carbon Fiber Tripod and Truck Deployment systems) turns the QZ3 advanced into a pan and tilt camera, offering the versatility of the former IMX camera series, along with the modern performance and controls of the QZ3.



800.327.7791 | salesinfo@cuesinc.com

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ElectricPAK VFD With SmartPrime Control Interface Is Designed With User in Mind

The new ElectricPAK VFD from Pioneer Pump is a rugged, packaged variable frequency drive solution designed to withstand the demands of mobile dewatering applications.

It features a touchscreen interface, known as SmartPrime, that's as intuitive to use as a mobile app. Users benefit from a fast startup and simple monitoring experience, eliminating the need for complex keypad setup, advanced programming skills or specialized training. Inside the unit, the VFD uses Franklin Electric's proven electronics to deliver dependable performance and optimized motor control. Customers can choose from two portable VFD package options:

- **Standalone:** A fully welded metal cage design keeps the VFD protected and secure during transport and setup while providing extra protection against job site hazards.
- **Integrated:** The quality and service of Franklin Electric is packaged with the performance and durability of the Pioneer Pump ElectricPAK system. These full packages are optimized to work together to get the job done and provide for secure transport within a job site or from one job site to another.

Every VFD comes backed by Franklin Electric's support network. The company's team of engineers and service specialists have decades of experience working with professionals in the field and understand how to help you get the most out of your pumping system.

NO LEARNING CURVE

One of the first hurdles operations must clear when upgrading their pumping systems to VFD control is education and product knowledge — specifically programming and operation. Gaining that knowledge is a resource-heavy process that requires the equipment operators to attend multiday training programs, often taught directly by the manufacturer. The SmartPrime Control Interface helps to cut that resource cost by modeling its operation after the industry standard diesel-driven pump package. Any user familiar with diesel engine-powered pump operation can translate that knowledge quickly and easily to installing, programming and running a VFD-controlled system without the resource cost typically required for such a system.



You can handle all aspects of operation from a streamlined central hub with easy-to-navigate graphics, and get fast startup and simple monitoring — eliminating the need for complex keypad setup and programming.

Two SmartPrime mode choices help operators get packages up and running with just a few clicks. Manual mode lets users adjust basic pump parameters using simple on-screen tools. It includes analog sensor monitoring for up to four control and data variables. Auto mode lets users set up preprogrammed behavior, including maintain level, two-float level control, constant pressure output, drain wet well and more.

- An alternative hand mode allows users to operate the panel with tactile push-buttons and door-mounted speed potentiometer.
- The unit tracks and logs alarms onto an SD card, allowing for quick and easy

review and troubleshooting.

- Operators can become fully operational in no time thanks to a suite of product features designed to ease installation and programming times.
- Series 16 quick connect power gland panels streamline power, float and transducer connection.
- Using ElectricPAK products in conjunction helps to simplify motor setup with integrated package identification numbers with no need to search for separate input parameters.
- The front of the panel includes clear indicators for critical operations, including an emergency e-stop push-button. ♦



Franklin Electric is a global leader in the production and marketing of systems and components for the movement of water and energy. Recognized as a technical leader in its products and services, Franklin Electric serves customers around the world in residential, commercial, agricultural, industrial, municipal and

fueling applications. Franklin Electric was named in Newsweek's lists of America's Most Responsible Companies and Most Trustworthy Companies for 2023.

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A variable frequency drive on the jobsite needs to be as tough as the environment it's in. That's why we've taken the best features of our most popular VFD system, repackaged it to withstand the demands of transport, and delivered a more intuitive startup experience with our SmartPrime™ touchscreen interface.

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The Difference Between Bluelight LED and UV



Light-cured lateral CIPP lining is one of the most popular trends in trenchless rehabilitation technologies and one of the questions HammerHead Trenchless hears a lot is, “What’s the difference between Bluelight LED and UV?”

All light-curing systems are based on photo-initiating resin, meaning the resin is specially formulated to cure only when exposed to a specific range of wavelengths of light within the electromagnetic spectrum.

Light penetration and exposure time are incredibly important for curing quality in all light-cured systems, and this fact shaped how the company’s Bluelight system was developed. If the curing light does not fully penetrate the resin, or if the exposure time is too short, the outer layers of the CIPP may not cure properly where the liner meets the host pipe. This also affects the overall strength of the CIPP composite, which may not meet ASTM F1216 standards.

ON A DIFFERENT WAVELENGTH

The biggest difference between Bluelight and

UV lateral CIPP systems is the wavelength of the light used. UV systems cure using ultraviolet light which is a wide range of wavelengths from 100 to 400 nanometers. The Bluelight system cures using specifically blue light (hence the name) which is a very focused range of visible light from 444 to 457 nanometers. This makes a difference in the quality and speed of the cure, according to HammerHead Trenchless, and it’s why the company’s light-curing system uses blue light rather than UV.

The wide spectrum of UV light is less intense and lower in wattage than blue light, which can create issues penetrating the resin, leading to an incomplete cure. UV-cured resins are typically

used with liners constructed with fiberglass and a reflective outer foil to help refract the UV light and increase its ability to penetrate the resin.

The Bluelight system’s LED light head ensures deep penetration and a complete cure that does not rely on glass or foil in the liner. The static head design with 360-degree LED lights ensures the entire circumference of the liner is exposed to light throughout the cure. The Bluelight system’s smart technology manages the light head travel speed based on the liner diameter and thickness. Taking the guesswork out of light head pull-back speed ensures that light penetrates the resin fully to ensure an efficient and complete cure every time. ♦



HammerHead Trenchless, a Charles Machine Works Co., of Lake Mills, Wisconsin, manufactures and delivers a unique combination of rehabilitation, replacement and installation equipment and consumables for the underground construction market. Besides being a full-solutions provider in rehabilitation and replacement, HammerHead also offers quality field support and project consultation to its customers worldwide. HammerHead products are proudly made in the U.S. and sold and serviced in more than 63 countries.

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METHODS.



Instead of waiting hours for a liner to cure, work at light speed with the exclusive, game-changing technology of the BlueLight LED[®] lateral lining system from HammerHead Trenchless. With its compact footprint and amazing speed, installers can instantly increase productivity and get more jobs completed faster.

The BlueLight system's enhanced features include intuitive touch screen interface, three light-head options, interchangeable reels, state-of-the art software, automated quality assurance, superior resin stability and more. Experience the next generation of lateral CIPP with BlueLight LED[®] only from HammerHead.



REHAB & REPLACEMENT. REDEFINED

Learn more: hammerheadtrenchless.com/bluelight

Exeter-Merritt Goes From AMR to AMI as Its Water Network Grows



Exeter-Merritt first started using advanced meter reading technology in 2012 with Mueller’s AMR endpoint. At the time, the endpoint was the perfect meter interface unit for the water co-op to transmit an encoded serial number, water consumption, leak detection information and status data operated on a 902 to 928 MHz radio frequency.

“Initially, we were presented with a number of AMR solutions from the market, but we decided to go with Mueller Systems,” says Barb Mathews, network manager and operator at Exeter-Merritt Water Cooperative. “What stood out for me was that the Mueller Systems AMR solution could address the impending needs and help us handle the influx of new customers.”

TAKING IT UP A NOTCH

Mueller Systems accelerated the next iteration of the endpoint by introducing the Mi.Net AMI Migratable solution. This AMR to advanced metering infrastructure migratable endpoint solution can be installed as a mobile AMR system, giving utilities the flexibility to migrate over to a fixed network in the future should the need arise. AMI empowers utilities to design certain areas with fixed metering and deploy mobile solutions throughout the remainder of the utility while maintaining the full two-way command and control capability that enables functionality such as remote disconnect, on-demand data log retrieval and even over-the-air firmware upgrades.

