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November 2022

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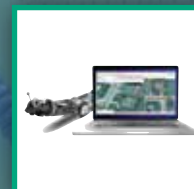
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Kyle Bartlett
Crew Leader
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PRODUCT FOCUS: LOCATION AND LEAK DETECTION



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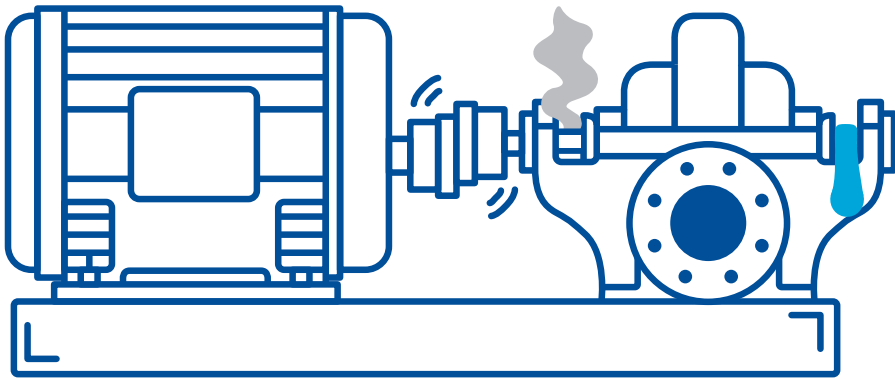


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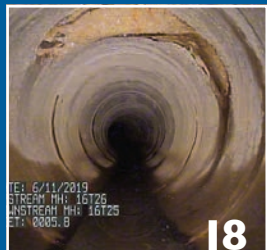
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ON THE COVER: Roseburg (Oregon) Urban Sanitary Authority CCTV crew supervisor Kyle Bartlett earned 2021 Collections Operator of the Year honors from the Pacific Northwest Clean Water Association. He is the fifth Roseburg operator in 10 years to receive the award. (Photography by Dan Hawk)



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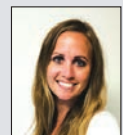
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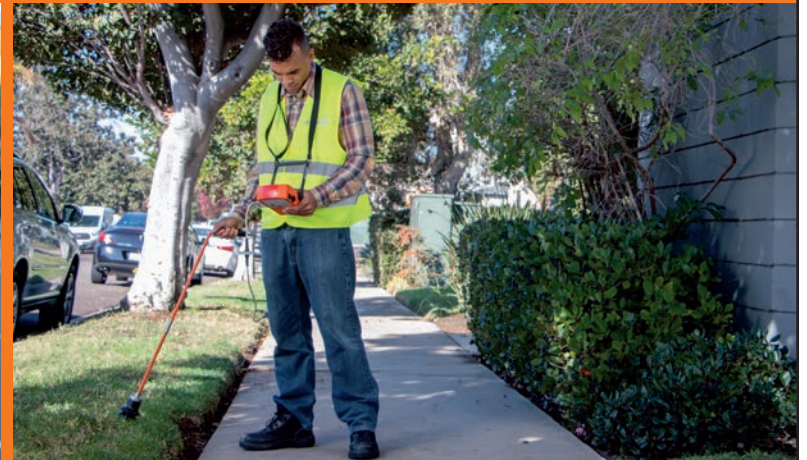
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Luke Laggis

COUNTING EVERY DROP

It's easy to turn on the tap, but it takes more thought to make smart water decisions

How much water do you need on a daily basis? I mean, how much do you really need?

You've no doubt budgeted money for a specific event like a music festival or baseball game, and probably without a ton of thought. Those of us who aren't fortunate enough to have a limitless supply of cash have to stick within our means, and knowing what you have to work with helps guide you in certain decisions. It makes sense, and it's a process we regularly apply in our daily lives. It's the same with time.

You budget time every day at work. My job is like yours in the sense that there's no such thing as getting everything done in a given day. There's always more — another project, the next deadline, etc. — but you do as much as you can and come back the next day for more.

I'd bet few of your customers really have any idea how many gallons of water they use each day.

Budgeting water is a little different. Where I live, budgeting water isn't a big concern. Northern Wisconsin is blessed with an abundance of water, but plenty of you are reading this in areas where that simply isn't the case. I'm sure some of you have a handle on how much water you use on a daily basis, but I'd bet few of your customers really have any idea how many gallons of water they use each day. Most of them probably don't even have a good idea how much they drink.

That latter piece is something I do pay attention to. I'm active and like to stay hydrated. I also mountain bike a lot and am used to thinking about if I'll need to bring one water bottle or two, or if I'll be able to loop back to my truck and grab a fresh bottle. But last weekend I went to an area I'm not especially familiar with and set out for a longer ride, so I had to figure out how much water I'd need for at least four hours and possibly more depending on circumstances and where the trail took me.

As it turns out, on a relatively cool late summer day, 2.5 liters and some light rationing was exactly what I needed for 7 1/2 hours on the bike. But that was just for drinking. If I'd had to budget my water for the ride, that glorious post-ride shower and everything else that day, I wouldn't have known where to begin. I'm fairly confident most of your customers are in that same boat. If they had to guess how much water they use, they'd be way off, and that number would almost certainly be significantly less than what they actually use. And almost just as certainly, they could comfortably get by with less. I could feel my hydration pack getting lighter as that ride wore on, and if your customers' had a daily water allotment sitting in a clear vessel of some sort and they could watch their supply drop, they'd be more careful. They wouldn't waste. And they'd get by just fine.

The drought conditions and dwindling water supplies of the West might finally serve as that vessel because the signs are obvious. Our supply of fresh water isn't limitless. How we use it today will dictate how we get to use it tomorrow. You already have plenty on your plates, but I hope you're doing your best to educate customers about ways they can save without making any great sacrifices.

Enjoy this month's issue. ♦



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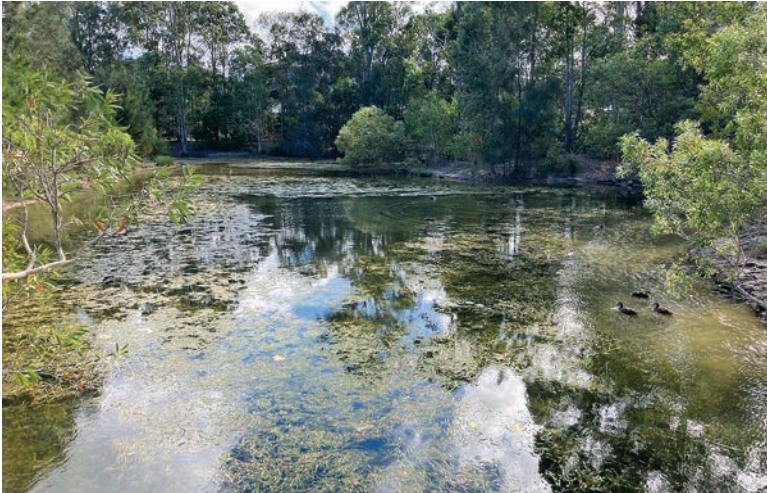
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CONSTRUCTED WETLANDS

A Natural Barrier to Microplastics

Constructed wetlands can act as a barrier preventing the spread of microplastics, a study has found. The researchers investigated the amount and distribution of microplastics in water and sediment at five constructed wetlands with stormwater and wastewater sources feeding into the wetlands. mswmag.com/featured

WATERFRONT TUNNELING

TBM Arrives in Virginia

A new 380-ton, 14-foot 8-inch tall tunnel boring machine named Hazel has been unveiled by AlexRenew — Alexandria, Virginia's wastewater authority — marking a significant milestone in its River-Renew program to improve local waterways. Read more about it in this online article. mswmag.com/featured



SEWER INSPECTION

Optimize Your Vehicle

While there's no shortage of sewer inspection technologies on today's market, CCTV remains a gold standard in assessing pipes of all kinds. But what should you consider to make the most effective use out of a vehicle-mounted sewer inspection system? mswmag.com/featured

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GRANDE PLANS FOR SUSTAINABILITY

El Paso Water keeps expanding its water portfolio to reduce reliance on the Rio Grande

By Ken Wysocky

Many cities enjoy easy access to abundant drinking water from rivers, lakes, underground aquifers and the like.

El Paso, Texas, is not one of them.

But over the years, El Paso Water — the city’s water and sewer utility — has successfully developed strategies for managing dwindling water sources, figuratively making lemonade out of the lemons tossed its way by Mother Nature and local geology in the form of drought and brackish groundwater.

These efforts have earned the utility a national and global reputation for innovative water management as well as a 2020 award from the Association of Metropolitan Water Agencies for sustainable water utility management.

Along with treated water from the Rio Grande, the utility relies on desalinated water from a massive yet diminishing aquifer, the Hueco Bolson. To boost the aquifer’s sustainability, it also operates a recharge program, slated for expansion later this year, says Scott Reinert, the utility’s manager of water resources.

In addition, the utility plans to build a \$100 million, cutting-edge water purification plant, called the Advanced Water Purification Facility. It will turn wastewater effluent

into potable water. Furthermore, the utility also is laying groundwork to import groundwater from a source 90 miles east of El Paso.

“We’re trying to educate people that the future of supplying water for El Paso doesn’t mean pumping more from aquifers,” Reinert says. “The future is water portfolio diversification.”

“When we needed more water in the 1960s, ’70s and ’80s, our operating model was to pump more from the Hueco Bolson aquifer. But we now need to preserve it for the future, which means building other water sources.”

Unreliable water source

With a population of around 679,000 people, El Paso stands at the far western tip of Texas and along the northern banks of the roughly 1,900-mile-long Rio Grande. Fed primarily by snowpack melt in southern Colorado and northern New Mexico, the river — which forms a roughly 1,200-mile boundary between the United States and Mexico from El Paso to the Gulf of Mexico — supplies drinking and irrigation water to more than 6 million people and millions of acres of land in the United States.



PROFILE: El Paso (Tex.) Water

SERVICE AREA:
About 260 square miles

WATER CUSTOMERS SERVED:
About 218,670

WATER INFRASTRUCTURE:
About 2,767 miles of water mains, three water treatment plants, one desalination plant, 60 pump stations, 11,567 fire hydrants

WATER TREATMENT CAPACITY:
157.5 mgd

MAIN WATER SOURCES:
Rio Grande, two aquifers

EMPLOYEES:
About 800

WEBSITE:
www.epwater.org

Senior Technician Vincent Ruiz (left) and Assistant Superintendent Ricardo Ruiz in the control room at the Jonathan Rogers Water Treatment Plant in El Paso, Texas. (Photography by Brian Kanof)

“We’re trying to educate people that the future of supplying water for El Paso doesn’t mean pumping more from aquifers.”

Scott Reinert

The utility’s annual allocation of river water is dictated by the Rio Grande Compact. Signed in 1938, the agreement spells out equitable water distribution between Texas, Colorado, New Mexico and Mexico.

But due to longstanding drought conditions, the utility hasn’t received its full allocation of water in more than a decade. Under a full allocation, El Paso — which averages only 9 inches of rainfall per year — used to obtain a large portion of its drinking water from the river from March through October, Reinert explains.

“This year it’ll be only from June through the end of August,” he says.

When river water isn’t available, the utility relies on other sources, including 120 wells — some up to 1,000 feet deep — that tap into the Bolson aquifer and another one nearby, the Mesilla Bolson, which doesn’t require desalination.

The utility serves about 218,670 customers in about a 260-square-mile area. It operates and maintains roughly 2,767 miles of water mains (and 2,368 miles of wastewater sewers), three water treatment plants with a total capacity of up to 130 million gallons per day and a desalination plant that produces up to 27.5 mgd.

Purifying brackish water

Faced with dwindling water from the Rio Grande, the utility in 2007 tapped into a previously unusable source: brackish groundwater from the Hueco Bolson aquifer.

“Brackish groundwater is a challenge in the West, where many aquifers include areas of salty water,” Reinert says. “The eastern half of El Paso is more prone to brackish water and the western half of the city has fresh water, even though it all comes from the same aquifer.”

A pivotal component in this strategy was the construction of the \$93 million Kay Bailey Hutchison Desalination Plant. (It’s named after a well-known Texas politician who served as a U.S. senator from 1993 to 2013 and helped obtain funding for the project.)

The plant, which opened in 2007, is located on the city’s east side near El Paso International Airport. It was funded by a \$25 million grant from the U.S. Environmental Protection Agency, cash reserves and bond issues.

“It’s the largest inland desalination plant in the world and we’ve welcomed many guests who’ve come from around the globe for tours,” says Denise Parra, the utility’s public affairs officer.



“We just hosted a delegation from Egypt in June.”

A total of 32 wells near the plant feed brackish water into the plant, where a reverse osmosis process removes salt. Another 10 wells on the city’s east side also pump brackish water, but it’s treated at the wellheads, not at the plant.

Deep-well injections

Desalination produces a waste product in the form of highly concentrated brine. At seaside plants, this concentrate typically is returned to the ocean. This obviously isn’t an option in West Texas, but regional geology provides the utility with a solution: deep-well injection.

After extensive testing and approval by state regulatory authorities, El Paso Water was granted permission to dispose of the concentrate in three 4,000-foot-deep injection wells, which are actually natural fractures in underground limestone-dolomite formations that already house salty water, Reinert says.

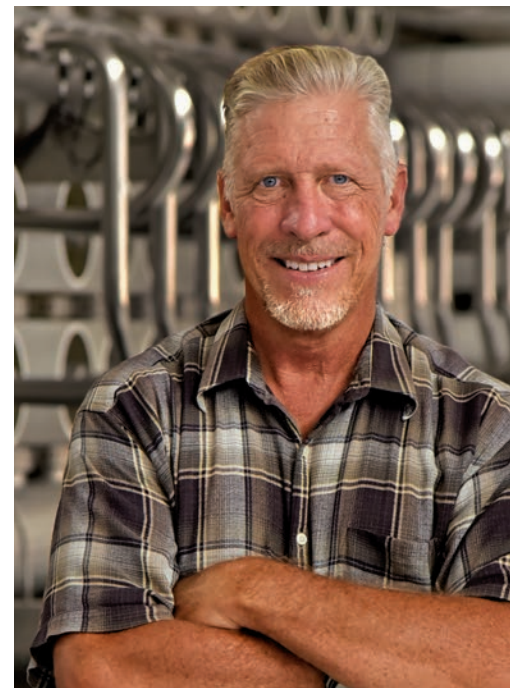
The wells are about 20 miles east of the plant, outside the city limits. Typically, about 1 million gallons of concentrate a day are fed to the wells via a pipeline.

“The wells are salty reservoirs with sufficient storage and a clay layer around them that contains the injected concentrate,” Reinert says. “We’re a unicorn in this respect — it’s very unique to find this environment away from the city and at a sufficient depth for disposal.”

Concentrate from the 10 small wellhead desalination units is treated at one of the utility’s four wastewater treatment plants.

Sustaining the aquifer

Pumping water from the roughly 500-square-mile Hueco Bolson aquifer, which sprawls over northern New Mexico, West Texas to Mexico,



Top to bottom: The Jonathan Rogers Water Treatment Plant.

Lead technician Woody Williams (left) and plant technician Aaron Connelly check over systems at the desalination plant in El Paso, Texas.

Scott Reinert, manager of water resources, El Paso Water.

MINIMIZING RELIANCE ON THE RIO GRANDE

In the years ahead, El Paso Water's continual quest to develop a more diverse water portfolio will focus on its own backyard as well as a water source nearly 100 miles away.

Locally, the utility is in the advanced stages of designing an estimated \$130 million water purification plant. It will be built on land the utility already owns that's adjacent to an existing wastewater treatment plant, the Roberto Bustamante Wastewater Treatment Plant, and a surface water treatment plant, the Jonathan Rogers Water Treatment Plant, says Scott Reinert, manager of water resources.

