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JUNE 2011

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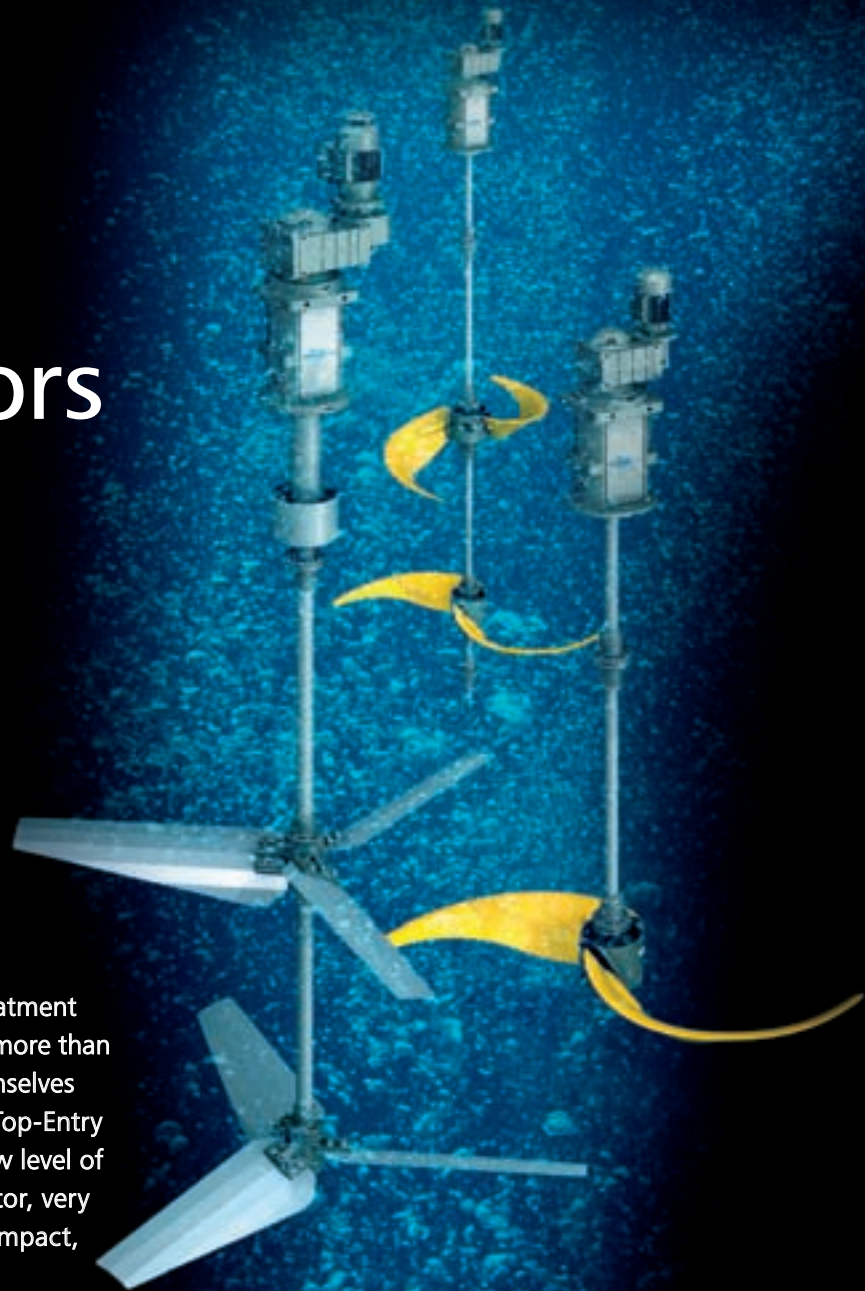
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WASTEWATER PROFESSIONALS

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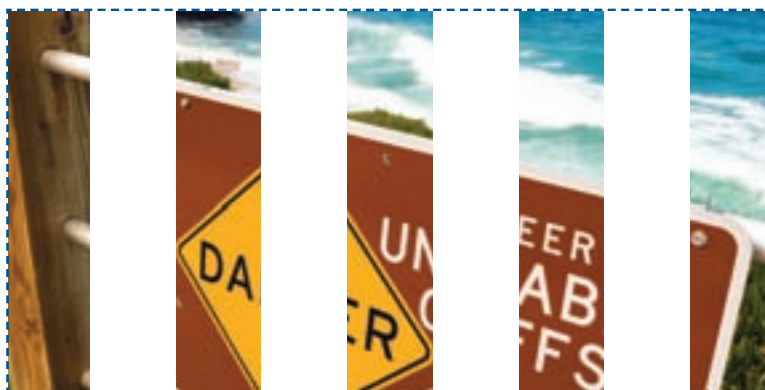


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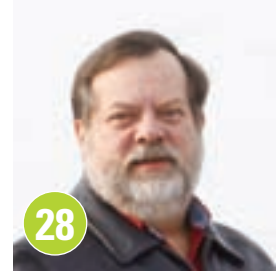
Today's closed-vessel UV disinfection systems include features that can deliver benefits in installation, operations and performance.

By Jon McClean and Patrick Bollman, P.E.

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As a teenager, Shane McCannon thought the clean-water profession might make a good career. Now he's in charge of the 20 mgd Mattabassett District Water Pollution Control Plant in Cromwell, Conn., and has just been named Young Professional of the Year by the New England Water Environment Association. (Photography by John Giammatteo)

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let's be clear

The Worst Perceptions Confirmed

DO PEOPLE JUDGE YOUR FACILITY WITH THEIR NOSES? IF SO, THEN EVERY DAY, THE AIR WAVING OVER YOUR FACILITY COULD BE UNDERMINING YOUR EFFORTS AT EDUCATION.

By Ted J. Rulseh, Editor

I live in a beautiful Wisconsin city on Lake Michigan. A few summers ago I attended an annual lakefront/riverfront art festival with artisan booths, performance tents, food stands and kids' rides and games.



It was a gorgeous day in July, the lake water so blue you might have sworn the Chamber of Commerce dumped in a barrel of dye just to make it look perfect for the occasion. But what I noticed most of all was the smell. The breeze coming from the south carried an odor from the wastewater treatment plant up and across the river. I cut my visit to the festival short because of it.

Now, given my background in the clean-water business and the job I now do, I am probably less sensitive to and less offended by smells from treatment plants than most people. I have never worked in a treatment plant, but I have toured a goodly number, and I know what to expect.

One thing I don't expect is for a treatment plant to smell like cherry blossom time in Door County. And yet on that festival day, the odor repelled me. I wondered: What impression is this leaving on city residents and people visiting from other towns? Do they know where the odor is coming from? Is the treatment plant staff aware of it?

MAKING A STATEMENT?

I wasn't about to criticize the treatment plant team or the city, because for all I knew they were doing everything they could, and that day's problem was a rarity. Odor problems can be tricky (as Robert Bowker, this issue's "In My Words" interviewee, will attest), and solving them takes money treatment agencies may or may not have on hand.

The fact remains that an odor, whether it's there all the time or only rarely when the wind is wrong, hurts public perceptions of a treatment plant and of the industry. We want the public to focus on what comes out of the plant. Odor speaks to them about what goes in. So the perception remains of a nasty place run by miserable people in dirty jeans.

I don't read much in the paper or on the Internet, or hear much on radio, or see much on TV, about treatment plant odors, and that's a sign the plants in general are doing a good job of odor control, or that what odors there are don't bother people very much.

If people aren't complaining, or if complaints are few and far between, then presumably there's no problem. Many treatment plants are built in somewhat remote areas, not really near the city proper, and so odors have ample time to dissipate before they reach sensitive noses.

If people aren't complaining, or if complaints are few and far between, then presumably there's no problem. But even if complaints aren't rampant, even if odors exist that most people just accept as part of life, are they insidiously doing harm?

HAVE A LOOK AROUND

But even if complaints aren't rampant, even if odors exist that most people just accept as part of life, are they insidiously doing harm? Are they consistently, day by day, reinforcing negative impressions people hold about plants and operators?

That's hard to say, and far be it from me to tell treatment plant teams where to place their priorities and where to spend budgets that are always limited. Yet I've seen examples since I began editing this magazine of plants that have mitigated odor issues with surprisingly simple modifications at extremely low cost.

So while I don't suggest bringing in an odor expert where a plant and its community are co-existing just fine, I do consider it perhaps worthwhile to keep odor issues on the radar — at least to the point of knowing what the largest sources are.

If a quick, simple, inexpensive remedy can mitigate an issue that's silently undermining the impression you want to convey to your publics, maybe it's worth taking action now instead of later. **tpo**

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Early Start

AN IDAHO TREATMENT PLANT'S LAB MANAGER
REACHES OUT TO THIRD-GRADERS TO HELP PROTECT
WATER QUALITY OF THE SNAKE RIVER

By Pete Litterski

With Idaho's Snake River running through her community, Jacque Nation has a keen interest in protecting the resource. As a former teacher and now laboratory manager at the City of Blackfoot Wastewater Treatment Plant, the time she spends sharing her mission with elementary school students should come as no surprise.

The Snake River is an important resource for an arid region that pins much of its economy on potato-growing and outdoor recreation. Nation, who was named the Pacific Northwest Clean Water Association's 2010 Idaho Laboratory Operator of the Year, says there are many reasons she wants to teach young students about water quality.

"The river is very vital to this area," she says. "We use it for irrigation, we use it for recreation. We live pretty high up in the watershed, so it's quite pristine, and we have an obligation to keep it clean for everybody."

"As I learned more and more about wastewater treatment, I began wondering, wow, why wasn't I teaching this to my seventh- and eighth-graders?"

JACQUE NATION



Jacque Nation and
Blackfoot pretreatment
coordinator Alex Dawson.

PHOTO BY MIKE MERLETTE



PHOTO BY ALEX DAWSON

Blackfoot lab manager Jacque Nation offers a River Rangers program that teaches third-graders in the Blackfoot School District things they need to know to help protect local water resources.

Nation offers a River Rangers program that teaches third-graders in the Blackfoot School District things they need to know to help protect local water resources.

SHARING KNOWLEDGE

Before moving to Blackfoot, Nation taught junior high science. When she and her family arrived in the city, in southeast Idaho, there were no teaching jobs open, so she applied for a job as a lab technician at the treatment plant. Even with her college degree and teaching credentials, the training for her new job was eye-opening.

"As I learned more and more about wastewater treatment, I began wondering, wow, why wasn't I teaching this to my seventh- and eighth-graders?" she recalls. As her knowledge of treatment grew, she began seeking ways to share it with students. She discovered the River Rangers program offered by Clean Water Services (CWS), a regional utility in Hillsboro, Ore.

The program, introduced in Blackfoot in 1991, focuses on "sewer and storm drain" citizenship. CWS developed it to encourage young people to protect the Tualatin River Watershed. The program includes classroom presentations and a colorful booklet focusing on sub-

What's Your Story?

TPO welcomes news about your public education and community outreach efforts for future articles in the Hearts and Minds column. Send your ideas to editor@tpo.com or call 877/953-3301.

(continued)

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stances that could hurt the treatment plant or harm septic systems and cause groundwater pollution.

Nation says the value of the program has risen as school budgets have become constricted. “Field trips are often the first casualty of education budget cuts, but River Rangers allow us to take our field trip to the classroom,” she says. “Our city population is 10,000 with five elementary schools that enroll students whose homes are connected to our sewer system. With two to three hours per school per year, the time requirements are minimal, and we reach nearly every family that has a third-grader at some point.”

A GOOD FIT

Nation says third-graders are a good target audience. First, teachers like the program because it fits nicely into social studies lessons (the Blackfoot schools focus on local services in the third grade). Second, 8-year-olds are just beginning to form habits, and it's easier for kids to learn good habits from the start than to break bad habits later.

“When we talk about the sanitary system, we talk about not putting anything down the drain that would be toxic to our activated sludge system or to the river if it passed through our system,” Nation says.

Finally, 8-year-olds are at a developmental stage where they are focused on learning and following rules. She says the children, act as “little enforcers,” go home and teach the rules to their families.

River Rangers send children home with assignments that require parental participation. The booklet includes a set of stickers the kids can attach to household substances that should not be dumped down the drain or on the ground, like pesticides and paint. When the parents sign a card to confirm the assignment is done, their child gets a refrigerator magnet identifying him or her as a River Ranger.

Nation sees a lasting impact from her program as teachers get more involved. Many teachers move to the back of the classroom to work on lesson

plans while she makes her presentation. “But ten minutes in, they’ll be looking up, and pretty soon they’ll be fully engaged,” Nation says. She believes teachers will continue to teach about water quality if she can get them interested in her presentation.

REACHING FARTHER

Nation recounts a time when she and some volunteers were stenciling storm drains outside an elementary school and a third-grade teacher noticed them. The teacher had been so impressed with River Rangers that she brought her entire class outside to see the stenciling and discuss the importance of protecting water quality.

Although Nation’s focus has been on third-graders, her reach has gone farther. She presents the booklet and an explanatory letter to new members of the Blackfoot City Council after each election.

The only hiatus in Blackfoot’s River Rangers program came several years ago when Nation took a job with another wastewater utility. But the program picked up right where it left off when she returned in 2008. Since then, Nation has taken pretreatment coordinator Alex Dawson under her wing, and she is developing a staged presentation that involves both of them working with the students.

Nation has the support of her managers at the treatment plant, including William Bottles, former plant superintendent, who started and supported River Rangers 20 years ago, and current superintendent Mike Merlette.

Nation coordinates all public tours at the treatment plant. In addition, the local Wal-Mart store has invited her to take part in its Earth Day activities. She uses that opportunity to share information about River Rangers and storm drain stenciling.

She welcomes invitations to share her interests in water quality: “It’s enabled us to reach even the people who would probably never attend an environmental fair.” **tpo**

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Laboratory technician Hilton Texidor uses a pipette while preparing standards for calibration of the lab instrument used for measuring ammonia concentrations in composite samples. (Photography by Joe Martinez)

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A QUALITY TREATMENT PLANT, EXCELLENT STAFF,
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A RECIPE FOR CLEAN WATER IN CLAYTON COUNTY, GA.

