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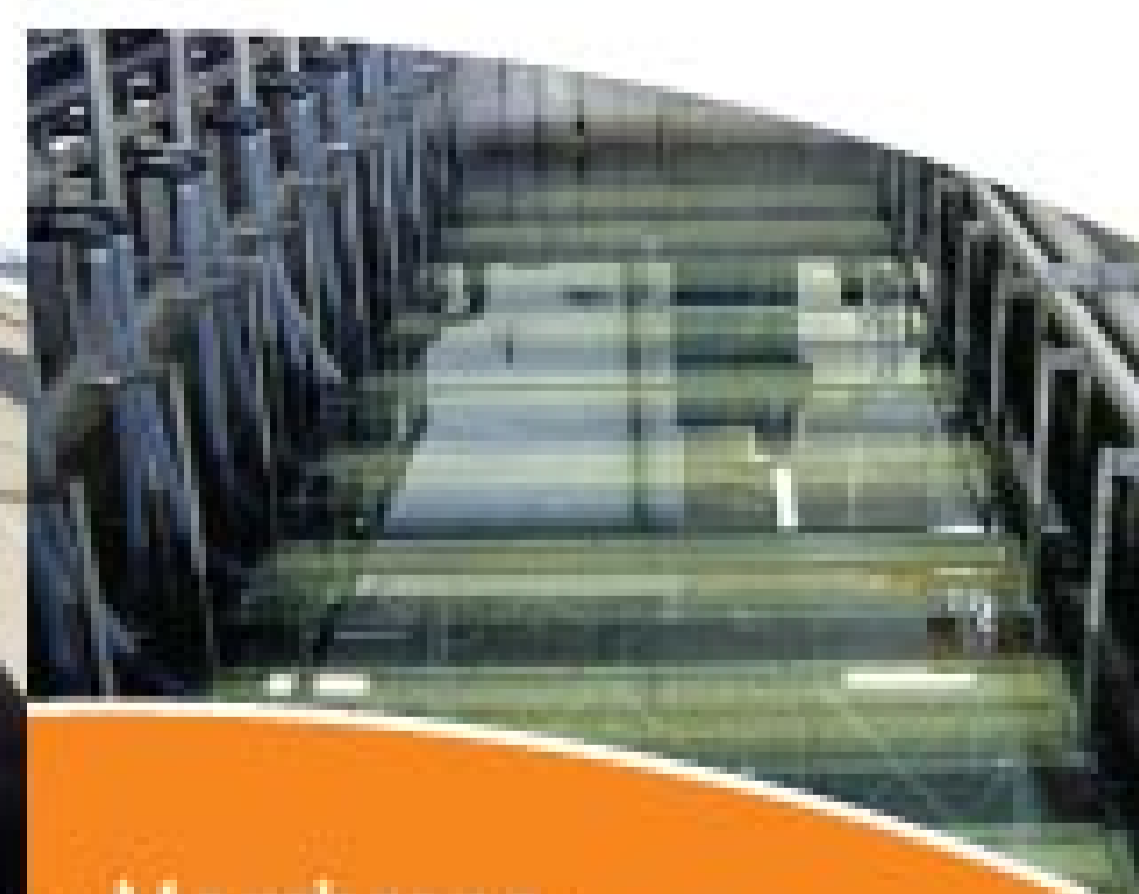
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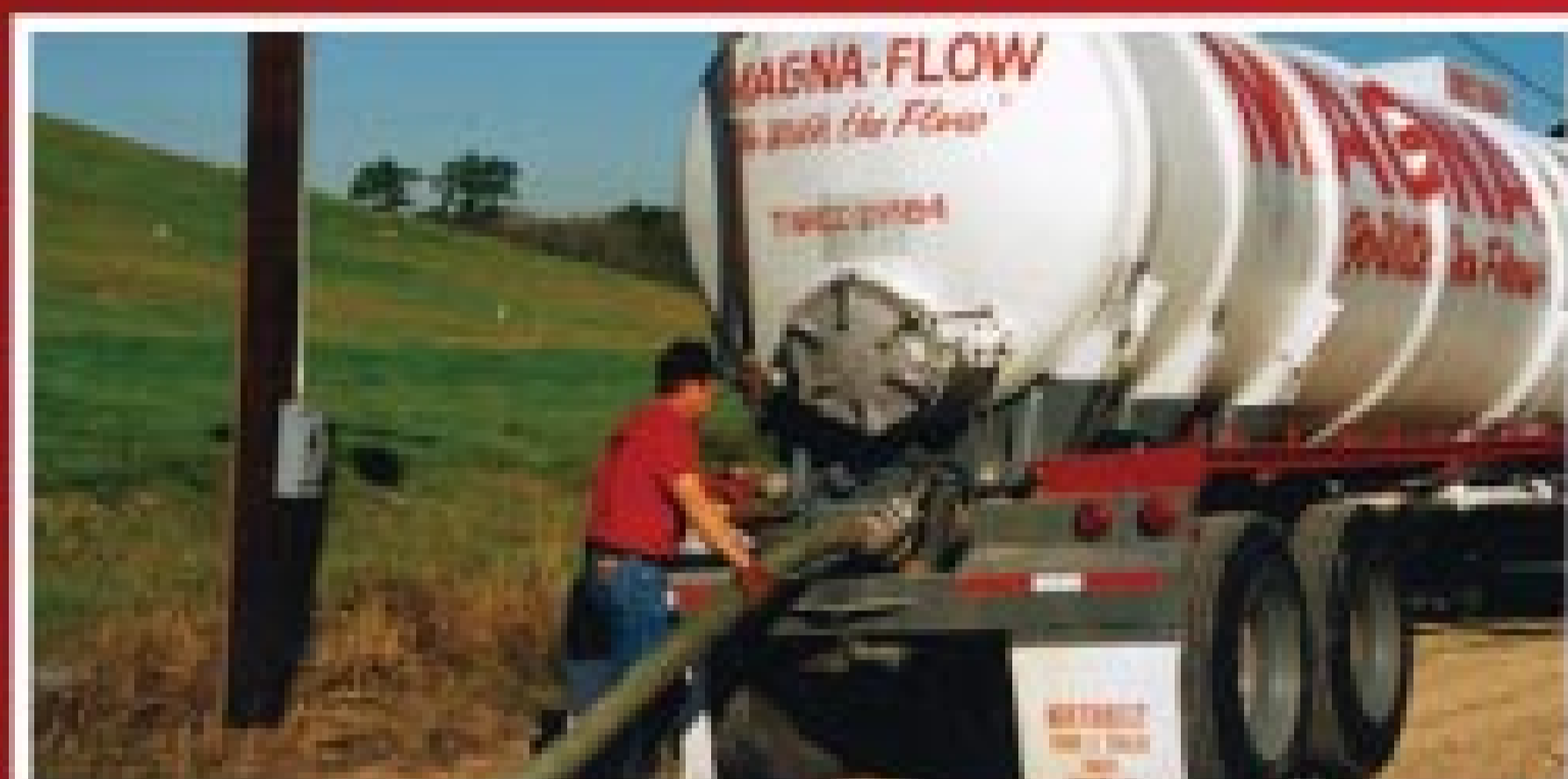
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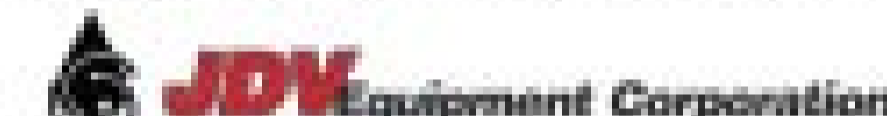
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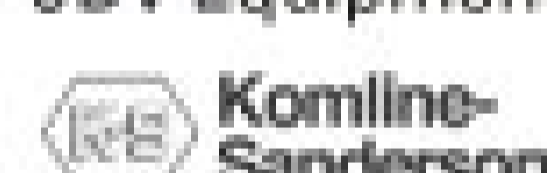


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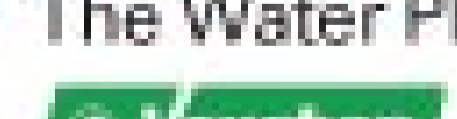
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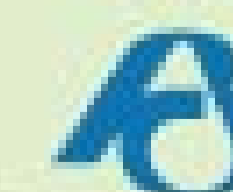
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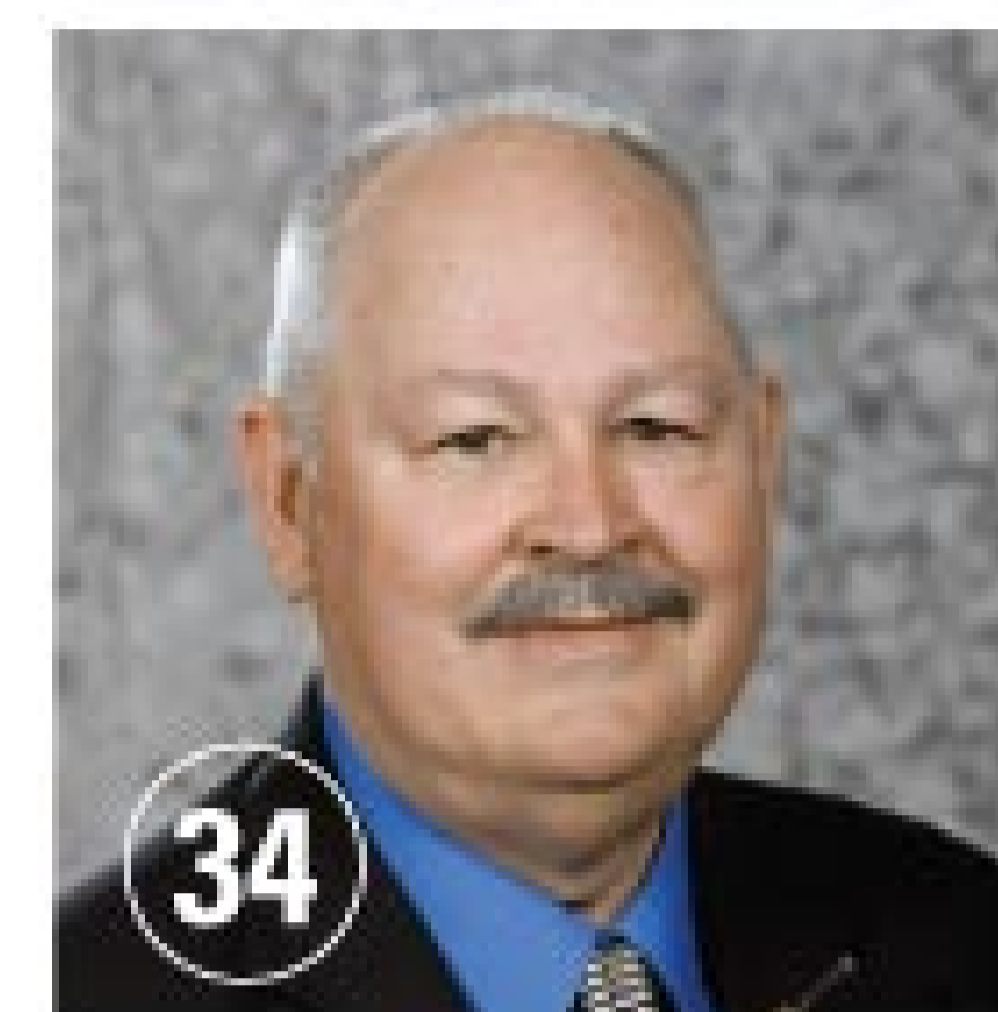
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on the cover

The city of El Dorado, Kan., combines wetlands with an activated sludge process to deliver exceptionally high-quality effluent and Class A biosolids. A recipient of multiple awards, the facility operates with a staff of four, supported by high school and college interns. Jason Patty is plant superintendent. (Photography by Steve Rasmussen)



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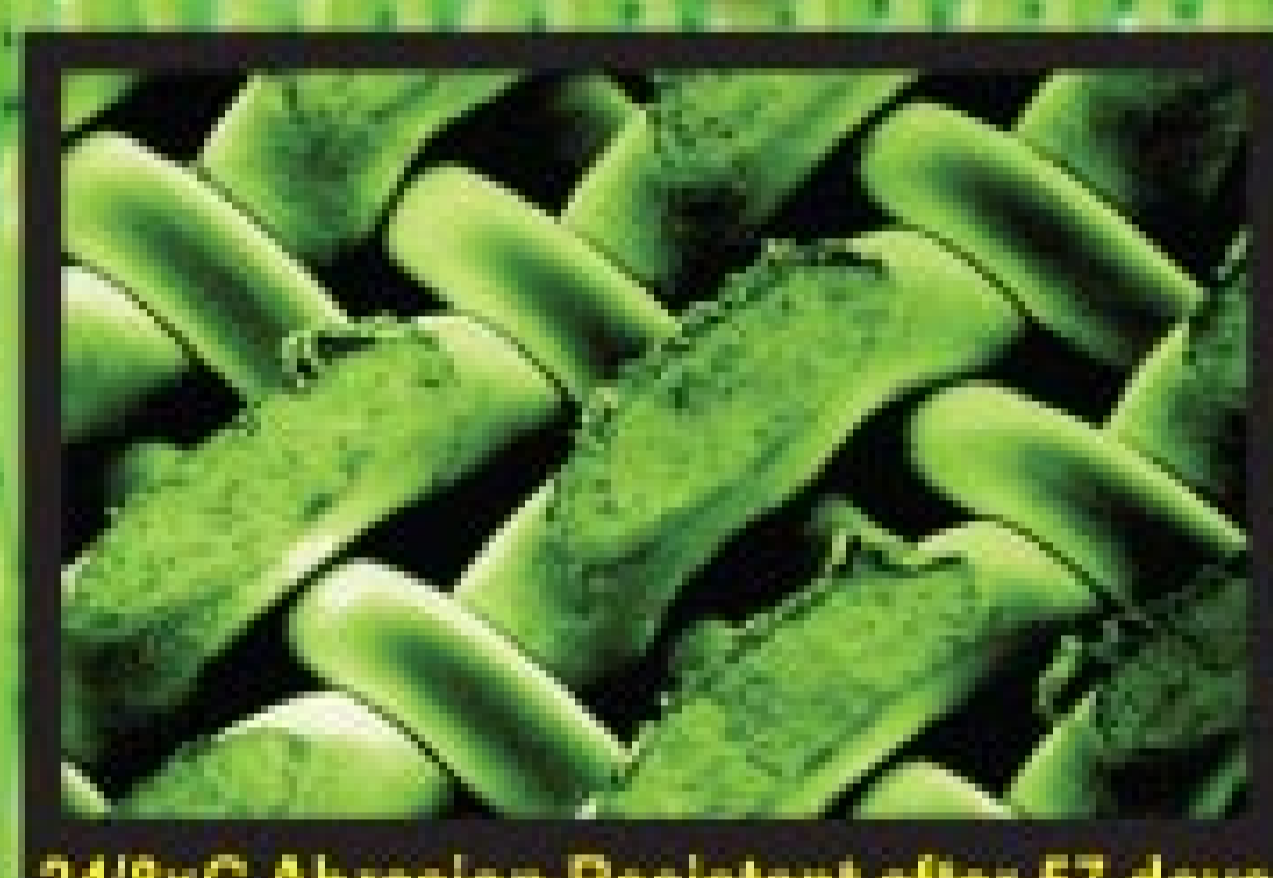
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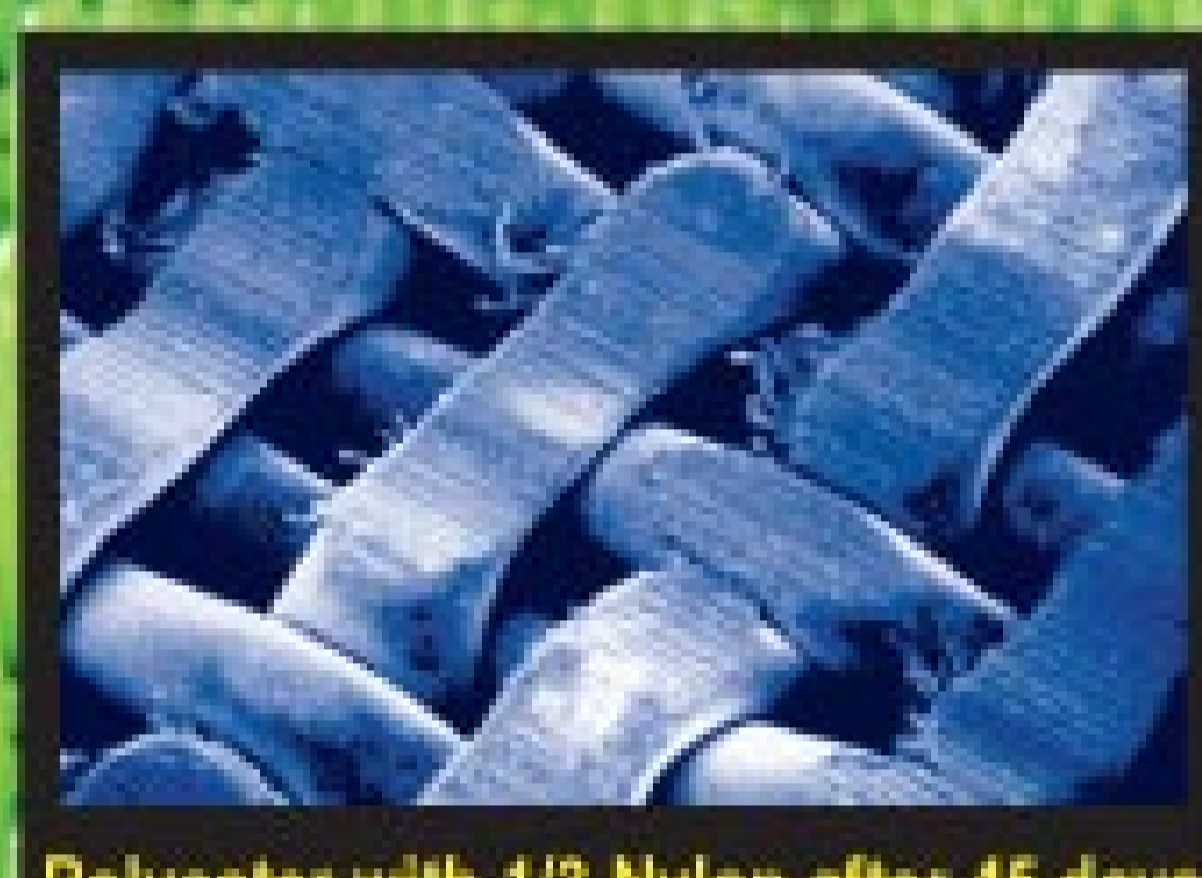
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let's be clear

Could This Happen to You?

THREE FATALITIES IN ONE STATE WITHIN A FEW WEEKS REMIND US OF THE IMPORTANCE OF HAVING SOUND SAFETY POLICIES AND MAKING SURE RULES ARE ENFORCED.

By Ted J. Rulseh, Editor

So, I was working away one Wednesday afternoon not long ago when one of our TPO correspondents sent me links to three Internet news items — all stories about fatal incidents at treatment plants (two wastewater, one water) in Pennsylvania.

They took place between July 30 and Aug. 19.

I'm not privy to news about every fatality that happens in our industry, but three such events, so close together in time and geography, made me stop and think. Maybe it should make you do the same. And ask, in particular: Is your safety program up to date? Are your people properly trained to follow it? And are your rules being enforced?



WHAT HAPPENED?

Without getting into great detail, here is what took place. On July 30, according to the Associated Press, Sewickley Wastewater Treatment

Plant employee Jack Hogan, 31, died while working in a 30-foot hole. "Hogan was working in the hole and fell back into it as he was trying to climb out," the AP reported.

The first suspect was toxic gas, but the county medical examiner later ruled that Hogan died of injuries from the fall and that toxic gas was not a factor. But then, in a classic case of a misguided attempt to rescue a co-worker from what may have been a confined space, three other people who tried to get Hogan out were overcome by an unknown gas and had to go to the hospital. They recovered. Hogan had been on the job about two months and left a wife and an 8-week-old child.

On Aug. 4, according to another news report, construction worker Cody Fyock, 23, was killed at the North Fork Creek Water Treatment Plant in Pine Creek when a steel forming wall collapsed and crushed him. Police initially ruled the death an accident, but an investigation was ongoing.

And on Aug. 19, the ABC-TV network affiliate in Philadelphia reported that an employee at the Tri-Community Sewer Authority wastewater treatment plant in Robinson died after he somehow drove a riding lawn mower into a wastewater

pond. The county coroner said the man, 64-year-old Joseph Sisitki of Bolivar, apparently drowned.

ABOUT "ACCIDENTS"

These accidents all seem highly unusual — we might look at them as "freak events" that no one could have foreseen and that would never happen at our facility. But then I recall working in a previous career with an executive of a mining company whose experience included managing a large coal mine in South America.

The mine had, by all industry standards, an exceptional safety record that should have made this executive proud. But if you asked him about it, he would remark, "I am ashamed to say that during my watch, two of our employees died."

It's hard to imagine a professional in our industry writing off a serious or fatal injury as just "one of those things." And that being the case, how often do you stop to think that there could be hazards in your facility just waiting for a certain confluence of unfortunate events?

He'd go on to say there was really no such thing as an accident. That when he looked into an event that led to an injury, he almost invariably found that it could have and should have been prevented. That when he got to the bottom of it, he ended up scratching his head and saying, "How in the world could we have let that happen?"

This executive wasn't interested in the statistics showing that his mine had far fewer lost-time injuries per 100,000 man-hours than the typical mine of similar type. His concern was that on two occasions he had failed. In his view, the only acceptable number of injuries and fatalities would be zero.

TOWARD ZERO

No doubt, deep down, that's how you feel about safety, too. It's hard to imagine a professional in our industry writing off a serious or fatal injury as just "one of those things." And that being the case, how often do you stop to think that there could be hazards in your facility just waiting for a certain confluence of unfortunate events?

In the press of daily business, it becomes easy for safety to drift into the background of consciousness. So much of safety boils down to attention to detail, to meticulousness, to fussiness about rules that even employees themselves at times feel frustrated at having to follow. ("I'll only be down in that tank for a few seconds — why do I have to go through all this rigmarole?")

But go through it they must. And facility managers and supervisors must do the hard work of making sure they have a buttoned-down safety program in place, from procedures, to education and training, to equipment, to enforcement that includes counseling or discipline for violations. Without that, awful things are more likely to "just happen." And you could end up having to tell a wife and kids why their husband and father won't be coming home.

Is your safety program ready for prime time? Would it be appropriate, starting today, to give it a shakedown and a tune-up? **tpo**

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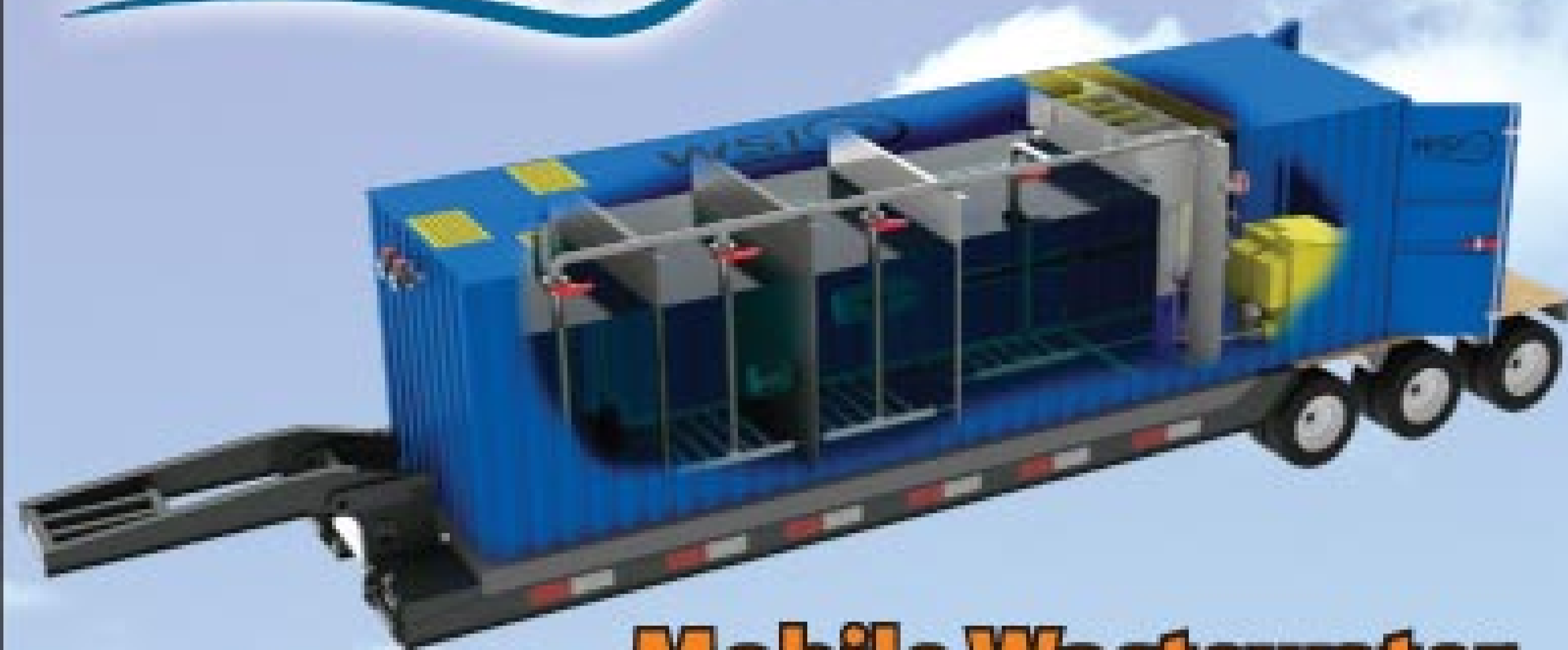
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Out With Pharmaceuticals

A MICHIGAN CITY OFFERS RESIDENTS A SAFE METHOD FOR DISPOSING OF UNUSED MEDICINES AND KEEPING THE CHEMICALS OUT OF WATERWAYS

By Diane Gow McDilda

Residents of Wyoming, Mich., are learning the proper way to dispose of pharmaceuticals, over-the-counter medicines, and personal care products. WYMED (Wyoming Medicinal Disposal Service) allows people to drop off their unused medicines in lockboxes at pharmacies instead of dumping them into the toilet or down the sink.