In mobile or AMR mode, the Mi.Net migratable endpoint transmits data every few seconds utilizing long-range, or LoRa, technology. LoRa is a radio frequency modulation technology for low-power, wide-area networks. It delivers significant distance improvements in communication over many AMR systems available in the market. The water co-op can also avoid driving down unsafe roads as the transceiver picks up the reading from at least a mile away.

“Having the AMR system saves me eight to 12 hours on meter reading. Now, it takes just four hours; saving us time and money,” says Mathews. Mueller Systems’ lightweight mobile transceiver works in tandem with its software to provide

reliable data directly into Exeter-Merritt’s billing system.

RELIABLE DATA LOGGING

The new solution also provides the water co-op with data-driven evidence of a suspected leak through a comprehensive and robust data logging feature called “Consumption Profiling.” This capability is built into the Mi.Net Migratable system, allowing over 100 days of hourly usage analysis to be retrieved from the meter, with graphically displayed alarms. This enables utilities to respond to customer questions quickly, and proactively approach customers about possible leaks or tampering.

“Now when we have customers who don’t believe there is a possible leak or faulty issue with their side of the meter, we can provide them with detailed reports to show their daily consumption usage. This has helped gain customer trust by showing their meter profiles on the spot, with granular hourly data. It assists us in responding to billing questions and demonstrates when issues such as leaks or backflow conditions start and end.”


Today, Exeter-Merritt Water Co-Op continues to reap the benefits of the Mi.Net Migratable endpoints and mobile transceivers. They are also in the process of changing their meters to the Mueller Systems ME-8 encoded register with positive displacement meters to receive granular data, permitting them to capture maximum revenue and be proactive in leak detection and resource conservation. ♦



Mueller is a leading manufacturer and marketer of products and services used in the transmission, distribution and measurement of water. The

company helps municipalities increase operational efficiencies, improve customer service and prioritize capital spending.

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Migrate to the future, without disrupting the present.

Meet the AMI system that works in drive-by mode. Mi.Net Migratable AMI from Mueller Systems gives you the full two-way functionality of our AMI system in a mobile application. Meaning your workers can remotely disconnect service and download months of hourly usage data from the meter—all from the comfort of their vehicles. And the system's built-in flexibility lets you cost-effectively migrate to a fixed network solution whenever you're ready.

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Subsite Electronics Covers Utilities' Needs for Inspection Equipment

Knowing the condition of underground sewer and water infrastructure is necessary to properly maintain essential services, and today's CCTV inspection systems visually identify structural and maintenance issues like cracks, broken, or collapsed pipe, infiltration, grease and roots as well as other issues.

Mainline inspection equipment is routinely used by municipalities, sewer/water districts and contractors for inspecting 6-inch and larger sanitary storm drain sewer pipelines. Smaller pipelines, 4-inches and under, are typically inspected with a push camera system and are accessed from the sewer clean-out or other entry points inside the house.

During an inspection, data collection software is used to identify assets as well as log observations of defects and maintenance issues. Pipeline Acescent Certification Program has a standard coding system, developed by the National Association of Sewer Service Cos. This tool is used for gathering common data that can be sorted by type of defect and severity of defect and allow an engineer to easily identify what pipes need to be addressed immediately, and how to address the defect.

COMPONENTS AND TYPES

The basic components of a CCTV pipe inspection system are a camera or camera/transporter unit, power supply/control unit, and a reel-and-cable system.

The type of inspection system used is based on the size of the pipe and the conditions present in the pipeline. Inspection systems can include simple push camera systems that manually push through pipelines using a fiberglass reinforced cable; portable systems that can be wheeled into a tight-access area like a backyard or easement; and vehicle-mounted systems that are designed for inspecting thousands of feet of pipeline per day and can house all the equipment and supporting items.

TRAINING AND SAFETY

To achieve maximum performance from inspection equipment, quality training is a must. Factory trainers or certified trainers are the best solution to receive proper training of operation and maintenance of the equipment.

Depending on the user's experience, a mainline



system training would take one to two days, and if additional equipment was purchased like a float system or a lateral launch system, an additional one to two days may be needed.

Sometimes breaking up the training into multiple visits can be beneficial to allow the operator to get familiar with one aspect of the system first — like the standard mainline camera and transporter —

before coming back to learn about another product like a lateral launch system.

If you have employee turnover it is always a good idea to have a trainer do a refresher or a new training session to make sure no bad habits are passed along. ♦



Subsite Electronics provides underground construction professionals a comprehensive suite of electronic products for the sewer/water industry, including utility locators, HDD guidance equipment, utility inspection systems and equipment machine controls. By using innovative technologies, extensive market feedback and outstanding customer support, Subsite has established itself as a premier source of electronic technology to support the installation, maintenance and inspection of underground pipe and cable. **800-846-2713 | info@subsite.com | www.subsite.com**

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Locate and inspect pipes and infrastructure, including private and unmarkable utilities, with the industry's only single-conductor lateral launch system. **See what you're missing. With Subsite Utility Inspection.**

90W motor and rugged, **six-wheel drive** power the tractor through longer inspection shots than the competition so you can efficiently inspect more.

Mainline and lateral pipeline inspections in a single run for greater productivity.

Self-leveling lateral line camera deploys/retracts at a rate of up to **30 feet per minute.**

Dual video cameras allow for precise lateral launches with full **360° inspection capabilities.**

Learn more at subsite.com

 **SUBSITE**[®]

Camel Max Series Combination Sewer Cleaners Offer Versatility, Safety, Productivity

Most citizens are unaware of what goes on above and beneath the surface of their cities, streets and homes when it comes to wastewater and stormwater. Cleaning and maintaining these established and intricate underground and aboveground sewer systems is essential to the health and safety of each community. Obstructions in a line or broken pipe and joint failures can cause major issues for a sewer system, while stormwater runoff can leave behind debris that will clog a storm sewer system. Whether addressing emergency situations or performing preventive maintenance, Camel Max Series Combination Sewer Cleaners are designed to offer versatility, safety and productivity when maintaining a community's sewer system.

VERSATILITY

Combo sewer cleaners are valued for their exceptional versatility in handling a wide array of applications. This versatility is attributed to their dual functionality, combining high-pressure water jetting and a powerful vacuum system. The Camel Max Series is the most versatile combination unit in the industry, tackling various applications with jetting, vacuuming and excavating. The product line comes in a variety of model configurations: 900 Dump, 1200 Dump, 1200 Eject and 1200 Wastewater Recycle. Additionally, customers can add a hydroexcavation package to a unit. This allows operators to transition easily from one task to the next from cleaning sewer lines to vacuuming debris to safely unearthing utility lines.

SAFETY

All Super Products equipment is designed with operator safety in mind. The Camel Max Series comes standard with a wide array of safety features, such as tailgate and debris body props, visual and audio alarms, backup camera and emergency stop switches. Additionally, Super Products offers eject unloading, a safe and efficient means of debris removal. As the debris body rises, the ejector plate quickly pushes out debris. With eject unloading, operators also have the ability to dewater before having to drive to a dumpsite, reducing overall weight and increasing payload capacity.



PERFORMANCE

The Camel Max Series comes with standard features and options to ensure efficient workflow and productivity. The front-mounted hose reel is highly accommodating, rotating 270 degrees and extending 18 feet. A digital monitor displays hose footage count, offers 20 saved settings for hose reel payout, can run the water pump with or without the vacuum, and is designed with LED panel lights to enable readability in multiple environments. Additional options can be added for increased performance capabilities. A pusher axle option offers increased payload capacity. The wastewater recycling system offers the ability to con-

serve water; operators can clean sewers all day without the use of freshwater. Clean nearly 3,000 feet of sewer pipe per day and save 60,000 gallons of water per week.