By Jim Force



THINK OF THE CLAYTON COUNTY (GA.) WATER Authority as a huge irrigation system. Now think of its William B. Casey Water Reclamation Facility as the watering can.

One hundred percent of Casey plant effluent is reused, most of it to replenish the Pates Creek watershed through an indirect potable reuse system consisting of more than 4,000 acres of constructed wetlands. The rest is put to work at the plant itself, irrigating the odor control biofilters, washing down belt filter presses, and mixing polymers.

"We're big proponents of reuse, and we have been for years," says Jim Poff, water reclamation department manager. "We opened the nation's largest municipal land application system in the 1970s, and in 1990 we received an EPA award for best operated and maintained land application facility in the nation.

"For several reasons, we converted to constructed wetlands in 2004. Since then, we've actively participated with other agencies on natural system research projects, studying such things as the fate of trace organics from personal care products."

A UNIQUE SITUATION

Located in the Upper Piedmont Region of Georgia, Clayton County has no large rivers or natural impoundments to supply drinking water for its 270,000 residents. The area is underlain by dense bedrock that holds very little water. Groundwater quality and quantity vary widely.

The situation is challenging, but the county has viewed it as an opportunity to take the lead in water reclamation. "Our original land application system was one of the largest in the U.S., containing more than 300 miles of distribution pipes, 250 valves, 20,000 sprinkler heads and a pump station," says Poff. "It was located on property owned by the authority."

The system was effective, but it was labor-intensive and consumed a lot of energy. It also required 100 acres per million gallons of applied water, so its capacity was severely limited.

"We can feed ferric sulfate in the secondary clarifiers to achieve phosphorus removal, but instead we rely on luxury uptake to remove phosphorus biologically. Ideally, our goal is to reduce the use of chemicals."

CHRIS HAMILTON

The Walker Process clarifier at the W.B. Casey Water Reclamation Facility.



Plant supervisor Chris Hamilton.

"After an exhaustive search, and with assistance from CH2M HILL, our engineering firm, we decided on a much less consumptive constructed wetlands approach," Poff says. "Wetlands continued our practice of using natural treatment systems. They also afforded more efficient recharge, lowered main-

profile

W.B. Casey Water Reclamation Facility, Clayton County (Ga.) Water Authority



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William B. Casey Water Reclamation Facility Permit and Performance

	PLANT EFFLUENT (annual values)	PERMIT (monthly average)	WETLANDS EFFLUENT (annual values)	PERMIT (monthly average)
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TSS	5 mg/l	15 mg/l	3 mg/l	15 mg/l
P	0.34 mg/l	Report	0.24 mg/l	0.6* mg/l
Ammonia	0.14 mg/l	Report	0.08 mg/l	1.4 mg/l

*Annual average

tenance and operations costs, and increased treatment capacity without having to purchase additional land.”

The new wetland system requires only 15 acres per million gallons of applied water, so it easily accommodates flow increases to the current level of 15 mgd. The system aligns perfectly with state mandates to maximize water return, and it represents a sustainable water source in all types of weather. A marshland and bird sanctuary offer additional benefits to the community.

WHAT’S UPSTREAM

While the constructed wetlands are an effective polishing step, what really counts is at the treatment plant. Chris Hamilton, plant supervisor, outlines the treatment sequence at the Casey facility.

“We’re an advanced secondary plant, with the ability to choose between two operational modes: the Modified Ludzak Ettinger (MLE) activated sludge process or the A2/O (nutrient removal) process,” Hamilton says. MLE systems incorporate an anoxic zone ahead of the aerobic zone. A recycle loop returns nitrified flow to the anoxic zone to facilitate denitrification.

The A2/O process incorporates an anaerobic zone ahead of the anoxic zone to promote the release of phosphorus. Subsequently, the luxury uptake

“Constructed wetlands have proven to be an excellent treatment barrier for any water utility. We’re very proud of our accomplishments.”

JIM POFF



Plant operator Johnny Simmons assesses the health of the microorganisms in the activated sludge process.

of phosphorus is achieved in the oxic phase. Turblex blowers power the aeration processes.

Ahead of the biological process, the Casey plant employs preliminary treatment using a pair of Parkson fine screens and a Smith & Loveless grit removal unit, followed by primary clarification in three Envirex Polychem clarifiers (Siemens). After biological treatment, wastewater is clarified in three 160-foot-diameter Walker Process circular basins. Sodium hypochlorite provides disinfection.

“We can feed ferric sulfate in the secondary clarifiers to achieve phosphorus removal, but instead we rely on luxury uptake to remove phosphorus biologically,” Hamilton says. “Ideally, our goal is to reduce the use of chemicals.” The plant is also equipped to add sodium hydroxide for alkalinity and pH control if necessary, but the plant’s ability to regain some alkalinity in the denitrification zone minimizes the need for that chemical.

The Casey plant recycles its biosolids, as well. After thickening and blending, an on-site pelletizing plant produces a Class A product for land application. Under a five-year rolling contract, the pellets are sold to a broker who trucks the material to Florida for use in agriculture and horticulture.

“We get \$7 a ton for the pellets,” says Hamilton. “We use a front-end loader to move the pellets from our covered storage area to trucks. We’ve found that’s cheaper than building a hopper and gate system.” The plant produces about 5,000 tons of pellets a year and ships two to three semi-truck loads a week. A separate dedicated pelletizing staff operates the facility 24 hours a day, six days a week.

CONSCIENTIOUS OPERATIONS

As proud as the facility’s staff is of its recycling record, it’s just as conscious of the need to be a good neighbor by controlling odors. In line with its goal of minimizing chemical treatment, the plant uses four biofilters with Bay Products media. Three units are stationed at the solids thickening and

LEFT: Turblex blowers power the aeration process.
BELOW: Aeration basins in action.

(continued)



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The W.B. Casey facility team includes, from left, department manager Jim Poff, plant supervisor Chris Hamilton, lab technician Bridgett Graham, environmental compliance coordinator Jennifer Flewellen, buildings and grounds maintenance technician Lee Morgan, department secretary Mary Safrin, plant operator Malcolm Allgood, chief operator David Blackstock and plant operator Johnny Simmons.

WINNING TEAM

Over the years, the W.B. Casey Water Reclamation Facility has earned enough awards to fill a sizeable trophy case. Among the most distinguished:

- Georgia Association of Water Professionals (GAWP) Plant of the Year (10 mgd and up), 2006 and 2009.
- GAWP Best Operated Plant, 1988, 1990 and 1994.
- GAWP Platinum Award (five consecutive years without a permit violation), 2009.
- GAWP Gold Award (one year without a permit violation), 2000, 2002, 2003, 2005, 2006, 2007 and 2008.
- EPA Region V Plant Award, 1990.
- EPA National First Place Award, 1990.
- WEF Safety Award, 1990.

"We couldn't have won any of these awards without the dedication and hard work of our employees," says plant supervisor Chris Hamilton. In addition to Hamilton and water reclamation department manager Jim Poff, the Casey plant staff includes:

Treatment plant operations: Chief operator David Blackstock; staff members Mike Crabtree, Malcolm Allgood, Johnny Simmons, Mike Holt, Ellen Heimbrecht, Joey Smith, Stan Court and Lee Morgan.

Natural treatment systems (constructed wetlands operations): Supervisor Donnie Kiblinger; foreman Mark Cochran; senior crew leader Dextor Norris; staff members Tim Hampton, Daniel Salmons, Wayne Wilkerson, Mark Brown, Joey Dobbs, Herlon Fayard, Marvin Harry and Tim Walker.

Biosolids pelletizing: Plant supervisor James Perkins; chief operator Robert Cloud; staff members Robin Liles, James Allen, Ricky Conaway, Doug Lamb and Tony Sommerville.

Laboratory: Environmental compliance coordinator Jennifer Flewellen; technicians Hilton Texidor and Bridgett Graham; environmental compliance inspectors Jimmy Powell and Troy Usry.

General services group: Plant services supervisor Marshall Maddox; chief maintenance mechanic Brent Taylor; lead maintenance mechanics Mike Gresham, Ron Haney, Mike Harp and Jimmy Brown; maintenance technicians Bennie Rose and Junior Thompson; electrician Bob Martin; PLC specialist Victor Bros; facilities maintenance foreman Thomas McClain; facilities maintenance crew leader Shane Lequire; facilities maintenance painter Steve Thompson; facilities maintenance workers Mike Sneed, Tony Head and Leonard Moore; grounds maintenance crew leader William Mead; grounds maintenance workers Earnest Major, Cynthia Land, Joseph Johnson, Willie Sims and Jamal Norwood.

(continued)

A woman with glasses and a red jacket is giving a thumbs up. In the background, there is a body of water with several SolarBee units floating on it. The sun is shining brightly in the sky.

"SOLARBEE MIXING GIVES MY TREATMENT PLANT THE BEST ACTIVATED SLUDGE PROCESS EVER, PLUS GREAT SAVINGS ON ELECTRICITY"

Melinda S. Ward
Wastewater Plant
Superintendent
City of Eden, NC

The reactor basin at Eden's wastewater treatment plant is 14 feet deep. Brush aerators ran constantly to try and mix it all, but they could only mix and aerate the top half. The results were a high, wasteful level of dissolved oxygen at the top of the basin, and a mass of sludge at the bottom that wasn't impacted by the treatment process. Superintendent Melinda Ward sought a "green" solution for these problems, and she found exactly what she needed in SolarBee® mixers.

In 2009 Ms. Ward installed Eden's first SolarBee SB10000 unit, and big improvements were immediate. "We could actually see the solids moving," she said. "It's amazing how the SolarBee brings them to the top of the basin!" The SolarBee provided improved mixing of the entire basin for better oxygen utilization, and the ability to maintain high suspended solids throughout the basin while reducing the aeration run time to the minimum needed for a healthy DO. An unexpected but welcome benefit was better sludge settling at the clarifier, leading to reduced effluent BOD and TSS.

Superintendent Ward was so impressed, she ordered two more SolarBees to achieve even better results and more energy savings. These solar-powered units work 24/7 virtually for free. And now, because the costly aerators are operated less, the facility's electric bill has been cut nearly in half!

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Plant operator Malcolm Allgood performs a calibration on one of the sodium hypochlorite pumps. He uses a timer and calibration column to determine the dosing rate.

blending locations and at a raw sewage pump station on the site of the old treatment plant next door. A central unit serves the new plant.

Each biofilter contains manufactured rock media on which microbes grow. "At first we were using wood chips, but the process called for changing out the media once every three years," says Hamilton. "The manufactured media doesn't need changing for at least 10 years. We have neighbors right across the street, so we take odor control seriously here. We don't want anything crossing the fence line."

The Casey plant also strives to be a quality employer, promoting continuous training of its staff members. "We're proactive on training, and we use an online training website (Company College by BizLibrary) that our employees really like," Hamilton says.

The website is a virtual college, offering more than 700 courses that include such topics as interviewing and reception skills, networking, healthy work habits, marketing, and stress management. "Each course takes anywhere from 15 to 60 minutes to complete," says Hamilton. "Employees are required to complete safety courses, and they receive certificates of completion when they've successfully finished a certain course. The instruction is free to the employees, and the authority pays the course provider a small fee for each participant."

The authority also provides in-house training to all employees, ranging from classroom computer and management classes to certified defensive driving and CPR/first aid classes.

FINAL ANALYSIS

Of course the ultimate aim of management and staff at the Casey facility is to meet the discharge permit and produce a high-quality effluent that can be reclaimed to help replenish the community's drinking water resource. Effluent values from 2010 reflect impressive reductions in BOD and suspended solids, as well as effective nitrogen and phosphorus control.

The treated effluent is pumped some five miles away to the wetland area, where it is introduced at the upstream end of the system and moves across clay-lined wetland cells of varying depths or zones by gravitational flow. The marsh zones of each cell range from six to 12 inches of water depth and are planted with species selected both to enhance treatment and promote biological diversity.

"Wetland plant species thrive in saturated soils, and we selected ours on their ability to prosper in the local climate," says Poff. "Some of these species flower and provide great aesthetic value as well. Alternating zones of pickerel weed, arrowhead, cutgrass, and bulrush, to name a few, were planted on a three-foot center-to-center pattern. Slope vegetation is a Bermuda grass mixture selected for high tolerance to heat and drought conditions."

Control structures on the outlet end of each cell regulate cell depth. Deep zones from three to six feet in depth are provided at the beginning, middle and end of each treatment cell to prevent short-circuiting, enhance mixing, and promote uniform treatment.

The wetlands are designed to provide an additional 10 to 20 percent of conventional pollutant removal. Residence time is five days, and the design loading rate is 1.0 mgd per 15 acres of wetland.

Poff calculates costs at an average of \$1.73 per gallon for capital construction of the 17.4 mgd of wetland treatment capacity. That does not include the cost of land the authority already owned. He also reports a reduction of 13 staffing positions through attrition since 2001, and an annual reduction in energy requirements of 5.3 GWh, enough electricity to power 407 Clayton County homes for one year.

"Constructed wetlands have proven to be an excellent treatment barrier for any water utility," he says. "We're very proud of our accomplishments. As we like to say, 'It's raining every day in Clayton County.'" **tpo**



DOING IT SAFELY

In addition to common sense and the avoidance of personal injury, staff members at the W.B. Casey Water Reclamation Facility have plenty of other incentives to operate their award-winning plant as safely as possible.

They are organized into teams that convene for monthly safety meetings and compete for rewards they can earn for operating citation-free and without lost-time accidents. The incentives include free meals and time off. "We're just as serious about safety as we are about meeting our permits," says plant supervisor Chris Hamilton.

Specifically, the program rewards each team member with a free \$4 breakfast for each accident-free quarter up to three quarters. If the team goes without an accident for a full-year, members receive a free \$8 lunch, and high-risk position teams receive a half-day off. Two years without a lost-time accident earns teams another free lunch and half-day off for both high-risk and low-risk (office) workers. Three years or more without an accident qualifies teams for lunch plus a full day off for high-risk staff and a half-day off for low-risk staff.

As of January 2011, the Casey facility had gone more than 2,400 days without a lost-time accident. In 1990, the plant won the Water Environment Federation Plant Safety Award.