Dave Oostindie, environmental services supervisor with the city, started the program in 2009, and it now includes more than 20 pharmacies. One benefit is personal safety, as fewer drugs will be stored in homes where they can fall into the wrong hands. It's been estimated that one in four teenagers have used prescription drugs for recreational purposes.

Another benefit is water quality. "Everyone has drugs in their house," says Oostindie. "We have to let people know how to manage them. The water plant gets its water from Lake Michigan, and our wastewater treatment plant discharges its effluent to the Grand River, which eventually goes to Lake Michigan. It's a full circle."

"Everyone has drugs in their house. We have to let people know how to manage them. The water plant gets its water from Lake Michigan, our wastewater treatment plant discharges its effluent to the Grand River, which eventually goes to Lake Michigan. It's a full circle."

DAVE OOSTINDIE

Data collected in 2008 and 2009 showed that medicinal compounds were present in Wyoming drinking water. Oostindie spearheaded the campaign to collect pharmaceuticals before they made their way to the wastewater treatment plant.

People aren't the only concern. Studies have shown an impact to aquatic life from medicines, especially endocrine disrupting chemicals (EDCs). "There is an impact especially on male and female fish comparing those who live upstream to those downstream of the effluent," says Oostindie. "The wastewater treatment plant isn't designed to remove pharmaceuticals. That's why we had to set up a source control program."



PHOTOS COURTESY OF DAVE OOSTINDIE

None of the pills from these bottles dropped off to the WYMED program are individually labeled. That would make it easy for small children to mistake them for candy. The program helps take unused medicines out of circulation and keep them out of the wastewater stream.

Nancy VanProoyen, senior volunteer at the local police station, and Dave Oostindie, environmental services supervisor for the City of Wyoming, show off the lockbox created for citizens to drop their unused or expired medications so they can be disposed of properly.



A FEW LOGISTICS

One hurdle Oostindie had to clear was the Controlled Substances Act, which prohibits pharmacies from collecting controlled substances such as Xanax or codeine, even though they distribute them. In the WYMED program, the police department has drop boxes where controlled substances can be left for proper disposal.

The police department also handles disposal. Law enforcement agencies routinely have contracts with incineration companies to destroy items such as unused uniforms, ballistic vests, and confiscated drugs. By working with the police, the city pays no added fees for incineration of drugs collected at local pharmacies. Even the startup cost for the program was minimal.

"Initially we had to buy a number of three-gallon pails and each one cost about \$150," says Oostindie. "The cost comes out of the industrial pollution control budget. Everybody thinks the cost is an issue, but really it isn't."

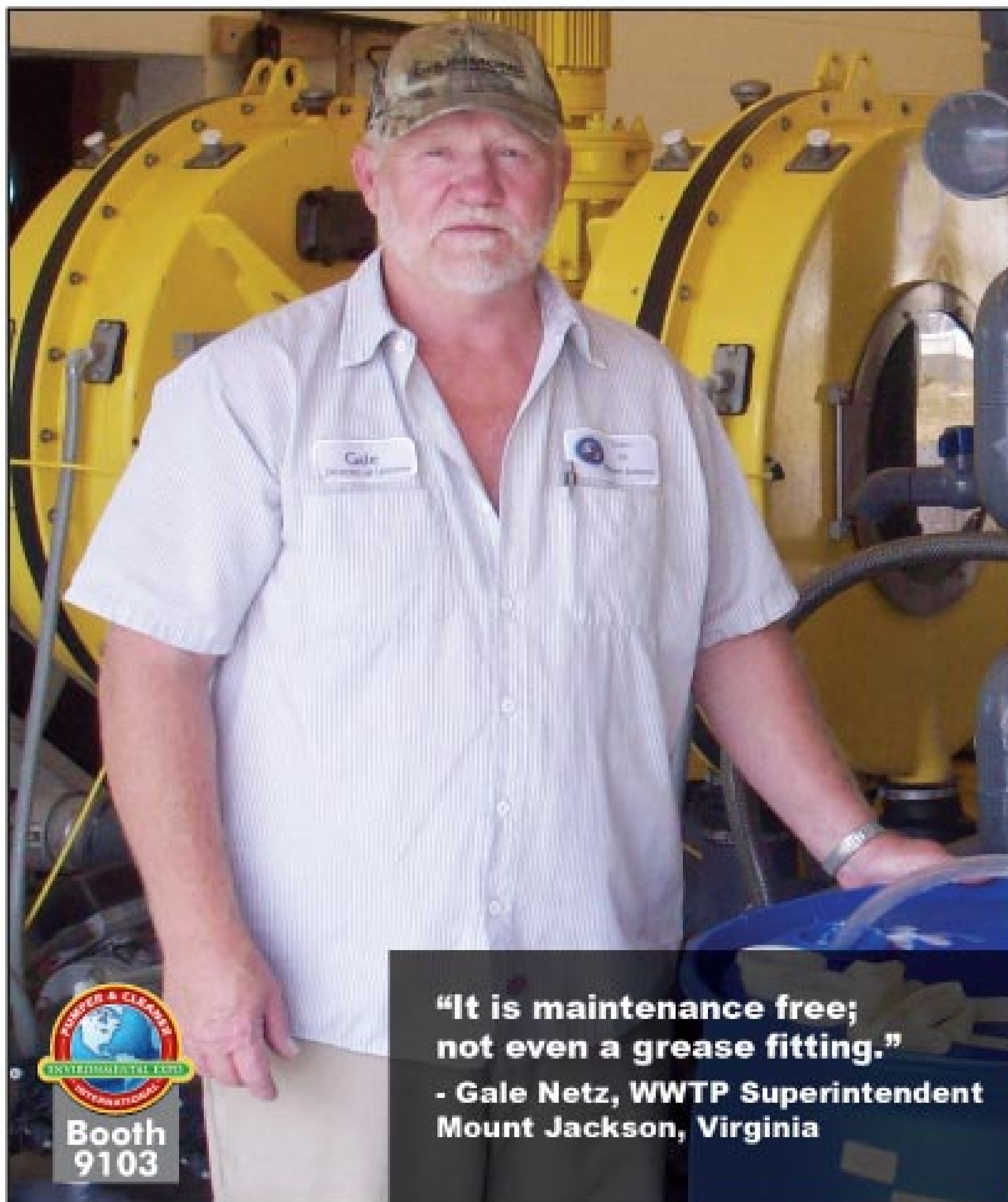
The program is run by the five-member staff in the environmental services department who routinely collect water samples or perform industrial pretreatment system inspections. "There's no extra work to go out to a Walgreens," says Oostindie. "It's nothing to stop every other day or so to collect the lockboxes."

GETTING THE WORD OUT

To make sure residents know about the take-back program, brochures are in-

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cluded with purchases of prescription drugs, over-the-counter medicines, and even herbal supplements.

To spread the word even further, the environmental services staff visits local BINGO games and long-term care facilities to speak with senior citizens on the importance of proper drug disposal. They visit schools in hopes that children will take the message home to their parents. Staff members also visit hospices to make sure that families understand what do to with remaining medicine when there is a death in the family.

Just six months after the program was started, the state Department of Environmental Quality presented Wyoming with a 2009 Neighborhood Environmental Partners Program Award.

Although the program has not been in operation long enough to yield water-quality data, Oostindie expects results to mimic the city's mercury take-back program. Without making changes to the plant, the staff was able to meet the 1.3 parts per trillion discharge criteria for mercury simply using source control.

As with restrictions on mercury, Oostindie expects regulators to begin including pharmaceuticals on discharge permits. With the take-back program in place, the city should be able to meet any regulation that comes down the pike.

As 2010 drew to a close, the program launched a website at www.wmtakebackmeds.org, and began to expand countywide. "After the success of our program, I started talking to other municipalities and Kent County, and all involved wanted to expand to the whole West Michigan area," Oostindie says. "So the county took the lead on coordinating the meetings and the formation of the website and now we will have well over 100 pharmacies involved.

"The total we have collected since November 2009 is just over 4,500 pounds from the WYMED program alone, so I can't wait to see it grow with the expansion to the entire area." tpo

The home page of the WYMED program website, www.wmtakebackmeds.org.

Only the *Best*

THE STAFF IN KELOWNA, B.C., MAKES A SUCCESS OF COMPOSTING WITH A FINE-TUNED PROCESS AND STATE-OF-THE-ART EQUIPMENT THAT SUPPORTS BEST MANAGEMENT PRACTICES

By Ted J. Rulseh



THE CITY OF KELOWNA LEARNED A CRITICAL LESSON about composting: It pays to do things right. A newly upgraded composting facility now yields an extremely high-quality end product prized by landscapers, nurseries and home gardeners.

The product, called OgoGrow, has seen increasing sales every year since it was introduced in 1995. The new facility has significantly enhanced the composting process while eliminating odor issues and improving community relations.

"The community has been very supportive," says Gordon Light, organics supervisor in Civic Operations, Utility Services. "We are in a geographical area with very little rainfall and poor soils. We make the highest-quality compost possible, and our customers can see the difference our compost has made to their lawns and gardens."

DOWN IN THE VALLEY

Kelowna lies in the Okanagan Valley in south central British Columbia, with mountain ranges on each side. The economy is based mostly on the tree fruit industry and, more recently, vineyards. In addition, the 80-mile-long Okanagan Lake attracts numerous tourists for summer recreation.

The 9.5 mgd (average flow) Kelowna Wastewater Treatment Facility is led by plant supervisor Mike Gosselin, operations foreman Frank Valentim, maintenance foreman Brian McAuley, and instrumentation/electrical foreman Doug Tomlin.

The plant uses a modified Bardenpho process (Ovivo) with three-stage biological nutrient removal. The process consists of two large treatment trains with 14 cells and two smaller trains with seven cells. The wastewater

The Kelowna-Vernon Regional Compost Facility includes an aeration system (foreground) supplied by Engineered Compost Systems (ECS). (Photography by Desmond Murray)

profile Kelowna (B.C.) Wastewater Treatment Facility



BUILT:	1913; upgrades 1980s, 1990s, 2010
POPULATION SERVED:	130,000
FLOWS:	10.5 mgd design, 9.5 mgd average
TREATMENT PROCESS:	Three-stage biological nutrient removal
BIOSOLIDS VOLUME:	44 tons/day (18-20 percent solids)
BIOSOLIDS PROCESS:	Thickening, lime stabilization, centrifuge
BIOSOLIDS USE:	Compost for sale
WEBSITE:	www.kelowna.ca



“The valley is narrow and densely populated, and land values are high. To find suitable locations for land application, we would have to drive far up into the mountains.”

GORDON LIGHT

flows through anoxic, anaerobic and aerobic zones that together convert ammonia and nitrate to nitrogen gas.

Effluent from the secondary clarifiers flows by gravity to six cloth media filters (Aqua-Aerobic) that backwash to the headworks. The disinfection system (Trojan Technologies) uses low-pressure, medium-intensity UV radiation. Final effluent is discharged to Lake Okanagan.

Sludge from the primary clarifiers is thickened in one of two circular fermenters. Waste activated sludge from the bioreactor is thickened in three dissolved air flotation (DAF) units.

The thickened sludges are then pumped separately to the dewatering building, where they are blended with polymer and centrifuged into a cake at 18 to 20 percent solids. Bioxide (Siemens Water Technologies) is added to

the centrifuged cake before trucking to reduce odor during transportation. The composting facility receives 29,500 wet tons of biosolids per year.

MAKING PROGRESS

Kelowna has composted biosolids for about 30 years, largely because the local geography makes land application impractical. “There are no large farms in the valley,” says Light. “The valley is narrow and densely populated, and land values are high. To find suitable locations for land application, we would have to drive far up into the mountains.”

During the 1980s, the city managed biosolids by combining thickened primary sludge and thickened waste activated sludge in a vault, then trucking it at about 3 percent solids to a holding pond at the local landfill.



Ogogrow compost mixture pours out of the trommel screen at the Kelowna-Vernon compost plant.



Jeremy Kozub, compost technician I, fills a dish with finished Ogogrow to perform a moisture test.

biosolids management technologies. Out of that meeting, we re-confirmed that composting was the best way for us to go here in the Okanagan Valley. It was the most cost-effective, and the compost provided a source of revenue as well as a benefit to the environment.”

The new site receives biosolids from both communities, trucked in by private haulers. Kelowna operates the facility, which uses an extended aerated static pile process with both positive and negative aeration.

“One reason we chose this process is that it’s very compact compared to a turned windrow process,” says Light. “You can do it on a postage stamp.” The facility occupies about 30 acres. The process uses best management practices (BMPs) as outlined in the province’s Organic Matter Recycling Regulation.

STRIVING FOR EXCELLENCE

Light’s staff at the compost facility is led by compost technician Marcia Browne, who is responsible for day-to-day operations, assisted by Level 1 compost technicians Morgan Lewis and Jeremy Kozub. The team also includes equipment operator II Shaun Runnett and loader operators Denis Goulet, Brad Crowell, David Irwin, Shane Prosser, and Art Malieapaard.

The process has seen steady improvement since the move to the new site. Arriving biosolids are emptied into a bunker inside a building. There they are picked up by a front-end loader and placed in a batch mixer with hog fuel and some overs (coarse wood particles) from the final compost screening process.

“We have a specific recipe we follow,” says Light. “The mixers have load scales on them, so everything is measured by weight. We add water as needed.” The mixture is taken outside to an aeration system supplied by Engineered Compost Systems (ECS). The material is placed on two 88- by 610-foot concrete slabs with built-in aeration trenches about 4 inches wide, spaced about 5 feet apart and running the slabs’ full length. Each slab is divided into 18 zones that are individually controlled by an automated process.

The anaerobic composting process used then was inefficient and had odor issues. The biosolids were mixed with hog fuel (wood waste from the forest products industry) and placed into aboveground pits. The biosolids were simply allowed to soak into the woody material. After about a year, the pile was turned and again allowed to sit.

Soon after Light took charge of the process in 1994, the city moved the composting site to a rural location on leased land and switched to an aerated static pile process using positive aeration. The process lacked odor and drainage controls. In 2006, the city created a new composting facility about 18 miles north, owned jointly with the City of Vernon, a community of about 30,000.

“Before we built the new facility, we conducted a value engineering workshop,” says Light. “We invited experts from the industry to Kelowna, spent a whole day with them, and went over more than 100 possible

“We have a specific recipe we follow. The mixers have load scales on them, so everything is measured by weight.”

GORDON LIGHT

THE LEGEND OF OGOPOGO

Scotland has its Loch Ness Monster. Okanagan Lake has Ogopogo — for whom the city of Kelowna named its regional biosolids compost product, Ogogrow.

Ogopogo is some 80 years older than Scotland’s “Nessie” — Native Americans told of sightings long before European settlers arrived in British Columbia. Sightings are still reported each year, and collectively they tell of a creature 20 to 50 feet long, with a horse-shaped head and serpent-like body.

Okanagan Lake is about 80 miles long, extending from Vernon in the north to Penticton in the south. Kelowna is in the center. People have reported seeing Ogopogo along the full length of the lake, but mostly in an area just south of Kelowna.

Ogopogo has allegedly been filmed a number of times, but except for people agreeing that there was something in the water, no solid conclusions have been drawn. The creature is usually reported as dark blue, black or brown with a lighter underside. People who reported being very close to the monster have seen fins or feet.

Naming the compost after the monster has been good for marketing. Gordon Light, organics supervisor for the City of Kelowna, says the name struck a chord locally: “Customers often call and say, ‘Do you have any of that Ogopogo poo?’”



The trenches are covered by stainless steel covers perforated with thousands of quarter-inch air holes. “We supply a soft flow of air, at a pressure of perhaps 2 inches of water column,” says Light. “If you blow air too hard, you tend to channelize it — the air finds the quickest route through the pile, and you don’t get the most thorough aeration.”

For the first few years, while the final compost product was well received in the market, the process was not achieving BMPs, mainly because the active compost area was too small. “We weren’t keeping the product on air long enough, and our piles were too high because we were trying to compensate for lack of aeration floor area,” says Light.

“The taller piles caused compaction. In addition, we needed a better watering system to maintain biofilter moisture; and we needed an insulating layer over the tops of the piles. An expansion completed in 2010 resolved those issues: It tripled the aeration space and

The trommel screener from McCloskey International in operation at the Kelowna-Vernon compost plant.

The Kelowna-Vernon Regional Compost Facility team includes, front row, from left, Jeremy Kozub, compost technician I; Morgan Lewis, compost technician I; Marcia Browne, compost technician II; and Gordon Light, organics supervisor; back row, Shaun Runnett, light equipment operator II; Brad Crowell, heavy equipment operator IV; and Shane Prosser, equipment operator IV.



Morgan Lewis, compost technician I, probes a batch of product with a handheld detector.

improved the watering system. The upgrade enabled an increase in aeration days to 21, from 10 to 14 days previously.”

APPROACHING THE IDEAL

In the current process, the initial mix is covered with mature compost (or overs) to provide a bio-filter (while the system is in positive aeration mode) and an insulating layer to keep surface temperatures hot. “Bacteria in that layer consume the odorous gases — mercaptans and sulfides — as they pass through,” Light says. “Maintaining that layer in a proper biological state is the key to odor control.”

Primary composting proceeds for 21 days with alternating positive and negative airflow through the piles. “We have the ability to blow air into the pile from below and draw air in from above,” says Light. “The air in this region is very dry, and if we only blow air in from below, the pile can dry out. Also, in winter, the blown-in air can cool the area where the air is introduced.

“With positive and negative airflow, each time the cycle goes into a positive mode, the heat and moisture go up in the pile. In the negative mode, the heat and moisture go down. So with our process, we’re moving air up and down through the piles many times a day. It’s a far superior system.”

After 21 days of aeration, the piles are torn down and the material is repiled on another section of aerated floor to compost for an additional 31 days (secondary composting phase). That material is then screened to one-half-inch particles and put in rows for final curing. Each windrow is tested for fecal coliform and salmonella in accord with the Organic Matter Recycling Regulation.

The resulting approved biosolids compost product is sold to bulk buyers, including landscapers, nurseries and value-added customers.

“To control odors at our compost facility we first monitor odor levels on site,” says Light. “Then through odor modeling equipment, we can determine the strength and direction of odors.” The facility uses the OdoWatch system from Odotech.



Jeremy Kozub adjusts the volume of airflow to the compost piles. The air is delivered via blowers with a drive from Yaskawa America.

“I always stressed the process, because it’s the process that makes the product safe. We maintained a positive outlook and kept our messages clearly in mind, and the program went off without a hitch.”

GORDON LIGHT

BUILDING THE BRAND

When Kelowna began marketing Odogrow, the product had a negative perception. The anaerobic process had created a low-quality product that contained objectionable items like condoms and tampon applicators that did not break down in the composting process. While the city improved its process, Light attended conventions held by the Northwest Biosolids Management Association and learned how to approach marketing.

“We decided to go with a gatekeeper program,” says Light. “We solicited support from specific people in provincial Ministry of Environment and Ministry of Health, and with local nurseries. We spent time with them to explain

our program and answer their questions about the product's safety and efficacy. Then I began marketing the product, first by taking it out in a little pickup truck to landscapers and nurseries and finding out what they would like to see in a final product."

Light went on local radio programs to promote Ogogrow, and when people called with questions, he not only answered but also referred them to the gatekeepers. "People might call in and say, 'It sounds like a good idea, but is it safe?'" Light recalls.

"I would reply that we were doing everything in accord with the provincial regulations, but they didn't have to believe me — if they had concerns about health and safety, they could contact this person at the Public Health Office.

"You know what? Our gatekeepers never got any calls. It was a very good way to introduce the product. I always stressed the process, because it's the process that makes the product safe. We maintained a positive outlook and kept our messages clearly in mind, and the program went off without a hitch."

PLEASING CUSTOMERS

As soon as prospective customers saw the quality of the product, the tiny loads Light took out on his marketing missions turned into large and repeated orders. The material is sold on a graduated pricing schedule, ranging from \$1950 per cubic yard for the first 50 yards ordered, to \$7.75 per yard for at least 5,000 yards per year.

The vast majority is sold in bulk to landscapers and nurseries. About half of all the compost goes to one customer, Lake Country Compost Distributors, which reprocesses it to create higher-value products sold under the Nature's Gold brand.

Some compost is trucked to a local landfill where consumers can buy it in bags supplied by the city. "We don't want to become a big retail outlet because we're in business with many other companies that also sell the material on the retail market," Light says. As of November 2010, the city was expecting as much as \$600,000 in compost revenue for the year.

"We have an incredible market, and we have a hard time keeping up with demand," Light says. "When customers describe the product, we hear words like 'amazing' and 'unbelievable.' We get only a couple of complaints per year, usually associated with weed seeds. We believe the more fertile soil created by the product leads to the germination of weed seeds from other sources."

Besides marketing Ogogrow as a fertilizer, Kelowna uses it in its water conservation program. The material is top-dressed to residential lawns at a reduced price, and it decreases the water consumed for irrigation.

Light advises communities considering composting to do their homework. "The best advice I can give is to make sure you have done a thorough site evaluation, including odor modeling," he says. "Make the highest possible quality product, and try to have a continuous supply." **tpa**

more info:

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www.aqua-aerobic.com

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www.compostsystems.com

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www.mccloskeyinternational.com

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A Little Help from *Nature*

AS THE FIRST PLANT IN KANSAS TO USE WETLANDS TO HELP TREAT WASTEWATER,
THE EL DORADO WATER RECLAMATION FACILITY WINS ACCOLADES

By Trude Witham



Class 2 wastewater treatment operator Glen Holz uses a Sludge Judge (Nasco) to test the depth of the sludge blanket in the final clarifier from Hi-Tech Environmental. (Photography by Steve Rasmussen)

WHEN THE CITY OF EL DORADO, KAN., NEEDED TO upgrade its trickling filter/rotating biological contactor plant to meet ammonia limits and deal with high rain events and more stringent nutrient removal specifications, plant managers devised a unique solution.

Started up in February 2007, a new 3 mgd (design) wetlands/activated sludge plant produces exceptionally high-quality effluent and Class A biosolids. The biosolids are applied to neighboring city-owned farmland, and a share of the value of the farmer's yield is returned to the treatment plant.

The El Dorado Wetlands and Water Reclamation Facility has produced effluent far better than permit limits, and the agreement with the farmer nets the city \$40,000 to \$50,000 per year. A recipient of multiple awards, the El Dorado facility has accomplished all this with a staff of four, supported by high school and college interns.

"Our old trickling filter/RBC plant had trouble meeting winter ammonia limits, and we knew the nutrient removal specs would be more stringent in the future," says Jason Patty, plant superintendent. "We also had experienced substantial infiltration, and we wanted a plant that could accommodate high-flow conditions. We ended up with an economical and environmentally responsible way to meet all those needs."