The plant will take wastewater effluent already treated at the Bustamante plant and run it through four more purification steps to create potable water — a prime example of so-called toilet-to-tap recycling.

"We're very excited about it," Reinert says of the plant, which will be the first of its kind in the United States. "It will give us yet another supply of water. Our need for diversification, drought management and future water supply, plus the availability of new technology, are creating a perfect storm for building this state-of-the-art facility."

The plant's capacity will top out at 10 mgd, he says.

"This plant will shine when we don't have river water," Reinert explains.

"We'll have to operate it like our desalination plant. ... When there's no demand in winter, we'll still keep it in a constant state of readiness.

"It's difficult to 'pickle' plants (shut them down) and then start up again when needed," he continues. "So it's better if we just keep it ready to ramp up when necessary."

The utility also plans to import water from Dell City, a community about 90 miles east and slightly north of El Paso that gets its water from the Bone Spring-Victorio Peak aquifer. The utility already owns about 70,000 acres of land with water rights in Dell City.

"It's a vast aquifer that the town has been using mostly for agriculture for the past 70 years," Reinert says. "We've been buying up properties out there that have water rights. ... We're aiming to balance out importation of water and their agricultural needs so they can both co-exist.

"Right now the town is all agriculture," he adds. "But in the future, it'll be an agricultural community with a water company that provides water for farming and importation."

Some of the aquifer water is fresh and some is brackish, so the utility will build a desalination plant in Dell City as well as a pipeline to bring the water to El Paso. Water importation is tentatively scheduled to begin in 2040 with 10,000 acre-feet a year; that level then will expand to 20,000 and 30,000 acre-feet annually in 2050 and 2060, respectively.

Total estimated cost is about \$600 million, which includes land acquisition and the pipeline and desalination plant. User fees will pay for the program, Reinert says.

"It's going to be a challenge, but we have had willing farmers and ranchers selling their land to us," he says, noting the utility has to comply with Hudspeth County (the county just east of El Paso County) Underground Water Conservation District regulations to make the program work.

Because the required infrastructure is so expensive, the utility is pushing this project back as far as possible. In the meantime, it plans to keep purchasing land and water rights to avoid paying even higher costs later on due to inflation.



El Paso Water team members Norman Escarcega, Norberto Olmos, Bryan Sanchez, Armando Gonzalez and Norman Escarcega (from left) on site to repair a 48-inch water main break.

“It’s the largest inland desalination plant in the world and we’ve welcomed many guests who’ve come from around the globe for tours.”

Denise Parra

helped reduce the city's reliance on diminishing Rio Grande water. But it also eventually contributed to lower aquifer water levels.

"The Hueco Bolson aquifer has been pumped for more than 100 years," Reinert notes. "It's been a huge component of our water supply." (The utility annually pumps about 40,000 to 50,000 acre-feet of water from the aquifer.)

"But in the 1960s, '70s and '80s, we began to notice that the water level was dropping because of over-pumping," he continues. "So we developed a recharge program."

The program went online in 1985. Since that time, the utility has recharged the Hueco Bolson with more than 80,000 acre-feet of water, Reinert says. Initially the utility used 10 injection wells to recharge the aquifer but they frequently clogged, forcing the utility to examine less expensive alternatives.

"The only people that liked the injection wells were our well contractors," Reinert quips.

Again, local geology provided an alternate technique: infiltration basins.

“We found we had the appropriate geology for a recharging method known as infiltration,” he notes. “We’ve had a couple good situations here for both disposing of concentrate and recharging the aquifer, that’s for sure.”

Infiltration basins

Building an infiltration basin requires excavating a 5- to 10-foot-deep layer of caliche (pronounced “kah-lee-chee”), a cement-like sedimentary rock common in the Southwest. Water is pumped via pipeline to the basin, where it rapidly infiltrates the soil and travels to the water table some 400 feet below.

“Our six basins on the northeast side of El Paso are very low cost on the capital side and low cost on operation side,” Reinert points out. “A well costs about \$500,000 and excavating a basin costs about \$100,000. They’re a very elegant and inexpensive solution.”

So where does the water for recharging come from? The Fred Hervey Water Reclamation Plant, which produces about 12 mgd of drinking-quality water.

“The Hervey plant was among the first in the nation to create drinking-quality water by treating used water and demonstrated the feasibility of artificial aquifer recharge,” Reinert says.

State regulators require the plant to produce effluent that meets drinking-water quality requirements because it’s located 20 miles away from any kind of river or natural waterway that would normally receive effluent discharge.

The plant produces about 7,000 acre-feet of high-quality water annually. Around 3,000 acre-feet goes toward recharging the aquifer and the rest is used for golf course irrigation or is purchased by a local electrical utility, El Paso Electric, for use at its cooling plant.

Enhanced efforts

Looking ahead, the utility plans to expand its aquifer recharging efforts, enlarge its water portfolio and boost water conservation measures, Reinert says.

The utility plans to evolve its aquifer recharging methods by building what’s called an enhanced arroyo (a Spanish term for a steep gulch), starting this fall. The 2-mile-long, \$12 million first phase of the project, largely paid for by funds from the U.S. Bureau of Reclamation and a state agency, will work much like an infiltration basin.

“It just enhances a natural arroyo by excavating anything that blocks water movement,” he says. “It’ll be located in the same area as the other basins.”

“Ultimately, we plan to build a pipeline from the Hervey plant to the arroyo a few miles away that will allow us to use additional water for recharge. The other basins haven’t reached capacity — we’re just looking for augmenting our cur-

rent recharge program and thinking about long-term aquifer sustainability.”

The utility also plans to build a 6-mile pipeline from a water booster station to the enhanced arroyo to further increase aquifer recharge efforts.

Multiple water sources

In the long run, many factors remain unknown as the utility prepares for the future — particularly the state of Rio Grande water allocations. Even at its depleted levels, the river currently still supplies about 40% of the city’s annual water supply.

But one thing is certain: The utility remains tightly focused on its primary mission — to provide customers with a sustainable water supply. And a diverse water portfolio is critical to the goal.

“Everyone is familiar with cities that have river water available 24/7, 365 days a year,” he says. “But we rely only partially on a river, plus freshwater wells, desalination, two aquifers, a water purification plant and, in the future, imported water.”

“We have five or six tools hanging from our tool belt,” he continues. “That’s the definition of diversity.”

Water washes away from a 48-inch water main as a crew begins repair work.

Alejandro Cortez (left) and Juan Alonzo remove a manhole cover to inspect a 6-inch water main.

El Paso draws some of its water from the Rio Grand River but the utility is increasingly diversifying and developing new water sources.

“We’re building a sustainable water future for El Paso and our motivation is diversification rather than desperation. What we’re doing right now will determine whether El Paso can thrive in 20, 30 or 50 years.” ♦



PROTECTING THE HEADWORKS

Daphne Utilities finds a better solution for clog-prone lift station

By *Chris French*

Suck it up, pressurize it and send it to the treatment plant. In theory, this should be a straightforward job for pumps at a lift station. However, as we all know, the curse of so-called “flushable” products in our sewer systems is also proving that some so-called “nonclogging pumps” are getting clogged.

If you don’t have a problematic lift station in your network, you’re either lucky or have the most environmentally responsible residents in the country. Or perhaps you’ve already solved the beast of a problem with a piece of equipment that has been around for over 70 years.

As more and more maintenance teams contend with the rise in non-biodegradable products, problems for wastewater lift stations are almost inevitable. This critical piece of infrastructure is further hindered by today’s low-flow household wastewater systems that honorably save water but allow solids to build up.

Unclogging the supposedly nonclogging pump can be a thoroughly unpleasant job, especially for example, in Daphne, Alabama, where its main lift station at Windscape was besieged with ragging issues to the point of having a vac truck there at least once per week. All part of the job, maybe, but burning up hours of labor returning to the same problematic lift station again and again can be demoralizing. The fact that some of those first to complain about backup and odors might include people who have contributed to the problem is not lost on the engineers who are doing their best to make things right.

At Daphne Utilities, the top priority is always to provide a reliable wastewater collections and treatment system that supports the needs of its community, protects the environment and quality of life for all Eastern Shore residents, and meets or surpasses all federal and state requirements. The Daphne Water Reclamation Facility can treat up to 4.17 million gallons of wastewater per day, but has the hydraulic capacity to process up to 9 mgd. The facility serves approximately 12,000 homes and businesses and treats an average of 3 million gallons of wastewater every day.

The utility has an extensive cleaning program in place, as well as a comprehensive pretreatment and grease management program to combat fats, oils and grease. This includes the requirement for grease interceptor devices at all food

service establishments and for car wash establishments to have sand/oil interceptors.

Critical infrastructure

Despite all these proactive measures, the recurring problem at Daphne’s Windscape lift station was getting some unwanted attention within the community.

“We have two 88 hp pumps but were still having ragging issues. Our power source was also unreliable, so our bypass pumps would soon become clogged,” says Goeff Wilkins, water reclamation facility manager. “Windscape is our primary lift station, which with seven others feeding into it, handles about 1 million gallons per day or about 1,500 gallons per minute, so it’s a very critical part of our network. I know some operators choose to use chemicals to address certain issues, but with wastewater being more aggressive, we wanted to find the best long-term pumping solution.”

Always on the lookout for technologies to improve

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maintenance costs and reduce
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USER:
City of Daphne, Alabama



the reclamation facility and its sewage network, Daphne Utilities had established a link with leading process equipment provider, Cahaba Water Solutions, based in Birmingham. Cahaba suggested testing an EradiGator from Landia, which is based on the very same chopper pump design that Landia invented back in 1950. Goeff Wilkins and his key engineers had also attended two national trade shows to weigh the best options.

Demonstrating effectiveness

“Daphne Utilities continues to be proactive in addressing and solving issues in their collection systems. However, like all utilities, there is always a pump station where there will be a continuing heavy presence of non-biodegradable products,” says Tim Boyne, owner/president of Cahaba Water Solutions. “We felt if we could demonstrate the performance of the Landia EradiGator under these tough conditions, we could greatly reduce their operation and maintenance costs at the Windscape station as well as reduce the potential of overflows from clogged conditions.”



At the trial, Wilkins and his team could immediately see the chopping and mixing of the 20 hp Landia EradiGator.

“It immediately resolved the issues in the Windscape lift station, so we had no hesitation in investing in it,” Wilkins says.

Set up on a timer to operate for 15 minutes per hour, the Landia pump now effectively protects the two existing 88 hp pumps with its chopping and mixing action. The EradiGator’s external knife system also prevents unpumpable solids from entering the pump’s casing.

“It does a phenomenal job,” Goeff says. “We can really see the difference at the headworks to our facility where there is now much less debris. We’ve saved huge amounts of time by not having to pull out the clogged duty pumps or send in the vac truck. Through SCADA and from daily inspections, we still check for any signs of matting and ragging, but the

“It immediately resolved the issues in the Windscape lift station, so we had no hesitation in investing in it.”

Goeff Wilkins

Landia EradiGator doesn’t need much maintenance. It works fantastic. “Cahaba has been very helpful in finding us such a solid yet simple long-term solution to the issue we had with our main lift station. None of our team misses having to go there all the time.” ♦



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DON'T SETTLE FOR GOOD ENOUGH

A lax attitude toward safety can be extremely costly

By *Ronnie Freeman*

People often use the phrase “it’s good enough” when they want to get the job done but it doesn’t have to be perfect or even great. For example, when you’re cooking dinner for the family on a Tuesday evening, good enough is fine, but if you have guests coming to dinner on a Saturday night you want it to be special.

Maybe you’ve even heard the phrase “it’s good enough for government work.” It’s commonly used to describe a task that doesn’t have to be completed to perfection. Being good enough is fine in many areas of our lives, but when it comes to being safe at work, it’s not the standard you want to

Just being good enough when it comes to workplace safety and your overall health should never be the standard.

work by. In fact, being good enough might be setting yourself up for an injury. When we settle for being good enough in safety, we are allowing ourselves to become complacent and we develop bad habits.

Another issue with having a “good enough” attitude about working safely is it allows us to be easily distracted instead of being focused on the task at hand. Hazards we don’t expect can develop and our awareness level falls off and can put us in harm’s way.

Being perfect may not always be possible, but when it comes to being safe at work, we should all shoot higher than good enough. The main goal of safety protocols is to always prevent incidents and injuries from happening. When we are working safely we don’t have to worry about getting hurt or damaging property, which is worth the extra effort.

The following are some examples where being good enough falls short of being safe at work.

- Wearing safety glasses that are scratched or too dirty to clearly see. Yes, you have safety glasses on, but having an obstructed view can create hazards of its own.
- Having all the appropriate ergonomic tools at your workstation, yet you sit awkwardly for long periods or slump over in your chair.
- Having the right tool but using it incorrectly.

- Lifting something correctly, but setting it back down incorrectly.
- Driving within the speed limits, but getting distracted by your cellphone.
- Digging the trench correctly, but not using a ladder to get in and out of it.
- Before entering a confined space, you perform atmospheric testing to ensure that the space is safe but fail to monitor the space for potential hazards that could be introduced at some point during the entry.

These examples are just a few of the ways we can do our jobs with some elements of safety involved, but we still leave an opening for an incident or injury. Just being good enough when it comes to workplace safety and your overall health should never be the standard.

Avoid this mentality by becoming familiar with the safety regulations that are there for your protection and abide by them. Understand that being safe takes effort every time and shortcuts should never be tolerated. Lastly, be willing to ask for help and direction when you are not sure. ♦



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STREAMLINING PIPE INSPECTION

Artificial intelligence provides efficiency and accuracy benefits for inspection programs

By Joshua Ford

You might be surprised at how little has changed in sewer pipeline inspection over the past 60 years. Closed-circuit television, first introduced in the 1940s, was adopted in the 1950s to determine pipe conditions and line defects. While equipment updates and new standards improved pipe inspections over the years, very few improvements were made to the process of identifying pipeline defects ... until now. Artificial intelligence offers a real breakthrough for more accurate, efficient and unbiased inspections.

Overcoming Obstacles

Utility owners and contractors benefitted from the standardization of pipeline observations by the National Association of Sewer Service Cos. in the early 2000s. The Pipeline Assessment Certification Program meant that pipe segments could be compared within the collection system, regardless of location and who conducted the assessment.

However, standardization did not eliminate variances in observations stemming from subjectivity, bias and experience. For example, an operator with just a few years of experience is likely to capture information differently than an industry veteran; experience levels greatly impact the time the camera is in the pipe and the ease of documentation. Another challenge is how time intensive the pipeline assessment is both during the inspection and while conducting a quality assurance/quality control review. Operators are expected to manage and review the video recordings of more than 200 NASSCO codes.

The traditional approach typically includes the following four steps:

- 1) Person-operated camera moves down the sewer
- 2) Camera captures footage of the sewer's current state
- 3) Individual codes defects based on camera footage
- 4) After results are reviewed, a QA/QC is conducted

These steps often result in the inefficient use of time and dollars. Coding is a very time-consuming step, and because two different people may view a code differently, it is open to interpretation. Enter AI.

Streamlined inspection

Using AI in sewer inspection does not replace the work of field staff. Instead, it supplements their work by providing reliable input that helps them work smarter. Like the human eye, AI depends on quality images to accurately predict what's in the sewer line, especially when debris and water



so easily obscure footage. High-quality CCTV with a high resolution remains essential to providing quality data outputs.