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GOAL- ORIENTED

FROM A YOUNG AGE, SHANE McCANNON SET HIS SIGHTS ON A CLEAN-WATER CAREER. HE NOW LEADS A TEAM AT A HIGH-PERFORMING REGIONAL TREATMENT FACILITY.

By Jim Force

SHANE McCANNON KNOWS AN OPPORTUNITY WHEN HE SEES IT. Driving by the local wastewater treatment plant as a teenager, he often thought the clean-water profession might make a good career.

Now, 12 years later, he's in charge of the 20 mgd Mattabassett District Water Pollution Control Plant in Cromwell, Conn., and has just been named Young Professional of the Year by the New England Water Environment Association (NEWEA).

At age 32, he says he still has a lot more to absorb and learn. But he's firm in his commitment: "Wastewater is the thing for me."

His accomplishments at Mattabassett include substantially reducing energy consumption, achieving significant nitrogen removal, substituting effluent for potable water for in-plant operations, and generally leading a highly cohesive team of operators.

A CLEAR GOAL

After high school, with his career goals clearly in mind, McCannon enrolled in Springfield (Mass.) Technical Community College. He earned an associate degree in environmental technology and took a practicum at the East Windsor (Conn.) Water Pollution Control Facility. There he met Art Enderle, a professional he now considers his mentor.

"Art allowed me to participate in a practicum at his facility as part of my studies," McCannon says. "He has a strong sense of service to the public and the environment. I got solid training with his excellent staff in the lab, the collections system, and the plant."

In just six months, Enderle left a lasting impression. "He had a great atti-



Shane McCannon at the Mattabassett District. (Photography by John Giammatteo)

tude," McCannon says. "I did what I was asked with a smile on my face, and he noticed. He is a friend to this day." Inspired and eager to work, McCannon joined the maintenance staff at the Manchester (Conn.) Wastewater Treatment Plant. "I found it extremely interesting — collections, the laboratory, treatment," he says.

As usual, he was looking for more responsibility. The chance came in 2000, when the Mattabassett District hired him as a second-shift operator. He continued his education, getting his Class III operator certification, and moved up to third-shift supervisor. He passed his Class IV operator's certification on the first try, and when he was offered the operations manager position in 2008, he took it.

"I knew it would be difficult, but I accepted the challenge," he says. "It took hard work and luck, but it was a great opportunity and the right place. I had a goal 10 years ago. I knew what I wanted to do."

REGIONAL FACILITY

McCannon's plant is a major treatment center on the Connecticut River, handling flow from Berlin, New Britain, Cromwell, and portions of Rocky Hill, Millington and Farmington — about

120,000 population. The plant dates to 1968, when it was a physical-chemical operation.

The treatment train today uses an activated sludge process to achieve biological treatment, including significant nitrogen removal. Effluent nitrogen averages around 6.5 mg/l, and sometimes is as low as 5.0 mg/l. Chlorine disinfects the treated effluent during the warm months. The plant discharges to the Connecticut River through submerged diffusers.

profile

Shane McCannon, Mattabassett District Water Pollution Control Plant, Cromwell, Conn.

POSITION:	Operations manager
EXPERIENCE:	12 years
EDUCATION:	Associate degree, environmental technology, Springfield (Mass.) Technical Community College
CERTIFICATION:	Class 4 wastewater operator
AWARDS:	2010 Young Professional of the Year, New England WEA
GOALS:	Continue efficient plant operation, manage a major plant upgrade, keep learning and growing
WEBSITE:	www.mattabassettdistrict.com
GPS COORDINATES:	Latitude: 41°35'13.74"N; Longitude: 72°39'2.91"W

The Mattabassett team under Shane McCannon's direction won the NEWEA Plant of the Year award in 2009 while saving the district money and increasing efficiency.

"Several veteran supervisors showed me the right and wrong ways to do things, look at processes, and correctly approach maintenance activities. I will always be grateful for the learning experiences I had under them."

SHANE McCANNON

Belt filter presses dewater mixed waste activated and primary biosolids, which are burned in a 1.5-dry-ton-per-hour Dorr Oliver fluid bed furnace.

A Wonderware (Invensys Operations Management) SCADA system monitors and controls plant processes, and the plant is operated 24/7 by a staff of 12, working three shifts. A separate nine-person staff provides maintenance support, and the district operates an on-site laboratory with a staff of two. The maintenance areas are professionally staffed to maintain the high level of expertise today's treatment facilities require.

SOLID RESULTS

Under McCannon's leadership, the Mattabassett team won the NEWEA Plant of the Year award in 2009, to no surprise for the district's executive director Brian Armet. "In his short time in charge, Shane has molded maintenance and operations into one cohesive workforce," Armet says. "And they've achieved some solid results. They make my job easy."

They've also saved the district money by improving operations and increasing efficiency, especially in energy consumption. McCannon and his staff sit down once a month as an "energy committee" and review processes and methods, looking for ways to save energy.

"We listen to all ideas, no matter how big or small," McCannon says. "We're very open-minded." It's not so much that the plant is wasting energy

"I had a goal 10 years ago. I knew what I wanted to do."

SHANE McCANNON

— it's that his crew knows there are always ways to reduce costs for fuel and power. For example, they've installed automatic sensors on lights around the plant. Using Hach dissolved oxygen meters, they've made the operation of the Hoffman (Gardner Denver) aeration blowers more

efficient. And they've changed the blower operation so that horsepower is more closely matched to the needs.

"In the summer, we run the large blowers in the sludge storage facility, but in the winter, when the need is less, we run the smaller blowers," says McCannon.

BIG REDUCTIONS

Another improvement cut building heating requirements by more than 50 percent. The facility's main heating system would be turned on in September just to keep the laboratory area warm. But in fall 2009 the plant purchased a smaller propane boiler for the lab-maintenance building, which keeps the lab warm in spring and fall. The full system, fired by a Cleaver-Brooks boiler, doesn't need to be turned on until later in the season.

By ducting waste heat from the fluid bed incinerator into the plant, the Mattabassett crew has cut heating costs even more. "Under Shane's leadership, we've reduced our electric bill from about \$1.75 million a year to \$1.62 million last year," says executive director Armet. "Plus, the plant is now using effluent water instead of potable water for many of our process water needs. That has reduced our potable water usage by one-quarter to one-third."

McCannon and his staff have made other improvements. Due to attentive maintenance, Mattabassett gets 10 times the belt life from its biosolids belt presses than the manufacturer says is normal. And plant nitrogen removal rates have been achieved through careful adjustments to the activated sludge system. Two of the basins have fine-bubble diffusers, and the other two have coarse bubble diffusers. The plant runs all four in parallel, cycling air on and off to create oxic and anoxic zones.

"We're dancing with cement shoes," says Armet, suggesting that the plant wasn't really designed for the performance it's getting through the hard work and innovation of its staff.

ALWAYS A TEAM

McCannon, married with three boys, spends a lot of his spare time volunteering to help coach youth baseball and other sports for his youngsters and their teammates — helping them learn the games and improve their skills.

It's the same approach he takes at the treatment plant, where he's proud

of a crew that gets along extremely well and achieves top performance. The district hires most of its operators as new to the field. "We put the time and money into building our employees from the ground up," McCannon says. "These employees are our future. An employee with five years or more in the plant is priceless, and an employee that we got to this point from the ground up is even better. It's a solid bunch of excellent operators."

McCannon preaches certification and professional development. He sees his own experience as an example of how much operators can achieve if they apply themselves. "We've reached out to the maintenance staff and others in an attempt to get them certified," he says. "I've become a member of the Connecticut Certification Advisory Committee so that I can contribute to the development of operators."



Shane McCannon is a big believer in staff training, certification, and professional development.



Attentive maintenance helps Shane McCannon and his team get longer life and better performance from plant equipment.

CHALLENGES AHEAD

Despite the learning experiences and plant upgrades, McCannon feels he and his team haven't peaked yet. Ahead of them lies a major retooling of the plant for more flow and even better performance.

"We're negotiating with the community of Middleton to take all of their flow," says Armet. "And we will have to get our effluent nitrogen levels down to 3.5 mg/l as part of new state and regional requirements to protect Long Island Sound."

(continued)



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THE ENVELOPE, PLEASE

The Mattabassett District treatment plant and operations manager Shane McCannon have been recently recognized by the New England Water Environment Association (NEWEA) for outstanding performance.

In 2009, the plant was named NEWEA Treatment Plant of the Year. In 2010, McCannon was honored as Young Professional of the Year and received the award at the 2011 NEWEA annual conference in Boston in January.

McCannon's enthusiasm for his job and his respect for his employees are evident in his response to the award. "I was excited because my staff has worked so hard to make sure our facility runs above and beyond what we have seen in the past," he says. "I felt a great sense of accomplishment, because like most people who set goals and have high standards, I tend to look at all issues as if they can be improved on."

McCannon points out that at his plant, processes, personnel, and routine tasks are all reviewed and questioned, sometimes more than once. "Every area, especially the attitudes and relationships the employees have with each other, has improved in the past few years," he says. "That has been the catalyst for the plant and I like to take credit for contributing to it as I can."

But he adds, "I am just a sum of the good job my staff has done, and we could not have accomplished everything without executive director Brian Armet and the board of directors allowing me to run the show. So the award is more a reflection on the staff

and the district, and I humbly accept it on their behalf."

Staff members in addition to those already mentioned are:

Plant staff: Michelle Ryan, P.E., district engineer; Michael Borchert, Daniel Drezek, Matthew McClimans, David Stille and Kevin Shlatz, shift supervisors; Brian Warman and Jan Dusza, operators Class III; Tom Carroll, Andrzej Laz, Marek Dazblaz, Robert Grasis and Mike Petrone, operators.

Lab staff: Elizabeth Walters, laboratory manager; Kathleen Peloquin, chemist.

Maintenance staff: Andrew Purchia, instrumentation technician; Tom Karpinski, electrician/mechanic; Bill Adkins and Peter Stankovics, lead mechanics; Chuck Cook, lead utility mechanic; Eric Bruscoe and Giofranco Macri, mechanics.

Office staff: Melissa Lancia, Elaine Brousseau and Anne Portier.

Shane McCannon with district executive director Brian Armet and maintenance manager Grant Bergeron.

Under a design that is nearly complete, with construction set to start next fall, the plant will add two more aeration tanks and retrofit the four existing aeration tanks to meet the new nitrification requirements. It will also add two new final clarifiers, build a new effluent pumping station, and install a new fluid-bed furnace, equipped with state-of-the-art emission controls. New centrifuges and other improvements are also in the plan.

The expansion and improvements will require the best from McCannon and his team, but you get the feeling they'll deliver because of the way they respect each other and work together.

"I have the privilege to manage many of my shift supervisors who trained me as I was growing at the district," McCannon says. "Several veteran supervisors showed me the right and wrong ways to do things, look at processes, and correctly approach maintenance activities. I will always be grateful for the learning experiences I had under them."

"Our maintenance manager, Grant Bergeron, is retiring after 36 years at the plant. Grant was probably the best instrumentation technician in the country, and he accepted the maintenance manager position a few years before retirement. He has a good solution every time, and has been a colleague and mentor beyond description."

"As I said before, I've always been the product of a great environment." **tpo**

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By Trude Witham



profile

**Coffee Creek Wastewater
Treatment Plant, Edmond, Okla.**

BUILT:	1972
POPULATION SERVED:	80,000
EMPLOYEES:	5
FLOWS:	9 mgd design, 7.18 mgd average, 13.5 mgd peak
TREATMENT LEVEL:	Tertiary
TREATMENT PROCESS:	Activated sludge, sand-anthracite filtration
RECEIVING WATER:	Coffee Creek
BIOSOLIDS:	Land-applied
WEBSITE:	www.edmondok.com
GPS COORDINATES:	Latitude: 35°40'14.52"N; longitude: 97°23'4.17"W

"Our focus is always on the staff. We can have the best equipment and facilities, but the human factor is key and it always will be. No computer can replace a rational thought process from a person."

FRED RICE

THE COFFEE CREEK WASTEWATER TREATMENT PLANT in Edmond, Okla., has had near-perfect compliance in 38 years and has won several awards, most recently 2010 Large Wastewater Plant of the Year from the Oklahoma Water and Pollution Control Association (OWPCA).

It all has happened with a staff of five, despite rapid population growth, several upgrades, and various episodes with collection system inflow and infiltration. "When you have only five staff, you have to focus on working smarter, not harder," says Fred Rice, water resources superintendent for the city. This means preventive maintenance, SCADA monitoring of critical alarms, and ongoing equipment and safety training.

It's also a matter of teamwork. Kris Neifing, chief plant operator, hired in 2004, supervises two operators, a maintenance specialist and a lab technician and is also responsible for one lift station at the plant and nine lift stations located throughout the collection system.

Rice credits Neifing and his staff for the plant's track record. "Kris has really pulled everyone together as a team," he says. "All the credit for what we've achieved in the last six years is due to Kris and his staff. My role is like coaching a sports team. You can coach them, but the team executes the plays."

Says Neifing, "What makes us successful is that everybody has different

skills that collectively make us the best we can be. Some are better at maintenance while others prefer operations. We believe that no one knows how to do their jobs better than the ones who do it every day."

BUILT IN STAGES

Started up in 1972, the Coffee Creek plant now has a 9 mgd design flow (7.18 mgd average) and serves a population of 80,000. The plant was built in three phases. Phase 1 was a two-stage nitrification system with two primary aeration basins (Philadelphia Mixing), each followed by an Infilco clarifier and two secondary aeration basins, in turn followed by clarifiers. Phase 2 in 1987 added two oxidation ditches and two clarifiers (Lakeside). Phase 3 added identical equipment again in 1994.

Plant and system upgrades have replaced old programmable logic controllers and floats at all nine system lift stations and at the plant lift station with MultiSmart Pump Station Manager units, manufactured by MultiTrove. These provide level control and remote telemetry capability, and phase monitoring of lift station motors. In addition, the Phase 2 treatment train has been rehabilitated, including clarifier structural steel painting, weir replacements and rotor resurfacing.

In today's configuration, raw wastewater passes through a Dresser mechanical bar screen and a Parkson fine screen, then to aeration basins. From there, the water goes to the clarifiers and then to a secondary aeration basin.