A NOVEL IDEA

The idea for the wetlands came after El Dorado public utilities director Kurt Bookout toured the wetlands treatment system at the Frontier oil refin-

ery nearby. The city constructed a small pilot wetland at the trickling filter plant, then performed tests on the site for several years, as requested by the Kansas Department of Health and Environment.

"The wetlands showed tremendous potential in removing nutrients during the growing season (April-October), and the water discharged from the wetlands had very low levels of ammonia, TSS and BOD," says Patty.

Therefore, the city proceeded with a new activated sludge plant that incorporated 20 acres of treatment wetlands. The new plant was built across the river from the old plant, which is now unused. Patty says the city may retrofit it in the future to provide water clarification, filtration and reverse osmosis water for the El Dorado Refinery.

"The water superintendent and public utilities director both have degrees and a background in wildlife biology," says Patty. "That, combined with their wastewater treatment experience, helped during the new plant's design stage."

DESIGNED FOR SAVINGS

The new \$10 million plant is designed for a 6 mgd peak flow, and wet-weather maximums of 12 mgd. Flow beyond 6 mgd is either held in a 4.6-million-gallon extraneous flow basin or sent to the 24-million-gallon-capacity wetland cells.

The plant includes an aesthetic 6-acre effluent pond stocked with sport



"The water superintendent and public utilities director both have degrees and a background in wildlife biology. That, combined with their wastewater treatment experience, helped during the new plant's design stage."

JASON PATTY

profile

**El Dorado (Kan.)
Wetlands and Water
Reclamation Facility**



BUILT:	2007
SERVICE AREA:	El Dorado, Butler County Sewer Districts 5 and 15, El Dorado State Correctional Facility
EMPLOYEES:	4
FLOWS:	3.0 mgd design, 2.3 mgd average, 6.0 mgd peak
TREATMENT LEVEL:	Secondary
TREATMENT PROCESS:	Activated sludge/wetland polishing
RECEIVING WATER:	Walnut River
BIOSOLIDS:	Composted, land-applied
WEBSITE:	www.360eldorado.com/Government

RIGHT PHOTO: The staff of the El Dorado Wetlands and Water Reclamation Facility includes, from left, Jason Patty, superintendent and Class 4 operator; Glen Holz, Class 2 operator; Ron McClure, Class 4 operator and certified lab technician; and Pat Fountain, Class 4 operator. BELOW: Pat Fountain operates the centrifuge (GEA Westfalia) with a touch screen.



fish and featuring an island and prime fish habitat. A shallow wetland at the southwest corner of the pond acts as a filter and polisher for the effluent before it exits the overflow structure on the way to the Walnut River. The plant also includes:

- New pumps and force main in the existing influent pump station building.
- New headworks building with fine screens (Parkson) and grit removal (Smith & Loveless).
- New biological treatment equipment including mixers (ABS), aerators (Philadelphia Mixing), clarifiers (Hi-Tech Environmental), pumps and instrumentation.
- UV disinfection (Aquionics).
- Solids handling equipment including progressive cavity sludge pumps (NETZSCH), blowers (Kaeser) and centrifuge (GEA Westfalia).
- Oxidation ditch (Philadelphia Mixing).
- New cascade, pump station, scum pump station, water reuse pump system and irrigation system.

The city chose the activated sludge process for its flexibility and efficiency. The wetlands reduced the necessary size of the activated sludge system concrete basin, saving some \$2.8 million in construction costs. The plant is fully automated, with automatic backup power, and was designed for expansion to twice its current capacity.

The plant serves about 15,000 people, including 4,800 connections in El Dorado, Butler County Sewer Districts 5 and 15, and the El Dorado State Correctional Facility.

ENVIRONMENTALLY FRIENDLY

The plant earned the 2008 Project of the Year: Environment Award in the \$2 million to \$10 million category from the American Public Works Association (APWA). The wetlands purify excess water during high rainfall and in dry weather receive UV-disinfected effluent to keep the diverse vegetation thriving. The effluent flows into the polishing pond and through the wetlands before cascading into the Walnut River.

The wetlands provide habitat for breeding, nesting, feeding and cover for many types of wildlife.

El Dorado Wetlands and Reclamation Facility PERMIT AND PERFORMANCE

	PERMIT (monthly avg.)	EFFLUENT (2009 monthly avg.)
TSS	30 mg/l*	6.8 mg/l
BOD	30 mg/l	2.4 mg/l
Ammonia-N	7.6 mg/l*	<0.5 mg/l
Total P	Monitor only	0.18 mg/l

* Maximum, depending on the month

"The whole concept has worked out well for us," says Patty. "Our existing basin held 4.6 million gallons, and now we have a 24-million-gallon capacity. We use 30 feet of native grass buffer strips, which line the perimeter of our farmland, to protect the Walnut River from sediment erosion and runoff. We also use no-till farming, which prevents erosion and runoff by leaving the residue from the previous season's crops."

The biosolids compost process is totally manual. Centrifuge-dewatered sludge is placed in windrows, and wood chips are added. Staff members turn the compost periodically and monitor the temperature. The Class A material fertilizes 260 acres of city-owned land, which is leased to a farmer who plants corn, soybeans and wheat. He splits the gross profit 50-50 with the treatment plant.

"We decided to start composting the biosolids because we used to keep it in a pile before taking it to the fields, and there was an odor issue," says Patty. "There have not been any odor problems with the compost process."

TEAM OF FOUR

If all this sounds like a lot of plant to operate, it is. With only four people to do the work, it takes a highly skilled and efficient team to keep the plant running well. Patty, a Class 4 operator, supervises three operators:

- Ron McClure, Class 4.
- Pat Fountain, Class 4.
- Glen Holz, Class 2.

"Right now, we have 2.3 fewer personnel than most plants our size, based on a recent salary survey," says Patty. "We're getting it done, but I really need to hire one more operator." In the meantime, a unique internship program,



ABOVE: Class 4 operator Pat Fountain takes one of the daily water samples used to check for *E. coli* and other bacteria, as well as ammonia. LEFT: A Royce handheld TSS meter is used to test for mixed liquor suspended solids in the aeration basin.



board during the upgrade. Fountain and Holz are fairly new and had no previous experience at an activated sludge plant.

McClure is dedicated to the lab, and all operators rotate on maintenance and composting. Patty conducts ongoing training to stay ahead of the curve and tries to cross-train everyone as much as possible.

"Although my lab technician normally runs the process control tests, I encourage all operators to understand how to do this, so they understand the numbers and can use them to adjust the process if necessary," he says. "We have more consistency with everyone knowing what's going on."

Operators work 7 a.m. to 5 p.m. Monday through Friday, with weekend rotations. A SCADA system allows off-site monitoring. "What makes us successful is the team concept," says Patty. "It's not just a biosolids guy or a lab guy, but everyone working as a team to get the job done. They're proud of the plant and the awards we've won."



Class 4 operator Ron McClure tests the settleability of mixed liquor suspended solids on a sample in the lab.

MANY HANDS, LIGHT WORK

The El Dorado Wetlands and Water Reclamation Facility hires high school and college students to help with various tasks. Three interns work 30 to 40 hours a week in summer, and two interns work 20 hours a week during the school year.

"We have a fairly elaborate landscape at the plant," says Patty. "We planted 50 sapling trees up and down the entrance road, and the interns help maintain them. They also do other grounds work like over-seeding and mowing. Sometimes they help with equipment maintenance."

Other tasks include harvesting and transplanting wetland plants, painting the pipe gallery and process equipment to keep everything like new, and general janitorial duties.

Patty coaches high school baseball and has found interns that way. He has also posted signs at Butler County Community College asking for help. Although not involved in equipment operations, the interns are key to allowing the plant to function with only four full-time operators.

"They do require more instruction and supervision because kids will be kids," says Patty. "So, they require more of my time to make sure they are on task. But, I try to be flexible with them." One intern, Kenneth Shave, has worked at the plant for three years. Patty sees the program as a way to educate young people about careers in wastewater treatment. "I would definitely recommend an internship program to other plants," he says.

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The El Dorado Wetlands and Water Reclamation Facility.

Beyond the APWA award, honors include a 2008 Kansas Public City Improvement Award and a 2009 Kansas Water Environment Association Operation and Maintenance Award.

EXPERIENCES TO SHARE

Patty says the plant's future success depends on keeping his current employees and finding good ones in the future. "It's a time-intensive process to find the right people," he says. "We are promoting the facility and getting people out here to see it, and we're targeting people with college degrees."

With a little over three years in operation, the plant is not on too many people's radars. The city is trying to get the word out that state-of-the-art mechanical treatment plants can be paired with constructed wetlands and save millions of dollars.

Patty stresses that because the industry is always changing, it is important for operators to share their experience. He encourages sharing of ideas and best practices. "We make our conference room available for organizations to conduct training courses related to the industry," he says. "That gets operators into our plant. We also give tours for city officials and others who want to explore the wetlands/mechanical plant concept."

El Dorado plans to use the wetlands to enrich environmental education, such as during the annual Walnut River Water Festival. Patty also intends to share this outdoor classroom with biology teachers from the high school and Butler County Community College. "We are continuing to work on species diversification of our wetlands," he says, "and we may hold classes on that subject as well." **tpu**

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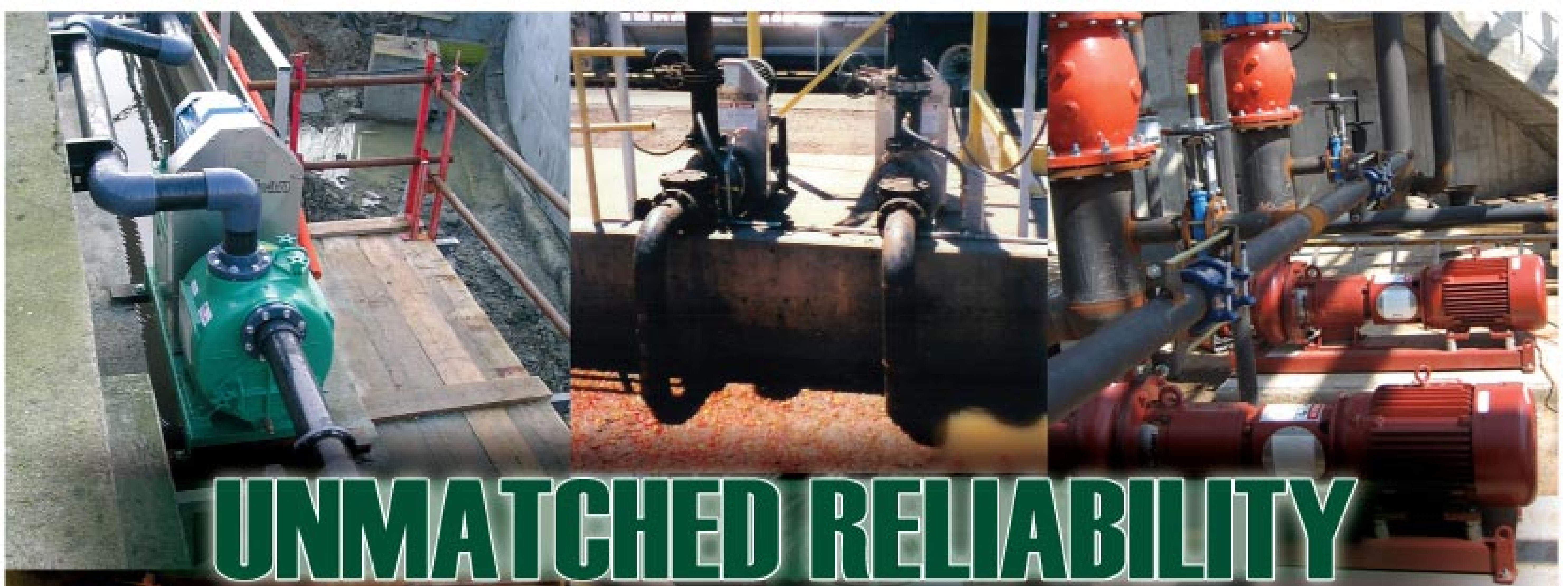
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LATE BLOOMER

ROGER GERVAIS SERVED IN THE ARMY AND TRIED OTHER CAREERS BEFORE FINDING A CALLING IN THE CLEAN-WATER PROFESSION

By Jim Force

WHEN YOU TALK WITH ROGER GERVAIS AT THE WASTEWATER treatment plant in Redding, Conn., you could easily believe there is nothing he can't do. "I'm a soup to nuts guy," he says.

He has the tickets to prove it. From a career in the U.S. Army, including service in Vietnam, to building houses and managing a warehouse, to doing just about everything at the Redding Water Pollution Control Facility, Gervais is a one-man gang.

He joined the wastewater treatment profession barely 10 years ago, at age 52. He took correspondence courses through California State University at Sacramento and eventually earned his Connecticut Grade 4 certifications in wastewater treatment and collections, plus Grade 2 certifications in water treatment and water distribution.

As project manager for Veolia Water at the small membrane bioreactor (MBR) plant on a dead-end road beneath an expressway overpass outside Redding, Gervais does the lab work, supervises the plant and operator Kerry McGuire, cleans the membranes, calls on neighboring plants when he needs extra help, and reports to the Redding Water Pollution Control Board.

He's also responsible for the system's single lift station and a small subsurface discharge system at a local high school. "Anything in the plant that needs fixing, he can do," says McGuire, who has been at Redding for a year and a half. "He's a hard worker, very methodical. He sticks to it until it's done, whether the job is large or small."

REDDING PLANT

Redding is a peaceful rural community of 10,000 in the southwest corner



Roger Gervais, project manager at the Redding Water Pollution Control Facility. (Photography by Bruce Ando)

of Connecticut, just outside the New York City metropolitan area. The water pollution control facility, operated under a contract with Veolia Water, is licensed to process up to 241,000 gpd.

It was the first plant in the state to use the MBR process (GE-Zenon, a Division of GE Water & Process Technologies), which has been in operation for about three years. Before that, the plant was equipped with a sequencing batch reactor and sand filters.

Average flow is 60,000 to 70,000 gpd. Wastewater enters the treatment train through Lakeside fine screens, passes to covered equalization tanks, and then to the bioreactors and by gravity to the microfiltration membranes. A TrojanUV system disinfects the effluent before discharge to the Norwalk River.

Gervais has a fair amount of flexibility with the system, adding alum for phosphorus removal, methanol as a carbon source, and caustic for pH control. The plant uses polymers to thicken waste biosolids to about 5 percent solids before the material is trucked for further treatment and incineration at a neighboring facility.

A pair of carbon towers (Carbtrol) control odors. A SCADA system with Allen-Bradley (Rockwell Automation) components automates and controls the

plant processes. It's a straightforward system that Gervais appreciates. "Simple is better," he says.

Effluent averages less than 4 mg/l BOD, less than 5 mg/l TSS, and 0.1 to 0.3 mg/l phosphorus. Total nitrogen generally runs from 1.0 to 5.0 mg/l. Effluent quality gets put to the test: Students and environmental groups often take samples in the river below the outfall and are impressed with purity of the stream.

"Anything in the plant that needs fixing, he can do. He's a hard worker, very methodical. He sticks to it until it's done, whether the job is large or small."

KERRY MCGUIRE

profile

**Roger Gervais,
Redding (Conn.) Water
Pollution Control Facility**

POSITION:
Project manager for
Veolia Water

EXPERIENCE:
10 years in wastewater
profession

RESPONSIBILITIES:
Supervises 241,000 gpd
MBR plant

EDUCATION:
Master's degree in education
and counseling, University of
Pennsylvania; numerous
courses through California
State University-Sacramento

CERTIFICATION:
Connecticut Grade 4 operator,
wastewater and collections;
Grade 2 operator, water
treatment and distribution
systems

GOALS:
Continue to operate Redding
plant efficiently and economically;
"Do the best I can and have a
trained replacement on board
when I leave."



Roger Gervais takes a grab influent sample using a Sigma 900 sampler from Hach.

Operator Kerry McGuire (foreground) installs a Zenon membrane cover (GE Water & Process Technologies) in membrane room number 1 while Roger Gervais operates the controls.

Roger Gervais joined the wastewater profession at age 52 and quickly found it to his liking.

A number of restaurants feed into the collection system, and Gervais works closely with the town sanitarian to check grease traps and prevent FOG problems. "Our sanitarian is just excellent here," he says.

A VARIED CAREER

Some members of the clean-water profession discover its challenges and satisfactions right out of school, and others, like Gervais, much later. He holds a graduate degree in education and counseling, served 20 years in the U.S. Army and retired as a first sergeant, and then took on other jobs. Ten years ago, he got a tip from his younger brother working at the Waterbury (Conn.) Wastewater Treatment Plant that there were good career opportunities in the field.

He took the necessary correspondence courses and finished first in the test for a position at Waterbury. "The job was mine if I wanted it," he recalls. "But there was no help from my brother. I got the job on my own — no nepotism there."

Gervais worked at Waterbury for four years, taking courses and accumulating continuing education credits. Then he became second in command at the wastewater treatment plant in New Town, Conn. Looking for opportunities to keep moving up, he eventu-

"We refer to ourselves as trolls down here underneath the bridge. People don't notice us much and pretty much leave us alone, but when they do realize what we do, they compliment us, and that makes us feel good."

ROGER GERVAIS

ally connected with Veolia Water, and soon after was assigned to Redding as project manager.

"It was rough at first," he remembers. "Each membrane seems to have its own personality." The manufacturer helped on the startup and came in for later troubleshooting, but, true to form, Gervais pretty much mastered the system on his own.

"It was a lot of trial and error, and plain old common sense," he says. "It's kind of like being a doctor. You need to learn the symptoms and understand what is wrong." Gervais takes a methodical approach. He checks things out one step at a time to eliminate possible causes, locates the problem, then fixes it.

SOLUTIONS FINDER

The quick mastery of the membranes is typical of Gervais's ability to fig-



BACK TO SCHOOL

Roger Gervais, project manager at the Redding Water Pollution Control Facility, goes back to school several times each week — not to take more courses in wastewater treatment but to attend to a small membrane bioreactor plant (17,000 gpd) that his employer, Veolia Water operates for the Joel Barlow High School.

The school sends its wastewater to the MBR for treatment before discharge to a pair of wells in a leachfield. "We have responsibility for making sure it operates as designed, and monitoring its performance," says Gervais.

The wastewater first enters an equalization tank, then passes through a grinder pump, an anoxic zone and an aerobic zone. Finally, it is filtered by the Zenon membranes (GE Water & Process Technologies). Recycle is routed to the anoxic zone. A pumper truck hauls waste sludge and other solids to off-site treatment.

The MBR is about 15 minutes from the Redding treatment plant. Gervais or his assistant, Kerry McGuire, visit twice a day to add sucrose as a carbon source, make sure all components are functioning properly, and check the dissolved oxygen, among other tasks. A dial-up alarm system alerts the Redding staff to any malfunction.

The Redding Water Pollution Control Facility is operated under contract with Veolia Water.



ure things out and find solutions. "He's able to iron out any glitches," says McGuire. Joe Hebert, operator of an MBR plant in Michigan, who visited Redding last April, credits Gervais for resourcefulness. "I was impressed with the attention, innovation and cost control measures," he noted in a letter to the city after his visit. "He thinks on his feet, makes things happen."

Indeed, Gervais seems to work constantly on reducing expenses, even if the measures seem small. "I've gone around the plant and used insulation and duct tape to close off areas where we were losing heat," he says. In another step, he turns off the propane-fueled water heater when it's not in use.

He's saving more money by reducing or even avoiding the use of methanol as a carbon source. "There's a lot of cost associated with that, and Roger has done a good job of controlling that expense," says Hebert.

A strong relationship with Walter Royals, the Veolia Water manager of the Danbury treatment plant 45 minutes away, pays off even more. With only two people employed at Redding, Gervais occasionally uses VW workers from Danbury for tasks like confined-space entry and specialized electrical work, providing cost savings for Redding.

"I was impressed with the attention, innovation and cost control measures. He thinks on his feet, makes things happen."

JOE HEBERT

FAMILY ATMOSPHERE

"We sometimes have problems here with electrical dropouts," Gervais says. "I have a good relationship with the Danbury staff. We're like poor cousins, and we help each other. Their guy comes down here to assist with valving and controls."

Gervais also saves money by deploying other Veolia Water resources (trucks and equipment) when needed. "More and more," he says, "we need to account for expenses and be as economical as possible."

All these work-arounds allow the city to sustain plant performance and permit compliance without adding staff or buying more equipment. That's the way Gervais likes it. "We refer to ourselves as trolls down here underneath the bridge," he says with his distinctive chuckle. "People don't notice us much and pretty much leave us alone, but when they do realize what we do, they compliment us, and that makes us feel good. At the end of the day, we take pride in our job. It's challenging, but rewarding."

Gervais has a good relationship with the city and with McGuire, his operator. "I've learned a lot from him," McGuire says. "Everything was new to me. He has taught me about reporting, chain of custody, how to operate the membranes. He knows how to run the plant well beneath the numbers we need to meet."

Gervais observes, "It's a family atmosphere here. You have to be able to get along with your people." At times, Redding has been honored as the best small town in Connecticut. Under Gervais, its treatment plant might qualify as the best small water facility in the state. **tpo**

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A PORTABLE AERATION SYSTEM PROVIDES BOTH IMMEDIATE AND LONG-TERM SOLUTIONS TO COMPLIANCE ISSUES WITH A WEST VIRGINIA CITY'S TREATMENT LAGOON

By Scottie Dayton

The 400,000 gpd wastewater lagoon in Parsons, W.Va., had dissolved oxygen, BOD₅, TSS, ammonia, and significant algae problems, resulting in more than 40 state Department of Environmental Protection permit violations in six months.

The surface aeration system — four vertical splasher-type and four horizontal aspirator-type surface aerators installed across six of the seven treatment cells — was the wrong equipment for a lagoon 10 feet deep. Air never reached the bottom, and mixing air and water at the surface created heavy stress on the motors. They failed frequently.

The city solved its problem quickly and cost-effectively by installing a new portable aeration system from Triplepoint Water Technologies.

TOUGH TO MAINTAIN

The old aeration system was a challenge to maintain and service. "Disassembling the compressor from the mixer was difficult and time consuming, and I needed a boat to reach them," says chief wastewater operator Frank White. "I would send the equipment out for repair, but it was very expensive."

The lagoon's annual maintenance budget was \$5,000, and the work was risky: once the boat capsized near the edge, and White and an employee fell into the lagoon (they were not injured). Unable to take the facility offline to drain the lagoon and install a diffused aeration system, city officials believed they had no option except to continue using surface aeration.

But White was not convinced. He found Stu Harper of S.R. Harper



A city employee tightens the stainless steel header connecting the Kaeser blowers to the aeration units.



PHOTOS COURTESY OF TRIPLEPOINT WATER TECHNOLOGIES

The 18 MARS 3000 aeration chassis before the addition of eight fine-bubble diffuser membranes and four weighted legs.

Share Your Idea

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Inc., a manufacturer's representative in Canonsburg, Pa., who put him in touch with Braden O'Leary from Triplepoint. "Parsons needed an inexpensive rehabilitation, and our MARS 3000 aeration technology was a good fit," says O'Leary. "We simply hook up the units, lower them into the water, and turn on the blowers."

After a product presentation, the city council voted to purchase an 18-unit aeration system, but funding for it would take a year. The DEP responded to the delay by issuing an ultimatum. "They told us to get some air into the lagoon or face serious penalties," says White.

O'Leary offered to install an emergency system to tide the city over until the full system was installed. "We mustered a blower and four aerators incorporating fine- and coarse-bubble diffusion — less than one-fourth the recommended aeration for the lagoon," he says. Despite this, the equipment brought BOD₅ and TSS levels into compliance within one month.

HIGH EFFICIENCY

When working properly, the Parsons Wastewater Treatment Plant used \$24,000 of electricity annually. The high-speed surface aerators (total 50 hp) averaged 2 pounds of oxygen per horsepower hour (lb/hp-hr). The MARS 3000 unit, with Double Bubble technology, can produce 7 to 8 lb/hp-hr of oxygen, and the full system delivers 20 brake horsepower (the power actually used).



Two Kaeser CB 130C blowers and their header are tested for leaks before backfilling of the trench.

“The system will pay for itself within four years and save the city many thousands of dollars over its lifetime.”

FRANK WHITE

Each aerator diffuses up to 30 cfm and has a central coarse-bubble tube surrounded by eight 9-inch membrane fine-bubble diffusers positioned 16 inches above the sediment. The 29-inch-high units have four weighted legs and a bottom clearance of 11 inches. An onshore blower pumps air through flexible weighted tubing through the unit's central static tube, creating a venturi that circulates the water and liquefied sludge. Anti-clogging technology on all the diffusers prevents backflow.