The combination of high-pressure water jetting and vacuum capabilities makes combo sewer cleaners an indispensable tool for municipalities, utility companies and contractors involved in sewer system maintenance and repair. Their ability to adapt to different tasks and environments contributes to the overall functionality and longevity of critical infrastructure. ♦



Super Products gives contractors and municipalities access to efficient and progressive vacuum excavators, combination sewer cleaners, industrial vacuum loaders, truck-mounted jetters and liquid vacuum trucks. Super

Products has a broad support network of representatives supporting contractors, dealers supporting municipalities and nine rental facilities supporting short- and long-term rentals, parts and service.

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PRO Reel Prioritizes Ergonomics, Visibility and Workable Coverage at the Manhole



The PRO Reel (Precision Reel Operation) elevates combination sewer cleaning capabilities to a new level. Designed from the operator out, the PRO Reel provides high flexibility, coverage and visibility at the heart of the job – the manhole.

The PRO Reel offers 16 feet of traversing motion across the front of the machine and 180-degree articulation for 69.6 square feet of working coverage. With 115% more coverage than the standard Vac-Con articulating hose reel, this flexibility allows operators access to manhole and lift station locations without having to park the unit precisely over the job site.

A front-mounted camera system and companion ARC visual screen provides 180 degrees of visibility to the driver in the cab with a generous range to park the unit and still have access to the manhole. This capability reduces setup time by approximately 50%.

A COMFORTABLE SYSTEM

Operator ergonomics are an essential factor in the design of the control panel on the PRO Reel. Adjustable motions allow for any operator to comfortably use the system. The control panel features four rotational positions, an 8-inch vertical adjustment and an armrest at the joystick.

Intentionally sourced materials, bolt-on design and the elimination of an outrigger leg result in

weight savings of 500 pounds from the front end when compared to the standard Vac-Con articulating hose reel. The PRO Reel can accommodate up to 850 feet of 1-inch hose.

The PRO Reel is a versatile, operator-conscious hose reel. Its capabilities could change the way that sewer cleaning operators do their jobs, according to Vac-Con. ♦



Vac-Con came into existence in 1986, but the company's founders were some of the first innovators in the sewer cleaning industry. Since Vac-Con's first unit, the company has grown to become one of the leading manufacturers of vacuum and water machinery used for wastewater, storm, utility and construction applications. As an employee-owned company, Vac-Con takes pride in each unit that works in your city, neighborhood and municipality.

Communities, environments, and the people that live, work and play within them are the lifeblood of Vac-Con. The company strives to design and build equipment that effectively and safely maintains the infrastructure that allows us to live clean lives.

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Weighing in under 26,000 GVWR, the non-CDL Titan is an ideal option for smaller organizations and those who need to be able to jump in the truck and go — no CDL required.

UNDERHOOD 70 Air Compressor Empowers Municipal Fleets to Reduce GVW

The first UNDERHOOD70 air compressor was installed in 1997. Twenty-five years later, with over 26,000 units installed, the UNDERHOOD70 system remains one of VMAC's most popular air compressors with municipal fleets across North America.

"Very few innovative products are still relevant more than two decades after their invention," says Tod Gilbert, VMAC president. "But VMAC knocked it out of the park with the UNDERHOOD70, and it continues to be a favorite compressed air solution for our customers."

The UNDERHOOD70 delivers 70 cfm at 100% duty cycle. The innovative air compressor was designed to be as compact and lightweight as possible, empowering fleet managers and vehicle owners to reduce gross vehicle weight.

A LIGHTWEIGHT SOLUTION

The UNDERHOOD70 is mounted within the engine compartment of a vehicle, freeing up deck space. Meanwhile, the complete system weighs less than 150 pounds, making it one of the lightest air compressor systems on the market.

"The only system that can match the UNDERHOOD's air output, light weight and small footprint is another VMAC system: the Direct-Transmission Mounted underdeck air compressor," Gilbert says.

Competitive underdeck systems are at least double the weight of the UNDERHOOD70 and require an additional shaft to connect the air compressor to the PTO, and no competitive air compressor systems use the vehicle's engine like the UNDERHOOD does, according to Gilbert.

"Nobody has been able to replicate the UNDERHOOD product line. No other manufacturer has developed an engine-mounted air compressor system for commercial vehicles in North America that municipal fleets can purchase year after year."

UNDERHOOD70 systems must be redesigned as new model-year trucks are released, and the UNDERHOOD70 is application-engineered for specific Ford, Ram, GMC/Chevrolet and International vehicles. The air compressor system is fitted and installed around existing vehicle components and uses the vehicle's engine to power the air compressor.

VMAC engineers work closely with leading truck manufacturers to design



installation kits that fit within the confined amount of space, confirm compatibility as new vehicle model years are released, and maintain OEM warranties.

"Why go to all the effort? Because people love UNDERHOOD air compressors and their benefits. If your truck runs, your compressor works. The UNDERHOOD70 doesn't require its own engine or power source, which results in significant space and weight savings that are almost impossible to replicate with other air compressor systems," Gilbert says.

Because the UNDERHOOD70 uses the vehicle's existing engine, it also reduces maintenance requirements to a quick inspection and service every six months or 200 hours. There is no additional engine to maintain.

In addition, the location of the UNDERHOOD70 air compressors protects the air compressor from the surrounding environment, ensuring it starts in every environmental condition. The UNDERHOOD70 is proven in extreme climates, including freezing arctic winters and unforgiving desert heat, according to Gilbert.

UNDERHOOD air compressors are proven in municipal environments and well-suited for hydroexcavation and jetting, blowing out lines, jackhammering, construction and utility projects. ♦



VMAC has been a leading air compressor manufacturer in North America for over 35 years. VMAC's mobile air compressors and multipower systems have earned a reputation for extraordinary design, build quality, durability and reliability in extreme conditions among operators and fleet managers worldwide.

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Cam Spray Offers Industrial Skid- and Van-Mounted, Gas-Powered Drain and Sewer Jetters



Truck-, van- and skid-mounted, gas-powered unheated sewer and drain jetters from Cam Spray are designed for outdoor use and can be mounted on a flat-bed truck, or placed in vans or enclosed body trucks with proper ventilation.

Equipped with the same features that make the company's trailer-mounted sewer and drain jetters an excellent option, skid- and van-mounted jetters are constructed on a compact, easy-to-move platform.

JETTER FEATURES

Skid- or van-mounted drain and sewer jetters feature a gasoline engine, a plunger pump with ceramic plungers and stainless steel valves protected by an unloader valve and secondary pop-off valve. A power pulse feature is available on some models for navigating longer runs and elbows. Industrial-coated skid platforms and frames offer transferability between vehicles, and mounting flanges allow the machine to be fastened to the floor or deck of a van or trailer.

Other features include a manual or 12-volt DC-powered reel for hose storage; 50-foot hose and washdown gun for pressure washing and site cleanup; a four nozzle set with storage box and tip cleaner; and an optional water tank.

THE LJ4008H

One of Cam Spray's most popular units is the 8 gpm, 4,000 psi LJ4008H van-mount jetter. The unit includes a Honda iGX 800 fuel-injected gas engine — with an oil alert and hour meter — powering a gearbox-driven plunger pump with ceramic plungers, stainless steel valves, pressure gauge and 80-mesh water filter.

The pump is protected by an unloader valve, secondary pop-off and has a schrader valve to blow the system out for freeze protection. ♦



Cam Spray is a small, family-owned company and leading manufacturer of pressure washers, drain and sewer jetters, and other high-pressure industrial cleaning solutions. In business since 1971, the company offers cold water and hot water power washers and sewer jetters in many different

variations for almost every application. If the standard machine is not what you are looking for, Cam Spray will custom build exactly what you need to get the job done.

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Weather the Storm With Vaughan Company's Chopper Storm Enclosed Pump

Flooding is one of the most common and destructive severe weather occurrences in the United States. Water and wastewater treatment facilities in storm-prone regions are especially susceptible to the impacts of floods, which can have rippling effects that cause long-term issues. Even in regions where pipelines are designed to withstand increased flows from severe weather events, facilities can become overwhelmed. In many cases, untreated wastewater can spill into residential areas, coastlines and freshwater sources contaminating drinking water and posing potential health risks to nearby communities.