Mimicking the traditional inspection process, AI utilizes existing data and equipment, but with more detailed analysis. Artificial intelligence streamlines the pipe inspection process by pairing machine learning algorithms with computer vision to detect and classify sewer defects that are precursors to backups, overflows and problems that lead to collapses. It captures 80% of PACP codes for structural defects (cracks, fractures, break and holes), O&M (roots and deposits) and construction features (taps).

The artificial intelligence processes both perpendicular and longitudinal views, which provides a more detailed analysis and makes it less likely that defects and other observations will be missed or miscoded. It can also decipher whether the camera is in a manhole or a pipe.

With an AI tool, there is a substantially higher degree of certainty that all incident codes are correctly identified and captured. The AI tool works by utilizing a robust dataset of each computer vision model that is constantly supplemented with inspection data through a supervised learning environment that increases the AI's accuracy over time. Removing bias from the

One of the greatest benefits of working with an AI tool is that it gets smarter the more it is used.

an AI tool is that it gets smarter the more it is used. Each time a contractor or designated QA/QC finds an incorrectly coded defect or defect that has a low probability score, they correct it and retrain the AI. With time, the program gains a deeper understanding of what each defect looks like. The more it's used, the smarter it becomes, reducing the time required for reviewing sewer inspection data.

Combining AI with human intelligence results in far more reliable and useful datasets, freeing the engineer to make informed decisions and advancing the process of pipeline inspections for the first time in more than half a decade.

Looking ahead, watch for AI efficiencies to cut CCTV video review time in half. The end goal

is to enable utility providers to rely on an AI-verified database to make fast, transparent and repeatable data-driven decisions. ♦

Joshua Ford is a project engineer with Columbus, Ohio-based engineering firm Burgess & Niple.



equation allows the AI tool to reduce errors and boost accuracy rates by identifying if a defect is present and classifying the defect code — all relieving the burden on the operator.

More accurate future

One of the greatest benefits of working with

BENEFITS OF AI

- Time savings
- Cost savings
- Reliable datasets
- Ability to identify incidents that may have been missed during initial evaluation
- Repeatable results

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The American Society of Civil Engineers (ASCE) reported a mechanical seal and an applied seal cost about the same, but mechanical manhole frame-chimney seals will last 3.5 times longer.* Contact a Cretex representative to learn more about the LSS Internal Chimney Seal advantages for new construction and rehabilitation projects.



* Data provided by the ASCE Manuals and Reports on Engineering Practice No. 92, "Manhole Inspection and Rehabilitation", 2008 Update.



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CONTINUING TO SERVE

Oregon operator turns Air Force experience into a successful wastewater career

By Giles Lambertson

Like many 18-year-olds, Kyle Bartlett didn't know what he wanted to do upon graduating from high school, so he joined the U.S. Air Force. During his four years in uniform, the Oregon native found himself working in the wastewater treatment plant at Eielson Air Force Base outside Fairbanks, Alaska. It seemed a good fit.

After his military service, Bartlett returned to his hometown of Roseburg and went to work for Roseburg Urban Sanitary Authority. That proved to be another good fit: The 30-year-old was named Oregon Collections Operator for 2021, an annual award presented by the Pacific Northwest Clean Water Association.

"It all worked out," Bartlett says of his early search for a life's work. "I was able to have an active-duty role in the air force that translated into a civilian role that I could make a career out of."

Multiple hats

Roseburg Urban Sanitary Authority provides services for the county seat town in Douglas County as well for a belt around the city, more than 15 square miles in all. The system contains some 11,000 sewer connections, more than 4,100 manholes and includes a treatment plant with a capacity of about 8 mgd.

The authority's program also incorporates 340 acres of nearby farmland, which is billed as a natural treatment system. Treated effluent is piped to it and the nutrient-rich water is filtered and polished by soil and vegetation before draining into the South Umpqua River.

Award-winning collections operator Kyle Bartlett leads the Roseburg Urban Sanitary Authority's CCTV crew. (Photography by Dan Hawk)





Roseburg Urban Sanitary Authority crew members Nic Soule and Devin Freeman flush a sanitary sewer main prior to inspection.

This is the system Bartlett joined in 2015 as a collections operator. Three years later, he was promoted to lead CCTV operator. One year after that, he became an acting supervisor as well, which means besides trucking around the system in the department’s TV van, he schedules and monitors the work of six other department employees.

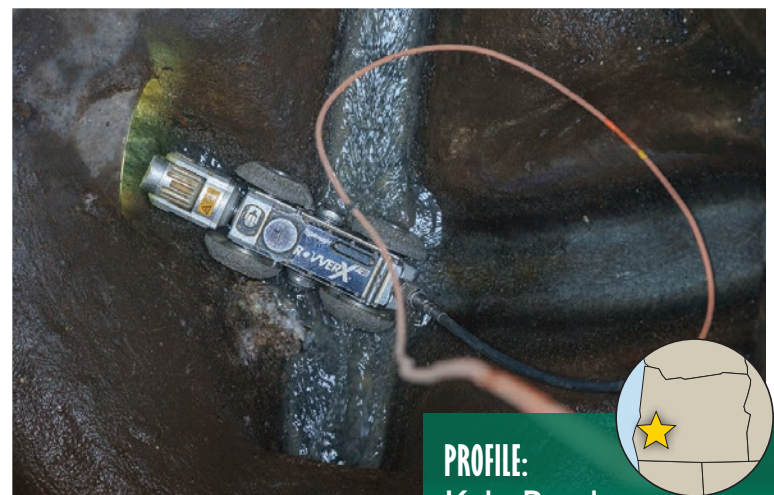
“It added another dimension to my work,” Bartlett acknowledges. “I have to keep things flowing and operating.”

Essentially, he has to do a little bit of everything. “We’re a small agency,” says Stephen Lusch, superintendent of collections and Bartlett’s immediate boss. “We are responsible for everything to do with the collections system in the city and also build and maintain the berms and roads for the natural treatment system.”

Consequently, when Bartlett’s camera work reveals blockages or other issues in main and tertiary lines, his job isn’t done. He just changes hats and moves from cameraman to maintenance man. “We are a jack-of-all-trades crew,” he says. “In the event of an emergency in the system, I am right there with everyone else getting it fixed.”

This being verdant Oregon, trees are everywhere — including underground where they send their roots into sewer system infrastructure, fostering inflow and infiltration issues and root blockage headaches. Bartlett admits to having a “love-hate relationship” with the trees, willow tree roots being particularly invasive.

To clear away root balls — or congealed grease blockages from restaurants — the department rolls out an Aquatech B-6 combo hydrovac truck or



An Envirosight Rover X sits at the bottom of a manhole at the start of a sewer main inspection.

“In the event of an emergency in the system, I am right there with everyone else getting it fixed.”

Kyle Bartlett

a larger Super Products Camel Maxx that can pump 80 gpm at 2,500 psi.

Bartlett particularly enjoys the inspection work. “I find the most satisfaction in discovering issues that need to be corrected so we can keep our system in the best shape possible,” he says.

The tools he uses to search out problems are a suite of Envirosight



PROFILE:
Kyle Bartlett,
 Roseburg Urban
 Sanitary Authority

POSITION:
 Supervisor, lead CCTV
 operator

YEARS WITH UTILITY:
 7

DUTIES:
 Supervise six department
 employees; CCTV inspection;
 system maintenance

EDUCATION:
 U.S. Air Force veteran

CERTIFICATION:
 Level IV wastewater
 collection



Kyle Bartlett runs the camera from inside the inspection van.

ROVER X crawler inspection cameras. With several of the robotic multi-wheeled camera models at his disposal, Bartlett can get a look at the interior of lateral pipes as small as 4 inches in diameter or peer inside trunk lines several feet in diameter. The system is mostly comprised of 8-inch pipe.

A challenging part of the inspection work, according to Bartlett, is setting up a camera for a run. Which camera is best suited for the job? Will a larger or smaller wheeled-unit work best? Should the camera head be mounted on an elevated stand? Occasionally, a camera will crawl into

place and Bartlett can see a different setup is required, at which point he'll retool.

A systematic inspection of the complete Roseburg network used to take six years. With the new EnviroSight cameras, the survey is completed in four years.

"The cameras are state-of-the-art and move quicker. That makes my job easier," Bartlett says. "But I think it also has to do with our crew. We are clicking on the same page now. Everyone wants to do a good job."

That was not always the case. Team spirit has grown since Bartlett was given supervisory respon-

"I find the most satisfaction in discovering issues that need to be corrected so we can keep our system in the best shape possible."

Kyle Bartlett

sibilities, Lusch says. "I can tell you that since Kyle took over as supervisor, morale of the crew has improved significantly. One of his leadership skills is that he communicates with people at all levels. They appreciate that."

Reluctant to "toot my own horn," Bartlett acknowledges that leadership is an instinctual trait. "I just naturally see when a hole needs filling and I'm willing to step up and fill it the best I can."

Core values

Lusch seems to be operating a school for collections personnel. Bartlett's recent recognition by the clean water association makes him the fifth Roseburg operator in 10 years to be honored with the award. He was mentored in CCTV work by the 2017 association winner, Dean Ronk. "He helped me out a ton."

Lusch attributes this pattern of excellence in employees to good hiring practices. Each candidate for a job is interviewed by a five-person panel representing each department. "It is getting harder and harder to recruit good people to positions here. Five of us interviewed Kyle over Skype, this was before Zoom, and I can tell you when we hung up the phone, everyone in the room said, 'This is the guy.'" Their judgment has been borne out.

Bartlett has steadily advanced in his technical certification and recently earned a Level IV certificate for waste collection, at which time the department eliminated the "acting" from acting supervisor. He is a committed advocate of safety on the job — the job often being in and under the streets of Roseburg — and volunteered to serve on the authority's safety committee. "I just want us to do the best job we can and make sure everyone goes home at the end of the day."

He also volunteers to help in community outreach programs to raise awareness of wastewater collections issues. "We want to tell people things that can help improve our program," Bartlett says. For example, use of flushable wipes is discouraged because they contribute to clogged pipes and pumps. "People are receptive. We haven't seen a huge difference yet, but I think we will."

Bartlett dates his good work ethic to his service in the military, to the core values instilled in him during those years. While Lusch, himself a retiree from the U.S. Army, believes Bartlett's service helped develop his skills, he is not persuaded that military service should get all the credit for his employee's workplace character.

"When I checked with a previous employer before hiring Kyle — I think he had only the one



Devin Freeman (right) hoists the camera out of the manhole after inspection.

“When someone talks like that about a young person, it is significant.”

Stephen Lusch

employer before the Air Force — her comment was, ‘You need to hire that guy.’ That told me a lot. When someone talks like that about a young person, it is significant.”

Right track

So, as Bartlett says, it has all worked out, for him and for Roseburg Urban Sanitary Authority. He looks back and feels good about the decisions that have propelled him to where he is today.

“You know, when I was in high school, we would get preached at all the time that we needed to go to college and get a degree in something. I think I have shown that you don’t have to get a degree to have job satisfaction and make a difference in your community. I certainly feel like I’m contributing to my community.”

He could be on track to help his community for some time to come. Lusch says he plans to retire in about five years. “Kyle is the logical choice to be my successor as superintendent.” ♦

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IMPROVING WORKPLACE PRODUCTIVITY

Empower employees to help eliminate inefficient and time-wasting tasks

By *Ken Wysocky*

In a recent survey, 58% of 10,600 employee respondents said they spend about five hours a day performing busywork instead of the work for which they were hired.

The respondents said this so-called “work around work” included attending pointless meetings, performing duplicative tasks and answering unnecessary emails and other workplace communications. In total, the employees said they spend only 33% of each work day doing the skilled work they actually were hired to do, with the balance of each day devoted to strategic planning.

The survey — performed by Asana, a work-management platform — also revealed an equally alarming statistic: Workers said they suffered from burnout an average of 2.3 times in the last year. And 40% said that burnout, stemming in no small part from the pandemic and its many workplace ramifications — including multiple communication platforms — was inevitable.

Excessive and unproductive busywork undoubtedly contributes to employees’ stress and anxiety.

“For too many employees, the road to an unproductive workplace is paved with busywork — those small, inconsequential tasks that add little value to personal and corporate goals and that trick workers into feeling productive,” says John Matthews, the owner of Gray Cat Enterprises, a management consulting firm based in Raleigh, North Carolina.

“I always tell clients that if they’re not trying to reinvent themselves every six months or so, the train is passing them by,” he continues. “You have to constantly ask yourself how you can work smarter and eliminate things that just aren’t utilized by your organization.”

Eliminate time-wasting tasks

As an example, Matthews cites routine, time-sucking reports that nobody reads — and in many cases even contradict other reports. It pays to determine if the people that receive those reports even use them.

“You need to determine if reports are redundant, duplicative or contradictory, then streamline them out of the system to free up time associated with producing them — time that can be spent doing something more productive,” he suggests.

On a more personal level, employees should strive to eliminate anything



John Matthews

they do that doesn’t add value — figure out the “needs” versus the “nice-to-haves.” The key is to figure out what tasks are truly business and jettison the rest, Matthews says.

One way for employees/managers to make those kinds of decisions is to look at the financial ramifications of their tasks. For example, they should determine if eliminating certain things could reduce expenses or improve revenue without being detrimental to customers, he says.

“It helps to develop key performance indicators that can reveal problems (inefficiencies) — determine where the low-hanging fruit is,” he says.

Matthews cites one instance where an examination of department expenses revealed a \$75-a-month charge for a never-used fax phone line. That might sound like small potatoes in the big scheme of things, but Matthews says that detecting and eliminating wasteful expenses like that

sends a larger overall message that an organization is serious about optimizing opportunities for growth.

“If you let things like that slide, it makes people think about what else are you willing to let slide,” he points out. “If it were your money, would you spend it on an unused fax line?”

Context is critical

When approaching colleagues or managers about making changes, it’s important to stress that it’s not an effort to shed work responsibilities. Instead, emphasize that the goal is increased efficiency and better use of valuable and limited time.

Furthermore, it’s also critical to offer managers a solution, not just a complaint. And on the flip side of that equation, organizations need to create a culture where employees feel they can bring up suggestions for eliminating busywork without fear of some sort of reprisal or developing a reputation as a whiner or someone who’s not a team player.

“Managers should be fostering those kinds of solutions,” he says. “There might be 15 other employees doing the same inefficient thing that wastes an hour every day.

“The more you let employees rethink what they do for eight hours every day and determine if they’re doing it in the most optimal way, the more successful your organization becomes,” Matthews adds. “The more that

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.



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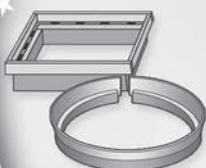
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managers allow employees to do their jobs, the more employees feel like they're in charge of their own destinies."

Empower workers

Why does busywork tend to accumulate and grow over time? Sometimes there's a comfort level associated with busywork because it makes employees feel more productive than they really are. In other cases, managers are at fault for not encouraging employees to think outside the box and eliminate time-wasting tasks.

"Sometimes managers have to push employees into the abyss a bit — make them feel uncomfortable," Matthews says. "They need to emphasize that instead of doing things because that's how they've always been done, it's time to try something different.

"Too many managers aren't comfortable enough — maybe are too insecure — to let other people be the superstars," he adds. "What they need to do is sit back and let employees do their thing."

Empowering employees to eliminate waste also creates built-in buy-in when changes are implemented. As an example, Matthews cites a company in Seattle that changed its organizational chart, a move that employees generally hated.

After holding numerous one-on-one meetings with employees to determine the "good, the bad and the ugly" at the company, Matthews asked four volunteers to develop a new organizational chart based on employee feedback.