While suspended in the water column, the sludge mixes with fine bubbles from the self-cleaning membrane diffusers. The high surface-area-to-volume ratio of degraded debris and fine bubbles maximizes contact time and efficiently reduces BOD₅ levels.

“We didn't have to do any work on the lagoon to prepare it for the installation,” says White. “As soon as we turned on the blower, the mixing process brought foul-smelling black sludge to the surface.” Within 24 hours, oxygen had broken down the sulfur and methane and dissipated the odor.

COMPLETE REHABILITATION

In April 2010, the four remaining surface aerators were removed and the full 18-unit MARS aeration system was installed. One aerator went into each of the four concrete pretreatment basins, 10 into the lagoon's primary treatment cell, and four into the secondary treatment cell.

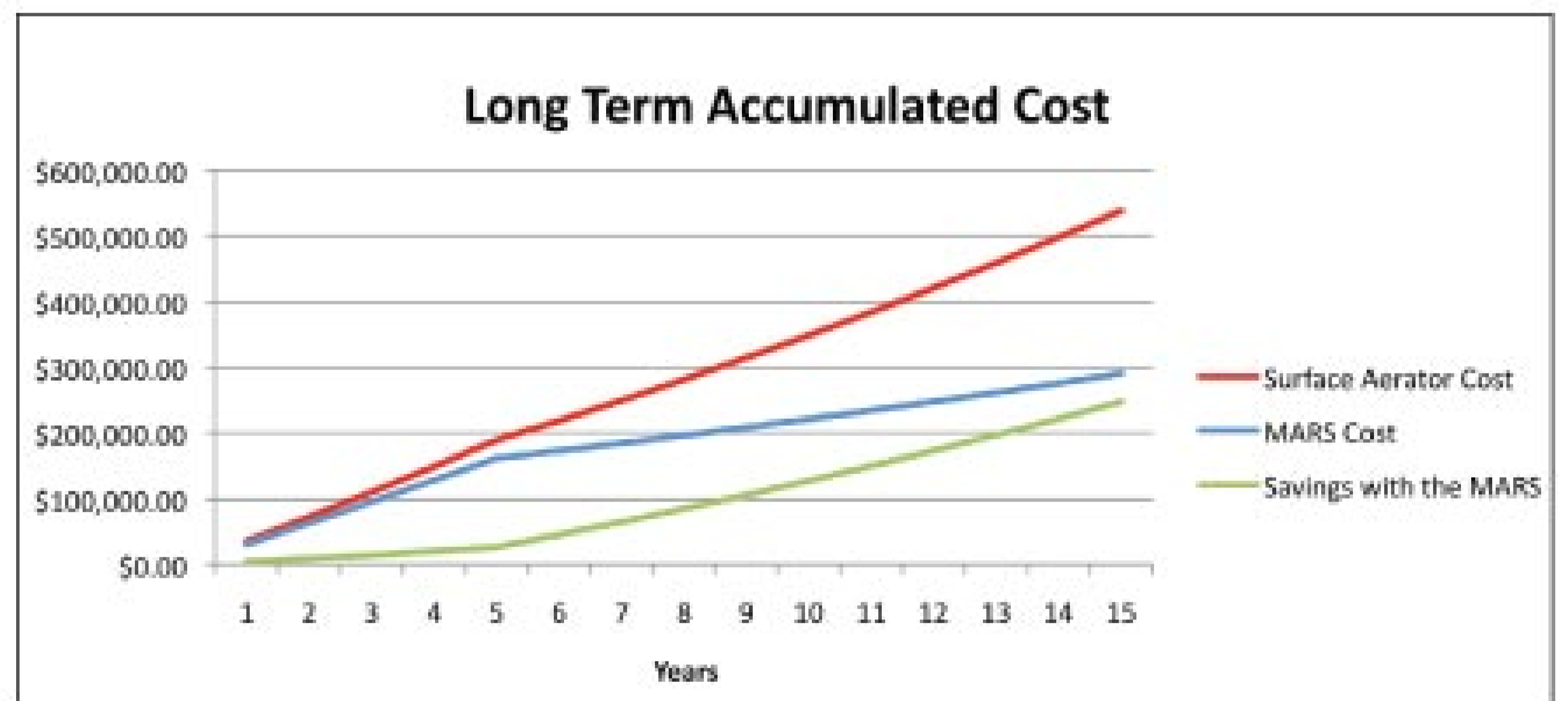
“We didn't aerate the tertiary treatment cell because it's used as a settling basin before disinfecting and discharging the water to the Shavers Fork River,” says White.

Flexible weighted tubing attaches each aerator to an onshore Type 304 stainless steel header with custom-welded manifolds. The airflow, regulated by ball valves on the manifolds, comes from two onshore Kaeser 15 hp CB 130C tri-lobe blowers, each delivering up to 270 cfm.

“The blowers run quietly at 60 to 70 decibels,” says White. “Depending on how we set the variable-frequency drive on the one unit, the city will spend \$6,000 to \$9,000 on electricity annually, instead of \$24,000.”



A city employee controls the airflow to each MARS unit in cell one by way of a stainless steel ball valve connected to a stainless steel air manifold.



This graph illustrates the savings over time from installation of the MARS aeration system.

The aerators have no moving parts — the blower requires only oil changes and new belts on a regular schedule. Consequently, the city reduced the lagoon's maintenance budget from \$5,000 annually to \$500. “The system will pay for itself within four years and save the city many thousands of dollars over its lifetime,” says White. **tpo**

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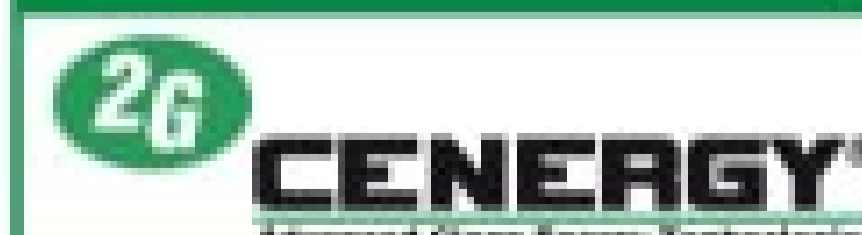
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The Praise They Deserve

THE METRO WASTEWATER RECLAMATION DISTRICT IN DENVER HONORS WASTEWATER WORKERS EACH YEAR WITH A SPECIAL BREAKFAST AND A PROCLAMATION STRAIGHT FROM THE GOVERNOR

By Ted J. Rulseh

Do wastewater operators and wastewater workers in general get enough credit for the work they do? Leaders of the Denver (Colo.) Metro Wastewater Reclamation District didn't think so. So in 2002, the district staff arranged for the governor of Colorado (then Bill Owens) to proclaim Wastewater Worker Recognition Week.

Since then, every year during the week of Earth Day in April, the state's governor has issued the same proclamation. Taking things a step farther, the Denver district now marks the week by treating all employees to a special breakfast hosted by district manager Catherine Gerali and served by the six department heads.

The mastermind of it all was Steve Frank, district public information officer. He'd like to see similar recognition for wastewater workers spread around Colorado, and to other states, as well. After all, it's a simple process that many clean-water plants and districts could easily replicate. Frank spoke about the initiative in an interview with *Treatment Plant Operator*.

People who work in water treatment get some recognition during Drinking Water Week in May. We thought our people ought to have similar recognition — they work just as hard, and their work is just as important.

STEVE FRANK

tpo: Where did the idea for this initiative come from?

Frank: We felt that people in the wastewater profession were not getting the credit they deserved. People who work in water treatment get some recognition during Drinking Water Week in May. We thought our people ought to have similar recognition — they work just as hard, and their work is just as important. That was the impetus for it.

tpo: Why did you choose the month of April for the proclamation?

Frank: We wanted it to relate to something people already knew about. Earth Day is fixed at April 22, so we decided to seek recognition for wastewater workers every year during Earth Week.

tpo: How did you go about getting the governor to issue a proclamation?

Frank: I obtained a copy of another proclamation that the governor had signed, and I used it as a template. I thought of things people ought to know about our profession, and I wrote a new proclamation around them. I showed it to a few of my colleagues here.

People made suggestions, and we finalized it. Then we created a cover letter asking that the governor sign it.

Rather than just send the letter in cold, we asked our government affairs people to take it to someone they knew in the governor's office, to make sure it was seen by a real person. After three or four weeks, they called and said they were going to issue the proclamation. We have been fortunate enough to get essentially the same proclamation signed and issued every year. It has continued from one administration to the next regardless of party. Gov. Bill Owens, a Republican, signed the first ones. Gov. Bill Ritter Jr., a Democrat, has signed the more recent ones.

tpo: Did you take any special steps to increase your chances of approval?

Frank: We gave the governor's office three months of lead time. Every governor's office differs in who needs to see it and how long approval will take. It's not unusual for a governor to issue a proclamation. You just have to make sure that you provide background information, that the proclamation looks like others they sign, and that it involves something they can support.

tpo: What did you do with the proclamation once the governor had agreed to sign it?

Frank: Once we knew it was going to be signed, I told a number of people I knew in the Rocky Mountain Water Environment Association, and they got behind it. Tom Dingeman, who was in charge of the treatment plant in Greeley, took a copy of it to his mayor's office and said, "Wouldn't you like to issue a similar proclamation?" The mayor not only signed it, he went to the treatment plant that day, spent some time with the people there, and told them how much he appreciated what they were doing.

We produced two radio ads to run on four stations in metro Denver during Wastewater Worker Recognition Week. One was based on



Steve Frank



the governor's proclamation, and it humorously reminded citizens of the value wastewater workers contribute to society. The other recognized pretreatment Gold Award winners we were honoring at that month's board meeting.

We also issued a news release and scanned the proclamation and sent it around to all the buildings here, so everyone knew the proclamation had been issued.

tpo: When did you begin serving the special breakfast?

Frank: When Catherine Gerali took over as district manager three years ago, she wanted to up the emphasis, and so she added the breakfast to the celebration. She asked our six department heads to serve the breakfast burritos — about 350 of them.

We found a small shop that was willing to make the burritos for us. The owner and her husband stayed up all night cooking the burritos, and when I went to get them at 4:30 a.m., they were all hot and in insulated cases. I got the sauce to go with them, and we were off and running. It's been the same every year.

tpo: How did you manage to serve breakfast to people in so many workplaces and on different shifts?

Frank: We started at 6 a.m. with the Resource Recovery and Reuse staff members who handle our biosolids. We set up a serving line in their employee lunchroom. Catherine came down and talked a little about the significance of the breakfast and told everybody how much she appreciated them. We served the burritos, and everybody was happy.

Then we took the entire setup over to the lunchroom that serves our operations and maintenance employees and repeated the performance there. Then we went on to the lab and information services area, and finally to the administration building. We made sure everybody got a burrito, and we also set aside burritos for our overnight people in operations and maintenance. We put them in their refrigerator along with some sauce.

There were a few things we learned going through it for the first time. For example, we didn't think about paper plates and utensils until the last minute. But we got it all figured out and it became a tradition — one we will probably continue.

tpo: How would you describe the employees' reaction to the breakfast?

Frank: I know they appreciate it. One thing we do in addition to serving the meal is scan the proclamation, blow it up real big, and put

The truth of the matter is that it takes some care and preparation, but it's not terribly hard. Anyone who can write reasonably well can get a proclamation from the governor, use it as a template, and put their own words to it.

STEVE FRANK

During Wastewater Worker Recognition Week, Denver's professionals enjoy hot breakfast burritos served by district managers.

IN THE GOVERNOR'S WORDS

Here is the language of the Wastewater Worker Recognition Week proclamation issued every year since 2002 by the governor of Colorado:



WHEREAS, Colorado's water is a valuable economic, environmental and recreational resource that should be protected; and

WHEREAS, Colorado's streams, rivers and lakes are getting cleaner because of the job being done by Colorado's wastewater treatment workers; and

WHEREAS, Colorado's wastewater treatment workers include operators, maintenance personnel, laboratory workers, sewer maintenance workers, biosolids workers, industrial waste pretreatment workers, administrative workers, engineers, and suppliers; and

WHEREAS, it is fitting to honor the work of this community in protecting Colorado's water and the environment;

Now Therefore, I, Bill Ritter Jr., Governor of the State of Colorado, do hereby proclaim the week of (dates) as Wastewater Worker Recognition Week in the State of Colorado.

it on a display board that goes around to all the locations where we serve the breakfast.

Catherine is always out front. She spends a lot of time talking to the employees, making sure everything is going well for them, finding out what's going on in the plant. So there's more going on than just serving burritos. You can tell by the way people react and by the looks on their faces that they appreciate the fact Catherine is there. Most of them know her. She's been with the district for 28 years.

tpo: What have you been doing to help spread this program to other communities in Colorado?

Frank: Last year, as the occasion was coming up, I called friends of mine at the Littleton/Englewood plant. They celebrated the day and served a breakfast. Tom Dingeman in Greeley got the mayoral proclamation signed again. I talked to several other people around the state, and they said they were going to do something. Some were just getting a proclamation signed. Others were considering a breakfast. It seems to be spreading around more as people become aware of it.

tpo: How difficult is it for a clean-water agency to do something like this in its own state or community?

Frank: The truth of the matter is that it takes some care and preparation, but it's not terribly hard. Anyone who can write reasonably well can get a proclamation from the governor, use it as a template, and put their own words to it. They can use ours as a model if they wish. **tpo**

In the Swim

A FISH POND OUTSIDE THE MAIN ENTRANCE SHOWS ORRVILLE RESIDENTS HOW WELL THEIR LOCAL WASTEWATER TREATMENT PLANT IS PERFORMING

By Jeff Smith

In Orrville, Ohio, it's never business as usual at the wastewater treatment plant. Visitors to the plant's administration building are treated to a clever first-hand demonstration of the plant's high-quality effluent.

At the main entryway of the building, one might expect to see shrubs, flowers and a manicured lawn. Instead, visitors find an effluent-fed pond, home to some 30 flourishing goldfish and colorful Koi. "It's a great way for us to demonstrate the high quality of our effluent," says wastewater superintendent Bob Auten.

SOMETHING DIFFERENT

The Orrville plant (design flow 3.2 mgd, average 2.1 mgd) uses a three-stage biological treatment system consisting of rock media roughing filters and two separate stages of activated sludge, followed by tertiary sand filtration.

Plant staff hatched the idea for the fish pond about five years ago when they decided to improve the landscaping outside the administrative building. "Rather than spend money on the same old thing, we thought, 'Why not build a pond to showcase our effluent, and a wetland to treat the pollutants produced by the fish?'" says Auten.

The plant did catch some flack along the way from a few residents and fellow employees. "When you write a purchase order for goldfish and start digging a large hole outside your office building, someone is sure to question your sanity," says Auten. "After I explained what we were doing and its benefits, I got the support of the mayor and the utilities director. We also made sure the Ohio EPA was aware of our project. We were technically creating another discharge point because the pond overflows into our receiving stream."

At the main entryway of the administration building, visitors find an effluent-fed pond, home to some 30 flourishing goldfish and colorful Koi.

PHOTOS COURTESY OF BOB AUTEN

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The pond has a surface area of about 300 square feet and a 3,500-gallon capacity. It is up to 4 feet deep and is continually fed by about 20 gpm of effluent. A small

1/4 hp recirculation pump cycles water through a decorative fountain and a 100-square-foot wetland, containing decorative plants including dwarf cat-tails, zebra rush, water lilies and water lettuce.

The fish thrive and reproduce in the pond. To control overpopulation, at least once a year fish are given away to fellow Orrville "ponders."

WASTEWATER REUSE

The Orrville plant has been proving consistently high-quality effluent since 1996, when it began using 600,000 gpd for cooling water makeup at a municipally owned 60 MW power plant. To date more than a billion gallons of clean effluent has been pumped the half-mile to the power plant through a 12-inch force main.

In another demonstration of effluent quality, plant workers recently discovered live freshwater sponges in the plant's 50,000-gallon post-air tank. "We had the tank down for routine maintenance and cleaning when a co-worker called me and said, 'You won't believe what we just found growing on the walls of the tank!'" Auten says.

One sponge about the size of a fist can filter up to 100 gpd. "They need clean water, so we're really glad to see them," says Auten. "It tells us our effluent is clean, and their presence helps us make it even cleaner."

Auten knows other treatment plants have sponges, but the unique thing about Orrville's crop is how they found a home in the post-air tank. "Because



The fish pond takes the place of more traditional landscaping with flowers and shrubbery.

“When you write a purchase order for goldfish and start digging a large hole outside your office building, someone is sure to question your sanity. After I explained what we were doing and its benefits, I got the support of the mayor and the utilities director.”

BOB AUTEN

of the way our plant is constructed, there is no pathway for the sponges to migrate into the post-air tank from the discharge stream,” he says. “I kind of think they came in through spores in the air, or possibly via ducks that sometimes swim in our final clarifiers.

“We know chlorine kills them because they only grow in the portion of the tank downstream from dechlorination. Since we chlorinate year-round because of our reuse system, we think airborne spores is probably how they were introduced.”

PROVING IT DAILY

In addition to its 8,500 residents, Orrville is home to major corporations like the J.M. Smucker Company (known for jellies and jams) and Ohio region’s Smith Dairy. In 2008, Orrville celebrated the 100-year anniversary of its wastewater treatment plant with an open house attended by hundreds of people.

The open house included plant tours and hands-on children’s activities provided by the Orrville City Schools’ Earth Science Club. Each participant received a souvenir coffee mug and saw the fish pond. **tpo**

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Linear electro-dewatering reduces cake volume

Problem

The RAEBL municipal wastewater treatment plant in Quebec, Canada, averages 17 mgd and 100 wet tons of undigested waste activated sludge per day. Three belt filter presses dewater the material to 14.5 percent solids before landfilling. In 2010, stringent regulations were expected to increase disposal costs 14 percent or \$70 more per wet ton. The plant needed an economical alternative.

Solution

The management team selected **Cinetek linear electro-dewatering equipment from Ovivo**. It uses electro-osmosis to dewater cake by applying a continuous current to electrodes sandwiching the porous media. The current transfers cations from the positive (anode) to the negative (cathode) pole. Bulk water molecules are driven toward the cathode, where water drains out. Changing the operating parameters achieves a final dryness of 30 to 50 percent, and a weight reduction of more than 50 percent. The combination of electricity, heat, and pressure disinfects the biomass, eliminating *E. coli*, salmonella, enteric viruses and parasites. The cake is rated as Class A biosolids.



RESULT

To optimize capacity and maximize savings, the plant set the equipment to process one-third of the sludge production, dewatering the cake to 35 percent solids. Energy usage is 160 kWh/ton of wet cake processed or 280 kWh/ton of extracted liquid. At full-scale design, reducing the biosolids weight by 58 percent will decrease the plant's budget by 40 percent. Payback is less than four years. RAEBL is looking at other beneficial reuses of cake such as compost farms, soil amendment, or biomass-to-energy. **450/641-3611; www.ovivowater.com.**

Three-belt design increases handling capacity

Problem

A pair of 2-meter 16 s-wrap belt presses could not keep up with increased dewatering requirements at the Gloversville-Johnstown (N.Y.) Joint Wastewater Treatment Facility. The plant receives 13.8 mgd, much of it high-strength waste from industrial sources. The two-belt units dewater 150,000 to 230,000 gpd of 3 percent digested solids at 38 to 40 gpm, producing 100 wet tons of material for landfilling.

The solids were difficult to process because of high concentrations of dairy whey. "We like the whey because it generates biogas in the anaerobic digesters, which the plant uses to cogenerate electrical power," says manager George Bevington. "To handle the high BOD levels, we needed to increase solids throughput and capture."

Solution

The city purchased two **Model 3DP three-belt 2.5-meter belt presses and two 2.5-meter gravity belt thickeners from BDP Industries**. The presses have an independent gravity belt and vertical pressure zone to optimize dewatering. Their open construction simplifies maintenance and operation. The gravity belt thickeners thicken the waste activated sludge before it enters the anaerobic digesters, enabling solids to stay longer in the digester.



RESULT

Each press dewateres at 55 to 60 gpm, processing up to a dry ton per hour. Reducing the amount of solids recycled through the treatment process has improved the plant's performance. The gravity belt thickeners have increased solids concentration to the digesters, enhancing their efficiency. **518/695-6851; www.bdpindustries.com.**

Cleaning system optimizes belt function and life

Problem

The porous belts on the two gravity belt thickeners at the Cowlitz County Regional Wastewater Treatment Plant in Longview, Wash., clogged despite regular cleaning, and the staff replaced them every other year. The situation extended run times, reduced machine efficiency and belt life, and increased belt cleaning and maintenance. It also produced inconsistent cake that cost the facility additional disposal fees. *(continued)*

Solution

To re-establish proper belt function, the facility installed an **EB Belt Blaster and spray attachment from GillTrading.com**. The first few revolutions of the cleaning system disperse embedded materials and the water spray penetrates the belt weave.

RESULT

The cake was consistent and within the anticipated range. The system has increased belt longevity and eliminated manual cleaning. **866/447-2496; www.gilltrading.com**.



Compact solution for Class A material

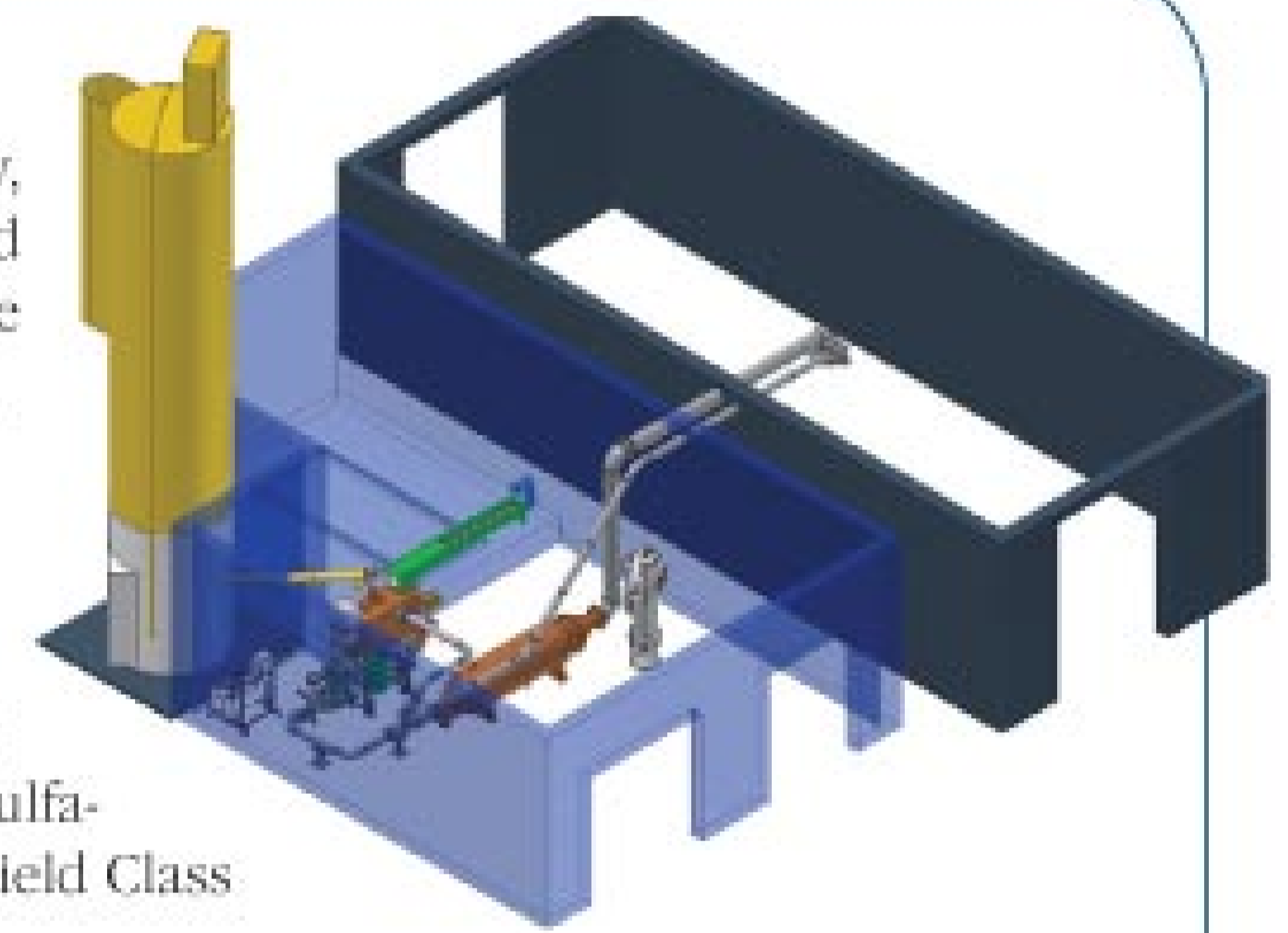
Problem

Operators at the Coleraine/Bovey/Taconite Joint Wastewater Commission facility in Itasca County, Minn., processed sludge intermittently, land-applying the biosolids on alfalfa fields. During the long and cold winters, the plant hauled the material but could not meet U.S. EPA Class B standards for landfills. The commission needed a cost-effective solution, but the facility's 0.5 mgd was too small for many technologies.