After final clarification, the effluent is polished with one of eight General Filter (Siemens) sand-anthracite filters, then disinfected with chlorine gas and dechlorinated with Wallace & Tiernan (Siemens) sulfur dioxide gas equipment. The plant's permit requires chlorination/dechlorination between May and September, when the receiving water, Coffee Creek, is used for recreation. Biosolids are treated in three facultative lagoons for one to two years before application to farmland.

Sand-anthracite filters provide effluent polishing at the Coffee Creek Wastewater Treatment Plant. (Photography by Stephen Houser)

The Coffee Creek Wastewater Treatment Plant Water Resources team includes, from left, mechanic Gary Langley, superintendent Fred Rice, operator Tony Henderson, chief plant operator Kris Neifing, and operator Bryan Mitchell.





LEFT: Operator Tony Henderson checks sludge depths in a secondary clarifier. ABOVE: Operator Bryan Mitchell performs a daily backwash on the sand filtration unit.

Coffee Creek Wastewater Treatment Plant PERMIT AND PERFORMANCE

	PERMIT (monthly average)	EFFLUENT (yearly average)
TSS	Apr-May: 15 mg/l Jun-Oct: 15 mg/l Nov-Mar: 30 mg/l	2.08 mg/l
CBOD	Apr-May: 10 mg/l Jun-Oct: 10 mg/l Nov-Mar: 15 mg/l	1.85 mg/l
Ammonia	Apr-May: 4.1 mg/l Jun-Oct: 3.0 mg/l Nov-Mar: 4.1 mg/l	0.766 mg/l
DO	Apr-May: 5.0 mg/l min. Jun-Oct: 4.0 mg/l min. Nov-Mar: 5.0 mg/l min.	7.9
Fecal coliform	May-Sept: 200	9.72
Chlorine	<0.10 mg/l	0.01 mg/l
pH	6.5-9.0	7.18-7.84

FOCUS ON PREVENTION

Neifing's team consists of lab technician Brian Green, hired in 2003; Tony Henderson, plant operator, hired in 1999; Gary Langley, plant mechanic, hired in 1992; and Bryan Mitchell, plant operator, hired in 2006.

All hold certifications in wastewater works operations and wastewater works lab operations. Neifing is a member of the Water Environment Federation and is the wastewater advisory chairperson and District 1 director for the OWPCA.

Being certified in both wastewater and lab operations means anyone can step into a given job if necessary. "Everyone can do everyone else's job," says Neifing. "Everyone has been in everyone else's shoes. And I have, too. I'm very much a working supervisor."

There's a simple reason such a small staff can accomplish so much in one 8-hour operating shift: "Good maintenance practices," says Neifing. "We don't run something until it breaks down. We replace it so we don't have a major problem down the road."

Besides maintaining the equipment, the staff is responsible for keeping the plant clean. Heavy maintenance and mechanical work is contracted out, as is mowing of the plant's 40 acres.

An operator is on call during the 16 hours a day when the plant is unstaffed. "We monitor the lift stations 24 hours a day with SCADA, and we use radio telemetry rather than phone lines, using Wonderware (Invensys Operations Management) software," says Neifing. "We pre-program certain alarm conditions. Critical alarms are auto-dialed out, and the plant's on-call staff member responds in 30 minutes or less."

While preventive maintenance is important, Neifing also stresses training. Every Monday the team holds a safety meeting where general safety training is provided. "The city's risk management department also does more formal training," says Rice. "They are a separate authority from the plant and can stop work if they feel unsafe practices are going on. I feel that it's good to have an unbiased set of eyes."

Rice and Neifing arrange for or conduct training on new equipment at the plant, and they also take advantage of vendor training. "We make sure our vendors have a service center within 100 miles of us," Neifing says. "That is a criterion we look for when specifying large equipment purchases."



DILIGENT PLANNING

Rice believes diligent planning is essential in maintaining good performance. After being hired in 2003, Rice put together a housekeeping plan and a maintenance plan. Neifing and his team also developed a wet-weather operations plan.

Says Rice, "You can mitigate odor control issues, for example, with good housekeeping. Keeping plant areas clean of accumulated sludge helps prevent odor potential. Ensuring proper system operation, such as maintaining a clean-water cap on solids treatment lagoons, also helps mitigate odor." There is a subdivision half a mile from the facility, but yet odor complaints from neighbors are rare.

The wet-weather operations plan helps the plant manage I&I from above-average rainfall. "Oklahoma is a weird-weather state," says Rice. "You can go from drought to floods relatively quickly. We do contingency planning for whatever may come at us."

When the plant experiences high flows from I&I, the operators shut down the aeration equipment. This allows the heavy solids comprising the mixed liquor to settle to the bottom of the oxidation ditches, keeping solids from being washed out of the plant during high hydraulic loads.

The staff also makes use of two flow equalization basins at the lift stations, and one at the plant, to hold the excess water until the flow level recedes and the plant treatment processes can handle the hydraulic load effectively.

CONTINUOUS IMPROVEMENT

The plant's compliance and safety record does not mean the staff is complacent. "We strive to continuously improve," says Rice. "There is no process out there that can't be improved, especially on the maintenance side."

Rice and Neifing frequently attend the WEFTEC conference and other trade shows to check out the latest equipment. This has led to several innovations, such as vibration analysis and laser alignment equipment to help ensure that pumps and motors operate normally with the lowest possible maintenance. Rice and Neifing also read trade journals and network with others in the wastewater treatment business to glean ideas.

"The staff comes to us with ideas, like getting air compressors for maintenance, and suggesting better equipment or ways of doing things," Neifing says. "We empower them to make suggestions, and we listen."

Adds Rice, "The city started a program based on the general concepts in the *Good to Great* book, because we believe that organizations that excel are successful from the ground up. We give our employees responsibility and then hold them accountable."

LOOKING TO THE FUTURE

Every year, the city's engineering department and Coffee Creek plant personnel prepare a five-year strategic plan and budget. That includes decisions on what equipment needs to be replaced. "Our biggest challenge in the near future will be balancing the needs of the system with the community's growth in a timely manner," says Rice. "We need to spend money the right way at the right time and for the right reasons."

Mechanic Gary Langley performs vibration analysis on bearings of the oxidation rotor (Lakeside Equipment) using a Vibscanner monitor from LUDECA.



MULTIPLE AWARDS

The Coffee Creek Wastewater Treatment Plant has picked up seven awards since 1978, and the staff is most proud of the 2010 Large Wastewater Plant of the Year Award from the Oklahoma Water and Pollution Control Association.

The award is based on use of technology, maintenance and improvements to the system, and a review of lab records to verify compliance with U.S. EPA and state Department of Environmental Quality regulations. "This award means a lot because it comes from your peers in water and wastewater treatment operations," says Kris Neifing, chief plant operator. Other OWPCA awards include:

- 2009 Operator of the Year, Tony Henderson.
- 2007 Supervisor of the Year, Neifing.
- 2005 Large Wastewater Plant of the Year.
- 2003 Most Improved Plant.
- 1993 Large Wastewater Plant of the Year.
- 1978 Large Wastewater Plant of the Year.



The Coffee Creek plant is a 9 mgd tertiary facility built in three stages, the last two being oxidation ditches.

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The city is now upgrading two lift stations to handle future flows and maintain system reliability. Also in the plans is a headworks upgrade to accommodate a new force main coming from one of the lift stations. That will help in treating peak flows.

Also planned is a complete overhaul of the plant's Phase 3 equipment, including painting, installation of Stamford baffles (NEFCO) and weir-cleaning devices, motor control center replacement, and sand filter rehabilitation.

The plant is upgrading the SCADA to the latest version of Wonderware and integrating the MultiSmart units from the lift stations into the plant SCADA for real-time monitoring of a wide variety of parameters, including water level, power, flow, and pump status. Two more lift stations will be upgraded in the next two to five years.

MAINTAINING HIGH MORALE

The plant has succeeded even in the face of fiscal challenges. A reduction in city sales tax funds, in part caused by a decline in the city's growth rate, has created a challenge for Rice and his staff in the form of a citywide wage freeze.

In Oklahoma, cities are funded entirely by their share of sales taxes. Plant operations are funded by user rates, but when the general fund derived from sales tax has issues, the burden is shared by all city employees, including the wastewater team.

"We've had to look for innovative ways to ensure that we spend the ratepayers' money effectively," says Rice. "The Water Resources Department brought in rate specialists to ensure that right decisions were being made when setting rates. This makes the customers feel better and ensures that we have the money we need to maintain system viability and reliability."

A city wage freeze in July 2010 might have threatened staff morale, but Neifing took steps to head that off. For one thing, he makes sure the staff is recognized. "We had a pizza party after we won the Large Wastewater Plant of the Year Award, and we publicized the award on our website and in the local press," he says. "We recognize achievements and make sure they know

they're doing a good job."

There have been no layoffs or furloughs, and none of the city's upper management took raises. "We lead by example," Rice says.

The plant also keeps morale high by offering training. "We let them go to conferences and in-state training, and if we can demonstrate the need, we can send them out of state for training," says Rice. Depending on their interests, staff members are offered opportunities to attend the National Ground Water Association, WEFTEC and OWPCA conferences every year.

"Our focus is always on the staff," says Rice. "We can have the best equipment and facilities, but the human factor is key and it always will be. No computer can replace a rational thought process from a person." **tpo**

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VISITORS



Show us your visitors

A friendly visitor meanders around the Town of Groton (Conn.) Water Pollution Control Facility grounds outside the administration building. (Photo courtesy of Sue Palmer)

TPO invites you to show us the wild creatures that visit your plant property. Mammals, birds, reptiles, amphibians — send a picture or two and a brief description of when and where the visitor appeared to editor@tpomag.com.

Taking a Tour?

A white-tailed deer strolls across the grounds at the Town of Groton (Conn.) Water Pollution Control Facility. "The picture was taken from our administration building, looking out over the plant," reports material control specialist Sue Palmer. "I felt someone looking at me, and looked up to see this deer peeking in the window. It was in no particular hurry, browsing around, checking out the flume and the primaries. It then walked off back through the gate and into the woods. I keep my camera handy because I get bluebirds on my bird feeder." **tpo**



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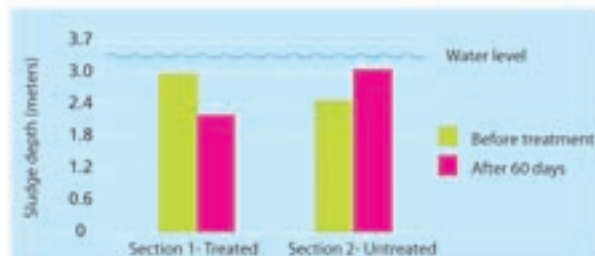
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Proof Positive

A SIDE-BY-SIDE TEST DOCUMENTS ENERGY SAVINGS FROM A HYBRID ROTARY LOBE COMPRESSOR AT A TREATMENT PLANT IN NEW YORK

By Scottie Dayton

An upgrade in 2008 reduced the nitrogen discharge of the Town of Huntington (N.Y.) Wastewater Treatment Plant by 90 percent and met state-mandated 2014 water-quality standards, but plant personnel were troubled by the energy consumed by three 125 hp blowers powering aerators with variable-frequency drives in the two 1.5-million-gallon sequencing batch reactors.

The plant found a solution in hybrid rotary lobe compressors, which proved its energy-saving potential in a side-by-side test with one of the older blowers.

CHECKING ALTERNATIVES

When the original blowers went online, the plant's electric bill rose from \$205,000 per year to \$500,000, an increase not anticipated by town officials. Under the direction of town supervisor Frank Petrone, John Pavlik, plant supervisor, looked at various blower manufacturer proposals.

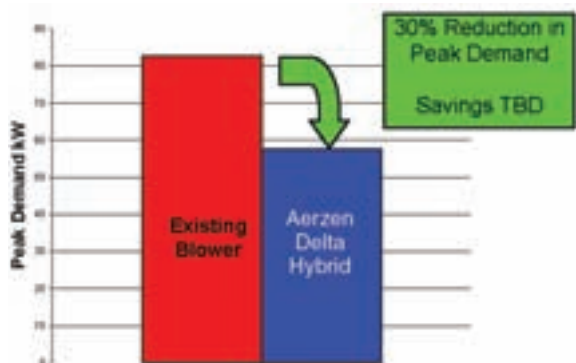
Aerzen USA suggested a pilot project that would make Huntington the country's first facility to install a Delta Hybrid rotary lobe compressor, made in Germany by Aerzener Maschinenfabrik GmbH.

Side-by-side comparison testing revealed that the hybrid blower used far less energy than the original blowers. Based on the test, the projected annual savings, including maintenance and labor, was \$79,320.

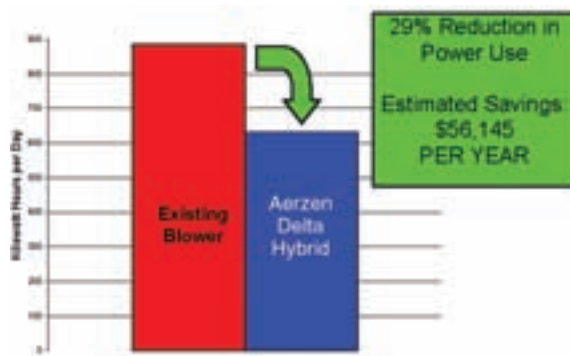
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TPO welcomes news about interesting methods or uses of technology at your facility for future articles in the How We Do It column.

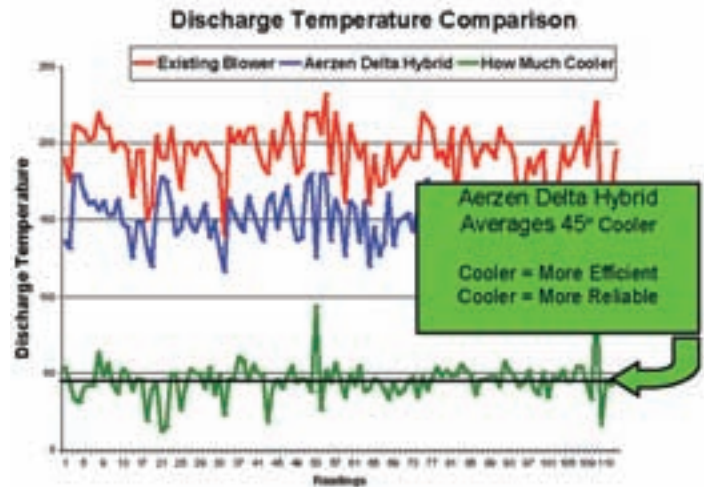
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There was a 30 percent peak reduction demand between the old blower and the new blower.