That's why Vaughan Company developed the Vaughan Chopper Storm, a fully enclosed stand-alone emergency backup pump solution. It allows for 100% lift station redundancy with easy activation whenever needed. For municipal facilities investing in flood resilience, this is the backup pump solution for you.

PUMP FEATURES

Powered by Diesel (Interim Tier 4) or natural gas, the Vaughan Chopper Storm is housed on a skid mount. The pump and engine shell is built with a 14-gauge solid galvanized shell, with additional insulating materials to help reduce equipment noise, plus interior and exterior work lights to assist visibility when the power is out.

Vaughan Company has built pumps for over 60 years, so customers can trust the equipment will deliver the necessary mechanics. The Vaughan Chopper Storm is available with automatic or manual control systems with auto start, as well as remote operation and mon-



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itoring, and includes a vacuum prime pump, priming tower and check valve. It is capable of auto throttling engine rpm in response to changing pressure, flow or pit level. The

Vaughan Chopper Storm is available with a pit level transducer with float backup and a SCADA interface via MODBUS communications. ♦



Vaughan Co. is a pumping and mixing equipment manufacturer located in Montesano, Washington, that provides products for both domestic and international businesses and municipalities.

Vaughan focuses on producing quality pumps and mixers for tough applications within the municipal, industrial and agricultural markets. This focus on quality means the company takes time on each project to ensure that the pumps and/or mixers are properly sized for each installation.

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SeCorrPhon AC 200: An All-In-One Device for Prelocation, Pinpointing and Correlation

The SeCorrPhon AC 200 combines the characteristics of a correlator with acoustic water leak detection. This makes it an all-in-one device for leak detection, which brings together the three important functions of prelocation, pinpointing and correlation in one single, functional system. Users can react to any location scenario, even in the most challenging of conditions. Switching between the different functions or processes is simple and fast.



according to the manufacturer. At the touch of a button, the SeCorrPhon AC 200 will apply tailored filters to the current noises and will automatically select the appropriate frequency ranges. Filter limits can also be adjusted to accentuate the leak noise and to permit improved comparability between recordings (e.g. for use in databases or teaching/presentation purposes).

The SeCorrPhon AC 200 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. ♦

HOW IT WORKS

The SeCorrPhon AC 200 makes structure-borne and ground-borne noises caused by leaks from water pipes audible to the human ear. The frequency spectrum is traced and made visible on the device, and the current acoustic intensity is shown as both a graph and numeric readout. The user can also see the precalculated volume settings and the current frequency analysis of the device on the display at all times.

To then carry out the pinpointing of the leak, the user uses the TS 200 carrying rod and BM 200 (for paved surfaces) or BM 230 (for unpaved surfaces) ground microphone on the section found during the preliminary detection stage. The SeCorrPhon AC 200 transmits the acoustic signals and shows the intensity as a graph on the screen, pinpointing the leak with sufficient accuracy to allow confident excavation.

The acoustic features of the piezo microphone are outstanding — even the faintest of leaks or leaks occurring in noisy environments can be identified and detected,



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Feddon Mechanical Uses Duplex Vortex Pump Systems for Restroom Additions at Florida Medical Warehouse

HCA Healthcare — a for-profit health care facility operator in the United States — partnered with HealthTrust to enhance operational efficiency in its Lakeland, Florida location. To accommodate offices, restrooms and break rooms for its staff, project manager Nate Hefner oversaw the planning of a facility expansion. The challenge was to drain three restrooms in different sections of the warehouse into the existing sanitary sewer, with the furthest restroom located approximately 850 feet away from the sewer access.



Initially, the plan involved “excavating 6 feet deep and 4 feet wide down in the ground to then pump up across the warehouse,” Hefner says, but the team decided to explore alternative solutions and reached out to Saniflo. After confirming the feasibility of the electrical components, they opted for two of Saniflo’s Sanicubic 2VX duplex lift stations to handle wastewater coming from three new single-user restroom facilities. These powerful 1.5 hp duplex pumps could discharge wastewater vertically up to 36 feet with a 2-inch diameter pipe, eliminating the need for costly and inconvenient pit installations. Moreover, the Sanicubic 2VX units could handle large-diameter solids and sanitary products efficiently.

The installation involved routing the discharge pipes, vent pipes and wastewater connections for each restroom separately, ensuring efficient drainage and venti-

lation. Additionally, an air compressor setup in the warehouse with a Sanicondens Best Flat condensate pump ensured moisture removal.

THE RESULTS

The results were highly satisfactory, with both Sanicubic units and the Sanicondens Best Flat operating smoothly at HealthTrust Lakeland. This choice not only proved cost effective compared to the initially specified equipment, but the facility contacted Feddon Mechanical and Saniflo to pursue a service agreement for routine preventive maintenance on all three units, expanding their commercial service division’s offerings.

“From blueprints to maintenance, Saniflo ensures that clients receive a full package of services,” says Hefner. ♦







Saniflo is a leader in the plumbing industry thanks to its above-floor technology. This

innovative method of using above-floor technology, allows its pumps to offer solutions for both residential and commercial needs that were originally impossible. Whether it’s a small project requiring drain and condensate pumps to more complex engineered jobs, such as whole buildings with multiple fixture units, Saniflo has a solution. All you need is water supply and electricity.

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Water Departments Saving Time and Labor With Valve-Out Flange Spreader

The Valve-Out valve/meter replacement and flange-spreading tool is a game changer for municipal customers everywhere. With over 100 units sold to various water departments in the last two years alone, the Valve-Out tool is empowering smaller maintenance departments to perform work in-house that would otherwise be contracted out.

HOW IT HELPS

The Valve-Out tool is a zero-gap flange spreader, which allows you to spread flat-faced flanges where there is no gap. When used with the included (12-inch in standard kit) spacer bar segments you can span across valves or meters to replace them safely, quickly and easily in the field. The Valve-Out tool helps you create the 1/4- or 1/2-inch space needed to swap flanged valves or meters in compressed piping and reinstall the gaskets in a fraction of the time or effort.

“I don’t know how a water or sewer utility can be without this tool,” says one city’s director of utilities. “It’s a major improvement

to the old way of doing things. Our employees are safer and more productive.”

Another water plant supervisor says “the last time we did this type of work, we prepped the day before and it still took us eight hours. With the Valve-Out Tool we finished in 2.5 hours, including an hour to drain the water level. What a labor saver!” ♦



Speciality Maintenance Products has delivered safer and more efficient tools to pipe maintenance crews all over the world for more than 20 years. The company serves the refinery, petrochemical, midstream, pipeline, power generation and water and wastewater industries, as well as the maintenance and TAR contractors who service these areas.

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Wachs Vitals Software Offers Precise Controlling and Recording for Valve Maintenance

When thinking of valve maintenance activities, the first thing that comes to mind is the hardware designed to exercise valves. The next most important item is the software that controls the hardware — an integral part of a valve maintenance program. That makes it important to choose an equipment supplier that is class-leading in both hardware and software. Wachs Utility Products, with its exclusive Vitals software, is that supplier.

Vitals is an acronym for Valve Information Tracking and Logging System. Wachs Vitals 3.8.X software is a leader in the field when it comes to critical valve maintenance software functions such as: controlling the equipment; recording the data generated; and transferring or synchronizing this data to your desktop GIS system.



Wachs TC-100 Controller with Vitals

HOW IT WORKS

Vitals Software is comprised of two modules, Vitals Mobile and Vitals Desktop. Here's how it works: Wachs Vitals-equipped machines contain the necessary motors and sensors, Vitals software contains the operating and recordability instructions, and the company's TC-100 tablet controller provides the microprocessor brains and memory.