Solution

The commission hired the Short Elliott Hendrickson engineering firm of Grand Rapids, Minn., to explore alternatives. Engineers selected the **alkaline stabilization process from Schwing Bioset** for its ability to produce Class A biosolids at low cost. The process mixes biosolids with quicklime and sulfamic acid to raise the pH and temperature before pumping the mixture through a plug flow reactor to yield Class A material.

Schwing Bioset worked with the engineering firm to fit the skid-mounted equipment into a garage bay and designed a building next to the garage to store the biosolids until spring. A control panel operates the system, and no new staff had to be hired. The process is scalable for plants from 0.5 mgd to more than 50 mgd.



RESULT

The 2009 American Reconstruction and Recovery Act provided funds via the Army Corps of Engineers to finance the project. Schwing Bioset, as general contractor, poured pads for the lime silo and storage building. The facility was to start operation in March 2011. **715/247-3433; www.schwingbiosettpo.com**.

Bioreactor reduces biosolids, takes plant off grid

Problem

Averaging 1.6 mgd, the Millbrae (Calif.) Wastewater Treatment Plant did not produce enough biogas to support combined heat and power equipment without augmenting digester feedstock. It also could not reduce energy costs or fulfill the city's recycling and green energy goals. "Fats, oils, and grease looked like a promising feedstock, but they had caused costly challenges for other facilities," said Dick York, then plant superintendent. Challenges included odors, clogs, grease balls, uneven biogas production, and disrupted plant biology.

Solution

York and chief operator Joe Magner designed and installed a **FOG receiving station and bioreactor** that later became the basis for their company, **FOG Energy Corp**. The automated station eliminates clogs, spills, mechanical breakdowns, and odor complaints.

The bioreactor treats unfiltered, unheated, unrefined FOG with actively digesting sludge (ADS). Intense mixing dilutes and reduces grease particle size, biologically changing it into miscible slurry that does not separate and digests completely. The operator-controlled variable-speed introduction system further dilutes the conditioned feedstock with ADS as it is metered into the anaerobic digester, eliminating shock loading.

RESULT

Since it implemented the process, Millbrae has more than doubled biogas production, increased its quality from 65 to 72 percent methane, and achieved Btu yields in excess of 90,000 per gallon of neat grease added to the digester. The process has reduced energy purchases to the minimum statutory requirements, effectively taking the plant off the grid. **408/315-4242; www.fogenergycorp.com**.



Bar screen lowers maintenance costs

Problem

The Camrosa Water Reclamation Facility in Camarillo, Calif., recycles 1.5 mgd for irrigation, but the mechanical bar screen was not effectively separating debris from the wastewater before it entered the plant. Built-up debris blinded portions of the screen, bent rake fingers, and caused erroneous meter readings. Removing the debris required a confined-space entry and much manual labor. The unenclosed screen spread debris across the headworks, requiring more cleaning. The mess and smell attracted swarms of flies.

"Our biggest issue was the inability of the Parshall flume to record accurate levels," says superintendent Robert Barone. "The flume measures and reports the flow to ensure that the district complies with its discharge permit. The debris caused the levels in the channel to fluctuate, creating errors in the flume's accuracy. We had to replace that screen."

Solution

The district chose the **Mahr bar screen and Screwactor from Headworks Inc.** The front-raked, front-return bar screen handles 5 mgd. The rake bars have 3/16-inch openings mounted to chains on each side of the self-contained frame. The design eliminates solids carry over and is enclosed for odor control and improved hygiene. To eliminate erroneous flow readings, Headworks recessed the side frame and bottom of the screen into the channel walls and floor. "We now have the necessary headloss to secure accurate flume readings," says Barone. The Screwactor dewateres and compacts screenings to reduce volume.



RESULT

Almost all the bar screen components are accessed at the top of the channel for fast, easy maintenance. "We save time and money because it operates effectively, and we no longer spend time cleaning debris scattered around the facility," says Barone. "Even the flies are almost nonexistent. Although the equipment was not the least expensive solution, it was the most fiscally responsible in the long run." 713/647-6667; www.headworksusa.com.

System prevents pump clogging, compacts trash

Problem

A San Diego (Calif.) pump station was filled with sheets, boots, strings, plastic bags and assorted trash. The pumps clogged often, causing manholes to overflow occasionally. Maintenance became excessive. Workers finally pinpointed the source of the problem when they found a book from the Richard J. Donovan Correctional Facility in the pump clog. The prisoners were using toilets as garbage cans.

Solution

The city considered installing a sewage grinder before the headworks screen, but operators worried about the high headloss across it. To avoid the expense of multiple grinders with a larger flow channel, or battling the overflow with pump clogging downstream, officials selected a combined **grinder, bypass drum screen, and screw screen system from Pro-Equipment Inc.**

The design integrates the Screen-Mate vertical drum bypass screen with a single grinder in the mounting frame to handle 2.4 mgd. As the grinder handles debris, the majority of the wastewater bypasses through the drum screen, reducing headloss across the system. The water and particles combine downstream before entering a Pro-Guard fine screw screen that filters, washes, and compacts the ground debris.



RESULT

The system has operated since October 2010 without problems. An Allen-Bradley (Rockwell Automation) ControlLogix PLC system monitors the components. When the Verbatim auto-dialer calls the operator, he identifies the problem on the Panelview touchscreen and troubleshoots it. 262/513-8801; www.proequipment.com.

Anaerobic digester upgrade yields significant savings

Problem

The three anaerobic digesters at the Middletown (N.Y.) Wastewater Treatment Plant had no mixing or heating, which affected solids reduction and biogas production and increased operational and chemical expenses. As part of a plant upgrade from 6.0 to 8.5 mgd, the city turned to Inflico Degremont Inc. to modernize its solids facility.

(continued)

Solution

Workers gutted the anaerobic digesters and installed **Cannon Mixers from Degremont Technologies** — anaerobic digester mixers with heating jackets. Vertical stack pipes, arranged to optimize mixing zones across the digester floor, keep solids in suspension with little settling. Large-piston bubble generation every three to four seconds per stack pipe ensures more than 90 percent total active volume in the tank.

The turbulent breaking action of the bubbles at the surface also prevents scum buildup. The heating jackets maintained the temperature at 95 degrees plus or minus 1 degree F to ensure high volatile solids reduction and biogas production. Workers covered the digesters to capture biogas, which the plant burns for process and facility heating. A new belt press was installed downstream of the digester to dewater stabilized sludge.

RESULT

The anaerobic digesters are producing enough biogas to sustain process and facility heating, saving fossil fuel costs. The high volatile solids reduction has reduced labor hours, chemicals and solids hauling. The overall savings from the anaerobic digester upgrade is more than \$140,000 annually. **804/756-7600; www.degremont-technologies.com. tpo**



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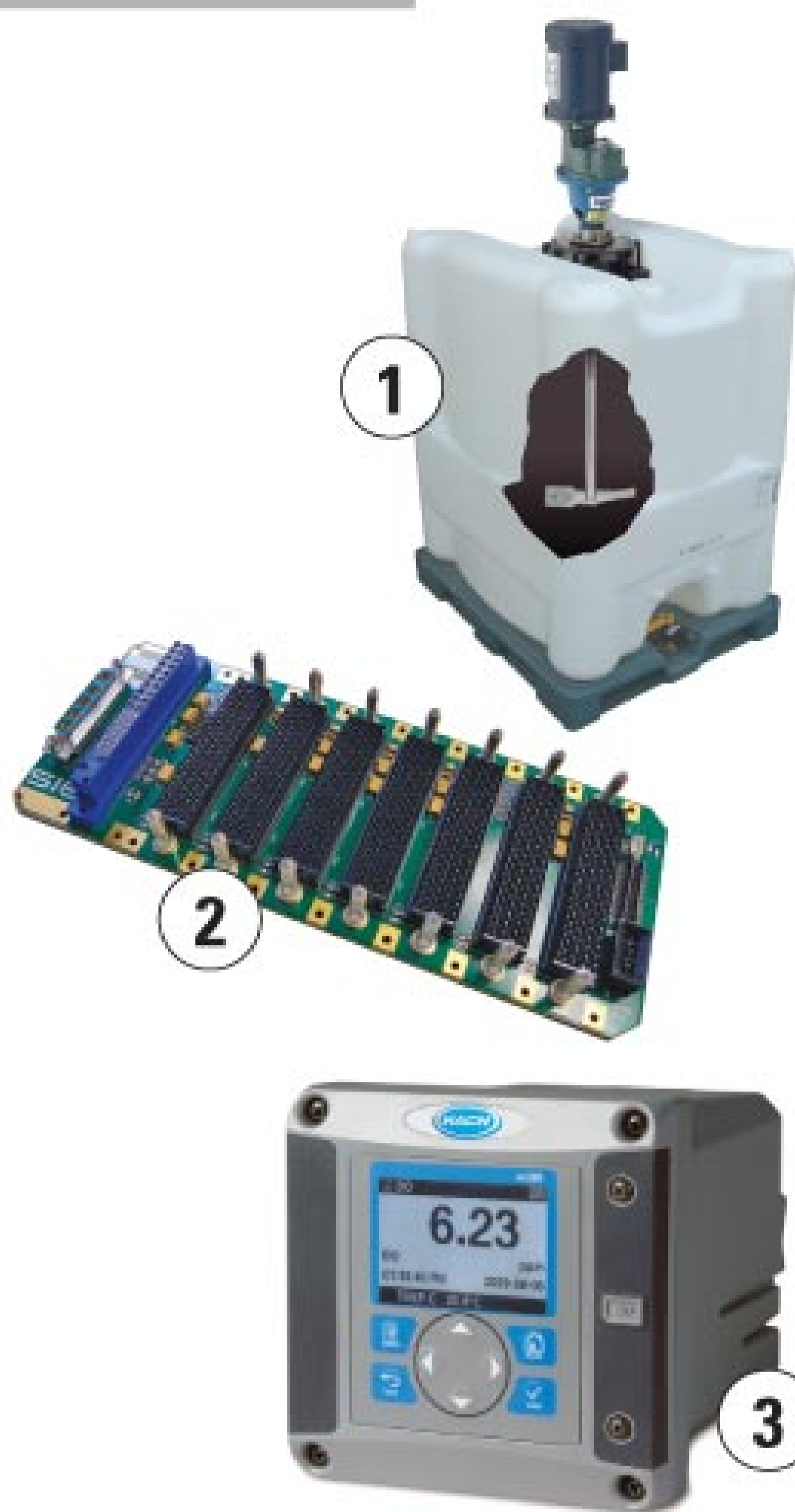
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1. NEPTUNE OFFERS ELECTRIC, AIR-DRIVEN HGL MIXERS

HGL mixers from Neptune Mixer Co. are available in electric and air-driven models. Designed for IBC and tote applications within wastewater treatment plants, explosion-proof models are available. Bulk-container mixers are vertically mounted. The gear-reduced mixers can turn large props at 350 rpms for thorough mixing. The 316 stainless steel propeller folds to fit through a 2-inch opening and opens to a 9-inch diameter when operating. Mixers mount directly to a 2-inch NPT fitting on the tank. An optional SS bulkhead fitting converts plastic caps to have a rugged 2-inch NPT connection. Low-profile models are available. **215/699-8700; www.neptune1.com.**

2. SIE INTRODUCES 3U OPENVPX BACKPLANE

The 3U OpenVPX backplane from SIE Computing Solutions Inc. is designed to allow for multiple vendor boards and other system components without sacrificing interoperability. The backplane features a centralized 6-slot design that offers maximum flexibility for both customized and varied standardization between OpenVPX profiles. It utilizes the BKP3-CEN06-15.2.2-3 profile ratified by VITA 65. **800/926-8722; www.sie-computing.com.**

3. HACH INTRODUCES SC200 UNIVERSAL CONTROLLER

The sc200 universal controller from Hach Co. allows the use of digital and analog sensors, either alone or in a combination, to provide compatibility with a range of sensors for water analysis. The controller can

be configured to operate either two digital sensors, one or two analog sensor inputs, or a combination of digital and analog. The controller's display provides guided calibration, visual warning and has a password-protected SD card reader for data download and transfer. Communication options range from Modbus RTU to Profibus DPV1. **800/227-4224; www.hach.com.**

4. MOYNO OFFERS METERING PUMPS WITH VFD/MOTOR CONTROLS

The Moyno Metering Pump with integral VFD/motor controls from Moyno Inc. offers improved accuracy and repeatability. Additional features include capacities of 0.1 to 400 gph, flow control at low rpm, pressure to 300 psi and LED external displays. **937/327-3177; www.moyno.com.**

5. SENSOREX OFFERS SELF-CLEANING SENSOR

The S8000 flat-surface, self-cleaning pH/ORP sensor with modular mounting hardware and optional electronics from Sensorex is designed to deliver precise measurement with reduced maintenance. The fully configurable system enables users to expand measurement capabilities as plant requirements change. The S8000 electrode measures pH from 0-14 at a pressure range of 0-100 psig de-rated under temperature and operates at a temperature range of 0-100 degrees C de-rated under pressure or 0-80 degrees C when mounted in a flow cell or 0-70 degrees C with an electrode module. **714/895-4344; www.sensorex.com.**

6. CROWCON INTRODUCES LASERMETHANE DETECTOR

The LaserMethane mini Gen2 portable methane detector from Crowcon Detection Instruments is ATEX approved. The handheld unit weighs just over 1 pound including battery and measures 2.8 by 7 by 1.6 inches. Features include a full-color numeric or graphical display, audio and visual alarms, six-hour minimum battery life per charge (four-hour recharge) IP54 ingress protection, automatic ranging and a temperature range of 1 degree F to 122 degrees F. **800/527-6926; www.crowcon.us.**

7. HSI OFFERS HIGH-SPEED TURBO BLOWERS

The HT-Series of high-speed turbo blowers from HSI, designed to reduce operating cost and maintenance, range in size from 5 to 300 hp. Blowers operate at less than 85 dbA and can operate in parallel with other type blowers. Features include pre-engineered working system with integrated controls, variable-frequency drive, filter inlet and electrical disconnect. **713/947-1623; www.hsiblowers.com.**

8. GRUNDFOS UNVEILS SUBMERSIBLE PUMPS

SLV and SL1 model submersible wastewater pumps from Grundfos are designed for network pumping stations and wastewater treatment plants. The pumps are engineered to handle municipal or industrial wastewater, wastewater with fibers, drainage and groundwater, process and cooling water. The SL pumps offer a SuperVortex impeller (SLV) for

free passage of solids up to 4 inches in diameter and Channel impeller (SL1) for large flows of raw sewage. Features include Eff1-type motor, moisture-proof plug, short rotor shaft, double mechanical shaft seal and easy-to-open clamp. **913/227-3400; www.grundfos.us.**

9. TORREY PINES INTRODUCES BENCH TOP INCUBATORS

Bench top incubators from Torrey Pines Scientific Inc. are fully programmable with temperature ramping. Models IN35 and IN45 are Peltier-based units with no compressors or CFCs. Temperature ranges from 4 to 70 degrees C with control to 0.1 degrees C. Controls are capable of storing three routines in memory with each routine capable of 10 steps. Units have an RS232 interface for data collection and 99-day timer readable to 1 second. **866/573-9104; www.torreypinesscientific.com.**

10. KOCH OFFERS ULTRAFILTRATION SYSTEM

The KONSOLIDATOR ultrafiltration system from Koch Membrane Systems Inc. is designed to reduce disposal wastewater costs in applications with high suspended solids. The system, available in five sizes ranging from 3,000 to 100,000 gpd, features tubular membranes with mechanical and chemical resistance properties. Additional features include control panel programmable logic controller, NEMA 12 enclosure, pressure and temperature alarms, feed temperature and permeate flow indicators, inlet/outlet pressure gauges, optional cleaning skid and automatic purge mechanism. **888/677-5624; www.kochmembrane.com.**

(continued)

product spotlight

Monitoring System Automates the Dewatering Process

By Ed Wodalski

The Octopus biosolids dewatering centrifuge autopilot from Alfa Laval is custom designed to monitor, control and optimize all aspects of the dewatering process. Software controls material feed, polymer dosing, and internal decanter settings, providing real-time information on each process step. Infrared sensors analyze performance and automatically make necessary adjustments.

The PLC-based optimization system is integrated with Alfa Laval's 2Touch centrifuge control system. It comes with communication components, remote-access capability, updates and support services.

The system takes its name from the central control unit and series of tentacle-like sensors. Its key benefit is 24/7 control of the dewatering process and polymer consumption for optimal operation and overall cost savings, says Ilya Yevilevich, business development manager. Exact savings depend on the desired dryness, plant size, amount of production, and level of automation, says Marty Davidson, Midwest regional sales manager, Environmental Market Unit.

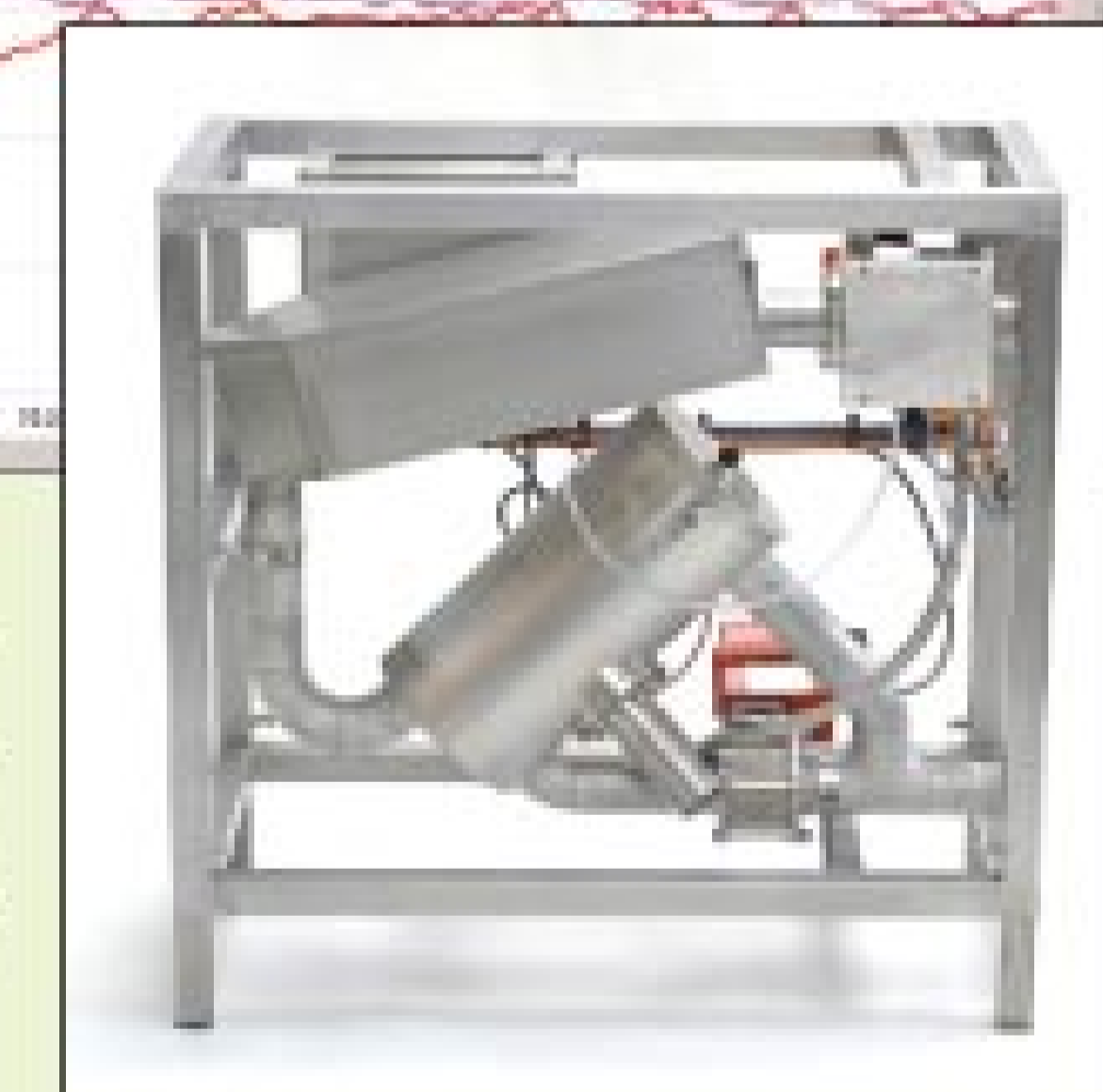
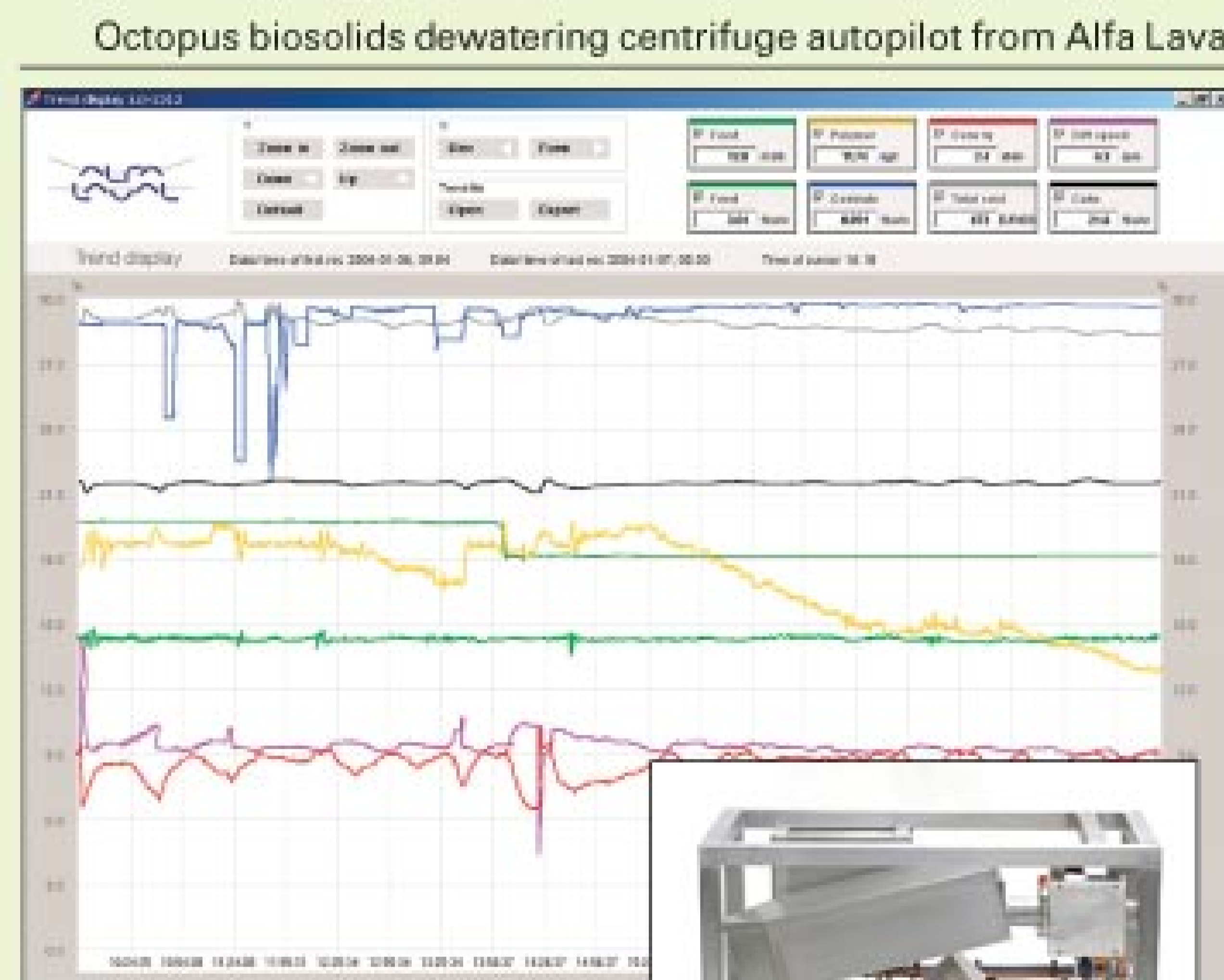
"Octopus is going to optimize the centrifuge based on the lowest total cost of operation," he says. Minimum boundaries for cake dryness, maximum allowable boundaries for polymer doses, and minimum boundaries for recovery are programmed into the software.