The Huntington plant saved \$56,145 after switching to the new blower.



The Aerzen Delta Hybrid blower averaged 45 degrees cooler operation than the original blower. (Graphics courtesy of Aerzen US A)

with a two-year payback. Huntington officials were encouraged enough by the results to seek funding to install Delta Hybrid units on the two batch reactors.

BASELINE ESTABLISHMENT

Pavlik designed the comparison test and served as the technical field consultant. For two months before the compressor arrived, Huntington operators collected data to establish a baseline. They installed E-Mon D-Mon Class 5000 Advanced series demand meters on two of the original blowers and took readings four times per day. "My staff did an excellent job monitoring the systems," says Pavlik.

Once the hybrid came online last November, operators disconnected the meter from an existing blower and connected it to the hybrid for comparison with the meter on another existing blower. After equal flow rates between the blower and the hybrid were verified, the trial began.

Four times per day, staff took readings and checked blower temperatures and pressures. "For the first few days, we questioned if we were monitoring the meters correctly because the numbers shocked us," says Pavlik. "They showed a 28 to 29 percent kW reduction, a 30 percent peak demand reduction, and a 45-degree temperature difference between the two units." The trend continued throughout the trial, and performance improvement increased at higher ambient temperatures.

"Replacing the three original blowers will save us \$56,000 to \$58,000 in electricity per year, not including labor and materials," Pavlik says.

HOW THEY WORK

The belt-driven Delta Hybrid unit combines the packaging princi-

Return on Investment for Aerzen Delta Hybrid Huntington, New York			
	Existing Blowers	Aerzen Delta Hybrid	Annual Savings
Power	\$192,145	\$136,000	\$56,145
Maintenance (Oil, Filters, Belts)	\$31,033	\$7,858	\$23,175
Total Annual Costs			\$79,320
Purchase		\$123,000	
Installation		\$35,550	
Total		\$158,550	
Payback: 2 Years			

bles of Aerzen rotary lobe blowers with screw compressor technologies for volume flows of 400 to 2,000 cfm. The model at Huntington uses the internal compression of a screw compressor to increase compression efficiency.

Low-pressure (3 to 5 psi) units use a 3+3 twisted rotor (super-charger) profile, while a 3+4 compressor rotor profile is used for higher pressures (up to 22 psi). The compressor is matched to the required pressure range for optimum efficiency.



Aerzen Delta Hybrid blower.

“Replacing the three original blowers would save us \$56,000 to \$58,000 in electricity per year, not including labor and materials.”

JOHN PAVLIK

“Every 1 percent excess in volume flow corresponds to a 1 percent increase in energy consumption,” says Pavlik.

Maintenance, including the setting of belt tension, is minimal. “The hybrid unit has a pivoting mount that allows some of the motor’s weight to actuate the tensioning device and set it automatically,” says Pavlik.

The hybrid unit needs few adjustments, but when they are necessary, the case has ample space for technician access. “And while every other piece of equipment in the plant requires an oil change at 400 hours or less, the hybrid is good for two years,” says Pavlik. “That reduces the cost factor dramatically.”

SENSITIVITY TRAINING

Simultaneously, Aerzen engineers tested iAir Remote, a stand-alone remote monitoring system that does not need integration with SCADA systems. The unit on the hybrid monitored blower output, inlet and discharge temperature and pressure, vibration, speed, and oil temperature in real time. It downloaded the data every 30 seconds via cell phone uplink, and will eventually send emails should maintenance or other interventions be necessary.

Personnel from sister plants and other sewerage districts, engineering firms, and county regulators with their engineers have visited Huntington. “Everyone has been impressed with the data,” says Pavlik. “Very rarely can a plant run equipment in a comparison test and prove how it works. It was an honor to have this opportunity.” **tpo**

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The Noblesville (Ind.) Wastewater Treatment Plant.

Touching All Bases

AN INDIANA TREATMENT PLANT LOOKS INTO EVERY AREA FOR WAYS TO SAVE ENERGY AND RUN A GREENER OPERATION

By Doug Day

From active solar biosolids dryers to an aggressive office-recycling program, the Noblesville (Ind.) Wastewater Treatment Plant has done its part to help the city become a state-certified CLEAN Community for its environmental policies.

Energy controllers, UV disinfection, a high-efficiency boiler, reuse of biogas, and even optimized travel routes for checking lift stations are all part of the plant's approach.

Utility director Ray Thompson says the 10 mgd (design) activated sludge plant has improved its performance while using less energy even as its city of 50,000 has been adding 10,000 residents every five years (population in 2000 was 28,500).

EXPANSION AND EFFICIENCY

Over the last three years, the plant has gone through several projects to double its capacity to meet demand. "It included installation of additional aeration tanks, two final clarifiers, and UV disinfection to replace chlorine," says Thompson.

"In the past, our anaerobic digesters were heated by a boiler that was fueled separately by either methane or natural gas," says Thompson. A U.S. Department of Energy grant provided \$24,000 of the total \$141,000 cost of a new Walker boiler that supports blending the two gases to take full advantage of available biogas. From May 2009 when it was installed through the end of 2010, the plant saved \$28,400 and offset the use of just over 7,000 million Btu of natural gas.

"The next time we do major work on the digesters, we plan to install meters to better track methane and natural gas use," says Thompson.

"We hope that will help us determine what we may want to do in the future. We've considered going to turbines to generate electricity from biogas."

He says UV has resulted in better disinfection, and while it's difficult to measure if it has saved any money, it has eliminated the use of chlorine and sulfur dioxide and their inherent safety and storage concerns and regulatory inspections.

Another grant, from the Indiana Department of Energy, provided \$26,690 toward the \$53,000 cost of installing KVAR (kilovolt-ampere-reactance) energy

controllers on 29 inductive motors and in nine lift stations. The controllers use capacitors to make the motors more efficient by improving the power factor. They also offer surge protection and reduce heat, thus decreasing wear and tear and maintenance needs.

A new Walker boiler that blends biogas and natural gas saved nearly \$30,000 in its first 18 months. At that rate, it will pay for itself in about 5 years.



PHOTOS COURTESY OF THE CITY OF NOBLESVILLE, IND.

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.

ENVIRONMENTAL MANAGEMENT

Some of the expansion work, such as UV disinfection, was influenced by an environmental management system (EMS) developed in 2009 with the assistance of Purdue University's Clean Manufacturing Institute, through a program funded by a U.S. EPA grant. An EMS is designed not only to reduce environmental impacts and prevent pollution, but to increase operating efficiency and, for businesses, to attract customers and increase market share. Regional EPA offices can provide more information about EMS and may even have a program to assist in developing an EMS plan.

"An EMS holds an organization accountable for its environmental actions," says Thomas Watson, lab supervisor at Noblesville. "On a basic level, we have to follow the rules that apply to us through mandates and laws, plus anything we might want to place upon ourselves." By following its EMS plan, the plant has become compliant with the international ISO standard 14001:2004 dealing with environmental performance.

While other wastewater plants have selected a limited EMS, Noblesville included its entire property, rather than just the treatment process. "We looked at all our procedures on how we do everyday work," notes Karrie Hutson, chief operator. "That included looking at how we check our lift stations to make sure we took the most direct routes, and other simple things to conserve energy like limiting the idling of vehicles."

BEING ACCOUNTABLE

The plant began buying flex-fuel vehicles that can use E-85 (85



A stainless steel "mole" is part of the solar biosolids drying system from Parkson Corp. The device automatically mixes and aerates biosolids.

percent ethanol), established rules for turning off lights and computers, added programmable thermostats, and installed more energy-efficient lighting in office buildings.

Gas heaters in garages were replaced with new radiant heaters that paid for themselves within five years from the gas savings alone. "It wasn't all new," adds Watson. "We could include things in the EMS that we were already doing. We just have to be accountable to do what we said we were going to do."

A local company, Universal Blower Pac, selected the plant as a test site for a new efficient blower package design; an EE-Pacs screw-type blower with a high-efficiency variable-speed drive. The results are still pending, but the staff expects the design to use considerably less electricity.

Even garbage was included in the EMS work. "We've saved a lot of money with our trash containers," says Watson. "The trash hauler used to come every week. Now they come when we call them, which works out to be about once a month."

A key aspect of reducing refuse was a new recycling program. "We sent out 186 55-gallon containers of mixed recyclables last year, compared to none in years before," says Watson. The plant also began recycling some potentially harmful materials, such as oil filters and fluorescent light bulbs. The waste management company picks up recyclables at no extra charge, so the plant saves money while sending less to landfills.

SOLAR DRYERS

On the biosolids side, two THERMO-SYSTEM active solar dryers from Parkson Corporation began operation in September 2010 to help cut the cost of land-filling the material. Instead of just pressing to remove some water, the dryers can reduce total volume by up to 97 percent, according to the manufacturer.

"We put nine single-axle dump truck loads of biosolids in each one — that's about 80 cubic yards," says Thompson. After drying, the volume is reduced to 20 cubic yards. "We reduced our dump container cost by more than \$12,000 in the first quarter. It is one of our biggest expenses."

Long term, he expects the \$1.2 million dryers to have a big impact on that part of the budget. "We should be able to reduce it by two-thirds," he says. Direct solar provides 95 percent of the energy to dry the biosolids. Each 4,500-square-foot dryer has a 145 kW supplemental heating system with water-to-air heat exchangers that use excess hot water from the digester's boiler.

A small, electric-powered wheeled "mole" from Parkson Corporation drives around the material to keep it mixed and aerated. Sensors and an automated PLC control the humidity through air inlets, ceiling fans and exhaust fans, so there's no extra work for operators.

FUTURE USES?

Parkson says the greenhouse-like structures can produce a Class A biosolids 75 to 90 percent dry. Noblesville didn't use the dryers for a Class A biosolids at first. "We just did it for volume reduction during the colder months," says Thompson, "so we found that 65 percent dry works just as well and doesn't result in any difference in volume."

He says drying to that level took about three weeks in fall and about five weeks in winter. He expected it to take about two weeks during warmer weather. "We don't meet Class A consistently; we're right at the line," he says. "We hope to achieve a Class A product during the summer season."

With give-away programs and other potential reuses of a Class A product, the plant could eliminate landfilling. Land application is no longer viable because growth has used up much of the farmland around the community, 30 miles north of Indianapolis.

Hutson says environmental awareness goes with a job in the wastewater field. "You go to school for the sciences and take environmental classes, so it naturally makes you a steward of the environment," he says. "We have always been very well supported by our city administration, Board of Works and council, as well as the citizens of our community. Our job is environmental protection." **tpo**

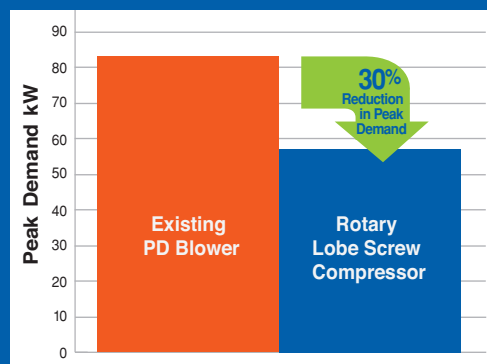
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Sensitive Noses

DEALING WITH COMMUNITY ODOR ISSUES CALLS FOR CAREFUL ANALYSIS, A SOUND GAME PLAN, AND SELECTION OF APPROPRIATE TREATMENT TECHNOLOGIES

By Ted J. Rulseh

There was a time when odors from places like manufacturing plants and wastewater treatment facilities were considered simply facts of life. Community residents looked upon the aroma of paper mills, for example, as the smell of money and jobs.

It's different today, observes Robert Bowker, principal of Bowker & Associates, a consulting engineering firm in Portland, Maine, that specializes in the control of odors and corrosion in sewers and wastewater treatment plants.

People today in general are much more sensitive to odors, and they expect remedies. That's putting pressure on wastewater treatment plant managers and operators. Bowker observes that solutions to odor problems can be elusive and, once found, challenging to fix completely. He advocates a systematic, scientific approach to diagnosing and correcting problems. He shared his experiences and ideas in an interview with *Treatment Plant Operator*.

tpo: What has changed in terms of public perception of odors?

Bowker: Twenty years ago, people would be more likely to say, 'Oh, that's the treatment plant; we notice that once in a while; we're used to it.' Today people are more aware of their environment, and they also understand that by putting enough pressure on the local municipality, they can sometimes cause changes to occur. The minimum standard of what odor is acceptable has changed and is becoming more stringent.

"One challenge is to figure out where you're going to get the best bang for the buck. What is the priority? If I cover the grit chamber and treat that air, what will be the result?"

ROBERT BOWKER

tpo: What is your role in solving odor problems at treatment plants?

Bowker: Most of the work I do is at the early stages of a problem — when people are starting to complain — and evaluating what is responsible for the complaints. Sometimes the plant personnel don't know where to begin.

Granted, operators are very familiar with their plants, and they often have some idea what is causing the odor — what process is potentially responsible — but that is actually pretty difficult to determine. You have many sources of odor in a treatment plant — the headworks, the primary clarifiers, sludge handling operations and dewatering, and other places where odors can be emitted.

Robert Bowker offers advice to treatment plant operators looking to control odors that bring complaints from the community.



One challenge is to figure out where you're going to get the best bang for the buck. What is the priority? If I cover the grit chamber and treat that air, what will be the result? I come in and actually collect air samples from these different processes and come up with a scientific way to rank the sources of odor. Here's your number one source; now let's look at what you can do to knock that down.

tpo: Identifying the source of odor seems simple. What makes it so difficult?

Bowker: You have to look at it in terms of how many pounds of odor are being released from each source. You might have a sludge holding tank that's got a real intense odor — and there is a technique for measuring the strength. Some sources might have strong odors, yet release relatively little odorous air.