Vitals offers users precise control of valve operation. Digital torque and turn displays provide clear insight into a valve's condition, while the electronic torque sensor records the torque chart. Adjustable torque control limits include indicators that signal when preset limits are reached, and trigger auto shutdown or auto reverse to prevent valve damage.

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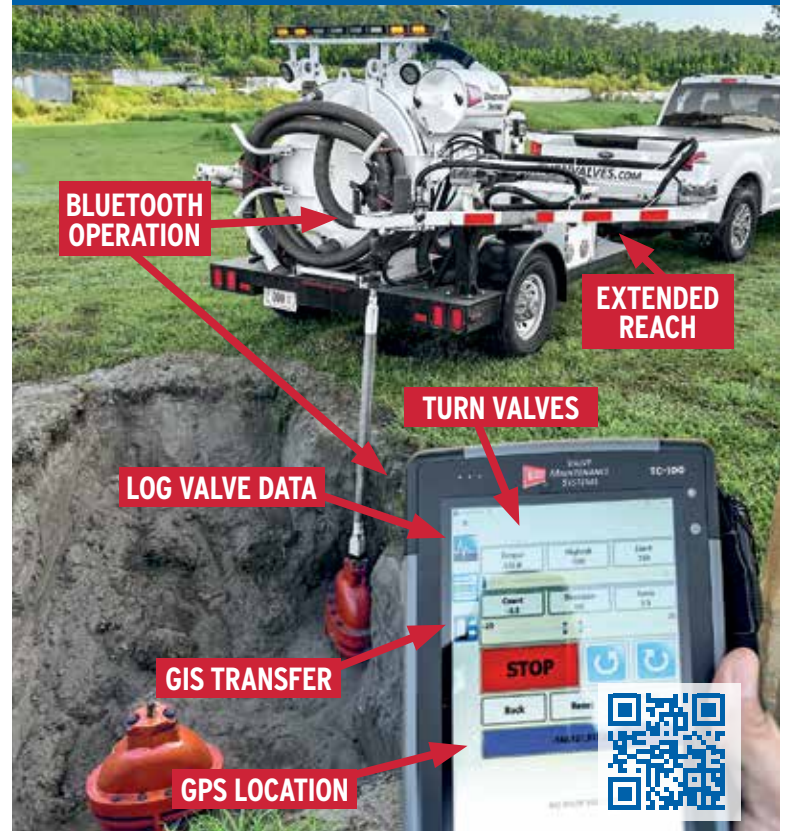
The Wachs TC-100 controller gives you the option to control the equipment wired or wireless via Bluetooth. It helps keep your crew curbside, out of traffic where accidents can and do occur. Vitals gives you the ability to exercise valves, capture the data, and transfer it to your desktop safely and remotely. Contact your local Wachs representative to learn how Vitals software can enhance your valve maintenance program. ♦



Wachs Utility Products is a leading manufacturer of water valve maintenance systems and advanced pipe cutting solutions. Wachs offers a wide range of equipment to suit any municipal need and budget, from the simplest handheld valve exercisers up to custom-built valve maintenance trucks.

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The new unit features a 28-foot boom reach with 340-degree rotation. ♦



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InfoSense's comprehensive inspection service offers a rapid and effective solution for obtaining vital capacity data for your gravity collection system. Using data from the Sewer Line Rapid Assessment Tool, operators can identify the 10% to 20% of sewer lines in need of maintenance, thereby optimizing resource allocation.

Additionally, the company's service teams conduct a Level 1 manhole assessment. This data not only provides insights into lid, structure and bench conditions but also highlights buried manholes and potential sources of inflow and infiltration.

The collected acoustic assessment and manhole data are integrated into an interactive GIS dashboard. This comprehensive approach streamlines the maintenance process, enabling utilities to prioritize critical areas while reducing unnecessary maintenance. Ultimately, it enhances the overall efficiency and reliability of your gravity collection system, making proactive maintenance a more manageable and cost-effective endeavor. ♦



InfoSense aims to help municipal collection system operators optimize their gravity sewer maintenance programs, allowing them to inspect more and clean better. Today, over 1,350 utilities around the

world have experienced how its technology can help overcome the challenges inherent in managing a wastewater collection system.

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REED Cordless Power Drive Offers Easy Handling With Impressive Torque

The lightweight yet powerful CPDWW cordless power drive from REED adapts to drilling and tapping machines or attaches to exercise valves. At around 15 pounds, the power drive for waterworks applications is easy to handle and provides impressive torque. For operator safety, there is a motor power kick-off feature.



Add the REED VOKUCLUTCH utility clutch for valve work or add the REED TMPDA adapter to connect REED and other common tapping or drilling machines. Designed for waterworks use, this unit concentrates on needs of in-ditch operators.

Cordless equals safe operation, as no power cords or air lines are needed, eliminating tangles in tight spaces. The physical size of the unit is compact, allowing it to fit easily into ditches. A dual use, battery-powered tool solves the power tool needs of utility work on the job site. ♦



Reed Manufacturing is based in Erie, Pennsylvania and has supplied the industry with high-quality pipe tools and vises for more than 125 years. Carl Reed, scion of one of Erie's pioneer families, along with three partners, started the business in 1896. In 1899 they filed papers to incorporate as Reed Manufacturing.

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PROTECTING PUBLIC HEALTH

Utility faces challenges as it offers to pay the full cost of replacing residents' lead service lines

By Ken Wysocky

While most cities in the United States don't pay for the entire cost of replacing private lead water-service lines, which have been identified as a significant health hazard, Cincinnati officials have opted to put public health ahead of financial considerations.

In 2021, the Greater Cincinnati Water Works, which provides water to about 1.1 million customers, decided to pay the full cost of replacing lead service lines that run

“We decided to put public health ahead of dollars and cents.”

Kevin Kappers



Kevin Kappers

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.

between water mains and customers' homes and businesses. A series of rate increases in 2021 generated additional revenue to expand the program, which previously paid for only part of the cost, says Kevin Kappers, the utility's lead program manager.

“I don't think there are many other programs in cities across the United States that voluntarily pay the cost of replacing lead lines,” he says. “The most successful programs out here are required by the United States Environmental Protection Agency to replace lead lines on a certain schedule.

“We're not under any regulatory requirements to do this — we're doing it voluntarily,” Kappers continues. “We decided to put public health ahead of dollars and cents.

“Our goal is to remove any obstacles that keep people from replacing their service lines and the biggest one we saw was cost.”

Tests show that water supplied by the GCWW does not have dangerously high levels of lead. But spurred by the drinking-water crisis that hit Flint, Michigan, about a decade ago, the GCWW in 2016 created a Lead Service Line Replacement Program aimed at the roughly 37,000 service lines that have lead pipes either on the private side or the public and private side.

The city's original goal was to replace all lead service lines by 2032. But that timeline now is being reassessed, Kappers says.

Public health threat

The utility's efforts reflect a national crisis. The EPA estimates that anywhere from 6 to 10 million lead service lines need to be replaced nationwide at an average cost of around \$4,700 each.

Those numbers suggest that the cost of replacing all those lines would range from \$28 to \$47 billion, according to a report from the Brookings Institution, a nonprofit, nonpartisan public-policy think tank.

Furthermore, EPA research shows that the benefits of replacing lead service lines outweighed the cost by about a 4:1 margin. And that doesn't even account for numerous health benefits the EPA found difficult to account for financially.

The GCWW originally started a service line replacement program in 2016, using both private contractors and in-house crews to do the work. At the time, the utility offered to pay up to 40% of the cost of line replacements, funded by ratepayer revenue, Kappers says.

The replacement program also offered residents what effectively amounted to interest-free loans to pay for their 60% of the replacement cost. Residents could either pay the cost — typically around \$3,000 — up front or have it put on their property tax bills and pay in biannual installments over 10 years, Kappers explains.

