

TREATMENT PLANT OPERATOR

# tpo™

DEDICATED TO WASTEWATER & WATER TREATMENT PROFESSIONALS

tpomag.com  
AUGUST 2017

TECHNOLOGY DEEP DIVE:  
**Mobile Sensor  
Management**

PAGE 36

HEARTS AND MINDS:  
**Water festival  
in Tucson**

PAGE 44



Magan Lersch  
Sr. Environmental Specialist

Steven Nutter  
Environmental Program Manager

Glory Walker  
Sr. Environmental Specialist

## Prescription for *Excellence*

**FORT WORTH'S ENVIRONMENTAL MANAGEMENT  
SYSTEM PROVIDES A ROAD MAP FOR SOLUTIONS**

PAGE 38

IN MY WORDS:  
**Tapping the potential of biogas**

PAGE 26

# ProSeries-M<sup>®</sup>

**PRECISION CHEMICAL METERING**  
FOR THE TREATMENT OF MUNICIPAL WATER & WASTEWATER.

PERISTALTIC METERING  
PUMP

## ProSeries-M<sup>®</sup> M-2

**PERISTALTIC PERFORMANCE  
AT AN EXCELLENT PRICE POINT**

ProSeries-M<sup>®</sup> peristaltic chemical metering pumps can handle the challenges associated with metering the tough often viscous or gaseous chemicals used in the treatment of municipal water and waste water.

### M-2 Benefits Include:

- **ACCURATE, DEPENDABLE CHEMICAL FEED**  
200:1 Turndown Ratio, up to 17.2 GPH (65.1 LPH). Varies by model.
- **INTEGRATED CONTROLS / USER INTERFACE**  
Local and remote configuration and connectivity to external devices (ie. SCADA).
- **STRAIGHTFORWARD, ALL INCLUSIVE PRODUCT ORDERING**  
Controls, interface, and motor are all built-in. A single model includes all necessary components for installation.
- **BUILT-IN PATENTED TUBE FAILURE DETECTION (TFD)**  
When a conductive chemical is detected, the pump automatically shuts down and energizes an alarm or relay. No false triggering with wash down.
- **ROBUST MOTOR**  
Quiet, Variable Speed, DC drive.
- **MAINTENANCE ALARMS**  
Tube count display & alarm for tube maintenance.
- **RUGGED ENCLOSURE**



## Flex-A-Prene<sup>®</sup>

### HEAVY-DUTY PERISTALTIC PUMP TUBING

Flex-A-Prene<sup>®</sup> is a multichannel pump tube assembly designed by Blue-White<sup>®</sup> exclusively for ProSeries-M<sup>®</sup> and Flex-Pro<sup>®</sup> Peristaltic Metering Pumps. Flex-A-Prene<sup>®</sup> is engineered for optimum performance, including up to four times longer service life than other pump tube assemblies.

# Blue-White<sup>®</sup>

[www.blue-white.com](http://www.blue-white.com) • [www.proseries-m.com](http://www.proseries-m.com)

5300 Business Dr., Huntington Beach, CA 92649 USA • 714-893-8529 • [sales@blue-white.com](mailto:sales@blue-white.com)

Cleaner Water for a Brighter Future® Raptor® and H-Pac® are trademarks owned by Lakeside Equipment Corporation. All other trademarks are property of their respective owners. © 2017 Lakeside Equipment Corporation.



## SOME THINGS WORK BETTER TOGETHER.

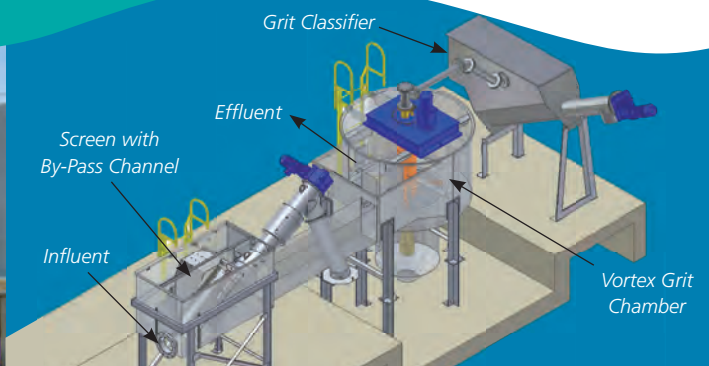
**Raptor Complete Plant and H-Pac system combine the actions of two or more steps in a single unit.** Our *Raptor* Complete Plant combines screening and grit removal into one self-contained fully automated unit. It features a stainless steel tank and the *Raptor* Fine Screen, *Raptor* Micro Strainer, or the *Raptor* Rotating Drum Screen plus dewatering and transport screws in the grit removal chamber. An optional grease collection system can be included. Grease can be removed manually or by means of an added motorized skimmer.