In California, where hauling costs are high, the system could be adjusted to use more polymer for a drier cake and reduced transportation cost, while in the Midwest, where dryness might be less important, the system could focus more on minimizing polymer consumption.

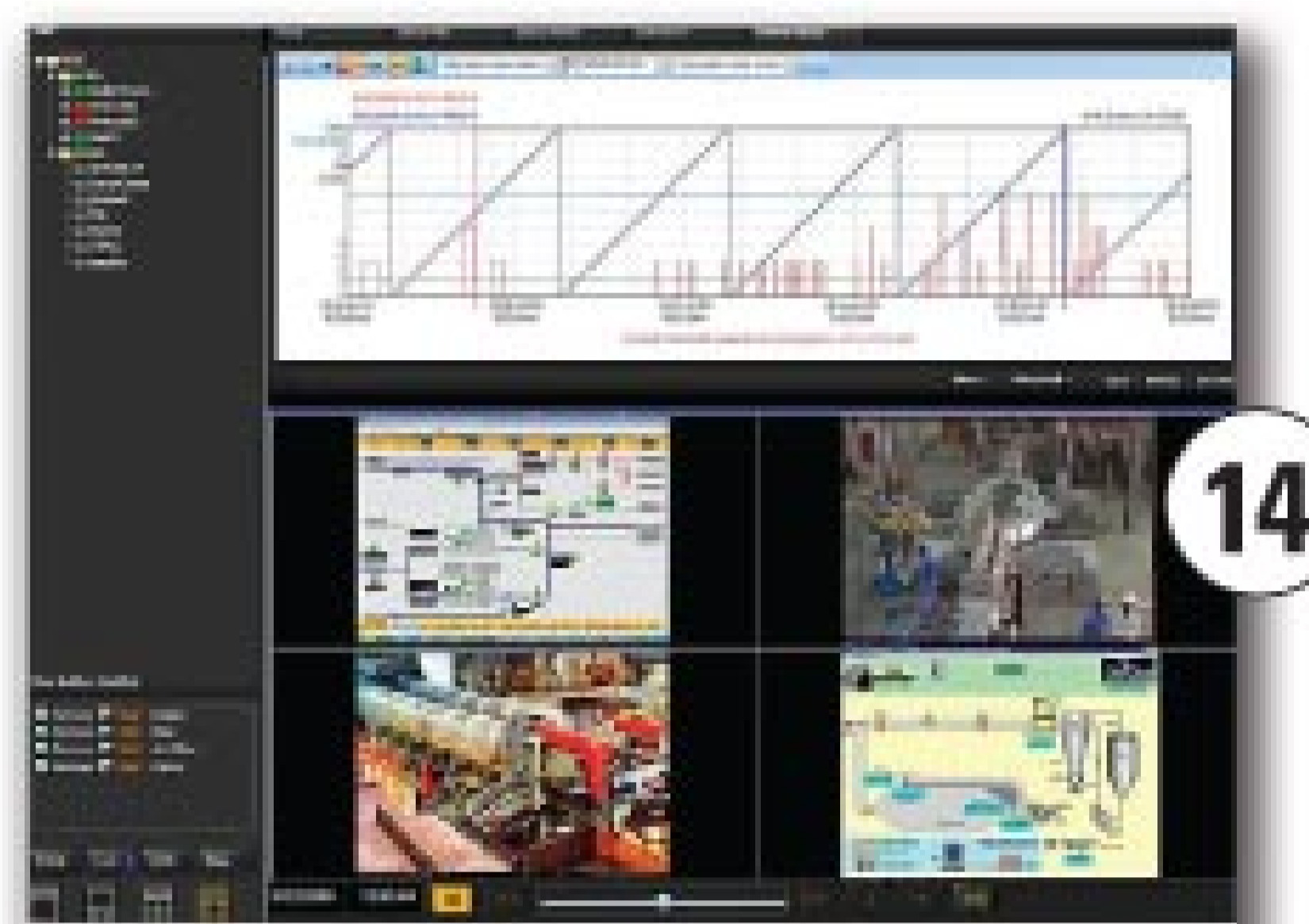
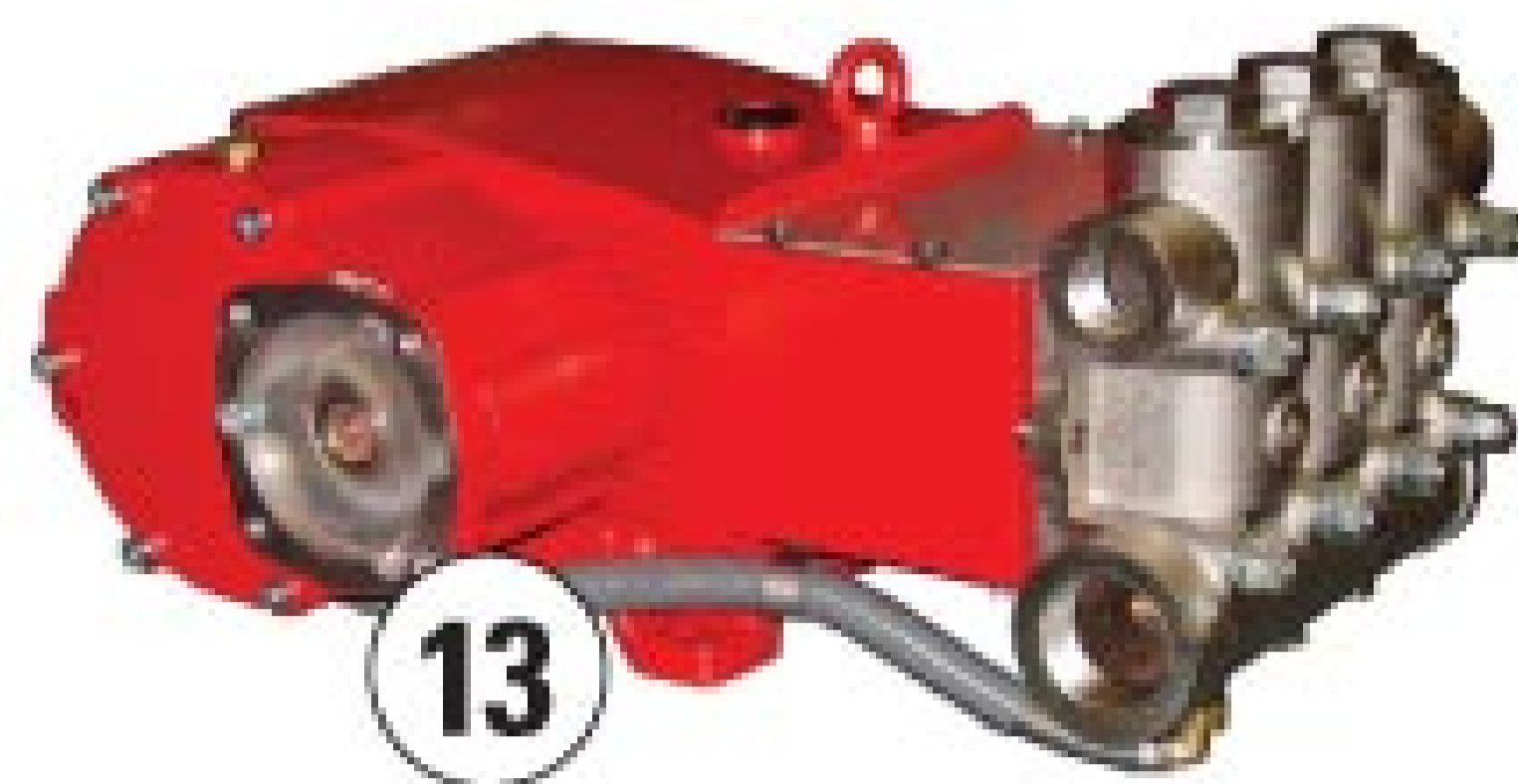
System maintenance varies depending on material flow and the comparison between instrument and lab sample readings. "Operators have to make sure they have flow to the system and that the sensors are accurate compared to the lab samples," Davidson says. "If not, they'll have to do some manual cleaning." Wipers on the sensors and an automatic tank flushing system help keep maintenance to a minimum.

In addition to savings, the system gives management minute-to-minute information. "You can historically trend dollars per dry ton overall cost, polymer dose per dry ton power cost – you can trend anything you want to trend – daily or monthly," Davidson says. **866/253-2528; www.alfalaval.us/wastewater.**

Octopus trend graph



Octopus centrate tank



11. KROHNE INTRODUCES TIDALFLUX ELECTROMAGNETIC FLOWMETER

The Tidalflux electromagnetic flowmeter from KROHNE Inc. is designed to measure the volumetric flow rate of electrically conductive liquids in partially filled pipelines. The unit combines a flowmeter with a capacitive flow-level measuring system built into the wall of the measuring tube for pipelines with fluid levels between 10 and 100 percent. **978/535-6060; www.krohne.com/northamerica.**

12. INVENSYS INTRODUCES FOXBORO PAC SYSTEM

The Foxboro programmable automation controller with Wonderware software from Invensys Operations Management offers control and information capabilities for installations with fewer than 3,000 input/output points, while providing a foundation for a larger and even more capable enterprise control system. The Wonderware software includes a single, common integrated development environment. The package also includes Wonderware InTouch 10.1 HMI software. **469/365-6400; www.invensys.com.**

13. GIANT INDUSTRIES INTRODUCES GP7500 SERIES PUMPS

GP7500 Series high-pressure pumps from Giant Industries feature an integrated gear-end cooling system for maximum longevity. The 100 hp, continuous-duty pumps are capable of flows up to 85 gpm and pres-

sure to 3,000 psi. They are available in solid crankshaft design, gearbox with pinion shaft and gearbox with hollow shaft hydraulic drive. Standard components include solid ceramic plungers, nitrile seals with fabric reinforcing and stainless steel valves. **419/531-4600; www.giantpumps.com.**

14. LONGWATCH SOFTWARE OFFERS ACP INTEGRATION

The Video Historian, live and archived video, and Console Recorder from Longwatch are part of the video productivity suite of software designed to work with ACP-enabled think clients. The Console Recorder, when used with ACP-enabled think clients, helps reduce download time. Users see exactly what operators were viewing during shutdown, line stoppages and other system events. It also records what is seen on the ACP think client and the operator's responses on the keyboard and mouse, but does not impact terminal service sessions or servers. **781/255-7400; www.longwatch.com.**

15. CSI CONTROLS OFFERS ARC ARMOR ENCLOSURE

The ARC ARMOR enclosure, offered by CSI Controls, is designed to reduce the risk of injury from arc flash and electric shock. The control and power circuitry are isolated in separate compartments, preventing unnecessary exposure to operators. Electric control equipment is segregated within an enclosure where only control voltage is present (120-volt AC maximum). High-energy controls, such as motor control, are located in the MCC compartment, while low-energy circuits such as controllers and low-voltage controls are located in the controls compartment, enabling staff to safely work on circuits without having to wear arc flash protective clothing. **800/363-5842; www.csicontrols.com.**

16. PENTAIR OFFERS HOFFMAN FILTER FANS

Hoffman filter fans from Pentair Technical Products feature UV-resistant plastic and foam-in-place gaskets for a tight cabinet seal. Models provide airflow from 16 cfm to 571 cfm and are available in side-wall and roof-mount and AC and DC power options. **763/421-2240; www.hoffmanonline.com. tpo**

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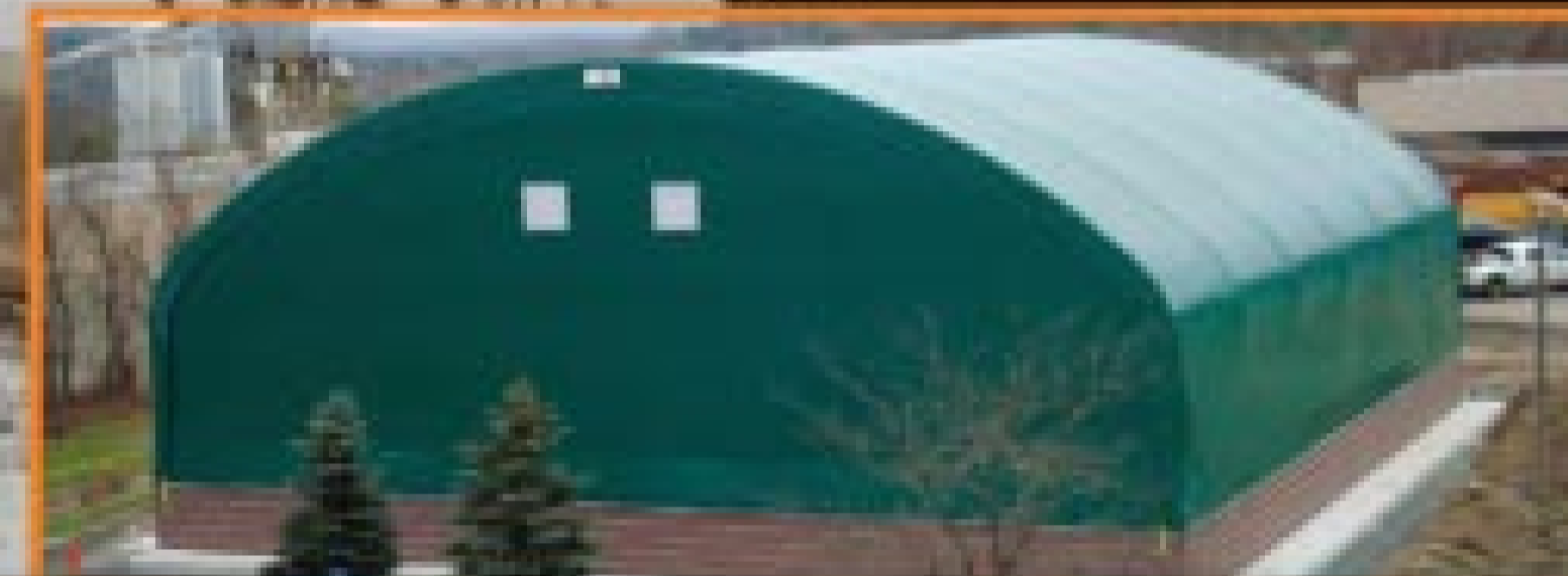
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EDUCATION DAY

WEDNESDAY, MARCH 2ND

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SSCSC Southern Section Collection Systems Committee

- 8 a.m. Sewer Collection System History & the Evaluation of Pipeline Materials and Problems
- 9:30 a.m. Combo Vacuuming, a Forgotten Art
- 11 a.m. Keeping your Standard CCTV Inspection Program Relevant
- 1 p.m. Growing Your Business by Building Your Company Image
- 2:30 p.m. Pump and Lift Station Fundamentals: How to Achieve Maximum Service and Reliability
- 4 p.m. Making Sense out of Nozzle Nonsense

NAWT National Association of Wastewater Transporters

- 8 a.m. So You Think You Want to Own a Waste Treatment Facility?
- 9:30 a.m. Grease as a Resource
- 11 a.m. Resource Recovery - Methane and Septage
- 1 p.m. O & M Problems on Drip Distribution Systems
- 2:30 p.m. O & M Problems We Have Seen
- 4 p.m. O & M Problems with Media Filters

NASSCO National Association of Sewer Service Companies

- 8 a.m. Grout: Its Use and Application for the Total Collection System
- 9:30 a.m. Cured-In-Place Pipe
- 11 a.m. Pipe Bursting Tools for Everyday Utility Installations
- 1 p.m. How Will You Know if You Need to do a Sewer System Evaluation Survey (SSES)?
- 2:30 p.m. Laser Profiling Applications for Documenting Piping System Conditions
- 4 p.m. Advancements in UV Technology for Curing CIPP

WJTA WaterJet Technology Association

- 8 a.m. Estimating the Vacuum Job for Fun and Profit
- 9:30 a.m. How to Maximize the Power of Your Waterjetter
- 11 a.m. Waterjetting - Financial Startup Considerations and Real-World Application

PSAI Portable Sanitation Association International

- 1 p.m. Understanding Your True Cost per Service for Special Events - Part 1
- 2:30 p.m. Understanding Your True Cost per Service for Special Events - Part 2

NARC National Association of Regulated Carriers

- 4 p.m. Avoiding Violation Fines and Tickets with DOT Safety Compliance

NOWRA National Onsite Wastewater Recycling Association

- 8 a.m. Troubleshooting Our Modern Waste Stream
- 9:30 a.m. Pumps - A Basic Understanding
- 11 a.m. System Remediation - Why, What, When, Where and How?
- 1 p.m. Selling the System to Site Conditions
- 2:30 p.m. Sampling Sewage Treatment Systems
- 4 p.m. Effluent Dispersal and Water Management

NEHA National Environmental Health Association

- 8 a.m. The Qualified O & M Service Provider
- 9:30 a.m. Effluent Screens and Filters for Onsite Applications
- 11 a.m. Develop Champions for Your Decentralized Wastewater Projects
- 1 p.m. The Business of Management
- 2:30 p.m. Developing O & M Inspection Actions
- 4 p.m. Working with Regulators, Regulations & Industry

SCOTT HUNTER Business Track

- 8 a.m. Creating an Extraordinary Organization - The Mindset of Leadership (Part 1)
- 9:30 a.m. The Mindset of Leadership (Part 2)
- 11 a.m. The Mindset of Leadership (Part 3)
- 2:30 p.m. Creating an Outrageously Successful Organization (Part 1)
- 4 p.m. Creating an Outrageously Successful Organization (Part 2)

LRN Leaders Resource Network

- 8 a.m. The Disciplines and Art of Business Success
- 10 a.m. Developing a "Fantastic" Team
- 1 p.m. Diversifying or Specializing Your Services
- 3 p.m. Succession Planning

DETAILED SESSION INFORMATION AVAILABLE AT:

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Center of Attention

THE BUDD INLET TREATMENT PLANT IN OLYMPIA, WASH., IS SO EARTH-FRIENDLY THAT IT STANDS AT THE HEART OF A MAJOR WATERFRONT DEVELOPMENT

By Doug Day

A museum, public plaza, hotel, and mixed-use development are sprouting around the East Bay area of the Port of Olympia, Wash. The heart of the new 14-acre waterfront redevelopment will be a public plaza to attract residents and tourists to the downtown area focused around, of all things, the Budd Inlet Treatment Plant.

"A treatment facility has become a centerpiece to a business district," says operations supervisor Ben McConkey. "It's a fascinating experience."

The plant has been there for years, operated by the LOTT Clean Water Alliance, a partnership between the cities of Lacey, Olympia, and Tumwater along with Thurston County. LOTT provides wastewater and reclaimed water service for the region, including the main sewer lines, pump stations, reclaimed water plants and recharge basins.

LOTT's new \$135 million Regional Services Center was recently added to the south end of the treatment plant. Expected to achieve Platinum certification under the U.S. Green Building Council's

Leadership in Energy and Environmental Design (LEED) rating system, the building is powered by a new cogeneration facility at the plant that burns digester gas to generate electricity and recaptures heat for digesters.

The heat is also used in the HVAC system at the plant, the services center, and a new children's museum being built across the street.

SAVING MONEY, CUTTING EMISSIONS

The Jenbacher (GE Energy) reciprocating engine and related equipment for the cogeneration system went online in December 2009 at a cost of \$2.4 million. Puget Sound Energy (PSE) provided 70 percent of the funding through a \$1.7 million energy conservation grant. The plant is capable of modulating from about 50 percent power up to a peak capacity of 335 kW, generating about 200,000 kWh per month. "It really gives us a lot of flexibility without having to build a gas storage facility," says McConkey.

The only storage is the floating covers



PHOTOS COURTESY OF THE LOTT CLEAN WATER ALLIANCE

The LOTT Regional Services Building uses half the energy per square foot as a typical building. From recycled and renewable wood products to natural daylighting, it was designed with sustainability in mind.



What's Your Story?

TPO welcomes news about environmental improvements at your facility for future articles in the Greening the Plant column. Send your ideas to editor@tpomag.com or call 877/953-3301.

A prominent water feature in front of the LOTT Regional Services Building helps demonstrate the importance of reclaimed water in protecting the environment.

on the anaerobic digesters.

Those digesters, treating the waste activated sludge from about 10 mgd of influent, create about 125,000 cubic feet of methane-rich digester gas every day.

Cogeneration provides about 15 percent of the plant's power and will save about \$144,000 a year in direct electricity costs — a payback of two to four years. The rest of the plant's power is purchased through the PSE Green Power Program at a cost of just over 7 cents per kWh. Other LOTT facilities can pay from 7.5 to nearly 9 cents.

The cogeneration system also reduces emissions equal to taking 306 cars off the road or planting 478 acres of trees. "We used to flare about 50 percent of our gas," says McConkey. "We flare less than 5 percent now because we don't have much excess."

MULTIPLE USES

The system feeds the in-plant substation, which also serves the new LOTT services center. "The Regional Services Center has about an 80 kW load during the day, and we're producing anywhere from



Hands-on displays at the WET Center educate the public about water conservation and protection of the Puget Sound. The center also offers educational resources to schools and weekend events for families.



This GE Jenbacher reciprocating engine provides power and heated water for the Budd Inlet Water Treatment Plant, the LOTT Regional Services Building, and the new Hands On Children's Museum across the street.

"We used to flare about 50 percent of our gas. We flare less than 5 percent now because we don't have much excess."

BEN MCCONKEY

250 to 335 kW," says McConkey. "We power the entire services center with the cogen, and the excess goes to equipment in the treatment plant." Under normal conditions, the center is expected to use no utility power.

The cogeneration system was designed by Trane (Ingersoll Rand) and HDR in partnership with LOTT and PSE through an energy performance contract with the Washington State Department of General Administration. The engine/generator was selected because it is expected to produce the most usable energy per pound of carbon dioxide in comparison to other alternatives.

About 5 to 10 percent of the effluent from the Budd Inlet plant is converted to reclaimed water. The center uses it for non-potable water needs, such as flushing toilets, feeding a 25,000-gallon pond surrounding the center, irrigating the grounds, and supplying a water fountain.

The rest goes to process and wash water at the treatment plant, irrigation at nearby parks, and dust control at the Port of Olympia marine terminal. "Future projects, such as irrigating the State Capital campus and a golf course, may get us to a point of expanding our production of reclaimed water," adds McConkey.

WETLAND PONDS

LOTT's 2 mgd Martin Way Reclaimed Water Plant, a satellite plant with filtration membranes from Siemens Water Technologies, feeds five constructed wetland ponds. "The water goes into one of eight gravity infiltration basins and eventually makes its way back to the groundwater," says McConkey. That system was just honored with an international award from the WaterReuse Association.

Because of its focus on renewable energy, Trane presented its Energy Efficiency Leader Award for sustainable energy and operational efficiency improvements to LOTT in May 2010. "We just finished a lighting retrofit done in conjunction with PSE using high-

GOING PLATINUM

The \$13.5 million LOTT Regional Services Center was designed by The Miller Hull Partnership for LEED Platinum certification. It includes offices and meeting rooms in 25,000 square feet of new construction attached to a remodeled 7,600-square-foot building that houses an expanded and updated water-quality laboratory.

The center is home to the educational Water Education and Technology (WET) Center. "The WET Center has detailed, interactive exhibits about our wastewater treatment processes and about reclaimed water so we can help the public understand our role in the community," says Lisa Dennis-Perez, public communications manager. "We also want to encourage young people to consider careers in the wastewater field."

The building uses half the energy of a typical building, and 90 percent of the construction waste was diverted from landfills through recycling. Natural light and glass partitions reduce or eliminate the need for artificial lighting, which is controlled by sensors that turn off or dim high-efficiency light fixtures based on ambient light. External louvers control sunlight entering the building to reduce the need for air conditioning.

A reclaimed water pond surrounds the building, showcasing that resource. Nearly 17,000 square feet of timbers were salvaged and reused from a demolished warehouse for much of the woodwork. There are two green roofs with soil and vegetation to provide insulation and reduce stormwater runoff.

Casework used renewable woods like palmwood and bamboo architectural plywood. "The furniture, carpet, concrete and steel all have recycled content," says Dennis-Perez. The adhesives, sealants, and paints are low-emission products.

The design is coordinated with other projects planned in the area, including the new Hands On Children's Museum now under construction, also designed by Miller Hull, and the East Bay Public Plaza. The museum, which focuses on natural resources, forests, and water, will use heat from LOTT's cogeneration project.

efficiency fluorescent lighting," says McConkey.