Additional financial assistance also was available for qualifying low-income customers through a program funded by private donations and fundraisers, as well as rental fees paid by cellphone companies to mount their equipment on city water towers. That generated about \$200,000 a year, he says.

“We also received a lot of donations from city employees, which is pretty cool. That shows people believe in the program and think it’s important for the community.”

“That shows people believe in the program and think it’s important for the community.”

Kevin Kappers

Poor participation

Sadly, only 4,000 residents have taken advantage of the program since 2016. That low rate of program participation is what prompted the utility to opt for paying the total cost, in hopes that it would motivate more residents to get their lines replaced.

“Because it’s a voluntary program, one of the biggest challenges we face is that we’re at the mercy of customers to allow us to replace the private side of the service lines,” Kappers says.

Current strategies used for community outreach to promote the program have only about a 50% success rate, which is better than previous levels, but still insufficient.

“We don’t have hard data, but we’re trying to determine why people are not signing up,” he says. “We do know that some people are concerned about damage to landscaping and others don’t want the inconvenience of having a contractor in their homes.”

A major part of Kappers’ job right now is to determine exactly why people aren’t taking advantage of the program, then make changes to alleviate those concerns.

“We’re trying to get more hard data behind their reasoning as well as working on strategies to increase program participation,” he notes.

Why not just unilaterally replace the lead lines on, say, a scheduled neighborhood-by-neighborhood basis?

“Making the program mandatory could potentially cause service shut-offs to customers who continue to not participate,” Kappers explains. “This is a sensitive topic that GCWW does not take lightly. So reasonable steps that our program can take to improve participation rates are a more desirable route for the immediate future.”

More work to do

To enhance participation, the utility plans to leverage a citywide resource: neighborhood councils that elect volunteers who then serve as a voice for their communities. There are 52 distinct neighborhoods in Cincinnati and most of them have formed councils, he says.

Kappers hopes that input from these councils, as well as outreach efforts with other community organizations, will help build new momentum for the program,

which was slowed a bit by the pandemic, coupled with a citywide hiring freeze and a wave of early retirements at the utility.

“We’re gearing up for the next big push to replace a large volume of lead service lines,” he says. “We want to make our entire community lead safe and my job is to find out how we can do that — remove any obstacles that stop people from participating in our program.”

“This reflects our care for our customers. Just like many utilities around the country, our main underlying philosophy is protecting public health. That’s why we exist.” ♦

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Product Spotlight

Milling cutters power through the most severe blockages

By Craig Mandli

The situations don't happen often, but municipalities are periodically confronted with severe obstructions that even the highest-pressure nozzles can't cut through. That's where SewerProShop's milling cutter options come into play. Generally, milling cutters are capable of removing the toughest obstructions where other sewer cleaning equipment fails — such as tuberculation from cast iron pipes, mineral deposits, concrete, calcified grease and collapsed liners.

The milling cutters, which have been precision engineered and manufactured by Buehler for over 40 years and upgraded by Intersewer in Germany since 2015, are distributed and maintained by SewerProShop to municipal and industrial markets in the U.S. According to Reinhart Laimer, president of SewerProShop, the cutters have effectively gotten hundreds of clients out of clogged pipe pickles for years.

"I've performed countless successful demos since 1997, removing tuberculation, pumice, concrete, mineral deposits, calcified grease and failed liners from sewer lines without damaging even clay or plastic pipes," he says. "The stainless steel drives of the Intersewer milling cutters aren't operated by percussion but uniform forward propulsion."

According to Laimer, to avoid pipe damage, it is important that the right-sized milling cutter is chosen before starting the job. Cutters are available for 4-, 6-, 8-, 10-, 12-, 15-, 18- and 20-inch sizes.



"Experience is always helpful when working with such a sophisticated tool," Laimer says. "To successfully operate milling cutters, you need to have 60 to 80 gpm at 2,000 psi available. They also have to be completely inserted into the sewer pipe before you start the job. Never slam the high-performance tool against the obstruction. Instead, let the milling cutter do the work. It's also very important to remember that milling cutters can only be operated in straight pipes, not elbows."

The stainless steel milling cutter drives with double sealed, high-speed bearings that don't need lubrication, ensuring years of low maintenance. They can be operated with recycled water as well. The tough carbide bits are bonded onto stainless steel bodies, with a water-cooled center bit. The 6- and 8-inch milling cutters can easily be converted to barrel cutters to cut protruding laterals.

"Cleaning sewer pipes with milling cutters is about evaluating each situation," says Laimer. "It is definitely more cost effective to remove severe obstructions using milling cutters compared to replacing entire pipes."

877-864-9394; www.sewerproshop.com

SPECIAL REPORT

OZ Lifting XR Series davit cranes

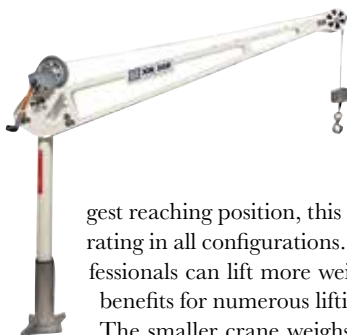
OZ Lifting Products has launched its XR Series of davit cranes for wastewater and water operators. The

Winona, Minnesota-based manufacturer has released the model in 500- and 1,000-pound capacities, but the long reach of the range is a stand-out benefit for operators. Where other davit cranes typically have reduced capacity when it is in the longest reaching position, this series maintains its maximum capacity

rating in all configurations. This means wastewater and water professionals can lift more weight, further out, which presents many benefits for numerous lifting and material handling applications.

The smaller crane weighs only 57 pounds and the larger crane weighs 95 pounds. Both have a maximum 62-inch reach and maximum hook height of 87 inches.

800-749-1064; www.ozliftingproducts.com



SPECIAL REPORT

SmartSights helps utilities reduce downtime and lessen costs

For 30 years, WIN-911 and SyTech have been trusted partners to protect critical infrastructure and plant health. The two have joined forces to form SmartSights,



delivering insightful and innovative solutions in data-driven analytics, reports and notifications. From building more resilience into water and wastewater facilities, to delivering analytics through industrial and compliance reporting, it's helping users shave millions off overtime and downtime costs. By providing comprehensive insight into critical infrastructure management, SmartSights enables swift problem resolution, waste reduction and cost efficiencies, elevating operational performance. If you're not already using remote alarming or a robust reporting tool, try a 30-day free trial.

512-326-1011; www.smartsights.com

SPECIAL REPORT

Superior Signal 5E FLEX battery-powered smoke blower

Superior Signal's new 5E FLEX battery-powered smoke blower is specifically designed for smoke testing building plumbing and sewer laterals. The 5E FLEX is compatible with leading 18-20-volt tool batteries and, utilizing a high-quality power adapter, the blower integrates seamlessly with an existing electric tool set. Additionally, it can also run off any 12-24-volt power source — such as a car or truck battery — using the DC clips power adaptor. The 5E FLEX gently pushes smoke through the system in just a few minutes and takes only seconds to see results. Smoke testing is a cost-effective solution ideal for hard-to-find odors, leaks and other faults in commercial, residential and municipal facilities. While the 5E Blower is popular for a variety of plumbing applications, it is also particularly useful in testing sewer laterals, and can clearly illustrate where a fault or leak may occur on private property. USA-made, the 5E FLEX comes with an 8-foot industrial grade hose. Used with Superior's 1A or 2B smoke candles, it creates 4,000 or 8,000 cubic feet of smoke, respectively. Superior's smoke candles are also sold in convenient SealPac cans which extend shelf life.