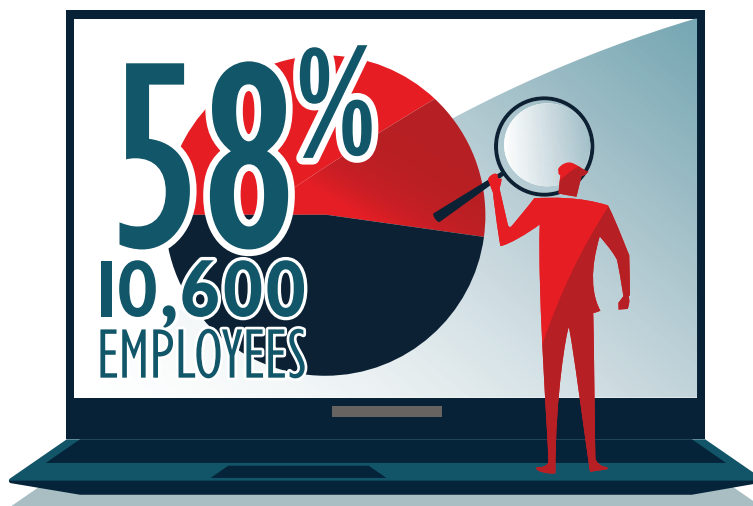
"I told them that if it makes sense, we'll change the org chart," he recalls. "If you do it, you own it ... whether it's great or it doesn't work, it was their call."

Happier employees

The team developed a new chart, management approved it and employees were much happier.

"I always tell clients that if they're not trying to reinvent themselves every six months or so, the train is passing them by."

John Matthews



"It actually worked because so many people were invested in it," Matthews explains. "It's a great example of employee empowerment. I still count it as one of the most gratifying things I've done during my career.

"The great thing about empowering employees like this is they also start thinking about other ways to optimize the business," he continues. "And if enough people start doing that, this peer pressure or competitiveness starts to blossom. And everyone starts rowing in the same direction." ♦

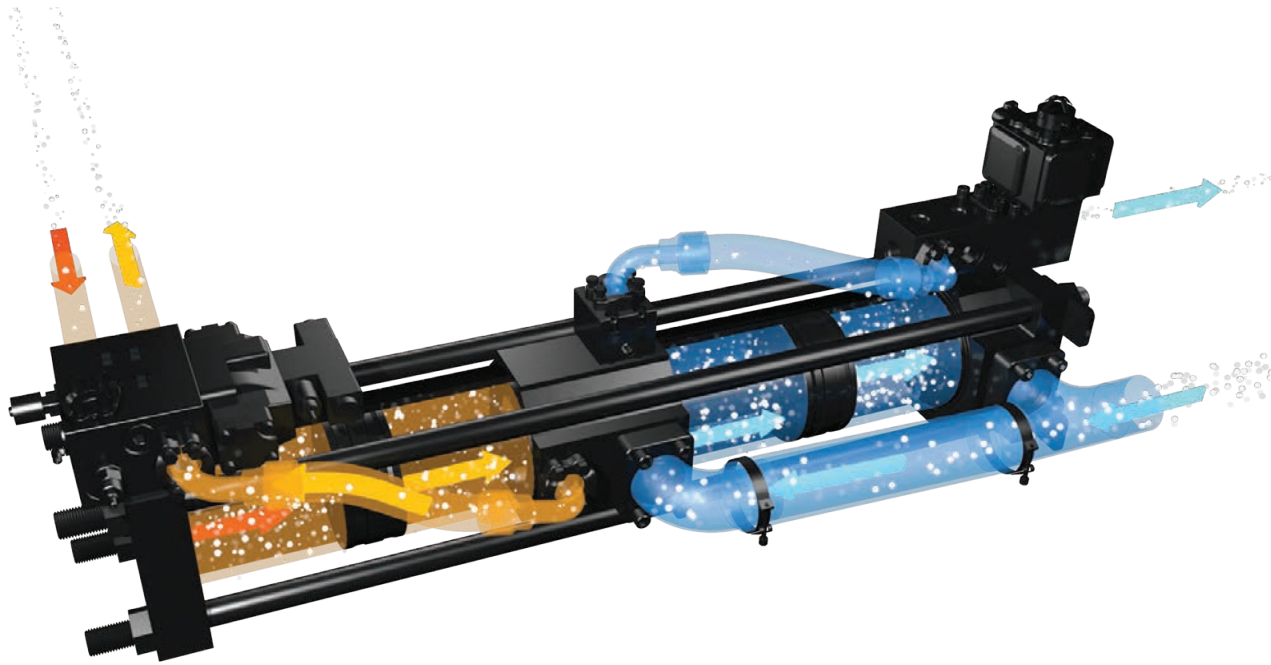
MUNICIPAL INNOVATIONS '22



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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Vactor's Innovative Technology Promises Simplicity and Power



Vactor makes sewer cleaners that increase productivity and handle tough jobs. Built around the idea of fast, simple and precise operation, Vactor-built machines utilize the latest innovative technology. The Vactor Jet Rodder Water pump is one such example of its proven technology.

“The Vactor team develops technology that makes jobs easier and more productive,” says Kip Ketner, Vactor associate product manager. “The Jet Rodder Water pump stands out due to its simplicity, power and reliability. It truly makes operation easy while producing high pressure and high flow.”

The Jet Rodder Water pump is available on the Vactor 2100i combination sewer cleaner, 2100i catch basin cleaner, iMPACT combination sewer cleaner and Ramjet Truck Series jetters. With the pump, daily routine maintenance and operation are simple because there is only one internal moving part and fewer seals compared to triplex pumps.

The technology is also powerful. As a sin-

gle-piston, double-acting pump, the Jet Rodder Water pump produces 50 to 120 gpm and 2,000 to 3,000 psi. Because of the large displacement of the pump, to achieve high flow, the pump cycles 25 times per minute as compared to triplex pumps 600-800 rpm. The more water you get to the nozzle, the more material you can carry back to the truck. Its jackhammer action at the nozzle pounds through line blockages and lifts the nozzle head up and over the blockage. This action gets the nozzle to the place where it will do the most work – on the other side of the blockage. This anchor also aids in the ability to climb grades.

The pump's single shaft features specially constructed piston heads that are driven back and forth making it hydraulically driven, with the hydraulic oil-to-water-ratio of about 1:1. For every

gallon of hydraulic oil pumped into the pump, one gallon of water is being pumped out.

A RELIABLE PUMP

Beyond the simplicity and power, the Jet Rodder Water pump is also reliable. Designed and manufactured in house at Vactor, the pump features pump cylinders made of bearing material, which is ground, polished and chrome plated. The shaft is stainless steel as well as chromed and polished, and the check valves are stainless steel too.

The Jet Rodder Water pump provides smooth continuous flows through its entire operating range and breaks up the toughest blockages. For more information on the pump, visit vactor.com/technology. ♦

VACTOR
Subsidiary of Federal Signal Corporation

Vactor develops and manufactures infrastructure maintenance equipment and safety tools including sewer cleaners, catch basin cleaners and more. For more than 50 years, Vactor has innovated the latest sewer cleaning technology to simplify jobs and make operation more precise.

815-672-3171 | www.vactor.com

G7 Trailer Jetter Is a Reliable Alternative to a Full-Sized Truck



GapVax introduced the G7 in 2021 to give customers an alternative to a full-sized truck without losing quality and reliability. A straightforward design, high-efficiency engine and quality components all come together to give you a high-quality jetter trailer option.

Fit-and-finish assembly prior to powder coating ensures maximum long-term durability. The G7 is your “everyday jetter” built to operate seven days a week.

The G7 Jetter is built on a heavy-duty, contractor-grade NATM-certified trailer. Several engine choices, including Cummins diesel, are all certified and sized appropriately for the water pump combinations. Every engine GapVax uses goes through a rigorous testing process to ensure that that engine works well with the selected triplex water pump to give you maximum performance.

G7 FEATURES

The hose reel is hydraulically powered with a direct-drive gearbox and variable speed control. The hose reel offers a 3-foot (curbside) articulation from center of bearing; 180-degree

rotation and 800 x 3/4-inch capacity.

The polyethylene plastic water tank is available in 500- or 700-gallon capacities. The water pump is center fed for optimum performance. Another safety integration to note is that the precise control of water pressure and flow is accomplished with the bypass valve. Underbody water and hydraulic lines come standard in stainless steel for longevity.

The control box is weather-tight and lockable. The controller is interlocked with safety features that will show low fuel or water levels, and is capable of a complete engine shutdown in the event of an emergency.

Options include 1/4- and 1/2-inch removable

lateral reels; precise digital footage counter; aluminum wheel and fenders; a larger toolbox option; wireless remote; lighting options; and more.

The G7 Trailer Jetties are available as a trailer-mount, skid-mount or slide-in unit for heated van bodies. Extended warranties are available on all components.

“The fit and finish on this unit surpassed anything that I ever saw in all my years of selling similar equipment,” says Paul Folker of Lonestar Municipal Equipment. “The quality of the welds, the routing of your hoses and wiring, and the powder-coat finish were all superior . . . and this is a unit that your people can be very proud of.” ♦



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.

888-442-7829 | www.gapvax.com

Boosting Efficiency with the Quickview airHD Zoom Assessment Camera

The city of Wichita (Kansas) Stormwater Utility Division was struggling to efficiently assess its collection system and combat problems like pipe defects and inflow and infiltration with its singular CCTV van. Inspecting the city's 1,400 miles of storm conduit is no small task, and in 2018, it was estimated it would take the division 40 years to complete the full system assessment.

Darrin Deutscher, general supervisor II for the division, wasn't sure how to increase efficiency. But it was clear that the team needed to consider other options.

THE SOLUTION

Deutscher credits John "Red" Phillips, another general supervisor II in the division, with finding the next step forward.

"He reached out to Key Equipment, and Nate Miller turned him on to the Quickview airHD zoom assessment camera and brought one around for testing," Deutscher says. "The price point was right, and we got four of them for less than another CCTV system."

THE RESULTS

The team started to see results immediately. With Quickview, the division can get eyes underground, fast. Determining sources of I&I, corroded pipe in need of repair, and more is now finally within its grasp.

"Honestly, we were surprised how much it instantly changed the way we go about business, for the good," says Deutscher. "Now, instead of CCTV'ing everything, we use these zoom cameras."

With Quickview in their corner, Deutscher expects the entire system assessment to take around five years — just a fraction of the previous estimate. And adding Quickview to the mix has transformed how the cleaning and repair functions of the division operate.

"Before, the crew would go out and televise every line in a mile section," Deutscher says. "We'd just work our way across the city, to the center. And we'd get pulled off for emergency stuff . . . Now we can use Quickview to look down a line,



and sometimes we bring the crawler, but most of the time we can get away without it."

BETTER USE OF RESOURCES

Quickview has also enabled the city to better utilize its available resources. "We have five cleaning crews. Those trucks used to go out to a section of town and run every line, because you couldn't tell if they were dirty or not. Now we do about a third of the cleaning — only the ones that need it," says Deutscher.

The cleaning crews can also use the inspection footage to make smarter decisions about how they tackle dirty lines. Video collected with Quickview is transferred via Wi-Fi to WinCan Web, which syncs effortlessly with the city's CentralSquare asset management system. That connection is all-important, says Deutscher.

"The video is actually in the system. I can go into any asset that's had it done, and anyone else can, too. [The crew] can look before they go in to clean to pick the right nozzle."

Quickview is a versatile tool, and it has come in handy for projects that fall outside of routine workflows, such as emergency callouts during storms. Spring downpours in the Midwest can create big problems fast when collection systems fail.

"We had a rainstorm, and a line was clogged up," recalls Deutscher. "They worked for seven hours but couldn't get through it. One of the guys took the pole cam downstream and saw a massive 30-foot root ball. We had to excavate. Without Quickview, we would have been guessing. This made it instantaneous." ♦



Envirosight designs equipment to serve the needs of municipalities, contractors, departments of transportation and civil/environmental engineers.

Envirosight is a full-service manufacturer of robotic sewer crawlers, zoom cameras, push cameras, inspection reporting and asset management software, and inspection vehicles.

866-838-3763 | www.envirosight.com | mail@envirosight.com

Hydro-Guard Flushes Out *E. Coli* in Liberty Lake, Washington



Liberty Lake Sewer and Water District is known for its pristine water that comes directly from an underground aquifer and is delivered to consumers with no extra additive treatments. LLSWD has a laboratory that monitors water quality through the system by taking 20 to 30 samples each month to ensure bacteria does not enter the system. When one of the tests came back positive for *E. coli*, LLSWD immediately implemented a series of daily flushing and chlorinating efforts with a boil water advisory in effect for seven days that had people on edge for the upcoming Thanksgiving festivities.

LLSWD was able to identify three dead-end lines that were not adequately being flushed through daily use, giving rise to *E. coli*. Liberty Lake is one of the few public water systems in the region, and for that matter the country, that does not chlorinate.

“Discovering the *E. coli* was a huge hit for us; it affected our morale. We pride ourselves on the purity of our water so we needed to resolve the situation ASAP,” says Mike “Andre” West, chief operator at LLSWD. The alternative was enforced chlorination by the Washington Department of Health that administers the Safe Drinking Water Act.

HYDRO-GUARD INSTALLATIONS

LLSWD installed three custom engineered

Hydro-Guard 100 Series automatic flushing systems with water quality sampling stations by Mueller. The installation of the units took one day using three LLSWD field personnel. Once installed, LLSWD was able to immediately program automatic flushing of the connected water mains to ensure freshwater was flushing the dead-end lines weekly. The Hydro-Guard system can flush over 110 psi, and the water is discharged to the atmosphere through a vented shield preventing erosion.

Each unit has an integrated programmer module that can be accessed by smartphone via Bluetooth. “I love the fact that I can just drive up with my phone and pull up the app to set the programmer,” West says.

All sorts of debris can slip into a water system. “One time we got a rock that jammed up in the globe control valve that can handle sand and other debris up to 5/8 inch. We had to disassemble the Hydro-Guard, retrieve the rock and put it all back together. It’s really easy to access the inner workings of the Hydro-Guard and does not take long

to get in and out,” says West. If the debris problem persisted, a permanent solution would be the addition of a Singer strainer upstream from the Hydro-Guard units.

The sampling stations are tapped into the service piping no more than 18 inches from the utility’s HG-3 flushing units. This positioning is essential to allow for a sample to be an accurate representation of the utility’s water quality at the point of entry into the flushing device.

During the *E. coli* event, LLSWD ran 240 samples through the entire district to ensure the system was clean. “The requirement is five clean samples over two consecutive days, so we went well above and beyond to assure ourselves and residents that the system was now clean,” West says.

They got the all-clear from the Department of Health the day before Thanksgiving, so all residents could celebrate and give thanks to LLSWD staff for working so hard to restore the purity of their drinking water. ♦

MUELLER

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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CUES' GraniteNet Offers New Defect Coding Service



If you're tired of looking at pipeline videos, consider outsourcing this tedious work to the CUES Defect Coding Service and letting its machines process the video using artificial intelligence for consistent accuracy, speed-to-completion and final review done by PACP-certified inspectors. The service allows your staff and engineers to get caught up and focus on more inspiring and productive work, letting the machines do most of the work.

PRESCRIPTIVE PLANNING

Also, CUES offers a sophisticated decision-support service called Prescriptive Planning that is based on the results of the AI-processed inspec-

tions to help prioritize risk and organize the types of work that should be done along with the suggested method of repair/replacement, which are based on out-of-the-box or customized decision logic. Quantify the type of work, assess your budgets, and streamline contractor bids for the specific rehabilitation jobs needed to be done.

For anyone looking to transform their organization from reactive to proactive, CUES Defect Coding and AI services are a turnkey solution to make it happen. CUES representatives are available by phone for discussions about the service or to schedule demos. ♦



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.