An APG-Neuros aeration blower retrofit is underway. PSE will fund about half of the cost of the high-efficiency bump-foil air bearings blower, which is expected to save LOTT more than \$84,000 per year in utility costs and further reduce emissions.

There are other environmental awards in LOTT's collection, an indication of the organization's commitment to the environmental responsibility and renewable energy. **tpo**

more info:

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industry news

Accutech Wireless Doubles Manufacturing Capacity

Control Microsystems, a Schneider Electric company, has expanded the manufacturing capacity of its Accutech wireless instrumentation facility. The company has doubled the size of its workforce and manufacturing capacity to meet growing demand. The company's product line includes acoustic monitors, pressure, temperature and flow instruments for the wastewater industry.

MSA Acquires General Monitors

MSA has acquired General Monitors, developer of fixed systems for gas and flame detection. The acquisition enables MSA to strengthen its position in the global oil, gas and petrochemical markets by adding a brand of detection systems to complement its product line.

Konecranes Expands Machine Tool Business

Konecranes expanded its Machine Tool Service business with the acquisition of King Tool Co., Erlanger, Ky. King Tool had \$3.9 million in sales in 2009 and 15 employees. Company founder Bob King will remain with the company. Terms of the transaction were not disclosed.

Parkson Partners with Passavant-Intech

Parkson Corp. has partnered with German-based Passavant-Intech GmbH. The licensing agreement enables Parkson to introduce its HiOx flat-panel aeration system in Europe.

Wilden Pump Receives Pro-Flo X Patent

Wilden Pump has received Patent No. 7,811,067 for its Pro-Flo X air distribution system. Its efficiency management system optimizes the Pro-Flo X for actual operational parameters, regardless of application demands or pump size.

Ruhrpumpen Opens West Coast Manufacturing Facility

Ruhrpumpen opened a manufacturing facility in Orland, Calif. The plant will produce LS Barge pump, Axial flow and Propeller units for the municipal and industrial markets, including the maritime transportation of petroleum distillates. The new plant joins locations in Tulsa, Okla., Germany, Mexico, Egypt and Argentina.

Fluid Components Opens China Subsidiary

Fluid Components International opened a subsidiary in Beijing, China. FCI Measurement and Control Technology Co. Ltd. provides access to FCI engineering and technical support, repair and re-calibration services, field service personnel, site dispatching, spare parts and training.



Webinar Highlights Jetter Selection

US Jetting will sponsor a webinar on "Selecting a High-Pressure Jetting Unit for Maximum Use Applications and Profits" on Thursday, Feb. 3, from 4 to 5 p.m. Eastern time. *Cleaner* magazine will host the session.

Presenters from US Jetting are Ryan Peake, southeast regional sales manager, and Danielle Young, new unit and international sales coordinator. They will explain why purchasing a high-pressure jetting unit is a capital investment that must be researched thoroughly.

A profitable jetting unit needs to cover a wide range of pipe cleaning applications, and the wider the range, the greater the potential profits. The webinar will focus on selecting a unit with the pressure, water flow, water storage capacities and engine horsepower to fill the needs of any sewer cleaning operation. The seminar will last 45 to 50 minutes and will allow 10 minutes for the presenters to answer submitted written questions.

To register, visit www.tpomag.com/webinar. **tpo**



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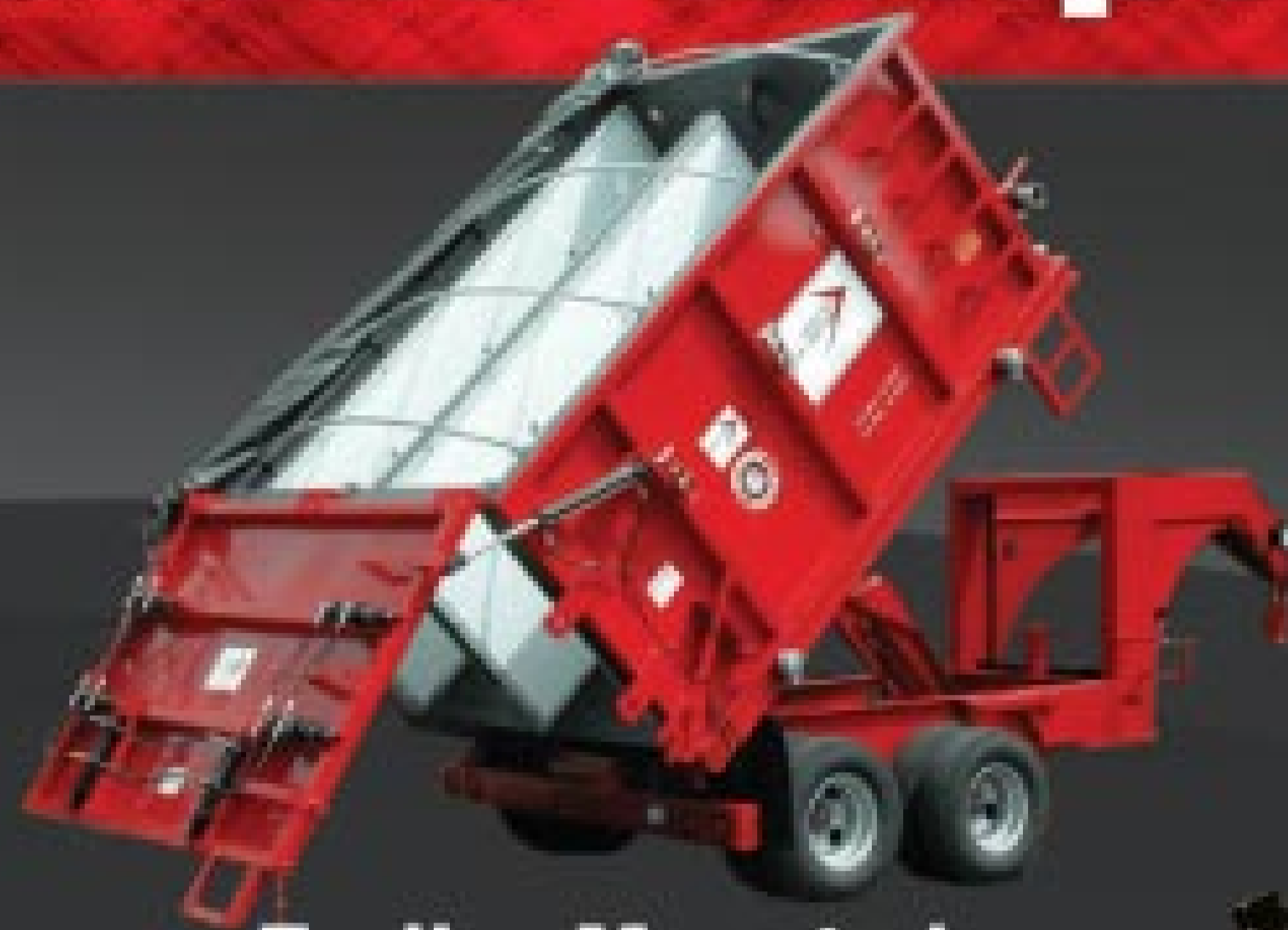
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BUSINESSES FOR SALE

New Jersey/Pennsylvania drain cleaning and pipe service business has all the elements for an ample start to a new foundation or an addition to your existing business. Established in 1994, well-rounded client base, customer contracts, and owner is willing to train. Modern equipment and inventory. Real estate optional. **Reasonably priced at \$425,000.**

Successful business with a large amount of equipment and inventory. Profitable sewer and septic business in central Pennsylvania. Increasing revenue over the past 3 years and a large amount of equipment and inventory. Equipment is a mix of old and new, but all is working and making money. **Selling price \$349,000.**

Dallas/Fort Worth Texas Area Sewer/Rehab Business For Sale. Drain Cleaning, TV inspection, Pipeline & Manhole Rehab/Relining, Municipal Cleaning and Maintenance business for sale. Excellent opportunity to expand or start your own business. Good revenue history and priced to sell. Includes all equipment to get started. **Asking \$150,000.**

Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business. Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicago-land area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. **\$4,900,000.** Huge potential, good profit and priced right. Non-Disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers.

New Jersey VIP Restroom/ Portable Toilet Business. Servicing Metro Philadelphia and Southwest New Jersey with VIP restroom trailers and portables. Many late model assets including 2 nice service trucks, 1 back-up service truck, pick-up truck, 4 VIP restroom trailers, nearly 300 restrooms, sinks, holding tanks, slide-in unit, 2 forklifts, and more. Assets worth over \$300,000 - priced to sell at **\$399,000.**

Established portable restroom and septic service business located in central Virginia. Excellent gross each of the past 3 years with no decline in revenue makes this business recession-proof. Steady work including many contracts and repeat customers. Extensive equipment inventory, good revenue, and owner willing to train. Great opportunity for expansion or a new career. **Asking price \$775,000.**

Well-Established and Profitable Texas Septic, Sewer & Installation Business For Sale. **Price reduced.** Grossing in excess of \$600,000 annually, customer list of nearly 2,000 accounts and 430 contracted customers. Includes nice late model equipment, most are 2007, 2008 model years. Owner retiring after nearly 40 years in business. Real estate available upon request. **Reduced to \$450,000.**

Amarillo, Texas sewer, drain & plumbing business established in 1976. Owner wants to retire, so take the keys to a 2004 Sprinter outfitted with all of the equipment you'll need to run this business. Price includes real estate with 80x100 shop/office on two city lots. Good gross, good profit, financials available with signed non-disclosure. **Offered at \$495,000.**

WANTED. Very serious and well qualified buyer looking for sewer, septic or industrial business in Dallas, Texas area. Must be grossing between \$500,000-\$1,000,000. All inquiries are kept confidential.

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Headworks and Biosolids

By Benjamin Wideman

REMOVES SMALL INORGANICS

The JDV Grit Classifier from JDV Equipment is a low-maintenance system with high-efficiency features to handle flows up to 800 gpm. It removes small inorganic items to avoid downtime and maintenance/repairs from premature failure of pumps and other equipment. The unit traps the materials and delivers them dewatered for proper disposal. An optional hydrocyclone increases capacity. **937/366-6556; www.jdvequipment.com.**



JDV Grit Classifier from JDV Equipment

IMPROVED BELT PRESS

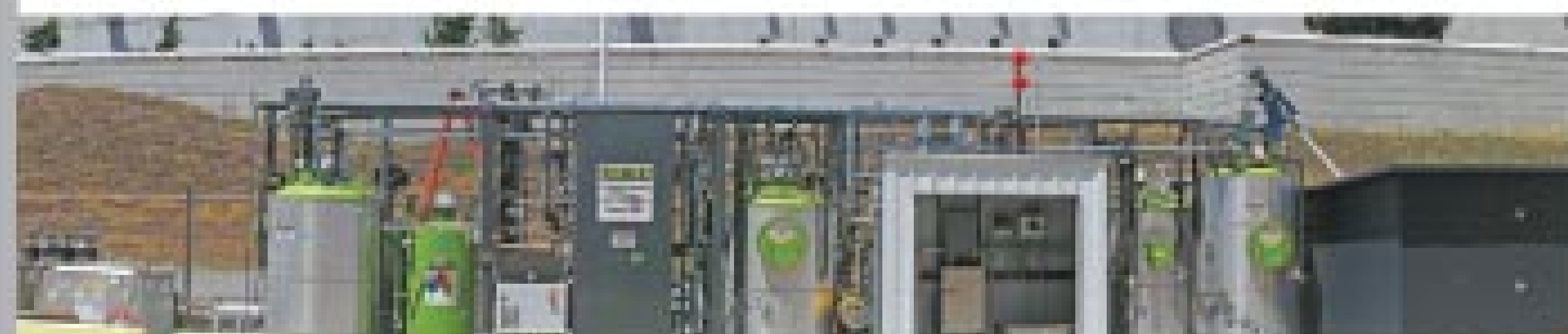
The Sentry three-belt press from Charter Machine Co. is engineered to handle high flows with thin feed concentrations while providing maximum cake dryness. The center pivot design improves belt alignment by adjusting both sides of the belt simultaneously, promoting even stretching over the entire belt length and providing consistent performance. The design also allows independent speed control. The low-gravity zone, high discharge, tubular steel frame, open design, and pneumatic operation all allow easy viewing, operation and maintenance. **732/494-5350; www.chartermachinecompany.com.**



Sentry three-belt press from Charter Machine Co.

CONVERTS FOG INTO BIODIESEL

The FOG-to-Fuel system from BlackGold Biofuels converts fats, oils and greases into biodiesel, transforming a liability into a renewable asset. The automated system is a compact, skid-mounted unit that integrates into a wastewater treatment plant footprint and can be operated by plant personnel. Incoming FOG-laden wastewater from grease traps, clarifiers, DAF tanks or vacuum trucks is separated into solids, water and dry FOG. The dry FOG is chemically converted into biofuel and purified, producing biodiesel, glycerin (a carbon source for denitrification) and biobunker fuel (a residual fuel oil). **215/253-5844; www.blackgoldbiofuels.com.**



FOG-to-Fuel system from BlackGold Biofuels

VARIETY OF FILTERS

Forsta Filters has released 13 new 90 Series filters, increasing capacity to include pipe sizes up to 10 inches and flow rates up to 2,400 gpm. The compact design offers an easy-to-install configuration and an automatic backwash cycle with minimal waste. Stainless steel construction provides durability for long life. **888/936-7782; www.forstafilters.com.**



90 Series filters from Forsta Filters

HIGH-VOLTAGE DISINTEGRATION SYSTEM



BioCrack disintegration system from Vogelsang

The BioCrack high-voltage disintegration system from Vogelsang has a two-part sludge conditioning process. The solids are mechanically reduced by a Vogelsang RotaCut inline macerator. A Vogelsang rotary lobe pump moves the macerated sludge into a piping array that contains a series of high-voltage, low-wattage electrodes.

The electric field created by the electrodes bursts the cells that compose the sludge. Bacteria then are better exposed to the nutrients and liquid within the cell structure. The results are more gas is created and more liquid is released, reducing the solids content at the end of the process. **800/984-9400; www.vogelsangusa.com.**

PACKAGED HEADWORKS PLANTS

Hi-Tech Environmental offers a complete line of packaged headworks plants. All major components are made of 304 stainless steel for long life. Each system is fully shop-assembled and test-run, then shipped partially assembled for quick and easy installation. Standard features include screening, grit collection, screenings washing, shaftless flighting, segmented replaceable screen brushes, and weather protection. Units are provided in a self-contained stainless steel tank with flanged inlet and outlet. **800/264-7005; www.hi-techenv.com.**



Packaged headworks plants from Hi-Tech Environmental



EcoMask from Aerator Solutions

CONTAINING MIST AND SPRAY

The EcoMask from Aerator Solutions is a fiberglass cover used to control and contain mist and spray from the pumping action of aerators. The hooded dome controls water discharge and directs the water back into the bulk liquid, minimizing mist and retaining heat.

The device is used for applications that require continuous aeration during cold weather but may be limited by an inadequate heat sink due to process selection or environmental conditions. It also controls odors where the wind may carry the mist and smell to surrounding areas. The dome is mounted to the diffusion head of EcoJet aerators and can be purchased with the original order or as a retrofit. **815/623-5111; www.aeratorsolutions.com.**



Grit Classifier from Schreiber

GRIT SLURRY TREATMENT

The Grit Classifier from Schreiber washes and dewateres grit slurry from grit removal systems, enabling easy handling and transferring of grit for disposal. It is effective over a wide range of grit particle sizes. The slurry is transferred to the grit classifier, where the inlet flow is directed downward.

The grit settles into the bottom of the hopper. A shaftless screw rotates, lifting the grit from the bottom of the hopper up the trough, further washing and dewatering the grit.

The decanted water flows over a weir and returns to the waste stream, and the dewatered grit is discharged into a container. The system is fully enclosed and is made of 304 stainless steel for long life and corrosion protection. A hardened steel shaftless screw provides durability and requires no submerged bearing. The device is available in 12-inch diameter for flows up to 150 gpm, and 20-inch diameter for flows up to 300 gpm. **205/655-7466; www.schreiberwater.com.**



Pre-Membrane Rotomesh Screen from Parkson Corp.

THOROUGH SCREENING

The Pre-Membrane Rotomesh Screen from Parkson Corp. does not allow stringy material or other types of solids to line up with screen openings and pass through. The system is available with 1-mm and 2-mm perforated plates and up to 6,500 gpm flow capacity. **888/727-5766; www.parkson.com.**

FILTER PRESS ENHANCEMENT

The Performance Optimization Rebuild Program from Ashbrook Simon-Hartley is designed to enhance filter press capabilities, increasing the dry solids content or to reduce operation and maintenance costs. The company provides the program for any make or model of belt filter press. The program uses only Ashbrook-certified parts, and a new equipment warranty is offered on complete rebuilds. **800/362-9041; www.as-h.com.**

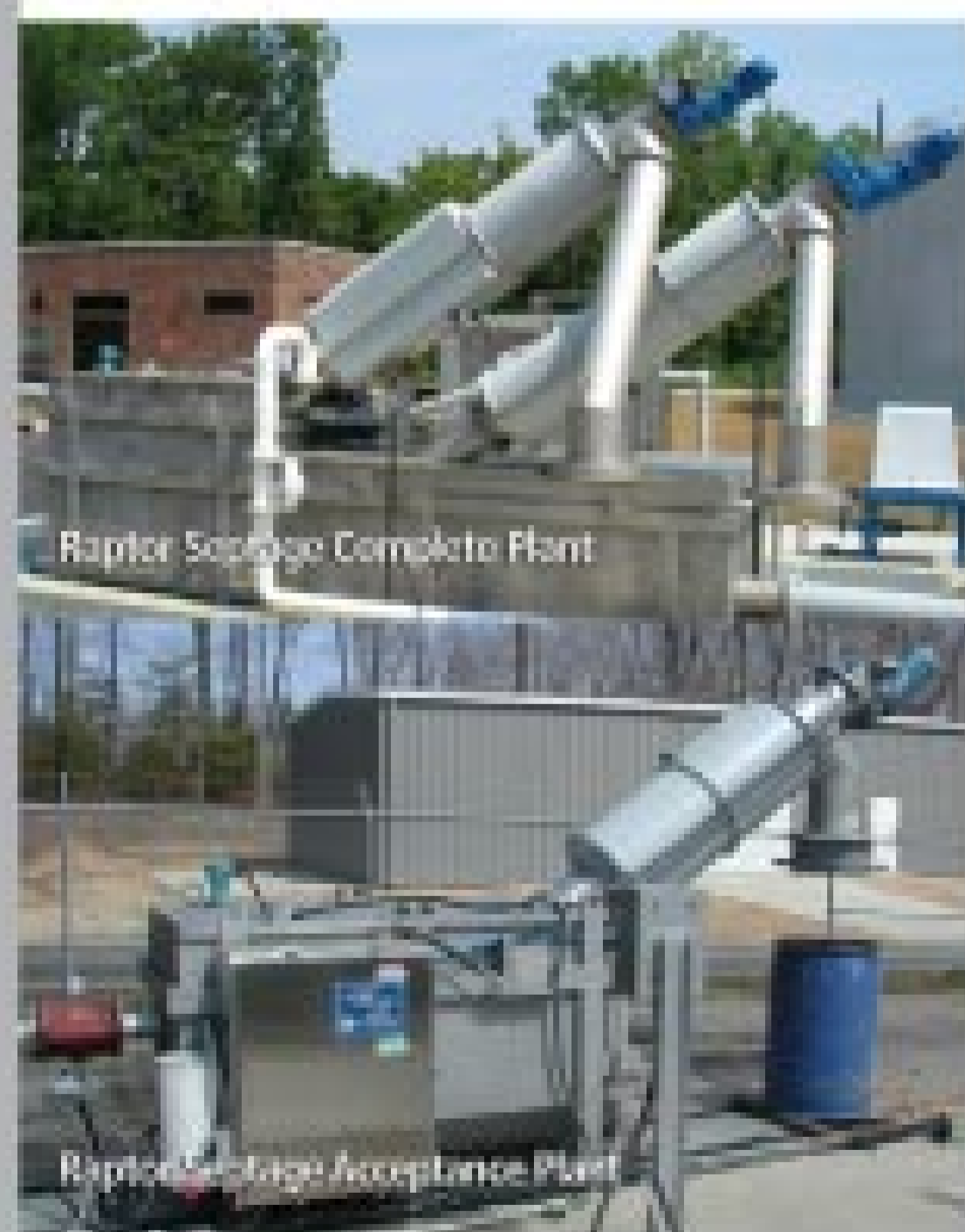


Performance Optimization Rebuild Program from Ashbrook Simon-Hartley

SEPTAGE PLANT

The Raptor Septage Acceptance Plant and Raptor Septage Complete Plant from Lakeside Equipment Corp. remove debris and inorganic solids from sludges. The heavy-duty machines incorporate the Raptor fine screen for screening, dewatering and compaction. Accessories include grit and rock removal, security access, and automated accounting systems. With the addition of aerated grit removal, the Septage Acceptance Plant is offered as the Raptor

Septage Complete Plant (a slight variation of the Raptor Complete Plant). **630/837-5640; www.lakeside-equipment.com.**



Raptor Septage Acceptance Plant and Complete Plant from Lakeside Equipment Corp.



CleanFlo Monoscreen from WesTech Engineering

SELF-CLEANING FINE SCREEN

Using a reliable blade and drive system, the CleanFlo Monoscreen from WesTech Engineering is a self-cleaning fine screen that creates a progressive step motion, allowing screenings to be evenly distributed while minimizing water level surges. The result is a screening capture ratio of 82.5 percent. When matched with the company's CleanWash SWP/CPS dewatering unit, the system maximizes the solids capture rate for almost any headworks operation

while minimizing the amount of solids for disposal. **801/265-1000; www.westech-inc.com.**

MOBILE PACKAGED PLANT

Mobile packaged plant containers from WSI International can be made stationary, as well. Sizes range from 5,000 to 50,000 gpd. The product includes an EQ tank, anoxic and aerobic bio-chip reactors, DAF unit, control unit, aerobic digester, WSI's fiber ball filter or ultrafiltration membranes, and chemical station. Secondary treatment effluent meets discharge limits of 10/10/10 mg/L (BOD5/TSS/TN). As an option, an onsite sludge dewatering box can be provided to dewater onsite to meet U.S. EPA Class B sludge guidelines. **303/985-0885; www.wsi-llc.com.**



Mobile packaged plant containers from WSI International



OdoWatch 3.0 system from Kruger

REAL-TIME ODOR MONITORING

The OdoWatch 3.0 system from Kruger is an enhancement to the OdoWatch real-time odor monitoring system that helps wastewater treatment plants prevent odors before they become a problem. Benefits include AERMOD modeling that follows the odor plume over terrain, allowing plants to track odors more efficiently.