On the other hand, you might have a primary clarifier where you walk up next to it and it doesn't smell that bad, but you have much more surface area emitting odor, and so the pounds of odor leaving that process are more than the pounds of odor leaving the sludge holding tank.

People will invite me to walk around and help them figure out which direction they should be heading. But without taking some basic measurements and collecting some data, it's tough. One thing that can help is to do what's called odor modeling. You take those calculations of how many pounds of odor are being released from a source and put them into a dispersion model, and it will predict how far downwind that odor may drift and where it might be a problem.

tpo: How is it possible to quantify odors?

Bowker: We can collect samples of the air and send it to a lab — usually two kinds of labs. One type of lab does what's called an odor panel analysis of the samples. They use an olfactometer to make up known dilutions of the odor. Then they present that diluted air to a group of trained panelists. The object is for the panelists to determine at what dilution they can first start to detect the odor. Then the lab calculates the strength of the odor in terms of dilutions to threshold. That is, how many times do I have to dilute this odor with clean air before 50 percent of the odor panel can no longer detect it?

The other kind of lab actually analyzes the odor constituents using a gas chromatograph. There are a lot of sulfur compounds that contribute to the odor. The main one is hydrogen sulfide, but there's also methyl mercaptan, dimethyl sulfide, and others. If you're looking for a way to treat that air, it's very helpful to know what's in it.

If it's primarily hydrogen sulfide, that's one thing, but if you get into solids handling, dewatering and sludge holding, you start seeing these other compounds that are formed under anaerobic conditions — organic sulfur compounds that are more difficult to treat, chemically or biologically.

tpo: Do all odors largely originate at the treatment plant?

Bowker: No, a lot depends on the characteristics of the wastewater coming into the plant. Is it septic (anaerobic) so that it already contains hydrogen sulfide? Usually, plants that have septic sewage coming in have odor problems.

We look at the collection system to see how that's contributing to odors. Big contributors of hydrogen sulfide are force mains. Sewage is detained in these enclosed pipes, and it becomes anaerobic pretty quickly. In gravity sewers, sewage tends to get aerated and stay fresh. Yes, it smells like sewage, but it's only when it's allowed to go anaerobic and generate hydrogen sulfide that the odor really gets intense. Normally, we would collect sewage samples and measure sulfide content, dissolved oxygen, pH, and oxidation reduction potential (ORP).

tpo: Can anything be done in the collection system to counteract odors?

Bowker: Yes. One option for force mains that's quite economical is injecting pure oxygen to keep the wastewater aerobic. Bleach is sometimes used, although that can be expensive. One approach that has been quite popular in the past 10 or 15 years is injecting products containing nitrate. If you add nitrate to sewage that is going septic, it acts as a source of oxygen for the bacteria. They will use nitrate as an oxygen source rather than using sulfate and degrading it into hydrogen sulfide. Hydrogen peroxide is another product that's used to knock out hydrogen sulfide. Iron salts like ferrous sulfate and ferrous chloride can be used to precipitate the sulfide and tie it up to keep it from being released as a gas.

tpo: Once you have all the necessary data and can quantify the odor, how do you go about finding a solution?

Bowker: Most plants will do a phased approach. Maybe we've done some sampling and modeling and found that the headworks and the sludge holding tank are contributing about 70 percent of the odor emissions. Then the challenge is to figure out how much control is enough — where we can get the most bang for the buck.

We come up with cost estimates for different control strategies. For example, this solution costs so many dollars per pound of odor removed. Suppose we estimate that an aerated grit chamber is spitting out 40 percent of the total odor from the plant. If you treat just that, will it solve the odor problem? Probably not, but it will help. Then you start looking at the primary clarifiers and other sources,

and probably the dollars per pound of odor start going up.

A municipality usually can't sink all the money into a project that it may want to and solve everything at once — that's just economic reality. The objective is to get the odors in the community down to a level that people find acceptable.

tpo: How do you go about collecting the air to be treated?

Bowker: You have to decide from which processes you want to pull air for treatment. To cite one example, a primary clarifier is often a fairly significant source of odor. If you have sewage containing hydrogen sulfide sitting in a tank not being stirred up much, you may

“A lot depends on the characteristics of the wastewater coming into the plant. Is it septic so that it already contains hydrogen sulfide? Usually, plants that have septic sewage coming in have odor problems.”

ROBERT BOWKER

not detect a lot of odor, but once you stir it up and create turbulence, you release those odorous gases.

In a primary clarifier, most of that turbulence is at the effluent launder where the sewage cascades over the weir. About 50 to 90 percent of the odor is released at the effluent launder. So you might look at strategies like covering the effluent launders and the turbulent areas, collecting that air, and conveying it to some form of treatment.

tpo: What treatment options are available?

Bowker: Traditionally, odor treatment systems have included chemical scrubbers, where the odor comes in the bottom of a tower containing a packing material, and you circulate a chemical solution of bleach and caustic soda through that packing. That process absorbs and destroys the odorous compounds, and the exhaust is discharged out the top.

These systems are very space-efficient, but they involve the handling of hazardous chemicals. I've seen a trend in the last 10 to 15 years that operators justifiably don't want to handle 50 percent caustic soda if they don't have to. That has tended to push people toward other options.

Another traditional technology is activated carbon. It's effective for a pretty wide range of odorous compounds, and there have been a lot of developments in improving the carbon chemically so that it does a better job of removing hydrogen sulfide. There are some carbons where you can actually regenerate its ability to remove hydrogen sulfide by soaking it in water. The big disadvantage of carbon is you don't want to use it on a very strong odor. It will work in those conditions, but it won't work very long because the capacity of the carbon gets exhausted.

tpo: What about biological treatment? Is that equally effective?

Bowker: Biofilters have been around for 20 or 30 years. They traditionally contain organic material, such as wood chips, a blend of compost, or bark mulch. The air is passed up through this bed. You need a sprinkler system or some way to keep that bed moist. The air is treated by bacteria as it passes up through the media.

They have a pretty large footprint, but if you have the area, they are very economical and effective. The disadvantage is that the organic media, although inexpensive, will degrade over time and will need to be replaced in about three to five years.

In the last 10 years or so we've seen a new technology, new to the U.S. anyway, called bioscrubbers or biotrickling filters. They look similar to a chemical scrubber. It's a vertical vessel with a packing material inside designed to grow bacteria. The packing will be some type of plastic mesh or lava rock. The air is passed up through that media, which is kept moist with an irrigation system.

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Unlike biofilters, bioscrubbers usually require nutrients to be added. They are extremely effective for hydrogen sulfide. You can get 99 percent removal, and the only thing you have to worry about is a small nutrient tank that you have to feed occasionally. The drawback is that these systems can be less effective on odors caused by more complex sulfur compounds.

"Operators are pretty sharp people. They try their own solutions, and a lot of times they work. Other times, on more complex problems, it helps to have some advice."

ROBERT BOWKER

tpo: What basic advice would you give to a treatment plant staff facing a persistent plant odor problem?

Bowker: One thing I always say: Whatever it is, keeping it moving. Anytime you let material hang around for a length of time, particularly sludge, it will go south very quickly. That applies to liquid sludge or sludge cake. Keep it moving, get it out. Cleanliness can help — flushing the weirs, keeping sludge holding tanks clean. It might not solve the problem, but it can go a long way to minimize the odor released. The other thing is — don't ignore your neighbors. If they perceive that there's a problem, there's a problem.

There are certainly things like chemicals that plant staff can try on their own. Operators are pretty sharp people. They try their own solutions, and a lot of times they work. Other times, on more complex problems, it helps to have some advice. An odor expert can look at things holistically, evaluate the plant and the collection system, and put them on the right road to success. **tpo**

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In-Pipe UV Disinfection

TODAY'S CLOSED-VESSEL UV DISINFECTION SYSTEMS INCLUDE FEATURES THAT CAN DELIVER BENEFITS IN INSTALLATION, OPERATIONS AND PERFORMANCE

By Jon McClean and Patrick Bollman, P.E.

Ultraviolet (UV) disinfection is now a standard feature in many wastewater treatment plants. It has also been adopted by the drinking water community as a barrier against chlorine-tolerant species such as *Cryptosporidium* and *Giardia*.

The technology is widely favored for its non-chemical nature, its elimination of subsequent dechlorination, and its ability to be unselective in disinfection performance. While wastewater treatment plants traditionally have used open-channel systems for UV disinfection, closed-vessel systems have been refined and improved in recent years and have benefits that make them deserving of serious consideration.

PROVING PERFORMANCE

UV light works by causing permanent damage to the organisms' DNA. Once the DNA becomes damaged, or dimerized, the organism is unable to carry out the routine cell functions of respiration, the assimilation of food, and replication. Once the cell is rendered non-viable, the organism quickly dies. The difference in UV system efficiency among different manufacturers was made transparent with the advent of UV system validation using bioassay techniques.

A bioassay involves the introduction of a non-pathogenic organism (biodosimeter) into the fluid stream before the UV system. Examples of biodosimeters include MS2, T1, and T7. The entire procedure is performed under controlled conditions, and system variables (flow, transmittance, power loads and lamp intensity) are carefully recorded as samples are taken before and after the UV system.

Once the sample data is returned from the analyzing laboratory, the system's ability to disinfect can be compared to the manufacturers' claims. Of course, bioassays should be carried out under the auspices of a credible third party.

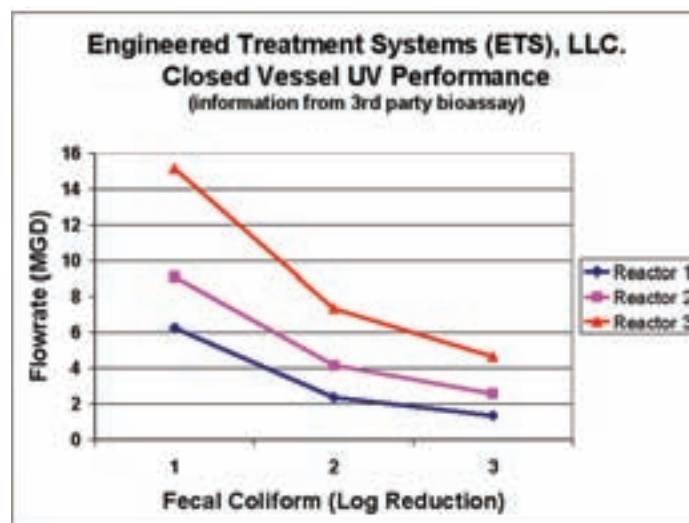
Such studies have documented the effectiveness of closed-vessel UV systems. The accompanying table shows results from a system using medium-pressure lamp technology. The performance is based on three separate reactors that underwent validation testing for a range of transmittance levels, flow rates, and power input levels to the lamps.

This example shows that when the required disinfection goals (log reduction of fecal coliforms) are increased while keeping the

An SX medium-pressure UV reactor from Engineered Treatment Systems undergoes validation. The flow is from right to left with the lamps perpendicular to flow.



PHOTOS AND GRAPHIC COURTESY OF PATRICK BOLLMAN



Results from a system using medium-pressure UV lamp technology. The performance is based on three separate reactors that underwent validation testing for a range of transmittance levels, flow rates, and power input levels to the lamps.

water transmittance constant; the capacity of the system is reduced. This reduction is expected since UV performance is a function of dose and exposure time. For greater log removal of coliforms, the flow must be exposed to the UV intensity for a longer time.

CLOSED-VESSEL ADVANCES

As bioassay validations became the norm, engineers began to notice that hydraulics play a vital and often overlooked role in system performance. In essence, if a UV system design allows short-circuits, or poor flow paths, then the water will receive differing degrees of UV dose. In extreme cases, the water can short-circuit straight through a UV system, rendering it grossly inefficient. Most UV systems need to cope with a variety of flow rates, and usually an operating flow range is considered when designing the system.

The standard in the municipal wastewater industry is to put UV lamps in an open-channel configuration. The industry went with this



A medium-pressure reactor with a design that incorporates an access hatch (on top) to ease operator maintenance.

Today's closed-vessel UV chambers are fitted with high-powered amalgam or medium-pressure lamps, automatic wiping mechanisms, air release valves, and hatches to provide access to the interior of the chamber.

original configuration largely because early municipal adopters of UV disinfection retrofitted their chlorine contact basins for the purpose.

Even today when new plants are constructed, the norm is to install open-channel UV systems because they are familiar to engineers and operators. However, there are alternatives, including closed-vessel reactors.

Early closed-vessel reactors received poor grades because they were fitted with large numbers of low-pressure lamps and did not have automatic wiping mechanisms to keep the lamps clean. Today's closed-vessel UV chambers are much different, as they are fitted with high-powered amalgam or medium-pressure lamps, automatic wiping mechanisms, air release valves, and hatches to provide access to the interior of the chamber.

Closed-vessel UV systems are proven in municipal water systems, industrial process water systems, swimming pools, water parks, ballast water systems, and many other applications. Closed-vessel systems offer many benefits for treatment plant operators and consulting engineers. These include:

Quick, easy, low-cost installation. A closed-vessel system can be thought of as a spool piece in a pipe. The systems are fitted with ANSI flanges and can be installed as a contractor would install plant piping. There is no need for pipe support directly under the chamber, as pipe supports can be added to influent and effluent piping. Closed-vessel chambers eliminate the need of precision alignment of poured concrete walls and floor. Some estimates are that closed-vessel systems can reduce contractor installation costs by up to 80 percent.

Installation flexibility. Closed-vessel systems can be installed in horizontal or vertical pipe runs. This allows consulting engineers greater flexibility when designing a new system or retrofitting an existing treatment plant. Vertical installations lead to a smaller footprint and eliminate air entrapment, but require additional head for gravity-fed systems.

Wiping mechanism is external to water. Systems are typically fitted with a fractional-horsepower motor external to the chamber and water. The motor is coupled to an internal threaded screw that turns and drives the wiping carriage across the quartz sleeves and UV intensity monitor. It is critical to keep all optical paths free from fouling to ensure optimum disinfection.

Simpler service. Wiper rings can be replaced without removing the wiping carriage from chamber. Systems with access hatches allow operators to replace wiper rings without having to remove the complete wiper assembly. The design also allows operators to replace lamps without draining the chamber and to replace individual lamps with relative ease. The lamps are removed without any contact with effluent, reducing the risk of disease or infection. To replace the quartz sleeves, the chamber needs to be drained, but each sleeve can be replaced individually.