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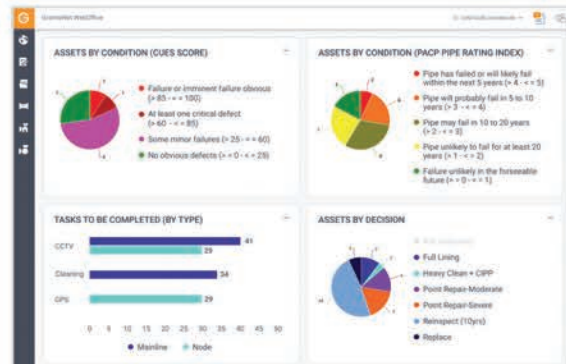
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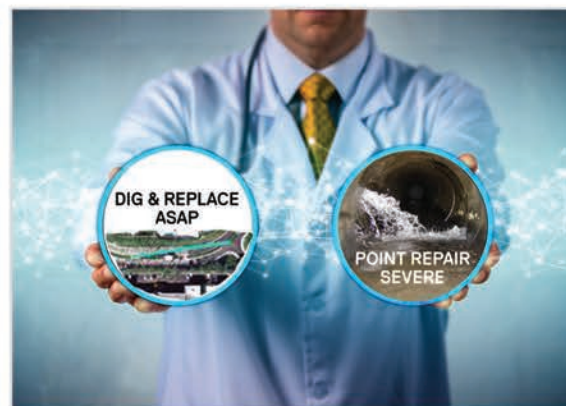
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UNDERHOOD Compressors Available for Service Trucks and Vans

Are you frustrated with long lead times for mobile air compressors? VMAC has the solution: UNDERHOOD air compressors are ready to ship within 10 days.

UNDERHOOD systems are engine belt-driven rotary screw air compressors that are installed in the engine compartment of a truck or van. These innovative air compressors are exclusive VMAC engineered products and specifically designed for OEM's Ford, RAM, GMC, Chevrolet, International and Mercedes-Benz Sprinter service vehicles.

The design process includes cooperation between the OEMs and VMAC, as each UNDERHOOD air compressor system is created for a particular vehicle make and model. The relationships behind these collaborations span 25 years, ensuring UNDERHOOD systems perform optimally while keeping the vehicle's OEM warranty intact, according to VMAC.

IN-HOUSE ASSEMBLY

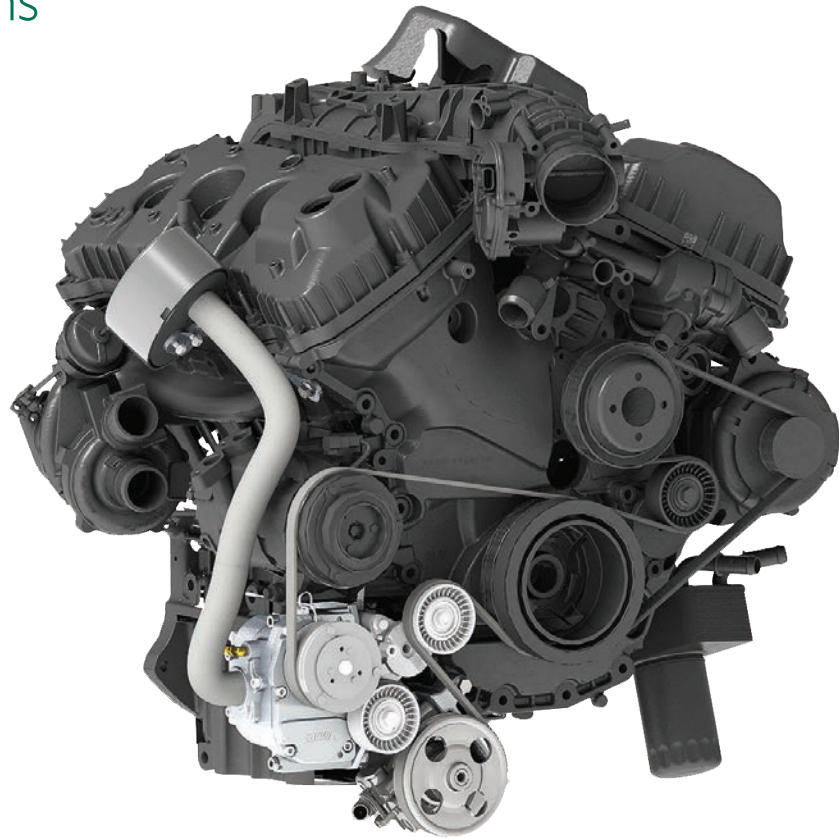
After designing UNDERHOOD air compressors with the OEMs, VMAC teams begin engineering, manufacturing, testing and assembling the air compressor systems entirely in-house. VMAC controls the entire manufacturing process at its North American facility, which includes a foundry, machine shops, fabrication shop, quality labs and assembly.

This vertically integrated manufacturing ability has been particularly advantageous in recent months as supply chain issues have created significant challenges for air compressor manufacturers. While lead times for deck-mounted air compressors extend for months, UNDERHOOD systems continue to ship out to customers in less than two weeks.

These short lead times are highly desirable for major North American fleet customers requiring onboard air to complete their service truck and van builds, and it's one of the many reasons VMAC has sold over 25,000 UNDERHOODs to date.

SAVING SPACE

The four UNDERHOOD models — UNDERHOOD40-Truck Series, UNDERHOOD40-Van Series, UNDERHOOD70 and UNDERHOOD150 — each offer significant space savings on the vehicles.



The UNDERHOOD40 only requires 1.7 cubic feet on the vehicle deck or cargo area for a combined air/oil cooler and air/oil separator tank. Meanwhile, the UNDERHOOD70 and 150 systems are entirely contained to the engine compartment and do not require any deck space at all.

Another benefit to UNDERHOOD is the weight savings. Compared to an above-deck diesel engine driven air compressor, UNDERHOOD air compressors can save almost 1,000 pounds on the vehicle.

For example, the UNDERHOOD40-Truck Series air compressor system weighs only 62 pounds, while the UNDERHOOD150 air compressor is 48% lighter than competitive 100 cfm underdeck air compressors. Many municipal fleets prioritize lightweight equipment to decrease gross

vehicle weight to meet weight regulations, improve fuel economy, or even downsize their vehicle class.

OTHER PRODUCTS

In addition to UNDERHOOD air compressors, VMAC's product line includes direct-transmission-mounted PTO driven air compressors, above-deck gas, diesel and hydraulic driven air compressors, multifunction power systems, and OEM custom air compressor solutions.

VMAC's mobile air compressor solutions enable fleets to reduce vehicle weight, load up trucks with more tools and equipment, and eliminate idling on the job site. Fleet customers and operators with VMAC air compressors enjoy less downtime and frustration on the job site, decreased costs and increased productivity. ♦



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

Frustrated with long lead times? VMAC air compressors ship in 10 days.



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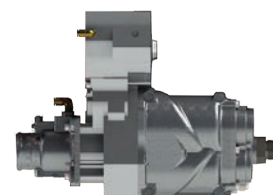
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60-70 CFM*



DTM70

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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 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.

An independent study conducted by Indiana University-Purdue University, October 2021, concluded, EnviroCure reduces on-site styrene emissions by up to less than 1 ppb. Actual job site reports very minimal detectable odors in reefer trucks when doors are opened, or in steam flumes or manholes (sense of smell is even more acute/sensitive than 20 ppb acceptable threshold).

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.

INSTALLATION SUCCESSES

Applied Felts' decades-long history of extending the life of sewer and water pipes using 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 its 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 only the highest quality raw materials available, products such as Applied Felts' flame- or stitch-bonded liners allow for greater flexibility in the field. Innovations include lateral liner and in-house applications, which are dependable small-diameter liner ranges for your every need; and Duraflex liners, a wide range 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.

The 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.

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

The WovoLiner features circular-knitted PE fibers, uniquely bonded to a seamless, impermeable PU 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 coming soon and is the company's latest innovation with improved dynamic flexibility for relining diameter changes with improved

physical property strength.

Applied Felts also offers a wide range of calibration tubes called CalTubes 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. Their 2- to 12-inch diameter CalTubes can be used in inversion, pull-in and "blind-shot" installations.

And, making your job even easier, 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. ♦



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. Be more than prepared on every job site with the right lateral equipment, materials and support with MaxLiner liners and CalTubes manufactured by Applied Felts. **276-656-1904 | www.appliedfelts.com | 844-433-7728 | www.ferratex.com | 877-426-5948 | www.maxlinerusa.com**

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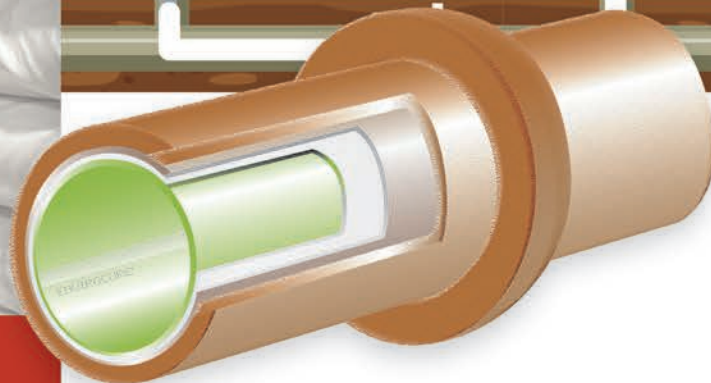
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*IUPUI Test, Oct. 2021

GPRS Increases Customer Satisfaction with WinCan Web



When Ground Penetrating Radar Systems is called to a job site, their main focus is always how best to serve that customer. From the initial call to the final deliverable, project manager Andy Jurski and his team work to ensure clients are not only satisfied with the end results but prioritized throughout the course of the project.

For many wastewater utilities and contractors, customers are the driving force behind operation and maintenance decisions. When property owners, businesses and government entities turn to municipal sewer departments to solve infrastructure problems like backups and collapses, it's essential that these customers get the insights they need fast, and in a format that allows for clear, complete analysis. This was a key factor that led Jurski and the GPRS leadership team to invest in WinCan.

EQUIPPED FOR INSPECTION EFFICIENCY

Jurski and his team began using WinCan two years ago and have already seen improvements in their workflow. Outfitted with WinCan and a VC500 tablet from EnviroSight, the GPRS team is able to conduct video pipe inspections more quickly and efficiently than ever before.

"WinCan Web has really helped workflow and back-of-house type work for me," says Jurski. "I don't have to copy and transfer all the videos

before sending them to the customer. I just click 'Upload Project' and let it go." With a few clicks, Jurski and his team can toggle through different project sections to build and fire off essential deliverables to customers nationwide.

The ease of designing these custom deliverables is a major benefit in itself. However, it's the fast delivery and intuitive review process via WinCan Web that helps GPRS stand out for its customer care.

DESIGNING CUSTOMER-FOCUSED DELIVERABLES

Getting the right data into the right hands is essential to clients. Municipal customers need accurate, accessible data that they can depend on, and according to Jurski, "once you explain what you can deliver, their wheels start turning."

Before WinCan, he was limited by manual video transfer, overencumbered servers and a painful review process that had customers bouncing back and forth between videos and reports. But now, Jurski says, "customers like WinCan Web because they can see the video correlated to different sections of the report."

Because deliverables are securely connected to WinCan Web, customers can easily navigate reports, reviewing defect photos and jumping to the video through an embedded button in the report. Customers find this not only saves time in the review process but alleviates the stress and complexity of processing inspection materials.

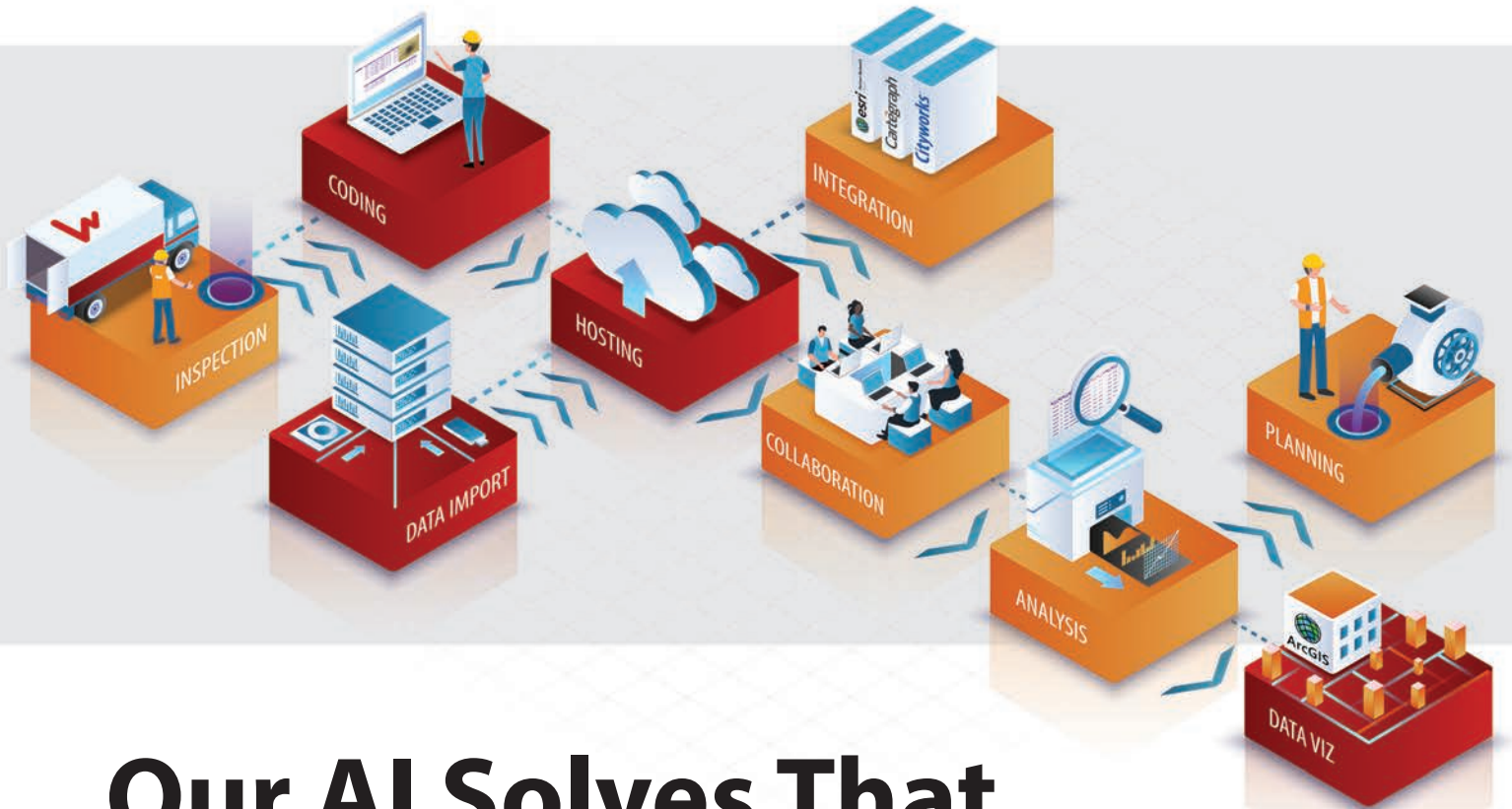
GPRS and WinCan are dedicated to creating positive customer experiences and helping communities stay safe and work smarter. See what WinCan can do to help you deliver the best results for your customers with a demo of WinCan Web.



WinCan has been a leading brand for sewer inspection and asset management software solutions for more than 30 years. Last year, it expanded offerings to include AI-backed data services via Sewermatics. Now, with the latest enterprise features in WinCan Web, users have access to a rich ecosystem of cloud technology to support sewer inspections. WinCan provides solutions for both office and field teams, supporting workflows from video capture and observation logging to work order creation and data visualization.