732-251-0800; www.superiorsignal.com/msflex

Franklin Electric FE Connect app

Franklin Electric added an enhancement to its FE Connect app that is designed to help professionals quickly set up and service Franklin Electric products equipped with wireless connectivity. The app supports some of the company's variable frequency drives, including SubDrive Connect, SubDrive Connect Plus, SubMonitor Connect and select configurations of Cerus X-Drive. The app offers an array of startup, monitoring and troubleshooting solutions, including in-app guidance when setting up products, access to over-the-air firmware updates for effortless upgrades, and visibility into real-time product status. Engineers and water system professionals can also create and manage templates to easily save and load configurations across installations. The app helps preserve VFD integrity, allowing users to perform tasks and troubleshoot with minimal hands-on interaction with the drive.



866-271-2859; www.franklinwater.com

Asahi/America Series 19 actuation line

Asahi/America recently expanded its Series 19 electric actuation line. The Series 19 MAV MultiPack multi-turn actuator features accelerated cycle times ranging from 13 to 100 seconds and a smart feature that tracks the number of completed cycles. Like all Series 19 actuators, The Series 19 MAV MultiPack comes standard with multivoltage capability, a visual position indicator, an LED light to indicate valve position or fault and auxiliary contacts. Controlled by firmware, the MultiPack is available in two packages as an on/off or modulating unit. It mounts on Asahi/America Type-14 diaphragm valves and gate valves up to 4 inches. It includes a heater, one set of dry contacts for PLC confirmation and one for alarm reporting, an OLED screen with push-buttons, local controls and a QR code for easy and instant access to user manuals.



800-343-3618; www.asahi-america.com

QED Environmental Xact Count pneumatic pump cycle counter

QED Environmental Systems' Xact Count pneumatic pump cycle counter reliably monitors pump performance, maintenance cycles and estimating liquid volumes being pumped. The cycle counter directly monitors the water discharge flow rather than monitoring pneumatic airflow as a proxy. While designed specifically for AP4 landfill remediation pumps, the Xact Count is capable of monitoring flow on many different applications. The liquid pulse detecting unit is placed in-line between a pump and its discharge reservoir or force main. It requires no external power source. A digital readout displays the number of times a pump cycles. An Xact Count cycle counter consists of a valve housing, an internally located and magnetically integrated poppet, and a digital display. All wetted parts of the Xact Count are 316 stainless steel, and the seat and poppet are also constructed of wear-resistant stainless steel. The internals of the valve have been optimized for maximum debris to pass and for minimal fluid disruption.



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LOCATION AND LEAK DETECTION

Electronic Leak Detection

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, meaning prelocation, pinpointing and correlation in one single system. It includes an easy-to-read measurement value display and automated filter selection. It is based on the tried and tested housing and hardware concept of the AQUAPHON A 200. 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.

888-592-9916; www.sewerin.com



Mueller Water Products EchoShore-DX

The EchoShore-DX leak monitoring system from Mueller Water Products has expanded to include the new valve-based sensors to complement the existing hydrant-based leak detection system. Both sensors are rugged and non-invasive, and they work together seamlessly. Ramp up your reliability with up to 10-year battery life and 5G network compatibility. Get coverage where you need it, and detect, locate and monitor leaks before they form. 800-423-1323; www.muellerwaterproducts.com



Electronic Line Locators

General Pipe Cleaners Gen-Eye Hot Spot

The Gen-Eye Hot Spot pipe locator and transmitter from General Pipe Cleaners makes locating pipes and utilities easy. The locator's total field antenna and on-screen icons lead the user right to the target, without a long learning curve. Whether an experienced pro or a first-time user, the user can quickly locate inspection cameras, sondes, active power lines and utility lines with pinpoint accuracy. Rated at IP65, the locator can withstand a 3-foot drop, is dustproof, dirt-proof and water-resistant. The powerful 5-watt Hot Spot transmitter, in tandem with the locator, makes finding buried utilities quick and easy. More power means more signal to locate. Choose one of four frequencies to best suit the application.

800-245-6200; www.drainbrain.com



Hathorn Inspection Cameras Rycom SnapTRACK

To complement their suite of inspection cameras, Hathorn Inspection Cameras distributes the multifrequency SnapTRACK locator. Made by Rycom, it comes configured with the industry standard 512hz sonde-locating frequency right out of the box. It works in tandem with the camera reels' built-in 512 Hz high-power sonde. If there is a problem in the pipe, using the locator above ground can help the operator to pinpoint the location of the camera and any



issues that it has identified. The locator features weatherproof buttons. Weighing in at only 2.2 pounds, it is easy to handle on the job.

866-428-4676; www.hathorncorp.com

MyTana Complete Pipe Locator Package

MyTana bundles the MT 512+ Locator and LineFinder Transmitter in a convenient Complete Pipe Locator Package to give expanded locating capabilities beyond detecting 512 Hz signals from sondes and inspection camera transmitters. The MT 512+ has multifrequency support and multiple operating modes for a wide range of applications. With the LineFinder Transmitter it can trace signals along buried utilities, cast iron pipes and more with a minimum of interference – while maintaining the ability to continue locating past faults and around conduit bends. The locator/receiver has a large digital display with real-time graphic and audio indicators. Both products are powered by a long-lasting lithium-ion battery.

800-328-8170; www.mytana.com



RapidView IBAK North America 3D GeoSense

Included in all IKAS Evolution bundles from RapidView IBAK North America is a system that provides the power to map mainline and lateral pipelines with accuracy and speed. Starting from the mainline sewer, the 3D GeoSense sensor tracks the movement of the camera as it travels through the lateral, capturing distance, position, and depth in three-dimensional space. The XYZ coordinates can be determined when the camera is moving both forwards and backwards, immediately providing the operator a real-life site plan with the width, length and elevation data of the lateral being inspected. This data can then be exported directly into all common sewer data formats and is compatible with other sewer software. The NANO, ORION, POLARIS and ORPHEUS 2.0 cameras all have the option of having the 3D GeoSense sensor installed. This powerful tool opens up new options for acquiring and using positional data for underground utilities. 800-656-4225; www.rapidview.com



RIDGID SeekTech R-24LE

The RIDGID SeekTech SR-24LE is a precision utility locating receiver with integrated GPS and Bluetooth Low Energy technology for easy integration with smartphones, tablets and high-precision GPS instruments for real-time location coordination via the RIDGIDtrax App. Its omnidirectional antennas capture the complete signal field, making it easy to acquire the signal and trace its path. The receiver maps the utility's position and direction on its display for an intuitive locating experience. Audio and visual warnings notify the operator if the shape of the signal field is being distorted so action can be taken to avoid mismarking the utility's position. Equipped with the 18-volt battery adapter, it is ready to be powered with a RIDGID 18-volt battery (not included) for long-lasting power in the field. It also has a foldable mast for easy transport and storage.

800-769-7743; www.ridgid.com





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PRODUCT FOCUS

Subsite Electronics UtiliGuard 2 RTK

The UtiliGuard 2 RTK receiver from Subsite Electronics was designed as a simple, easy-to-operate utility locating tool for operators locating, mapping and capturing underground utilities. It utilizes survey-grade technology and features dual-band antennas to provide operators with reliable positioning data with centimeter-grade accuracy. Its precision helps when locating abandoned and untracked utilities that are difficult to pinpoint. By quickly verifying the utilities installed, operators efficiently tailor bids to match job site needs, as well as gain insight into the underground infrastructure to avoid cross bores during future projects. The receiver provides locate crews with integrated data capture, GPS positioning and an intuitive user interface to improve work quality and maximize locate awareness. By downloading the MyUtiliGuard application, operators simplify and streamline how they capture, map and share data. **800-846-2713; www.subsite.com**