Nuisance prevention. A closed system eliminates fly and mosquito nuisances and protects electrical components against corrosion that can be caused by elevated humidity. It also excludes sunlight, which causes algae to grow and stimulates an enzyme that can repair DNA damage to pathogens and thus reduce system effec-

tiveness. In addition, operators are protected against inhalation of aerosols containing pathogens.

Reduced safety concerns. Closed-vessel systems keep UV light inside the chamber, reducing the chance for operator exposure. Open-channel lamps running under effluent pose little risk, but if the level control fails, or if the lamps are turned on when the racks are lifted out, operators are at risk. UV light can burn exposed skin in seconds, causing sunburn. Burns to the inside of the eyeball (sometimes called arc eye or welding flash) are extremely painful and can lead to retinal lesions, cataracts, and yellowing of the lens on prolonged exposure.

System validation is performed under controlled conditions, and system variables (flow, transmittance, power loads and lamp intensity) are carefully recorded as samples are taken before and after the UV system.



CONCLUSION

A persuasive case can be made to put the UV disinfection system for wastewater into a closed pipe, as in nearly every other application that uses UV. Closed systems optimize hydraulics and reduce operators' exposure to the wastewater and the UV light itself. Manufacturers offer reactors up to 30 inches in diameter designed specifically for wastewater treatment applications.

ABOUT THE AUTHOR

Jon McClean is president and Patrick Bollman, P.E., is municipal operations manager for Engineered Treatment Systems (ETS), LLC, a manufacturer of UV disinfection equipment based in Beaver Dam, Wis. tpo



Odor Control and Disinfection

By Scottie Dayton

HYDROGEN SULFIDE ANALYZER

Arizona Instrument's Jerome J605 hydrogen sulfide analyzer has a resolution of 20 ppt and detects hydrogen sulfide vapor levels as low as 3 ppb. It is housed in a light and ergonomically designed case. The gold film sensor has been upgraded for longer life. The device has a larger display, onboard data logging, auto zeroing and battery-powered sensor regeneration. Communication options include USB communication, SCADA compatibility via 4-20 mA output, and menu-driven programming. Portable and fixed instrumentation are available. **800/528-7411; www.azic.com.**



Jerome J605 analyzer from Arizona Instrument



Odor control system from Ozonology

COMPACT SYSTEM

The odor control system from Ozonology has a compact contact chamber for reacting ozone with hydrogen sulfide and other gases. The fiberglass contact chamber uses a gridwork of internal baffles to provide up to 30 seconds detention time. It is designed to be placed on a rooftop to conserve space or located on grade.

The unit neutralizes 5 ppm hydrogen sulfide drawn off coarse screens using ozone. Chambers are sized in relation to exhaust air volume and desired detention time, and ozone is injected via spargers in the incoming air supply duct. The ozone dosage is based on air volume and concentrations of hydrogen sulfide and other odor constituents. **866/998-8808; www.ozonology.com.**

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The standard inlet is a 4-inch side inlet to allow for mounting the filter on the floor. Bottom inlets are available for mounting directly on the vent. The crossflow media bed allows fresh air to enter. The device works with the blower on or off. A saturation indicator monitors VOC breakthrough. **973/846-7817; www.stopsepticodor.com.**



MT-50-Power T lift station filter from Simple Solutions



ECO₂ SuperOxygenation Technology

OXYGENATION SYSTEM

ECO₂ SuperOxygenation Technology prevents formation of hydrogen sulfide by dissolving pure oxygen in wastewater to raise dissolved oxygen levels and maintain aerobic conditions in force mains, headworks and primary clarifiers. The technology can supplement DO in for DO and BOD discharge compliance. **317/706-6484; www.eco2tech.com.**



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BIOBUG UL from Bio-Systems International

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Dual technology reactor controls odors

Problem

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Solution

The two-stage **EcoPure system** handles 1,000 cfm of air containing high concentrations of hydrogen sulfide (H_2S) and other organic sewage odors. The unit combines a biotrickling filter of EcoBase plastic media with a carbon polishing stage. Primary treatment occurs in the biotrickling filter with its synthetic media consisting of uniform surface area, flow distribution, and biomass contact time.

Flow channels in the filter eliminate plugging. Controlled air turbulence optimizes mass transfer of inorganic and organic odorous compounds and proliferates the growth of the odor-removing bacteria. Combining activated carbon with the unit's air purification power extends the carbon life up to 10 times over typical carbon filters for low emissions without high cost.

RESULT

The compact, quiet reactor removes more than 99.5 percent of H_2S and more than 95 percent of all odors in the airstream. Minimal maintenance keeps operating costs low. **856/258-6969; www.bioairsolutions.com.**



Manatee County solves odor problems

Problem

Seasonal odor complaints taxed the staff at the Manatee County (Fla.) Wastewater Treatment and Collection Department, and H_2S gas corroded the infrastructure. Initially, the department addressed the complaints on a case-by-case basis, but, "We couldn't keep up," says Jim Marble, collections systems superintendent. "We needed to do more testing to achieve optimum performance from our chemicals."

Solution

After working with Siemens Water Technologies, the county outsourced the operation rather than add seasonal personnel. Based on data collected at the site, **Siemens Water Technologies Odor Control** offered a comprehensive solution of the company's liquid and vapor products under a single contract. Liquids targeting odor compounds included BIOXIDE, BIOXIDE-AQ, and ODOPHOS/ODO-FREE. Custom-designed feed systems dosed the sewers with them. Vapor technologies included wet scrubbers, biofilters, and carbon adsorption.

BIOXIDE solution reduced dissolved H_2S concentrations of more than 50 ppm to less than 0.1 ppm. BIOXIDE-AQ solution, a combination of AQUIT and BIOXIDE solutions, reduced dissolved H_2S levels from 50 ppm to less than 0.1 ppm in force mains, wet wells, and gravity interceptors. Aqueous solutions of ferric-ferrous sulfate (ODO-FREE) and ferrous sulfate (ODOPHOS) controlled H_2S to 0.50 ppm levels.

Siemens used 12 of its technologies at various sites around the 22 mgd system. It maintained the systems and the county monitored the results. Products and services were billed on a consumption or time basis to eliminate capital cost.

RESULT

The solution ended consumer complaints and slowed corrosion of the infrastructure. The county calls a single entity to address odor issues. Records indicate that new problems are resolved in less than two weeks and old problems at existing sites within 24 hours. **866/926-8420; www.water.siemens.com.**

Biofiltration system removes 99 percent of H_2S

Problem

Odor sampling of the organic media biofilter in a pump station in Orange County, Fla., showed 5,500 ppm detection threshold in the outlet from residual H_2S . Controlling odor was important to the Orange County Utilities Water Reclamation Division, as the station is near a large residential development.

Solution

The utilities selected the **MÓNASHELL biofiltration system from Bord na Mona Environmental Products U.S.** The waste airstream is directed into recirculating water within the unit. As it is pulled through the system rather than pushed to reduce the risk of escaping odors, odorous compounds contact microorganisms on the seashell media that begin the odor reduction process.

The process continues with the seashells, which contain high levels of calcium carbonate that neutralize the acid byproducts of sulfide oxidation. The media's physical, structural, and chemical properties allow for smaller filters and higher efficiencies than conventional biotrickling filters. Advantages



include low pressure drop and energy costs, built-in pH control, and low water consumption. The long-lived media requires no additional nutrients, has high porosity, sustains high irrigation rates, and retains large quantities of water.

RESULT

Pilot testing of the unit verified that it removed more than 99 percent of H_2S from the pump station. Reduced sulfur compound (RSC) testing indicated the system removed the most prevalent compound measured — methyl mercaptan. Remaining RSCs were 0.005 ppm and detected volatile organic compounds were 2 to 60 parts per billion by volume. **800/787-2356; www.bnm-us.com.**

Oxidant regenerates spent iron salts

Problem

The City of Raleigh, N.C., used ferrous sulfate ($FeSO_4$) in the collection system to control H_2S and effluent phosphorus. When the Neuse River Wastewater Treatment Plant upgraded to a higher-intensity UV disinfection system, the mechanical wipers failed to clean the lamps because of the sleeve's higher temperature and elevated levels of iron salts. Manual cleaning every two weeks required 32 hours.

Solution

In 2008, the city implemented peroxide regenerated iron sulfide control (PRI-SC) technology from US Peroxide by adding hydrogen peroxide (H_2O_2) at the Walnut Creek lift station to regenerate $FeSO_4$ fed from three upstream locations.

The iron salt absorbs dissolved sulfide as it moves down the line. Intermittent injections of H_2O_2 regenerate the iron salt, allowing it to absorb additional sulfide downstream. A final regeneration site at the treatment plant provides rapid oxidation of sulfides to less than 0.1 mg/l dissolved sulfide in less than five minutes, H_2S loading to the influent scrubbers. Hydrous ferric iron can be used for additional odor control in primary treatment or for enhanced flocculation in clarifiers.

US Peroxide provided all applications and field support to install the H_2O_2 feed. It also provided turnkey service including H_2O_2 supply, double-walled chemical storage system, dosing equipment, remote telemetry monitoring, data collection, dose rate adjustment, applications support, and reporting. The city maintained the existing ferrous sulfate sites and plant alum feed and collected data for raw and final phosphorus levels per the NPDES permit.

RESULT

The city saved \$80,300 per year in chemicals and \$25,600 per year in labor, as the UV sleeve required cleaning only every two months. **877/346-4262; www.h2o2.com. tpo**

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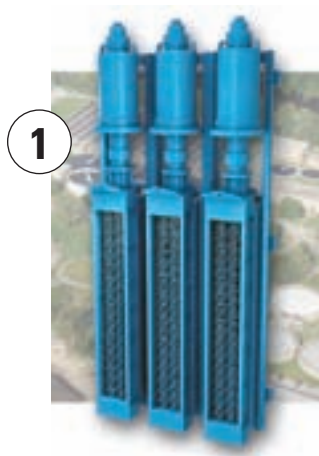
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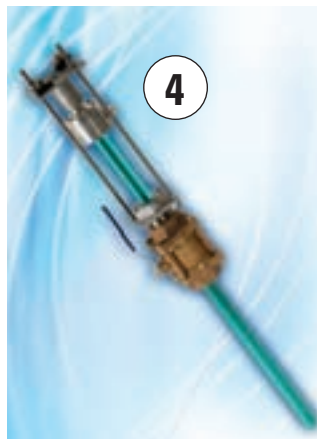
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1. MOYNO OFFERS MAX-FLOW ANNIHILATOR GRINDER SYSTEM

The Max-Flow Annihilator grinder from Moyno Inc. is a custom engineered headworks debris handling system designed to protect downstream pumps, valves and process equipment. The system can be used in place of bar rakes and screens, as well as drum screen grinders. The unit has two or more grinders mounted side by side in a stainless steel retrieval frame in the headworks of a waste treatment system. They can be installed inline, staggered or offset to accommodate a variety of channel widths. **800/486-6966; www.moyno.com.**

2. HACH INTRODUCES sc200 OPEN CHANNEL FLOW MONITOR

The sc200 Universal Controller open channel flow monitor from Hach Co. features plug-and-play setup and communication options. The trans-reflective display uses menu-driven programming to guide the user through setup, primary device selection and calibration. Password protection prevents tampering. The sensor can be used alone, with a second flow sensor or with a Hach digital probe. Two 4-20 mA outputs are standard, with capacity to increase to six. A 4-20 mA input module can be added to allow mA signals from other analyzers. Communication choices

include Modbus RTU and Profibus DPV1. The controller can be panel, surface or pole mounted. **800/368-2723; www.hachflow.com.**

3. CHEMINEER OFFERS MR AGITATORS

MR Agitators from Chemineer Inc. are made for mixing fluids in the chemical, biodiesel/ethanol and wastewater industries. The mixers feature a parallel-shaft, helical gear design, minimum 50,000-hour L10 bearing life and oversized output shaft for extended life. Other features include cast-iron housing and double-lip seal, compliance with AGMA, OSHA, ANSI, IEC, DIN, EU and ATEX standards, and a variety of seal options. The swing-out mechanical seal change is designed for easy maintenance and reduced downtime. Custom pedestals, couplings, impellers, shafts and steady bearings are available. The unit can be mounted to support beams for open tank operation or to pedestals, plates or flanges for closed tank operation. **800/643-0641; www.chemineer.com.**

4. MCCROMETER INTRODUCES FPI MAG FLOWMETER

The Model 394L FPI Mag (full profile insertion) flowmeter from McCrometer features bidirectional measurement. The compact meter has an L-Series converter calibrated to provide real-time indication of flow and totalized flow volume in both forward and reverse directions. The unit's multisensor design compensates for variable flow profiles, including swirl, turbulence and low-flow conditions by reporting the average flow rate over the full diameter of the pipe. **800/220-2279; www.mccrometer.com.**

5. SPECTROM INTRODUCES TRUE UNION BALL VALVES

True Union Ball Valves from Spectrom Parts are available in 1/2-, 1-, 1 1/2-, 2- and 3-inch sizes. The valves are made of Georg Fischer PVC or CPVC (other materials available) with threaded or socket connections (valves up to 2 inches come with both socket and threaded ends). Each valve has an option of EPDM or Viton seals. **909/512-1261; www.spectromparts.com.**

6. INDUSTRIAL SCIENTIFIC INTRODUCES MX4 MULTIGAS DETECTOR

The Ventis MX4 multigas detector from Industrial Scientific Corp. is a lightweight, configurable device available with or without an integral pump and is compatible with iNet. The unit detects one to four gases, including oxygen, combustible gases (LEL or CH₄) and any two of the following: CO, H₂S, NO₂ and SO₂. Designed for confined-space monitoring or continuous-personal monitoring in hazardous environments, the gas detector can be used to draw samples from up to 100 feet. It has an audible alarm, LED visual alarms and vibrating alarm. **800/338-3287; www.indsci.com.**