Our H-Pac system combines our *Raptor* or Hydronic T Screening product line with our SpiraGrit Vortex Grit Chamber in an elevated pre-engineered headworks system. Capable of handling flows as high as 12 mgd, the H-Pac can be installed above or below ground and its compact design uses less space and costs less than other packaged systems. For more than 85 years, Lakeside has provided solutions for treatment plant designers and engineers—working better together!

Speak to one of our experts at 630.837.5640, email us at [sales@lakeside-equipment.com](mailto:sales@lakeside-equipment.com), or visit [www.lakeside-equipment.com](http://www.lakeside-equipment.com) for more product information.



Cleaner Water for a Brighter Future®



### Package Headworks Systems

*Raptor*® Complete Plant  
H-Pac®

FREE INFO – SEE ADVERTISER INDEX

# AllMax Software can save you time and make your job easier!

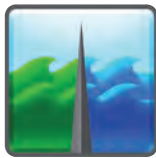
## Contact us today to find out *how*.



Antero™  
Maintenance



Operator10®  
Water & Wastewater



Synexus™  
Pretreatment

**AllMax**  
Software  
www.allmaxsoftware.com

800-670-1867

sales@allmaxsoftware.com

FREE INFO – SEE ADVERTISER INDEX

## advertiser index

AUGUST 2017

	FREE INFO		FREE INFO				
AdEdge Water Technologies, LLC .....	7	<input type="checkbox"/>	Hydro International .....	72	<input type="checkbox"/>		
					JDV Equipment Corporation .....	61	<input type="checkbox"/>
Aerzen USA .....	15	<input type="checkbox"/>			Keller America Inc. ....	71	<input type="checkbox"/>
			Kifco, Inc. ....	69	<input type="checkbox"/>		
AllMax Software, Inc. ....	4	<input type="checkbox"/>			Komline-Sanderson .....	37	<input type="checkbox"/>
					Kuhn North America, Inc. ....	59	<input type="checkbox"/>
Aqua-Aerobic Systems, Inc. ..	11	<input type="checkbox"/>			Lakeside Equipment Corporation .....	3	<input type="checkbox"/>
			Landia, Inc. ....	65	<input type="checkbox"/>		
BDP Industries .....	35	<input type="checkbox"/>	Park Process .....	69	<input type="checkbox"/>		
			Paxxo .....	70	<input type="checkbox"/>		
Blue-White Industries .....	2	<input type="checkbox"/>	Rhino Linings Corporation ....	27	<input type="checkbox"/>		
Bright Technologies, Division of Sebright Products, Inc. ...	59	<input type="checkbox"/>	Robuschi USA .....	23	<input type="checkbox"/>		
					Roto-Mix, LLC .....	65	<input type="checkbox"/>
Centrisys Corporation .....	25	<input type="checkbox"/>			ScreenCo Systems LLC .....	69	<input type="checkbox"/>
			<b>SEEPEX.</b> ALL THINGS FLOW		SEEPEX Inc. ....	53	<input type="checkbox"/>
CNP - Technology Water and Biosolids Corp. ....	53	<input type="checkbox"/>			Vaughan Company, Inc. ....	29	<input type="checkbox"/>
Duperon Corporation .....	17	<input type="checkbox"/>	Walker Process Equipment, A Div. of McNish Corp. ....	43	<input type="checkbox"/>		
			Wangen America Inc. ....	4	<input type="checkbox"/>		
Eagle Microsystems, Inc. ....	61	<input type="checkbox"/>	WWETT Show .....	63	<input type="checkbox"/>		
			<b>CLASSIFIEDS</b> .....	70	<input type="checkbox"/>		
Enviro-Care Company .....	43	<input type="checkbox"/>					
Force Flow .....	43	<input type="checkbox"/>					
							
Hach .....	5	<input type="checkbox"/>					
Heron Innovators .....	8	<input type="checkbox"/>					
							
Huber Technology, Inc. ....	9	<input type="checkbox"/>					
Hurst Boiler & Welding Company, Inc. ....	35	<input type="checkbox"/>					

### FREE Information from Advertisers (check the Free Info boxes above)

PRINT NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

FACILITY NAME: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ CELL PHONE: \_\_\_\_\_

FAX: \_\_\_\_\_ EMAIL: \_\_\_\_\_

Scan and email to: nicole.labeau@colepublishing.com / Fax to: 715-546-3786  
Mail to: COLE Publishing Inc., P.O. Box 220, Three Lakes WI 54562



the water quality event™  
Visit us at booth 4257



**WANGEN AMERICA**  
ONE STEP AHEAD™

The Xpress pump is equipped with a quick change system, which allows changing wear parts without removing the pump from the pipeline system. An awarded innovation.