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Sewer Insight Can Be Complicated.



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Sewermatics applies powerful AI to the biggest challenges in sewer inspection and rehab. It works seamlessly with the WinCan ecosystem you know and trust—delivering AI-powered results and actionable insights that integrate with your team and processes.

Sewer upkeep is full of challenges. Our AI solves more of them.



Automatic Coding. Upload pipe and manhole footage, get back coded inspections. It's that simple. And WinCan has the world's largest user base, so our AI can grow faster.



Team Collaboration. Different jobs, different departments, one goal. Using AI, Sewermatics optimizes team scheduling and workflow hand-offs so you get more done.



Data Translation. Data siloed across different applications, formats and standards? Let our AI fix that. With merged data, you'll get broader insights.



Map-based Visualization. More data, more headaches? Not with AI from Sewermatics. View real-time heatmaps, spot hidden trends, and drill down to root causes.



Rehab Planning. Save days of effort and guesswork. Our AI builds smart, system-wide rehab plans that factor in defect type, proximity, severity, criticality and repair cost.



Sewermatics

wincan.com/sewermatics

Headsets With Situational Awareness Keep You Alert and Protect Your Hearing

“Situational awareness” describes an alertness to what’s happening around you and your environment so you’re able to respond if there’s a threat to yourself or others. More simply, keeping your head in the game keeps you safe.

Picture a flagger directing traffic in a busy work zone. Or a hydrovac driver’s attempt to back up within a few feet of their operator. All of these jobs require focus and concentration to maintain safety.

WHY SITUATIONAL AWARENESS IS IMPORTANT

Avoiding a scenario that can lead to a struck-by or back-over incident may be as simple as hearing a vehicle’s backup signal before it’s too close, or a co-worker hollering out for you to look up. Those are clear examples of the value of situational awareness — especially when you’re focused on your own task. You’re able to take action and maintain a safe distance. Add the challenges of extreme noise and bad sight lines and you have situations where knowing what’s going on around you is absolutely essential to maintain a safe and productive job site.

ISOLATION IS THE ENEMY

We know occupational noise exposure is a problem and you must protect your hearing. However, traditional earplugs and earmuffs block out all noise. They don’t distinguish between sounds that threaten your hearing, your coworker’s raised voice, or an alarm beeping on a console. Everything is muted.

As a result, workers experience a sense of isolation when wearing earplugs or earmuffs. It makes them uneasy. So much so that they may refuse to wear hearing protection in order to stay in touch with their environment.

KEY FEATURES TO LOOK FOR

In-stereo listening — Two microphones, one on each ear dome, allows you to hear where



sounds are coming from. Yes, hearing a backup alarm is great, but knowing if it’s coming from your right, left or from behind gives you better information allowing an intuitive response.

Awareness on demand — Being able to decide when to open up the external microphones or keep them off lets you bring in outside sounds when you’re ready. Toggling the feature on or off with a quick, one-handed button press lets you keep working without having to stop, take the gear off and fumble around while you figure it out.

Fully adjustable volume — Since no two workers or work environments are the same, changeable volume levels lets you mix in the right amount of outside sounds that suit your situation.

You shouldn’t have to compromise your safety or your long-term hearing ability just to have a conversation with your team. Situational awareness lets you take control of who and what you need to hear to improve your ability to stay alert and responsive. ♦

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

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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. ♦



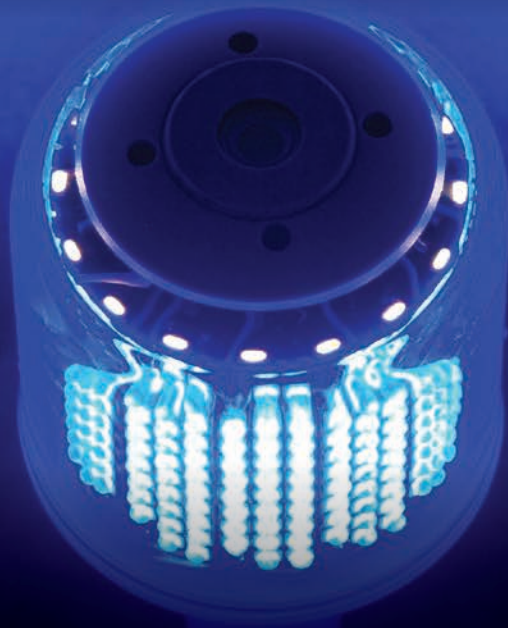
HammerHead Trenchless, a Charles Machine Works Co., of Lake Mills, Wisconsin, manufactures and delivers a unique combination of rehabilitation, replacement and installation equipment and consumables for the underground construction market. Besides being a full-solutions provider in rehabilitation and 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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THAN OTHER
CIPP CURING
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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.



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Learn more: hammerheadtrenchless.com/bluelight

Troubleshooting a Sewer Bypass Startup

When startup fails, check these four common culprits before you check anything else.



You've done all the necessary planning for your sewer bypass and checked and rechecked every component as you installed it — and now the system won't start.

"In spite of best efforts, there are times when some issues can arise," says Neil Ripley, region product development manager at United Rentals.

Ripley recommends looking at these four potential trouble spots to eliminate the most common culprits.

VOLUTE DRAIN VALVE OPEN/PRIMING SYSTEM VALVE CLOSED

There's a lot of sophisticated planning that goes into the automatic priming system on a centrifugal pump, but when something goes wrong, the culprit may be simple: Someone left the drain valve open or the priming system valve closed.

"This is the first question we ask when we get a call about priming issues. If there's one thing I've noticed throughout my career, it's that valves have a way of magically opening or closing themselves," says Ripley.

GASKET LEAK OR FAULTY SUCTION HOSE/PIPE

Look for the easy fixes first. The answer could be as simple as a \$5 gasket that's cut or missing inside the suction hose.

"Do a quick check to make sure all gaskets are present and in good condition," Ripley says. "Also, look for any physical damage such as holes or creases. Everything might have been good on installation but something may have happened as it sat during the night before startup."

FAULTY OR OBSTRUCTED CHECK VALVE

If the check valve is open just a little bit, there is potential for an air leak. The check valve is a

hard rubber flapper that has a lip seal around its circumference, and over time it can wear out. If check valves do not make a positive seal, you will have an air leak.

"If you get to this point in your troubleshooting, inspect the valve, and if it appears good, apply a thick coat of petroleum jelly around the lip seal of the flapper. Push it down firmly to seat it and try the startup again," Ripley says.

THE SUCTION LIFT EXCEEDS MAXIMUM LIMIT

"The suction lift can be tricky and depends on several factors," says Ripley. If you are working out of a manhole or wet well, vault or other structure that is deeper than 28 feet, make sure you measure the vertical distance between the level of the water and the centerline of the pump.

Water levels fluctuate in sewer systems, and if the depth is greater than 28 feet, the pump will not prime. It's possible the water level increased just when you were trying to start up your system. If you're using a trailer-mounted pump, there's a quick remedy that might make the difference: Remove the wheels, which gets the pump lower to the ground.

Planning and execution of a sewer bypass can be a large and costly undertaking and you should always consult with an expert regarding the specific circumstances, applicable rules and regulations related to your site and to your situation.

To learn more about United Rentals sewer bypass solutions, contact the United Rentals Fluid Solutions Group. ♦



United Rentals Inc. is an equipment rental company with an integrated network of 1,278 rental locations in North America, 11 in Europe, 28 in Australia and 18 in New Zealand. In North America, the company operates in 49 states and every Canadian province. The company's approximately 20,100 employees serve construction and industrial customers, utilities, municipalities, homeowners and others. **844-873-4948 | www.unitedrentals.com**



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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 set-up 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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IT'S TIME TO GO PRO

The patent-pending PRO Reel from Vac-Con is the most versatile, operator-focused hose reel available in the industry.

With a working area of over 69.6 square feet and 16 feet of traversing motion across the front of the unit, the PRO Reel offers the most hose reel coverage in the market. Combined with our in-cab manhole placement camera system, the PRO Reel can reduce your setup time by 50%.

Learn more at www.vac-con.com / pro

Creative Construction Sequencing Aids Light Rail Construction

The Los Angeles County Metropolitan Transportation Authority is in the final stages of constructing an underground light rail trunk line that will allow riders to travel through downtown Los Angeles. Known as the Metro Regional Connector Transit Project, it will connect three existing light rail transit systems through downtown.

Regional Connector Constructors — a joint venture of Skanska USA Civil West California District in partnership with Traylor Bros. — was awarded the design-build contract by the LA Metro to construct this 1.9-mile completely underground transit way through downtown Los Angeles.

While the tunnels for the twin rail lines were excavated with a 400-foot tunnel boring machine, the stations were excavated by open cut. In order to open cut to the needed depths in a high density metropolitan area, the contractors first had to safely get past numerous older utilities, many of which needed repair or replacement. The historic Broadway Station was the most challenging to construct due to having the most congested existing underground utilities in the area, including a 10-foot diameter reinforced concrete storm drain that had been constructed around 1960.

A creative construction sequencing plan devised by RCC would expose the existing utilities along the 400-foot station zone to make any repairs or replacements. These exposed utility lines would then be suspended for perhaps as long as four years over what would soon be 50 to 60 feet of air.

REPLACING THE STORM DRAIN

The electrical, telephone, fiber optic and natural gas lines were easily enclosed in a suspended casing, but the 10-foot diameter reinforced concrete storm drain belonging to the LA Flood Control Department was a larger and heavier challenge. The contractors immediately realized that due to its weight and uncertain structural integrity, the existing concrete storm drain would have to be either rerouted or replaced with something lighter. HOBAS Pipe was chosen as the lighter, stronger, less expensive and more efficient option for the project.

A temporary support system for the pipe installation was devised using vertical supports and a



series of threaded rods to attach nylon web slings that would suspend the pipe from the temporary ceiling/supporting deck beams for the Second Street decking. The pipe was secured at grade with turnbuckles and ultimately with lateral and longitudinal braces. There it would remain suspended for the remainder of the excavation, station build-out, and backfill to the pipe's grade.

As the new 300-foot line neared completion, the existing reinforced concrete storm drain was removed up to a couple of feet above its invert. This work was done during Los Angeles' dry season from April to October to take advantage of

the low flow at that time of year. A sandbag dam and pump were able to handle the minimal base flow during the construction of cast-in-place transition structures to connect the new line to the existing storm drain at either end of the cavern. Upon completion of the connection, the remaining lower portion of the reinforced concrete was removed.

The new section of 126-inch HOBAS reinforced concrete storm drain, totally and permanently encased, will continue serving the LA Flood Control Department and the citizens of Los Angeles indefinitely. ♦



HOBAS®

HOBAS Pipe USA manufactures fiberglass reinforced polymer mortar pipe from 18 to 126 inches in diameter. With over 10 million feet installed across North America, engineers and contractors regularly select HOBAS pipe due to its light weight, high strength, ease of installation and leak-free push together joints. It is suitable for a variety of installation methods including sliplining and other trenchless methods, open cut and above ground. It is also suitable for new construction and rehab of critical installations including storm and sanitary sewers, hydroelectric penstocks and other corrosive environments. HOBAS also provides fully structural FRP noncircular pipe and vertical manhole systems.

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The HOBAS standard is based on supplying products which far exceed the minimum national standards. HOBAS Pipe USA's experienced staff will assist you from project inception through completion. To achieve success on your next project, specify HOBAS performance.

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 mul-

iple 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.

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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.

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

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Zero-Gap Flange Spreader Allows Safe, Efficient Valve Swaps

The SMP Valve-Out tool is a seven ton, zero-gap flange spreader that allows a small crew to safely and efficiently swap valves, meters or gaskets on steel piping systems.

The Valve-Out tool can fit any flanges with bolt-hole sizes ranging from 3/4 inch through 1 3/8 inch (5/8-inch through 1 1/4-inch bolt size) and can adapt to any lay length needed. Because the Valve-Out tool grabs the outside companion flanges there is no gap required for this tool to work, and you will be able to easily clean your flange faces and insert gaskets after you drop your new valve in.

“I don’t know how a water or sewer utility can be without this tool,” said one city director of utilities. “It’s a major improvement to the old way of doing things. Our employees are safer and more productive.”

The optional Valve-Out Water Service Kit also includes a set of Titan flange alignment pins and Piper backup wrenches to make bolt-up just as easy. ♦



Specialty Maintenance Products has delivered safer and more efficient tools to the water and wastewater industries for over 25 years. The company’s specialized hand tools help cities and municipalities all over North America save time and effort while also working in a safer way.

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Spread outside flanges & remove old valve



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CAN BE USED ON ANY VALVE WIDTH

REQUIRES NO GAP AND CAN BE USED TO SPREAD FLANGES AND REPLACE GASKET

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Water Service Kit



How SpeedyLight+ Helped Savy & Sons Expand

Savy & Sons — an infrastructure-restoration company from Amston, Connecticut — has seen rapid growth in recent years, and finding reliable vendors has been important to its success. The company offers a range of capabilities, from wastewater and infrastructure rehabilitation to waterproofing services. Taking on these diverse jobs is par for the course for Savy & Sons. But the company needed a relining technology that would simplify setup and allow them to complete more jobs, faster.

THE SOLUTION

These days, the SpeedyLight+ light-based curing system for CIPP is an essential tool for the Savy & Sons team. SpeedyLight+ cures at speeds ranging from 0.66 to 3.3 feet per minute — up to five times faster than traditional technologies. And it can cure 90-degree bends in lines as small as 4 inches, as well as other challenging geometries like transitions and verticals.

The Connecticut contractor uses the SpeedyLight+ system for a wide range of jobs, including commercial buildings, underground, throughout multifloor buildings with pipes, roof drains, sewer stacks and all the way down to underground service laterals and mainlines.

THE RESULTS

“Game changer.” That’s how Travis Savy, technical director of the pipe lining division at Savy & Sons, describes SpeedyLight+. “The crew has



SpeedyLight+ is LED-based

Light Cure



Cures Faster, Relines Bends, No Styrene or Mixing

- Works with many approved felt and glass fiber liners
- Cures up to 3.3 fps over 328'
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more confidence, and it’s lowered stress on lining jobs. To be able to prep offsite for them with the UV resin using our choice of liner is great.”

SpeedyLight+ helps the team cut down on rehab project duration, sav-

ing their customers time and resources and allowing them to take on more jobs.

With SpeedyLight+ in its toolbox, the busy contractor has been expanding even more. And Savy & Sons has found PRT’s pros to be valuable partners in the industry. ♦

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Pipeline Renewal Technologies delivers innovative technology for no-dig structural lateral renovation; drain and mainline cutting; durable point repair; video drain flushing; and process management.

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With today's increasing use of nondegradable sanitary products, Flomatic is offering a suitable solution to meet the harsh complexities of congested wastewater systems: the AIS-compliant model 408S6 ball check valve.

A proven favorite in the industry for decades, the model 408S6 ball check valve is American Iron and Steel-compliant and designed according to AWWA C508 standard lay lengths. The self-cleaning model features no sharp edges or snag points, helping to prevent clogging from nondegradable sanitary products. There are no moving parts except for the Buna-N vulcanized metal ball. ♦

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Flomatic Valves specializes and produces valves

ranging in sizes ¼ inch through 36 inches for a variety of projects in the municipal, industrial and irrigation markets. Flomatic Valves is one of the first valve manufacturers in the U.S. to earn both ISO 9001-2015 and ISO 14001-2015 International Standard Quality Management certifications in the industry.