Vivax-Metrotech vLoc3 RTK-Pro

The vLoc3 RTK-Pro receiver from Vivax-Metrotech adds RTK GNSS accuracy to a utility locator. Using the internal cellular module with 4G LTE capabilities, the operator can connect to an NTRIP RTK (Real-Time Kinematic) caster that provides RTCM 3 corrections. By utilizing these corrections, the operator can collect both utility location data and the utility's geographical location with survey-grade accuracy. It is designed for all operator levels, utilizing user-friendly and intuitive locate screens. Operators confirm the utility data with the press of a button and align the electronic spirit level to store data. All field data is sent to the cloud and retained in the receiver's onboard storage for review and exporting to mapping programs. **800-446-3392; www.vxmt.com**



for purchase in three size variations: 1- and 5-gallon totes and 55-gallon drums. **800-843-7584; www.cherneind.com**

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**



Superior Signal Smoke Fluid Systems

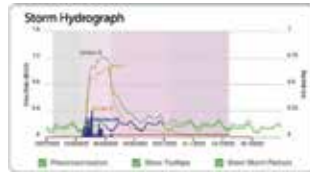
Smoke Fluid Systems from Superior Signal are used to find faults and sources of surface water inflow in collections systems. Smoke fluid is both high-quality and economically priced. Blowers are engineered for smoke testing, using a double-insulated heating chamber with stainless steel injector to maximize dry smoke output and produce quality, liquid-based smoke. Blowers can be configured to work with Superior Smoke Candles. **800-945-8378; www.superiorsignal.com** ♦



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The SLiCER software suite from ADS puts the power and control of I&I studies directly in users' hands, providing a trusted and complete I&I evaluation solution. It makes it easy to evaluate the entire collection system as a single, end-to-end, interrelated entity, tracking down I&I to guide rehabilitation programs, eliminate overflows, and validate results. Seamless integration to the PRISM platform provides greater flexibility for collection engineers and managers to interactively see and evaluate relationships between multiple factors that impact I&I. It automatically calculates wet and dry weather sewer flow parameters, with visualization in a variety of graphical displays, including Dry Day Hydrographs, Storm Event Hydrographs, and Q-vs-i graphs, along with the ability to control settings and vary assumptions. **877-237-9585; www.adsenv.com**



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SEWER & WATER

Sewer Equipment celebrates 82 years

Dixon, Illinois-based Sewer Equipment is celebrating 82 years of business this year. The company began in 1941 in a garage in Park Ridge, Illinois, with a simple idea of a tool to unclog kitchen sinks. In the 1970s, the second generation of O'Briens developed several machines in Chadwick, Illinois. The company has continued to evolve, developing safe, simple and reliable solutions for municipalities, plumbers and industrial contractors. Last June, Sewer Equipment manufactured its 10,000th unit, a Sewer Equipment Co. of America Model 900 ECO combination sewer cleaner truck, a production milestone highlight.

Naomi Park wins Stockholm Junior Water Prize 2023

Naomi Park from the United States received the Stockholm Junior Water Prize 2023 for her research on the removal of carbon dioxide and oil products from the ocean. The Stockholm Junior Water Prize is an international competition where students between the ages of 15 and 20 present solutions to major water challenges. The award has been organized since 1997 by the Stockholm International Water Institute, with Xylem as founding partner.

Carollo Engineers opens new Fort Myers office

Carollo Engineers opened a new office in Fort Myers, Florida, to better serve municipal and private sector clients in the region. Located at 9160 Forum Corporate Parkway, this location marks the firm's eighth office in the state. Carollo opened its first Florida office in 2001.

NACD names CITCO Water as winner of Excellence Award

The National Association of Chemical Distributors announced the winner of the 2023 NACD Responsible Distribution Excellence Award CITCO Water. This award is presented to companies that demonstrate continuous improvement and a sustained and rigorous commitment to Responsible Distribution, NACD's mandatory, third-party verified environmental, health, safety, and security program. Headquartered in Huntington, West Virginia, CITCO Water serves the water and wastewater industry across West Virginia, Kentucky, Tennessee, Pennsylvania, Virginia and Ohio.

Gator Drain Tools named HammerHead Trenchless distributor

Gator Drain Tools entered into a distributor agreement with HammerHead Trenchless. Based in Abilene, Texas, Gator Drain Tools' equipment portfolio will now include lateral pipe bursting systems, lead pipe replacement equipment and hydraulic power units.

Vermeer looks to future after 75 years in business

From its home base in Pella, Iowa, Vermeer looks forward to the future after 75 years in business. Founded in 1948 by Gary Vermeer, the company now has over 4,000 employees worldwide and operates eight facilities on six continents. Vermeer also offers service and support in more than 60 countries, and its equipment is distributed through a global network of more than 600 industrial and forage dealers. ♦

PEOPLE/AWARDS

Allison Hardin was hired as director of the Lancaster County (South Carolina) Development Services Division, which includes the stormwater department.

Josh Evans was hired as an engineering assistant at the Duluth (Minnesota) location of civil and environmental consulting engineering firm AE2S, which includes stormwater systems among its specialties.

The state of Colorado was awarded a \$531,000 grant from the U.S. Environmental Protection Agency to upgrade stormwater collection and sewer systems. The funds are from the Sewer Overflow and Stormwater Reuse Municipal Grants program.

One Westfield Place received a Smart Growth Award from New Jersey Future, a nonprofit organization that recognizes redevelopment projects and infrastructure improvements that incorporate sustainable elements into communities. One Westfield Place incorporated green stormwater infrastructure.

The City of Hendersonville (North Carolina) Stormwater Division received \$250,000 through Golden LEAF's Flood Mitigation Program.

The city of Coatesville (Pennsylvania) was awarded a \$621,360 grant from FEMA to design and engineer long-term resilience solutions to mitigate flooding. The grant will be used to address outdated stormwater infrastructure, among other topics. ♦

CALENDAR

November 1-2

Wisconsin Association for Floodplain, Stormwater and Coastal Management 2023 Conference, Hyatt Regency Hotel, Green Bay. Visit wafscm.org.

February 13-16

National Association of Clean Water Agencies Winter Conference, Hilton Austin Hotel, Austin, Texas. Visit nacwa.org.

February 25-28

International Erosion Control Association Annual Conference, Spokane Convention Center, Spokane, Washington. Visit ieca.org.

April 7-10

American Society of Civil Engineers Operation and Maintenance of Stormwater Control Measures Conference, DoubleTree by Hilton, Austin, Texas. Visit asce.org.

April 8-11

Center for Watershed Protection National Watershed and Stormwater Conference, InterContinental Kansas City At The Plaza, Kansas City, Missouri. Visit cwp.org.

April 9-12

Water Environment Federation Collection Systems and Stormwater Conference, Connecticut Convention Center, Hartford, Connecticut. Visit wef.org.

May 7-9

New York State Floodplain and Stormwater Managers Association, Queensbury Hotel, Glens Falls, New York. Visit nyfloods.org.

May (dates TBA)

Ohio Stormwater Conference, Kalahari Convention Center, Sandusky, Ohio. Visit ohioswa.com.

June 23-27

Association of State Floodplain Managers Annual Conference, Salt Palace Convention Center, Salt Lake City. Visit floods.org.

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What services does your company provide (categories)?

- Inspection n Infrastructure Trucks n Rehab/Relining Manholes Flow Control
 Location/Detection Cleaning Stormwater Education/Training Safety

Other _____

Which types of sewer, storm & water repair, maintenance & inspection do you perform monthly?

- Jetting n Manhole Rehabilitation Treatment Pipeline Rehabilitation & Relining
 TV Inspection Repair/Replace Excavating Vacuum Truck Service

What is approximate population of the area in which you provide service?

- 1-10,000 10,001-50,000 50,001-100,000 100,001-200,000
 200,001-500,000 500,001+

How many vehicles do you currently have in service?

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

What is your annual equipment budget?

- Under \$50K \$51K-\$100K \$101K-\$200K \$201K-\$300K \$301K-\$400K
 \$401K-\$500K \$500K +

If municipal, what percentage of your sewer and/or water work is done by private contractor?

- None 1-20% 21-40% 41-60% 61-80% 80%+

FAX this form to 715-350-8456

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