The odor plume shows the separate odor contribution from each monitored source, enabling diagnosis and quick action on odor problems. The system saves time and money on odor management and capital planning. It also allows for addition of the OdoSulf monitoring, which enables separate monitoring of hydrogen sulfide emissions. **919/677-8310; www.kruger-usa.com.**

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The Rotary Press from Fournier Industries dewateres biosolids using filtering elements that can run constantly in the absence of wash water, with a feed system that automatically compensates for changes in influent feed solids. Little or no operator supervision is needed. The machines are expandable from one to six modular dewatering units (channels) driven by a single, robust gear unit. They can be sized for today's flows and expanded as the need increases. **418/423-4241; www.rotary-press.com. tpu**



Rotary Press from Fournier Industries

DEWATERING

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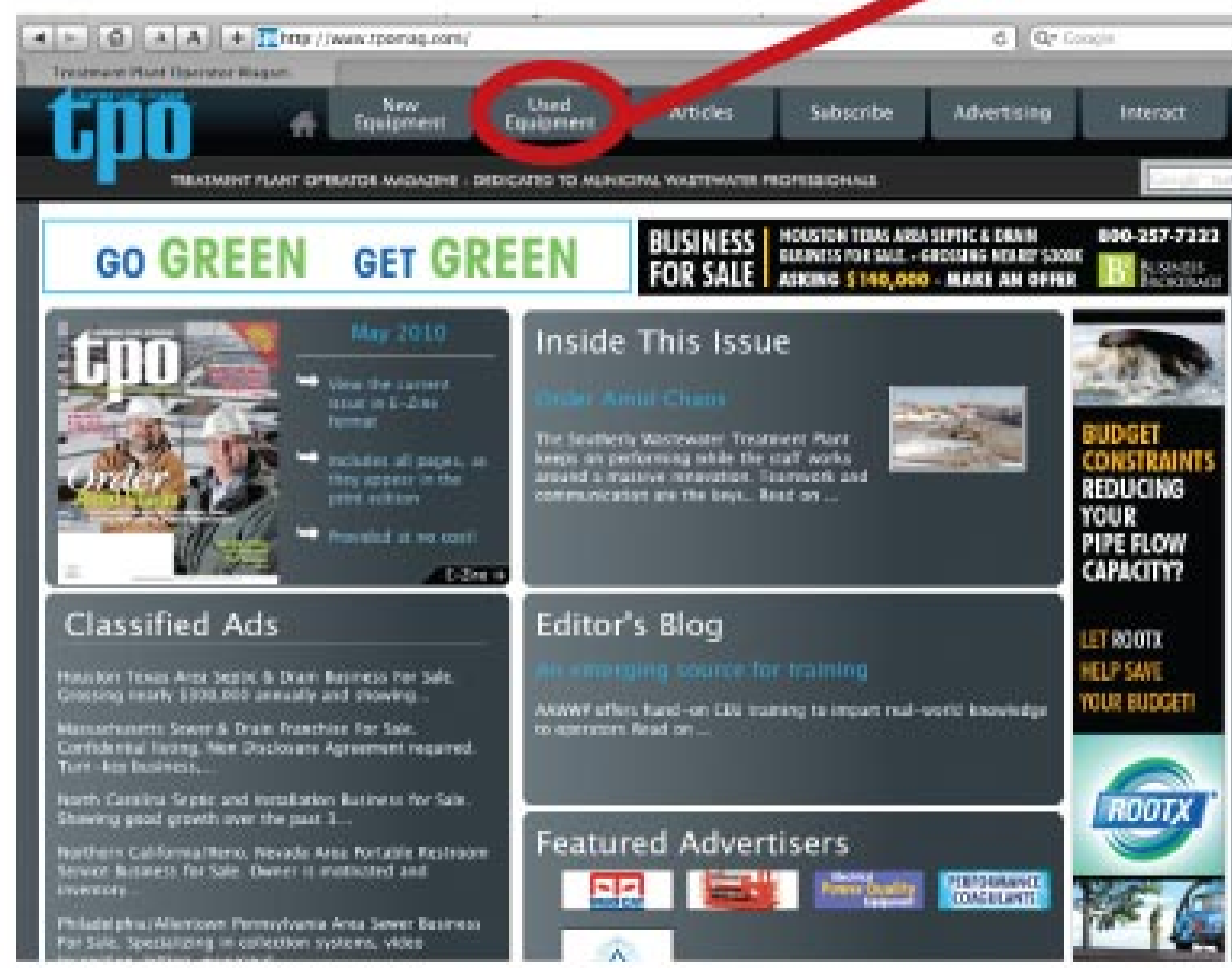
The Twin Lakes Regional Sewer District is accepting applications for the position of Operations Supervisor. The position is responsible for the operation and maintenance of the collection and treatment facilities and provides day-to-day supervision of the facility operation personnel. Position is subject to project work, emergency call out, and call-back procedures. This position requires a Class III Indiana Municipal Wastewater Treatment Plant Operation Certification and a valid Indiana Drivers License. Applications are available at the Twin Lakes Regional Sewer District Office, 921 W. Executive Court, Monticello, IN 47960 or at www.twinlakesrsd.com. (o2)

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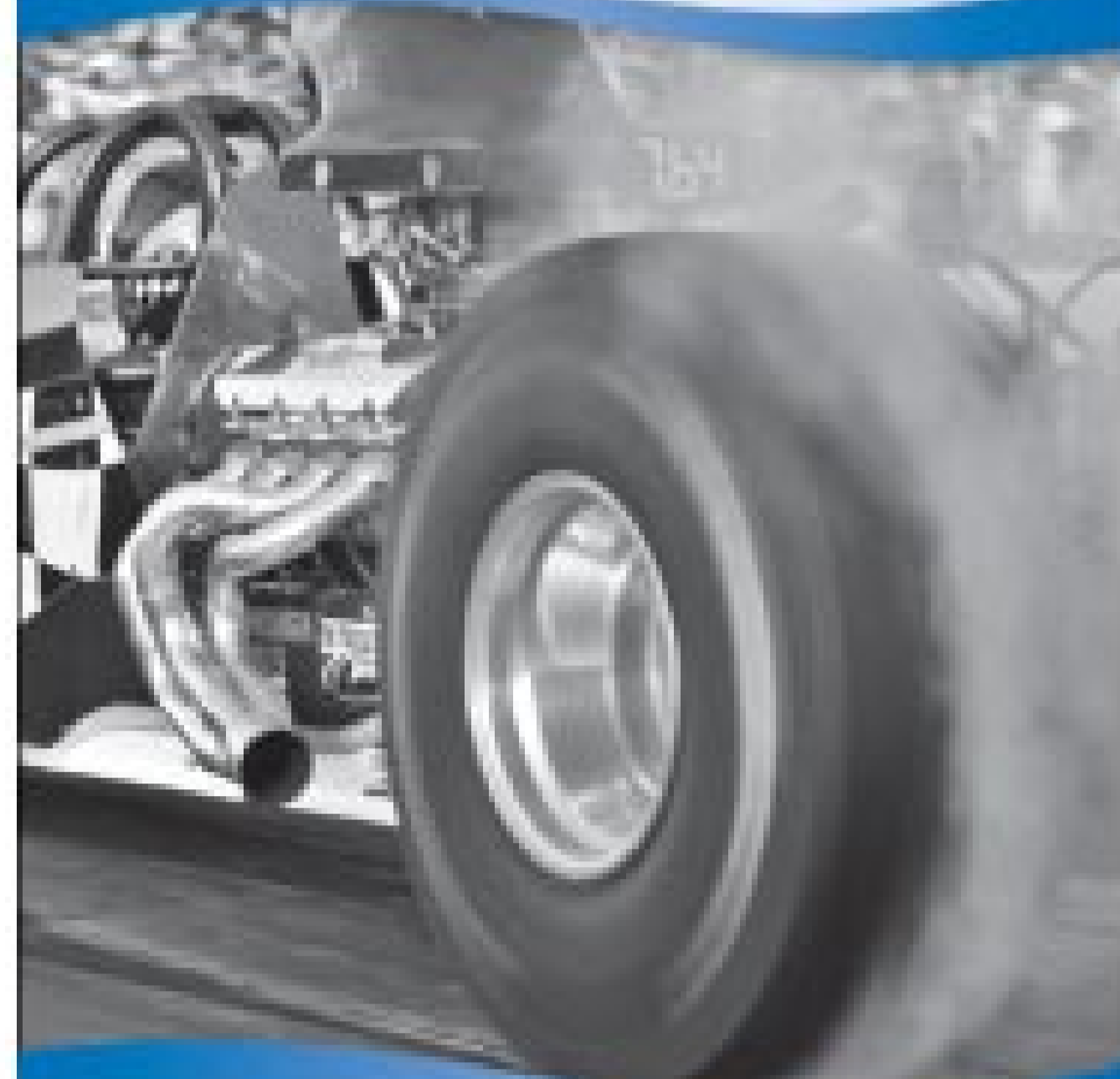
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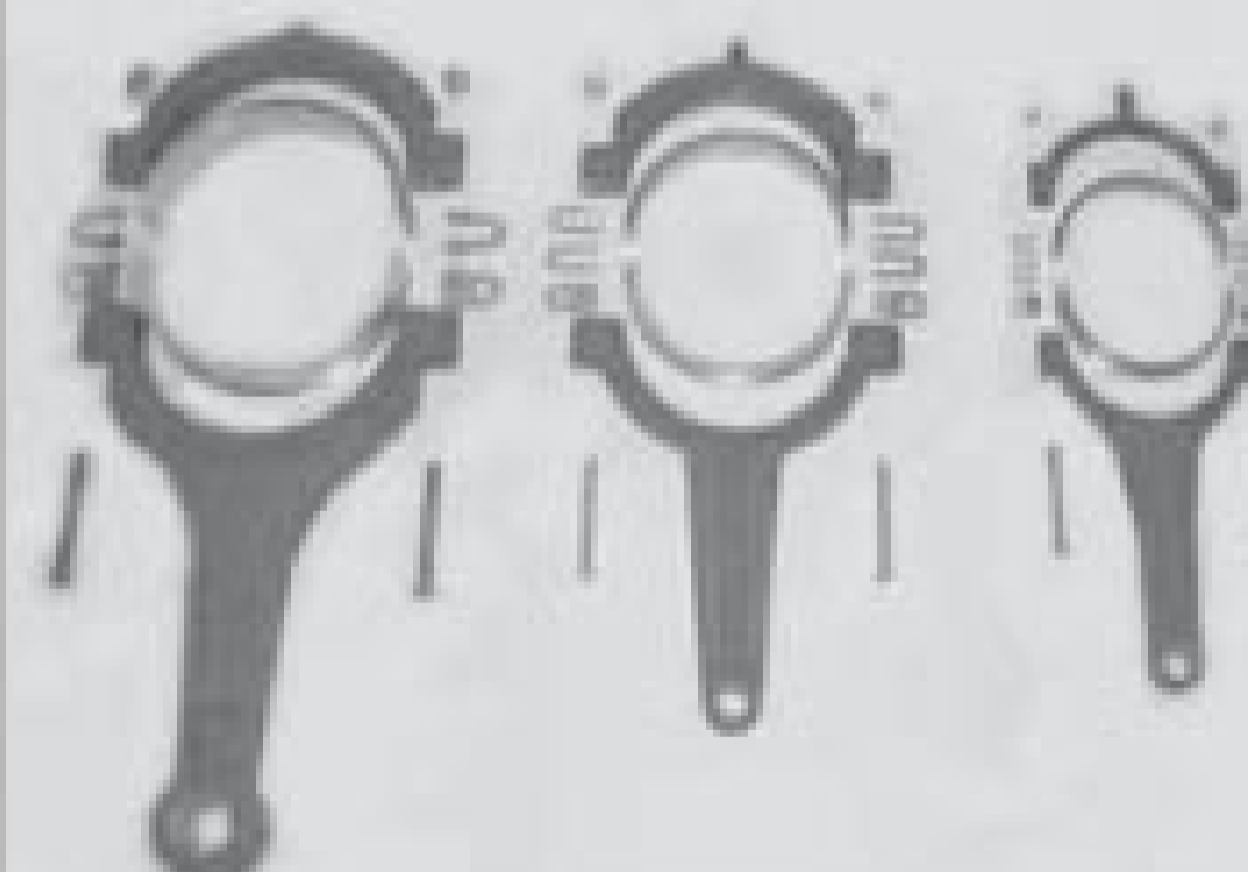
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people/awards

The **Design-Build Institute of America** awarded the 2010 Water/Wastewater Over \$25 Million Design-Build Merit Award to PCL Construction as the contracting firm, Stantec Engineering as the engineering firm and Rosendin Electric as the specialty contractor for the Nogales International Wastewater Treatment Plant in Rio Rico, Ariz.

The **Sanford Sewerage District wastewater treatment facility** received a Certificate of Achievement from the Maine Department of Environmental Protection.

Glen Petersen of Iowa Great Lakes Sanitary District received the Harris F. Seidel Education Award from the Iowa Water Environment Association.

Teams from Virginia won the titles in Division 1 and Division 2 at the annual Water Environment Federation Operations Challenge, held during WEFTEC 2010 in New Orleans in October.



Division 1 winners were Terminal Velocity from the **Virginia Water Environment Association**. Above, from left, are Operations Challenge committee chair Jeff Pratt, team member Donnie Cagle, coach Elijah Smith, WEF president Jeanette Brown, team members Steve Motley, Paul Cubilla and Jason Truitt, and coach Bobby Williams.

Second place in Division 1 went to the **California Water Environment Association** L.A. Wrecking Crew (Jesus Garibay Jr., Tom Jauregui, Paul Johnson, Jeff Valdes, and coach Steve Johnson).

Third place went to the **New England Water Environment Association** Seacoast Sewer Snakes (Paul Fritz, Sean Greig, John Sykora, Timothy Vadney, and coach Paula Anania).



The Division 2 championship went to Team HRSD from **Hampton Roads (Va.) Sanitation District**. Above, from left, are WEF vice president Cordell Samuels, team members Tim Scott, Laura Shields and Chuck McMahon, WEF president Jeanette Brown, team member Eric Washbon, and coach Wesley Warren.

Second place in Division 2 went to the **Water Environment Association of Texas** Dillo XXPress (Ash Bledsoe, Richard Hamilton, Nathan Haywood, Daniel Smith, and coach Ellery Studivant).

TPO invites your national, state or local association to post notices and news items in this column. Send contributions to editor@tpomag.com.

Third place went to the **Water Environment Association of South Carolina** Liquid Force (Allan Clum, Greg Hill, Thomas Kohler, Troy Newton, and coach David Niesse).

TPO welcomes your contribution to this listing. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements to editor@tpomag.com.

education

Michigan

The Michigan Water Environment Association has a Lagoon Seminar on Feb. 24 in Saginaw. Visit www.mi-wea.org.

New York

The New York Water Environment Association has these courses:

- March 3 – Nitrogen Removal, Brewerton
- March 16 – Nitrogen Removal, Bergen Point
- March 17 – Anaerobic Digestion, Bergen Point
- March 21-24 – Troubleshooting O&M, Old Forge

Visit www.nywea.org.

Ohio

The Ohio Water Environment Association has a Government Affairs Workshop on March 10 in Lewis Center. Visit www.ohiowea.org.

South Carolina

The Water Environment Association of South Carolina has a Customer Service Workshop Feb. 9-10 in Lexington. Visit www.weasc.org.

Texas

The Texas Water Utilities Association has its 93rd Annual School Feb. 28-March 2 in Corpus Christi. Visit www.twua.org.

Wisconsin

The Wisconsin Department of Natural Resources has these courses:

- Feb. 1-3 – Phosphorus Removal, Introduction and Advanced, Oconomowoc
 - Feb. 14-18 – General Wastewater Treatment, Introduction and Advanced, Green Bay
 - Feb. 17 – Security and Emergency Planning for Utilities, Chippewa Falls
 - Feb. 22-23 – Anaerobic Digestion, Introduction, Appleton
 - Feb. 24 – Anaerobic Digestion, Advanced, Appleton
 - Feb. 28-March 4 – General Wastewater Treatment, Introduction and Advanced, Chippewa Falls
 - March 15-17 – Lab, Intro, Fond du Lac
 - March 21-25 – General Wastewater Treatment, Introduction and Advanced, Madison
 - March 28-29 – Activated Sludge, Introduction, Oconomowoc
 - March 30-31 – Activated Sludge, Advanced, Oconomowoc
- Visit www.dnr.state.wi.us/org/es/science/opcert/training.htm.

The University of Wisconsin Department of Engineering-Professional Development is offering the following courses:

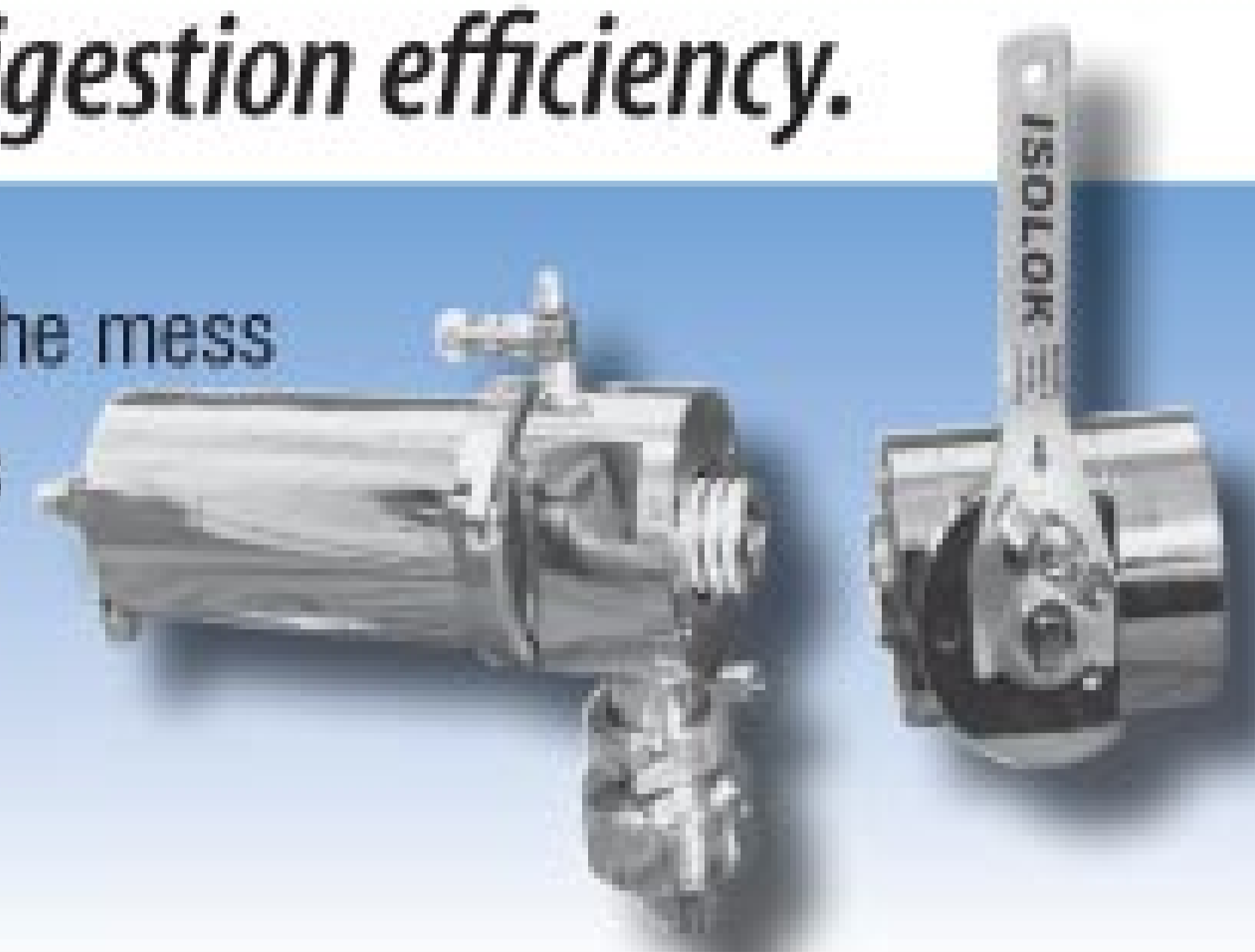
- March 21-22 – Upgrading Your Sanitary Sewer Maintenance Program, Madison
 - March 23-25 – Wastewater Pumping Systems and Lift Stations, Madison
- Visit www.epdweb.engr.wisc.edu. **tpo**



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CALENDAR OF EVENTS

Feb. 6-9

New York Water Environment Association Annual Meeting and Exhibition, New York Marriott Marquis, New York City. Visit www.nywea.org.

Feb. 8-11

Utility Management Conference 2011, Downtown Denver, Denver, Colo. Visit www.wef.org.

March 2-5

Pumper & Cleaner Environmental Expo International, Kentucky Exposition Center, Louisville, Ky. Call 800/257-7222 or visit www.pumpershow.com.

March 15-16

Georgia Association of Water Professionals 2011 Industrial Confer-

ence and Expo, Callaway Gardens Convention Center, Pine Mountain. Visit www.gawp.org.

March 21-24

WaterCon 2011 Conference and Expo, Crowne Plaza Hotel and Conference Center, Springfield, Ill. Visit www.iweasite.org.

March 27-30

Missouri Water Environment Association/AWWA Joint Annual Conference, Osage Beach. Visit www.mwea.org.

March 27-April 1

Kentucky Water and Wastewater Operators Association 2011 Conference, Galt House Hotel and Suites, Louisville. Visit www.kwwoa.org.

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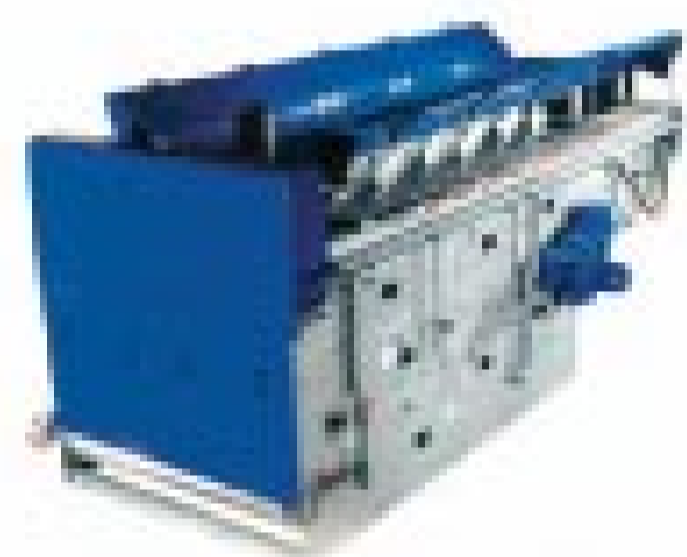
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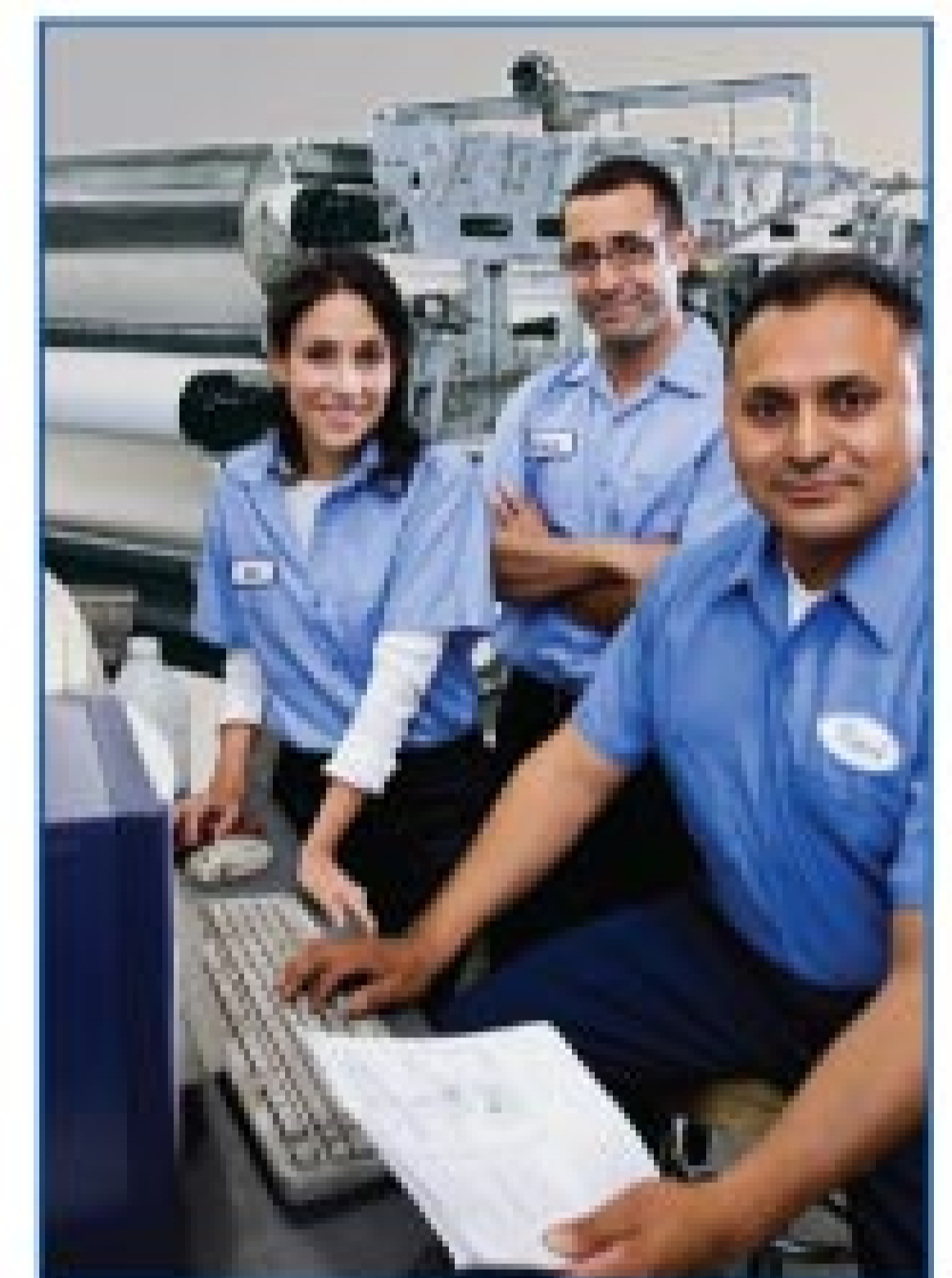
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