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ROPING IS NO JOKE

Swing check valves can cause roping in wastewater applications. If modern trash keeps clogging your check valves and you want to avoid system interruptions, *maybe it's time for a different solution.*

Flomatic's ball check valves have no moving parts other than the self-cleaning ball which automatically moves out of the path of flow, minimizing head loss and maximizing efficiency.

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- ✓ Multiple Accessories Available.

Avoid roping with Flomatic's line of ball check valves.

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MUNICIPAL INNOVATIONS '22

Wachs Valve Maintenance Experts Offer Quality Equipment and Support



A vital task in maintaining water infrastructure is turning, operating or exercising valves – different words describing the process of cycling a valve to prevent sticking or freezing caused by debris or tuberculation. Wachs Utility Products — as a leading manufacturer of water valve maintenance systems and advanced pipe cutting solutions — offers valve exercisers and maintenance systems products that include handheld powered exercisers, mounted valve exercisers, VMT valve maintenance trailers, VMS valve maintenance skids, all the way up to the company's dedicated valve maintenance truck.

QUALITY SUPPORT

As you look to partner with a valve maintenance equipment manufacturer, consider not only the quality of the equipment and its software, but also the quality of the support you'll receive, before and after the sale. Wachs dedicated direct sales team members are industry experts, and will be there with you through equipment procurement, in-servicing and training, offering "best practices" advice down the road to go along with the hardware and software.

With Wachs valve maintenance equipment, even small to midsize organizations can implement suggested or mandated procedures for water infrastructure maintenance. The company's equipment aims to make your team more productive while saving you expensive outsourcing. In addition, a valve maintenance program saves money in the future by minimizing expensive valve replacement and service outage related costs. ♦



Wachs manufactures a wide range of equipment to suit any municipal need and budget, and the company stands ready to assist in the procurement process. With

Wachs Utility Products you can start small, knowing the equipment is designed to grow with you as your needs grow.

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Wachs Utility Products The Valve Maintenance Experts™



Choose Wachs®

Wachs is known for making rugged and reliable valve maintenance equipment ranging from powered handheld exercisers all the way to custom-configured valve maintenance trucks; not to mention our VITALS® valve rehabilitation software.



What you may not know is the Wachs direct sales and customer service teams (The Valve Maintenance Experts™) are available before and after the sale to develop a custom solution with you, provision equipment, and provide hands-on, in-service training. No one else provides you with this dedicated level of customer support.

To maximize the life of your water systems, choose the experts in great equipment, great software, and great support.



Choose Wachs today for a solution tailored to fit your needs and budget.

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MUNICIPAL INNOVATIONS '22

Secure Your Excavation Site With EasyDig Trench Cages

THE PROBLEM:

Large, dangerous and messy excavations for fixing small underground utility repairs.

THE SOLUTION:

EasyDig Trench Cages are small and circular. Their design is low impact and provides a safe work area. EasyDig's modular shoring comes in 2-foot-by-4-foot half-circle pieces that are easy to transport and carry by hand. They come with a built-in ladder and

are engineered to conform with national regulations. EasyDig also has a locking lid as an accessory to secure the excavation. Not only can you provide a safe work environment you can save time and money as well. ♦



Utility Repair Trench Cage

855-485-EASY
www.easydig.ca



EasyTech's focus is to provide innovative solutions to the underground infrastructure market like the EasyDig trench cages. EasyTech also provides large-diameter, multisensor pipe inspection. The company's cutting-edge inspection services including sonar, laser and CCTV performed all in one pass down the pipe. Visit the EasyTech team at ConExpo 2023 in Vegas, or check out the company's YouTube channel at <https://youtu.be/Z2fxFjgn1WY>.

855-485-3279 | www.easydig.ca

THE SHOOTER®

Mobile Efficient CIPP

Emagineered SOLUTIONS

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Photo is courtesy of Chirex Central Ltd.

MUNICIPAL INNOVATIONS '22

THE SHOOTER Boasts Simple Operation and Improved Efficiency

THE SHOOTER by Emagineered Solutions is the original continuous air-inverter for CIPP and for decades has been a standard in the industry. Simple to operate and built to last, THE SHOOTER is a tool that can make your company more efficient and profitable for years to come.

THE SHOOTER 12 has a range of 4 to 12 inches and up to 15 inches with the conversion kit, a knife gate for after the liner tail passes, and comes with either the self-lubricating hand truck or the basic non-oiler cart.

THE SHOOTER 24 is for 15 to 24 inches, is trailer-mounted and comes with a knife gate and remote operating station on the fender. An optional conversion kit expands its range from 6 to 24 inches.

Additional equipment offered includes full steam packages with portable dry steam generators, steam hose, A and B stations, water cure flanges, and LED ultraviolet Y adapters. THE SHOOTER is crafted in Redmond, Oregon. ♦



THE SHOOTER® Emagineered Solutions of Redmond, Oregon, has a track record of innovation in

the field of water control technologies since 1998. The company is a forefront innovator in CIPP relining and repair.

541-504-0416, ext. 6 | www.theshootercipp.com

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 flatbed 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.

800-648-5011 | www.camspray.com



WORKING WELL UNDER PRESSURE

Pressure Washers & Drain Jetting Equipment

NEW



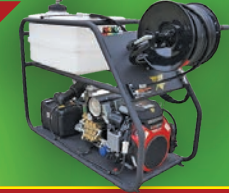
RCJ4008H

»8 gpm @ 4000 psi
»800 cc EFI
Honda Engine

»200' x 3/8" Jet Hose on Manual Reel

Call for Quote

NEW



LJ4008H

»8 gpm @ 4000 psi
»800 cc EFI
Honda Engine

(NARROW DESIGN)

»200' x 3/8" Jet Hose on Manual Reel

Call for Quote

NEW



4008H Power Unit

»8 gpm @ 4000 psi
»800 cc EFI
Honda Engine

Just Add A Tank!

»400' x 3/8" Jet Hose on DC Powered Reel

Call for Quote

3012H Power Unit

»12 gpm @ 3000 psi
»800 cc EFI
Honda Engine

»400' x 1/2" Jet Hose on DC Powered Reel

Call for Quote

3012H Compact Skid

»12 gpm @ 3000 psi
»800 cc EFI
Honda Engine

(100 GALLON TANK)

»400' x 1/2" Jet Hose on DC Powered Reel

Call for Quote

4008H Compact Skid

»8 gpm @ 4000 psi
»800 cc EFI
Honda Engine

(100 GALLON TANK)

»400' x 3/8" Jet Hose on DC Powered Reel

Call for Quote

NEW



VM4008H

»8 gpm @ 4000 psi
»690 cc
Honda Engine

»50' x 3/8" Washdown Hose on DC Reel

Call for Quote



STB3012H

»12 gpm @ 3000 psi
»800 cc EFI
Honda Engine

»400' x 1/2" Jet Hose on DC Reel

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GROUT SAFETY CERTIFICATION NOW AVAILABLE

Self-paced, online test is based on the Grouting Unified Safe Operating Practices Program

By Sheila Joy

Members of NASSCO's Infiltration Control Grouting Committee and its Health and Safety Committee have released a new certified grouting safety program aimed at the protection on grouting projects of not just the industry's field workers but also warehouse personnel, engineers, transporters and inspectors. The concept is not new to the industry, but one that deserved renewed focus.

David Magill first created Avanti International's Safe Operating Practices Program in 1979, requiring all buyers of acrylamide grout to certify their compliance with this program every three years. In 2002, Avanti was joined by NASSCO in supporting and implementing the industry standard guideline on safe operating procedures for the use of acrylamide grouts.

After the release of two new grouting specifications in October 2021 (Pipeline Packer Injection Capital Grouting and Pipeline Packer Injection Pre-Rehabilitation Grouting v2.10), ICGC members turned their efforts toward updating the 2002 industry SOPP guidelines. Led by NASSCO-member suppliers (Avanti International, American Chemical Grout Co., and Madewell Products), and joined by vendors of grouting equipment (CUES and Logiball) and contractors (Michels Trenchless), the concept of an industry-wide Grouting Unified Safe Operating Practices Program was born. Over several months, the ICGC workgroup met to discuss current program requirements, share resources and assemble a working document. After completion, the 30-page program was carefully reviewed by NASSCO's Health and Safety Committee in conjunction with NASSCO's Technical Advisory Council. Finalized and released in April 2022, the completed document is now available for download on www.nassco.org.

The topic of personal safety addresses the responsibility of not only a company but also the responsibility of individuals to recognize, accept and implement the requirement for the use of personal protective equipment during grouting operations. Links embedded in the document direct individuals to OSHA's Respiratory Protection Standards and the program's specific require-

ments for small entity compliance. The GUSOPP also looks to provide guidance during grouting operations on the proper respirators and cartridges, protective suits, boots, hand and eye protection, and provides some general guidelines on the use and care of personal protective equipment.

New to this edition are subjects including Understanding DOT Placards, Global Harmonized Systems and Safety Data Sheets. While these systems have been in place for many years, ICGC recognized that not everyone that may handle products has been exposed to or trained to understand exactly what they stand for. Everyone should be responsible to take measures to properly protect themselves and others. A link is also provided for an easy online UN/NA number search that will provide more information on the proper labels, special provisions and quantity limits for acrylamide and its other components.

Rounding out the document, the final topics provide descriptions of the various materials used, best practices for product storage, transfer and disposal, and lastly a daily grouting rig housekeeping checklist.

NASSCO'S vision to build awareness of aging underground infrastructure relies heavily on educating the industry of this critical need and providing viable solutions. In line with its focus on safety, a self-paced, online certification test has been developed based on the information provided within the Grouting Unified Safe Operating Practices Program document and will soon be available through NASSCO's online training site (www.nasscotrainingsource.org).

ICGC suggests that everyone involved in grouting operations acquire this certification including laborers, inspectors, transporters and warehouse personnel. All grout distributors have agreed to incorporate the document into their own safety programs and to begin requiring companies to maintain current certification of their employees when purchasing grouting products like David Magill's original SOPP program.

For more information on NASSCO, ICGC and available training programs, please visit www.nassco.org. ♦



NASSCO is located at 5285 Westview Drive, Suite #202, Frederick, MD 21703; 410-442-7473; www.nassco.org

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

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Trainer: Tim Back

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Includes: ITCP-CIPP
Trainer: Lou Krch

NASSCO

PRO TRAINING



OTHER CLASSES FORMING

Contact one of the trainers listed above if you are interested in having a class at your facility or in your area.

We don't believe in wasting words.

We thought we'd share them with you instead. Introducing the WWETT Making Waves Podcast.

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Product Spotlight

Flexible inspection platform a fit for remote sites

By Craig Mandli

Sewer inspection requirements tend to vary with every job. Sometimes a crew needs crystal clear footage to assess every inch of a pipe's interior. Sometimes, though, they need to minimize a file size for easy data transfer. And there's often a call for something in between.

Flexpection from EnviroSight is a flexible, unified sewer video capture platform that provides those options. With three video resolution settings to choose from, it lets operators strike just the right balance for the variety of jobs they face on a day-to-day basis. And it's built to adapt and change as your needs change, too.

"There's no such thing as a typical sewer inspection anymore," says Allison Symonds, senior marketing communications manager for EnviroSight. "Sometimes you need flexible data that can quickly transfer from remote work sites. Sometimes you need high-resolution images to pinpoint exact defects in a pipe. When demands vary from pipe to pipe, you need powerful technology that can keep your team on track."

With Flexpection, resolution can be throttled according to your needs and digital bandwidth. Users can choose from SD resolution, which is nimble and easy to share; 720p HD, which is robust, detailed and portable; and 1080p HD, which is crystal clear and high res.



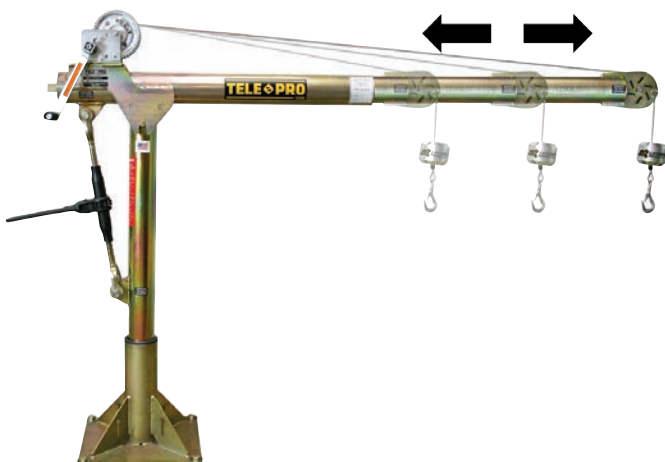
"Choose the resolution that meets your needs — your workflow, your upload capacity, your client's preferences, your data storage method, your asset management solution, your everything," Symonds says.

Flexpection was designed not just for today's work orders, but for future inspection protocol, too. Using its multiresolution capabilities means the user is ready to adopt emerging technologies like AI-assisted inspections and automated defect coding. And rolling out things like photogrammetry and on-screen feature measurement is easy when your digital platform is built to adapt, according to Symonds. Flexpection makes it easy to adapt to changing demands and keep regulators satisfied. And contractors deploying Flexpection can easily use the same crawler and software across multiple clients, projects and standards.

"Wastewater requirements for inspection can vary across cities, states and regulatory jurisdictions, and standards are changing," she says. "Municipalities need to stay up to code, now and in the future, ensuring that inspection data remains compliant and actionable."

Flexpection is exclusively available with the ROVER X sewer inspection crawler system. **866-227-9845; www.envirosight.com**

SPECIAL REPORT



OZ Lifting Products Tele-Pro davit crane

OZ Lifting Products' patented Tele-Pro davit crane features an industry-first telescoping boom adjustment that can be moved in and out while under load. A ratchet screw jack allows the user to adjust the boom from horizontal to 45 degrees while under load and the 360-degree rotation of the crane allows a full range of motion. Smart latch technology at the boom/mast means no tools are required for assembly. A

zinc-plated finish provides added corrosion protection. The Tele-Pro is available in 500-, 1,200- and 2,500-pound capacities. AC and DC electric winches are optional on the 500- and 1,200-pound models, or manual winch with drill drive adapter is available for all three models. The cranes are made in the U.S. and each one is individually tested and certified at 125%. **800-749-1064; www.ozliftingproducts.com**

SPECIAL REPORT



Superior 5-E Electric Smoke Blower finds faults, odors, leaks and inflow

When testing laterals, building plumbing or pumping or inspecting septic tanks, smoke testing is a quick and effective way to find plumbing faults that lead to odors, leaks and inflow. Superior Signal Company's Superior 5-E Electric Smoke Blower easily connects to any clean-out, port or vent to smoke test the entire system in just a few minutes. The Superior 5-E Electric smoker gently pushes smoke throughout a system to

find cracks or leaks and quickly identify problems. Made in the U.S., the durable Superior 5-E Electric smoker is competitively priced and comes complete with 8 feet of industrial-grade hose. Used with Superior Smoke Candles, this cost-effective solution is ideal for hard-to-find odors, leaks and other faults in commercial, residential and municipal facilities. **732-251-0800; www.superiorsignal.com/MS5**

CUES GraniteNet defect coding services

Outsource pipeline videos with CUES' GraniteNew defect coding service. Using artificial-intelligence-based machines, it processes the video for consistent accuracy, speed-to-completion with a final review done by PACP-certified inspectors. CUES also offers a sophisticated decision-support service, Prescriptive Planning, that is based on the results of the AI-processed inspections to help prioritize risk and organize the types of work needed with the suggested method of repair and/or replacement. Quantify the type of work, assess your budgets, and streamline contractor bids for necessary rehabilitation jobs. **800-327-7791; www.cues.com** ♦

PEOPLE/AWARDS

John D'Antonio Jr. was hired as the water resource business development manager at Wilson & Company Inc. Engineers and Architects. He is based in Albuquerque, New Mexico. Stormwater system planning and design are among the company's services.