7. SENSOREX INTRODUCES SUBMERSIBLE, INSERTION ELECTRODES

The S651CD submersible and S656CD insertion electrodes offer low maintenance and long life. The 651CD submersion pH/ORP electrode is designed for measurements in tanks, flumes and sewer lines. It features a quick disconnect, flat surface to resist coating and can be mounted at a 45-degree angle facing into the flow to further increase scrubbing action across the measured surface. The sensor is available in CPVC and with or without ATC elements. The 6556 CD enables pH measurements to be made in pressurized tanks and mainlines without shutting down the system for electrode maintenance. **714/895-4344; www.sensorex.com.**

8. DETCON OFFERS X40 CONTROL SYSTEM

The Model X40 low-power alarm and control system from Detcon is made to monitor multiple gas detection sensors and a range of other field devices. The system can be customized and expanded. All I/O modules are individually addressable and operate on 11.5-30 volts DC. The X40-8 can provide power for up to eight field devices and house up to six 4-channel I/O modules. The X40-32 provides power for up to 32 field devices and can house up to 12 4-channel I/O modules. The control system is completely field programmable and offers advanced technology with intuitive, embedded intelligence. **888/367-4286; www.detcon.com.**

9. CONTROL MICROSYSTEMS INTRODUCES TRIO ER45E DATA RADIO

The Trio ER45e data radio from Control Microsystems is designed to increase IP communication network reliability and coverage while reducing the cost of deployment and management. The radio provides both Ethernet and serial connectivity in point-to-point and point-to-multipoint SCADA and telemetry applications in licensed 450 MHz band. Features include ChannelShare, data compression, low latency and over-the-air firmware upgrades. **888/267-2232; www.controlmicrosystems.com.**

10. OMEGA INTRODUCES M12 SERIES SENSORS

M12 Series thermocouple sensors from Omega Engineering Inc. include M12 connectors with thermocouple compensated pins in Type J and Type K calibrations. The sensors are available with Type J, 316 stainless steel or Type K, Inconel 600 sheaths, ungrounded junctions and a variety of metric and imperial diameters and lengths. The connectors have a temperature range of -50 to 90 degrees C (-58 to 194 degrees F) and are rated to IP67. **203/359-1660; www.omega.com.**

(continued)

product spotlight



De-Gritting System Combines Hydrocyclone and Filter

De-gritting system from Flo Trend Systems

By Ed Wodalski

The front loader de-gritting system from Flo Trend Systems combines a gum-rubber-lined, steel-body hydrocyclone with a front loader container filter.

Underflow from the hydrocyclone and concentrated wet grit discharge into the container filter, allowing water to pass through and exit the discharge ports on the bottom of the unit. With a small amount of fines passing through at the beginning of the fill cycle, the Poly-2004 filter media can withhold particles 25 microns and larger.

The idea of combining a hydrocyclone and container filter originated with New York City in the mid-1990s. "They started buying dewatering boxes from us and were loading them with grit from multiple sources, one of which was the hydrocyclone," says Russ Caughman, company vice president.

Hydrocyclones are typically used with dewatering screw conveyors for grit removal and dewatering, but the discharge can be quite wet and present a problem for disposal. A client suggested a dewatering box might be a better solution for producing dry cake. Flo Trend contacted a hydrocyclone manufacturer and built a frame to fit over the dewatering box.

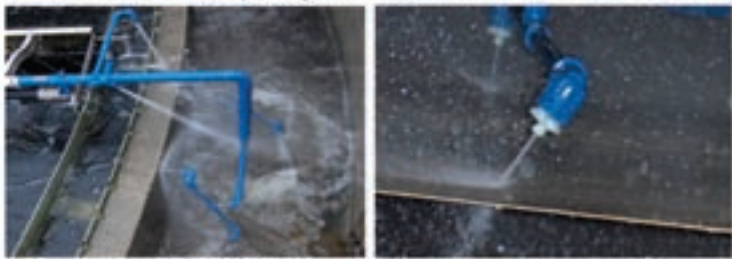
"I don't know if you'd consider that new technology, but it is, as far as we're concerned," Caughman says. "I know that our boxes have been used with hydrocyclones for grit removal here and there, but they don't tell us how they're delivering the grit to our dewatering boxes."

The combination system positions the hydrocyclone at 11.5 degrees, rather than vertically. The result is a less watery discharge and more concentrated solids. A vacuum pump can be attached to the dewatering box to pull fluid through the grit for quicker dewatering.

The 6-inch hydrocyclone has a 2-inch vortex finder and 12-degree lower cone, delivering 90 gpm at 10 psi. The unit can remove 95 percent of particles 100 microns and larger with a specific gravity of 2.7 and greater. Featuring a 2.2-inch carbon steel inlet head, the hydrocyclone has a carbon steel housing with corrosion-resistant exterior coating.

The 2-cubic-yard filter dump container and frame are made of 10-gauge, 304 stainless steel plate with a 7-gauge, 304 stainless steel plate floor. The walls and floor are reinforced by 304 stainless steel structural angle and formed channel framing. Removable filter supports allow easy cleaning. Wall filters drain into the bottom cavity. Two 2-inch female-threaded drainage ports are located in the bottom of the interior support panel. Other features include lift brackets and four caster-type wheels for lateral mobility. **713/699-0152; www.flotrend.com.**

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product news



11. TIME MARK INTRODUCES 64-5 POWER FACTOR REGULATOR

The Model 64-5 monitoring and power factoring control system from Time Mark Corp. is designed to obtain an improved power factor with a minimum of added capacitors and uses a phase-angle sensing circuit to monitor the power factor of a three-phase power line. The unit automatically responds to changing power factors by closing or opening the internal relays, which add or subtract capacitor banks on the line. Features include adjustable limits, automatic/manual modes, activated step indicators, 2-inch by 8-inch backlit LCD display and five relay outputs. **800/862-2875; www.time-mark.com.**



12. BADGER METER INTRODUCES OVAL GEAR METERS

The Model IOG oval gear flowmeter from Badger Meter is available in aluminum with liquid crystal polymer gears and stainless steel with stainless steel gears. It has 1/2-, 3/4- and 1-inch sizes with inline National Pipe Thread and British Straight Pipe Thread or flanged in 150, 300 and DIN 16. The meter is designed to withstand extreme conditions and high-viscosity liquid. It can be installed in tight spaces either vertically or horizontally and does not require a straight run of pipe or flow conditioning. **800/876-3837; www.badgermeter.com. tpo**



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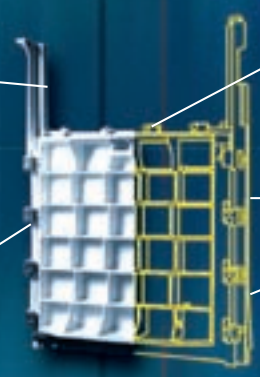
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people/awards

J.B. Myers Enterprises in Blairsville, Pa., received the Governor's Award for Safety Excellence.

The **City of Toledo-Bay View wastewater treatment plant** received the 2010 Pacesetter Plant Award for excellence in developing a state-of-the-art combined cycle power plant that produces renewable energy and reduces the city's carbon footprint.

The **Regional Municipality of Wood Buffalo, Alberta, and Stantec Consulting Engineers** of Edmonton, Alberta, received an Award of Merit from the Consulting Engineers of Alberta, and the 2010 Northwest Trenchless Project of the Year Award from the North American Society for Trenchless Technology for a wastewater pipeline project.

The **Hawaii Section of the American Water Works Association** announced award recipients for 2010:

- Paul Kemp, George Warren Fuller Award
- Lisa Appelgate, Special Recognition Award
- Russell Okita, Outstanding Section Member Award

The **Hale Avenue Resource Recovery Wastewater Facility** in Escondido, Calif., received three awards from the San Diego Section of the California Water Environment Association:

- 2010 Plant of the Year
- Sarah Hooper, Operator of the Year
- Christina Moran, Laboratory Person of the Year

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

British Columbia

The British Columbia Water & Waste Association has these courses:

- May 30-June 3 – Wastewater Treatment I, Fort St. John
- May 30-June 3 – Wastewater Distribution I, Fort St. John
- June 1-2 – Small Wastewater Systems, Fort St. John

Visit www.bcwwa.org.

Texas

The Texas Water Utilities Association has these courses:

- June 1 – Pump and Pumping, Longview
- June 21 – Basic Wastewater, Victoria
- July 18 – Utilities Management, Carrollton
- July 19 – Utilities Calculations, Gatesville

Visit www.twua.org.

Water Environment Federation

The WEF has a Perspectives on Collection Systems Rehabilitation and Replacement seminar on June 1 via webcast. Visit www.wef.org.

Wisconsin

The Wisconsin Department of Natural Resources has these courses:

- June 15 – Personal Protective Equipment, Plover
- July 14 – Excavation "Competent Person" Safety, Plover
- July 28 – Permit-Required Confined Space Entry, Ashwaubenon

Visit www.dnr.state.wi.us/org/es/science/opcert/training.htm. **tpo**

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CALENDAR OF EVENTS

June 5-8

Pennsylvania Water Environment Association Annual Technical Conference and Exhibition, Lancaster Marriott. Call 570/549-2204 or visit www.pwea.org.

June 6-8

New York Water Environment Association/New Jersey Water Environment Association, The Sagamore Hotel, Lake George. Visit www.nywea.org.

June 8-10

Iowa Water Environment Association Annual Conference, Coralville. Visit www.iawea.org.

June 12-15

Water Environment Federation Conference: Collection Systems 2011, Raleigh, N.C. Visit www.wef.org.

June 12-16

ACE: American Water Works Association Annual Conference & Exhibition, Washington, D.C. Visit www.awwa.org.

June 21-23

Ohio Water Environment Association Annual Conference & Exhibit Expo, Kalahari Resort & Convention Center, Sandusky. Call 614/488-5800 or visit www.ohiowea.org.

June 26-29

Michigan Water Environment Association Annual Conference, Shanty Creek Resort, Bellaire. Visit www.mi-wea.org.

July 10-13

Georgia Association of Water Professionals Annual Conference & Expo, Savannah International Trade & Convention Center, Savannah, Ga. Visit www.gawp.org.

July 21-22

Nebraska Water Environment Association's Heartland Operators Conference, Holiday Inn, Kearney, Neb. Call 402/228-5221 or visit www.ne-wea.org.

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Aqua-Aerobic Partners with SupplyCore Middle East

Aqua-Aerobic Systems Inc., a global provider of wastewater treatment solutions, has partnered with SupplyCore Middle East, a Riyadh-based service and solution provider of advanced technology for infrastructure needs. The partnership will provide wastewater solutions to Saudi Arabia as well as the rest of the Gulf Cooperation Council.

FCI Releases Product, Services Catalog

The flow/level measurement product and services catalog CD from Fluid Components International LLC is designed to assist engineers in specifying the right flow, level or temperature instrument for improving plant process control lines or increasing OEM equipment performance. The catalog is available at the company's website, www.fluidcomponents.com/cd.



Schneider Electric Offers Online 3D CAD Drawings

Schneider Electric has made 3D CAD drawings for its automation and control products available to OEMs and end users on its website. To access the website and download the drawings, go to www.schneider-electric.us.

Simple Solutions Adds Odor Control Dealer

R.C. Worst & Company Inc. has joined Simple Solutions Distributing as a dealer for the Wolverine Brand of odor control products. Idaho-based Worst is a third-generation, family-owned business serving the water and wastewater industries.

Gorman-Rupp Mansfield Division Receives ISO Certification

The Gorman-Rupp Co.'s Mansfield, Ohio, division achieved certification to ISO 14001:2004 (environmental management system). Certification of the pump manufacturer recognizes the use of best management practices, technical advances, continual improvement and environmental awareness.

Synagro CEO Featured on *Undercover Boss*

Bill Massa, president and chief executive officer for Synagro appeared on the March 27 episode of the CBS reality TV show *Undercover Boss*. The episode can be viewed at www.cbs.com/primetime/undercover_boss/video/. The wastewater treatment company enables municipalities and industrial companies to turn waste into fertilizer, compost, renewable energy and other reusable goods. During filming, Massa cleaned sludge from a 2.2-million tank, worked alongside a centrifuge operator to separate water from solids and helped dredge and clean a lagoon.

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PSG Names Brito Market Development Director

Pump Solutions Group named Edison Brito market development director, Americas. Fluent in English and Spanish, Brito brings 18 years of experience to his position.



Edison Brito

Water for People Marks 20 Years

Founded by the American Water Works Association in 1991, Water for People marks its 20th anniversary in 2011. Water for People is an international, nonprofit humanitarian organization dedicated to creating reliable safe drinking water resources, improved sanitation facilities and hygiene education programs in the developing world.

WesTech Partners with Nordic Water Products

WesTech Engineering Inc. has partnered with Nordic Water Products AB to bring the ZICKERT clarification system, used in sedimentation tanks for wastewater treatment plants, to North America.

Griswold Pump Receives ISO Certifications

Griswold Pump Co. has received ISO 9001:2008 (quality management system) and ISO 14001:2004 (environmental management system) certification. The certifications cover the design, development and manufacture of Griswold's pumps, pump parts and accessories. Both certifications are from SAI Global.

Wilden Launches 'See More Green' Website

Wilden's "See More Green" website, www.wildenpump.com/seemoregreen, provides information on its Pro-Flo X air distribution system and energy-saving benefits. The site also features the PX Simulator that allows users to optimize their Pro-Flo X pump for actual application parameters, and videos on the company's See More Green initiative.



Online White Paper Looks At Solar-Powered Aeration

A white paper published on the *Treatment Plant Operator* website presents a case study on the use of solar-powered aeration in activated sludge wastewater treatment facilities. Sponsored by SolarBee, a manufacturer of solar-powered mixing and aeration systems, the paper describes the experience of the Mebane Bridge Wastewater Treatment Plant in Eden, Minn., with solar-powered circulation technology for mixing and oxygenation previously supplied solely by electric-utility-powered aerators.

During study periods in which the plant used solar-powered circulation, no NPDES permit violations occurred. Water quality parameters were generally unchanged or improved. Both mean monthly electrical-grid power use and cost decreased significantly. Annual electricity usage declined by 1,692,000 kWh (42 percent). The cost savings on electricity resulted in a 10.7 month payback period.

The white paper can be accessed at www.tpomag.com/whitepapers. **tpo**

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