The **University of Notre Dame** received the New Municipal Best Management Practice Award for the Joyce Center Green Roof Project.

The **city of Kingsport** (Tennessee) received the Public Outreach Award from the Clean Water Professionals of Kentucky and Tennessee for its Storm Drain Art Contest.

The **city of Tulsa** (Oklahoma) received \$26 million in grants from the U.S. Department of Transportation. A portion of those funds will be used to build infrastructure to support a future low water dam.

The **city of East Moline** (Illinois) received \$24 million in federal infrastructure funding for its downtown revitalization project, which includes reducing stormwater runoff through the use of green infrastructure. ♦

CALENDAR

Nov. 7-9
American Water Resources Association Annual Conference, Hyatt Regency Lake Washington, Seattle. Visit www.awra.org.

March 28-31
American Water Works Association / Water Environment Federation Utility Management Conference, SAFE Credit Union Convention Center, Sacramento. Visit www.awwa.org or www.wef.org.

April 16-19
American Public Works Association North American Snow Conference, Omaha, Nebraska (hotel TBA). Visit www.snow.apwa.net.

April 16-19
American Water Works Association Sustainable Water Management Conference, Minneapolis (site TBA). Visit www.awwa.org.

June 11-14
American Water Works Association ACE23, Toronto, Canada (site TBA). Visit www.awwa.org.

June 27-29
Water Environment Federation Stormwater Summit, Kansas City Convention Center, Kansas City, Missouri. Visit www.wef.org.

July 17-19
American Water Resources Association Summer Conference, Hyatt Regency Denver Tech Center, Denver. Visit www.awra.org.

Municipal Sewer & Water invites your national, state or local association to post notices and news items in this column. Send contributions to editor@mswmag.com.

LOCATION AND LEAK DETECTION

By Craig Mandli

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**



MyTana Locate and Leak Detect Package

MyTana's Locate and Leak Detect Package includes the 512+ Locator, the LineFinder Transmitter and the LD40 Leak Detector. The locator detects 512 Hz signal from sondes and camera heads to help find the location of problems in most pipes. Partner with the LineFinder Transmitter to trace the paths of buried utilities like CATV cable, gas lines, telephone cables or fiber optic cables with sheath. Find water leaks by using the locator/transmitter combo to trace a water line, then use the LD40 to pinpoint where the leak is. Both the locator and the LD40 offer large displays with real-time visual and audio feedback to guide you. **800-328-8170; www.mytana.com**



RKI Instruments GX-2012

The **GX-2012** from **RKI Instruments** monitors ppm LEL, and percent volume methane, oxygen and carbon monoxide, and hydrogen sulfide. It includes three operating modes: normal, leak check and bar hole. Leak check mode includes a ppm leak detector that detects methane down to 100 ppm. Visual and audible pulses change with gas concentration. The carbon monoxide display in leak check mode is ideal for residential investigations. Barhole test mode is for underground leak checks. It includes vibration, visual and audible alarms, an automatic backlight during alarms, bump test and calibration reminder with lock out option, interchangeable lithium-ion or alkaline battery packs, alarm latching or non-latching, a high-impact, dust and water-resistant design, up to 600 hours of data-logging with alarm trends, on-demand data recording, and TWA and STEL readings with a lunch-break mode. **800-754-5165; www.rkiinstruments.com**



ELECTRONIC LINE LOCATORS

Radiodetection RD8200

Radiodetection's RD8200 is the most advanced precision locator in its range, offering accurate and reliable location in the most challenging of situations as well as mapping. In addition, it is an all-industry locator — a versatile, high-quality solution that is suitable for a wide variety of locating tasks including TX transmitters and powerful signal generators, which enable accurate cable and pipe locating. **877-247-3797; www.spx.com/en/radiodetection**



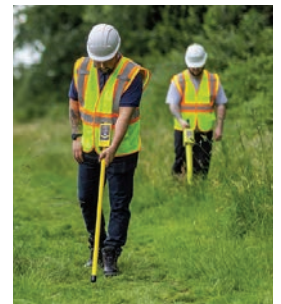
RapidView IBAK North America 3D GeoSense

Included in all **IKAS Evolution** bundles is a revolutionary system that gives you the power to map mainline and lateral pipelines with accuracy and speed. Starting from the mainline sewer, the **3D GeoSense** sensor from **RapidView IBAK North America** tracks the movement of the camera as it travels through the lateral, capturing distance, position and depth in 3D space. The XYZ coordinates can be determined when the camera is moving both forward and backward, 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 sensor installed. This powerful tool opens up options for acquiring and using positional data for underground utilities. **800-656-4225; www.rapidview.com**



Schonstedt Instrument Locators

Schonstedt Instrument pipe and cable locators detect and trace the path and depth of metallic underground utilities, such as water and sewer pipes, and plastic pipes with tracer wire. Rex is a versatile, three-frequency locator, with a 5W transmitter, capable of detecting 512 Hz sondes. **u-LOCATE** comes with one or two active frequencies, a 1W transmitter and optional 512 Hz sonde capabilities, and is designed for users who aren't locating frequently but need an inexpensive tool to ensure they are avoiding buried utilities before digging. **800-999-8280; www.schonstedt.com**



Sensors & Software LMX Ground Penetrating Radar

The **LMX Ground Penetrating Radar** system from **Sensors & Software** complements traditional pipe and cable locators by locating both metallic and

nonmetallic utilities (PVC plastic and concrete pipes) and other buried structures (underground storage tanks, vaults, foundation walls and concrete pads). Designed and optimized for utility locating, systems make it easy to add GPR to an existing locating workflow. It simultaneously detects both shallow and deep targets and quickly displays the results on the display unit in the field. Results can be easily shared and integrated into CAD and GIS mapping solutions. **800-267-6013; www.sensoft.ca**



Subsite Electronics UtiliGuard 2

The **UtiliGuard 2** from **Subsite Electronics** provides locate crews with integrated data capture, GPS positioning and an intuitive user interface to improve work quality and maximize locate awareness. Operators get an in-depth understanding of locating activity by documenting locate accuracy and operations performance for more consistent results on job sites. The user interface offers simplified graphics that are easy and fast to interpret. Operators will notice an obvious change in screen layout when directly over a utility locate, providing positive confirmation. The graphics provide increased confidence, locate consistency and operational performance. The automatically captured data can be used by operators to quickly prove or track performance, compare with benchmarks and provide actionable outcomes to help increase quality and productivity while reducing cable strikes. In addition to data-logging capabilities, it is equipped with integrated GPS positioning, enabling crews to improve activity reporting. **800-846-2713; www.subsite.com**



Vivax-Metrotech vLoc3 RTK-Pro

The **vLoc3 RTK-Pro** receiver from **Vivax-Metrotech** includes real-time kinematic GNSS accuracy. Using the internal cellular module with 4G LTE capabilities, the operator can connect to a NTRIP RTK caster that provides RTCM 3 corrections. By using these corrections, the operator can collect both utility location data along with the geographical location of the utility with survey-grade accuracy. It is designed for all operator levels with 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 the data. All field data is sent to the cloud and retained in the receiver's onboard storage for review and exporting to external mapping programs. **800-446-3392; www.vivax-metrotech.com**



SMOKE LOCATORS

Cherne Smoke Fluid

Cherne Smoke Fluid is a simple-to-use smoke testing system that produces thick, dense smoke to effectively identify inflow. Easy to pour and regulate, it is constructed with a Briggs and Stratton engine that has the ability to generate airflow up to 3,679 cfm. Built with virtually indefinite store life, it can be used with traditional smoke candles or liquid smoke. It is available 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 generator

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



TRANSMITTERS

Hawk Measurement CGR PoE Level Transmitter

The **CGR PoE Level Transmitter** from **Hawk Measurement** is a guided radar Power over Ethernet product that provides secure in-plant and remote monitoring, as well as remote sensor setup, diagnostics and troubleshooting abilities. If any troubleshooting is required, it will communicate to remote service technicians for offsite diagnostics, sensor health and reconfiguration, without the need to climb a tank or enter the facility. It can connect to an online portal, the HawkEye365, which can monitor multiple tanks worldwide in real time. This monitoring portal provides accessibility to critical data such as the ability to view volume, space, material height, historical trending, alarms and alerts, sensor setup and diagnostics. Plant-level operator screens are customized to the company's specifications to include control room-level and operations-level interface screens. The graphical user interface is common throughout and permissions can be set for different tiers such as plant level, finance or executive level. **888-429-5538; www.hawkmeasurement.com**



RIDGID Remote Transmitter

The **RIDGID Remote Transmitter** is a powerful, miniaturized transmitter that can be easily installed at the end of a fiberglass push cable, duct rod or sewer cable for fast, easy and accurate locating of underground pipe. Its small profile, 1 inch in diameter by 3 inches long, also allows it to be pushed into trouble spots. Transmitting a 512 Hz signal that can be picked up with any compatible locator, users are able to pinpoint its position underground in depths greater than 15 feet. The solid steel core unit is powered by AAA battery and has easy on/off activation with a blinking red LED light when in use. Abrasion resistant urethane plastic protects the electronics in the harshest environment and stainless steel wear ring provides longer life. It meets FCC Class B and EN 55022 Class B requirements. **800-474-3443; www.ridgid.com** ♦



CASE STUDIES

LOCATION AND LEAK DETECTION *By Craig Mandli*

Water commission stops leak and saves highway from potential catastrophe



Problem:

The DuPage Water Commission in Elmhurst, Illinois, found a leak underneath a major highway overpass. To complicate matters, water was appearing on both sides of the road in multiple locations. The pipe was under 6 inches of asphalt and 12 inches of concrete, so DWC needed to quickly and

accurately pinpoint the leak, isolate that section, reduce excavation limits and minimize site disturbance. Following the first leak, a second leak occurred that was even more challenging as the 24-inch DIP water main dove down 20 feet to go under a creek, a 60-foot-wide cast-in-place box culvert, and a four-lane highway.

Solution:

Echologics field technicians used the **EchoShore-M** leak detection technology, as it is well suited for a variety of pipe materials, including DIP and larger pipes ranging in diameter from 16 to 90 inches. Hydrophones were attached to the pipe (in the case of the first leak) and two air release valves (for the second leak) on either side of the leak. Using advanced signal processing with acoustic readings from the hydrophones and filters for blocking out background noise commonly experienced on large-diameter pipeline assets, both leaks were located. DWC could then confidently make the repair.

RESULT:

For the first leak, DWC used a repair clamp and for the second leak, they chose to line the pipe as the leak ended up underneath the box culvert. Both leaks were identified within inches of the EchoShore-M readings, enabling quick repairs and preventing further damage and disruption. **866-324-6564; www.echologics.com**

CLASSIFIEDS

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Problem:

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

Solution:

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



RESULT:

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



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TITUS Wastewater Solutions relocates headquarters, announces rebranding

June 15 marked TITUS Wastewater Solutions' official relocation of its headquarters, manufacturing and fabrication facility to Casper, Wyoming. The move provides TITUS room for continued growth as it expands its wastewater manufacturing and distribution across North America. The new facility has 44,000 square-feet of space within a four-building complex. A small portion of the facility will continue to house the marine storage and maintenance business, and the rest of the property will be utilized to accommodate the expansion of the TITUS wastewater organizational initiatives. In conjunction with the move and expansion, TITUS announced a rebranding. The former TITUS Industrial Group has rebranded as TITUS Wastewater Solutions.

Duperon awarded ISO certification, adds to leadership team

Duperon Corp. was awarded ISO certification for its systems and processes under ISO 9001:2015. This marked the company's first ISO audit, which it completed with zero findings. The ISO 9001:2015 certification sets the standard for a quality management system, which is achieved when an organization exhibits its ability to consistently provide products and services that meet customer and regulatory requirements.

Duperon also welcomed Steve Macomber as business development manager. Macomber brings 25 years of industry experience and will lead the company's business development efforts. Hailing from Charlotte, North Carolina, Macomber's expertise spans across the engineering industry, including six years with Black & Veatch, and more than 18 years working for equipment manufacturers in the screening, dewatering and thickening sector.



Steve Macomber

BlueTriton Brands joins The Water Council's WAVE program

The Water Council announced BlueTriton Brands has signed onto The Water Council's WAVE program, becoming the first company in the beverage industry to participate. BlueTriton is a North American provider of bottled water brands including Poland Spring, Ice Mountain and Pure Life. WAVE will help BlueTriton improve its enterprise-level water stewardship performance and public reporting, concluding with independent verification of its progress.

Ed Fritz named WEF's Chair of Solids Separation Subcommittee

Operators Unlimited Wastewater Process Engineer and Project Manager Ed Fritz was named the Water Environment Federation Chair of the Solids Separation Subcommittee. Dedicated to researching wastewater solutions, the subcommittee is organized under the Residuals and Biosolid Committee and focuses on the many aspects of thickening and dewatering. The subcommittee has more than 40 members.



Ed Fritz

Aliaxis acquires Aquarius Spectrum

Aliaxis SA announced the acquisition of Aquarius Spectrum, a provider of advanced acoustic water leak detection and pipe condition assessment

solutions for water infrastructure. Aquarius Spectrum will be part of Aliaxis Next, Aliaxis' newly created division which develops adjacent businesses in the field of water management and preservation. Aquarius Spectrum, an Israel-based technology company, has developed systems that proactively monitor water distribution networks. Aquarius sells leak detection technology worldwide, leveraging acoustic sensors and sophisticated analysis engines to detect water leaks and pinpoint their exact location.

Syrinx adds East and West coast distributors

Syrinx expanded its footprint with the addition of two new distributors: Environmental MD and Whitney Equipment Co. Covering four states in the eastern and western U.S. respectively, the new partnerships will apply smart water solutions to solve challenges shared coast to coast, including reducing nonrevenue water loss and protecting aquatic life from harmful wastewater spills.

HazTek announces Leading Safely program

HazTek announced its new Leading Safely approach to safety leadership. Leading Safely is designed to help industry leaders transform their organizations in ways that reduce risks, improve team morale and open pathways to far better financial performance. The program is designed to build on HazTek's capabilities for safety management and integrate the most recent insights into human performance and safety system design and implementation.

Felling Trailers adds UN31 tanks to certifications

Felling Trailers has received certification for its UN31 tank design. The 607-usable-gallon tank's intended use is for the mobile generator industry. The UN31 tanks were designed to be compatible with Felling's DDG drop-deck generator trailer line. The tank option is utilized in conjunction with an OEM's Genset mounted to the trailer frame. The tank is certified to meet the safety standards of CAN/CGSB-43.146 for metal intermediate bulk containers, for use with liquids in packing group III, such as diesel fuel.

Brown and Caldwell announce new COO

Brown and Caldwell has promoted Euan Finlay from senior vice president to chief operating officer. A senior executive with 25 years' experience, Finlay excels in leading organizations and teams to deliver excellence to clients while driving sustainable growth. Before joining the firm in 2019 as director of business transformation, Finlay was an operations executive for a leading provider of design, design/build and program management services.



Euan Finlay

McElroy hires Eric Duerr as new purchasing manager

McElroy has hired Eric Duerr as the company's new purchasing manager. A native Oklahoman, Duerr brings 15 years of procurement, sourcing and inventory management experience, mainly in the oil and gas industry. He has developed and led the performance of numerous purchasing and sourcing teams in the United States, Canada, Egypt and the United Kingdom. Before arriving at McElroy, Duerr was the western hemisphere strategic sourcing manager for TD Williamson in Tulsa. ♦



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