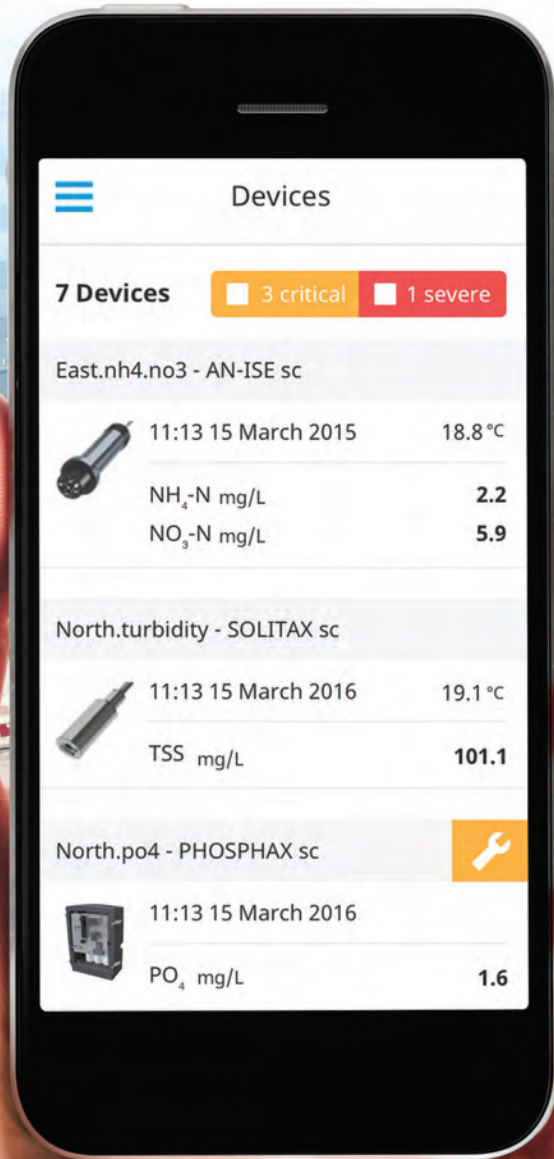
**Wangen America, Inc.**  
Wood Dale, IL 60191  
phone: (847) 201-3121  
mail: info.usa@wangen.com

[www.wangen.com](http://www.wangen.com)

The Pumps Experts. Since 1969.

FREE INFO – SEE ADVERTISER INDEX

# CLARITY THROUGH ACTIONABLE SENSOR INFORMATION



Be Right™

Mobile Sensor Management gives you confidence in your water quality analysis. Anytime. Anywhere. Providing clarity through easy access to crucial information.

LEARN MORE ABOUT THE POWER OF CLARITY AT:  
[WWW.HACH.COM/MSM](http://WWW.HACH.COM/MSM)



### on the cover

The Fort Worth biosolids land application program uses an environmental management system (EMS) as a framework path to help identify the root causes of issues, evaluate potential remedies, and put the best ones into practice. Pictured from left are team members Magan Lersch, senior environmental specialist; Steven Nutter, environmental program manager; and Glory Walker, senior environmental specialist. (Photography by Olivia Ogren-Hrejsa)

## top performers:

### WATER PLANT Page 18 Excellence is SOP

Partnership for Safe Water standards drive everything from operating procedures to equipment specifications at a Phase IV-recognized water treatment plant.

By Jim Force

### WASTEWATER PLANT Page 30 Recovering the Resources

A plant on Lake Michigan's shore uses a mix of innovative technologies to make the most of nutrients and energy carried in wastewater.

By Jim Force

### WASTEWATER OPERATOR Page 12 Retired? Not Exactly.

William Grandner devotes many hours in his post-employment years to advancing the industry and helping operators hone their skills.

By Trude Witham

### WASTEWATER BIOSOLIDS Page 38 Prescription for Excellence

Fort Worth's environmental management system for biosolids provides a road map for solving problems and steadily improving processes.

By Ted J. Rulseh

### LET'S BE CLEAR Page 8 The System Works

Management systems of various kinds take time and effort to put in place, but in the end they can pay off in smoother operations and better problem-solving.

By Ted J. Rulseh, Editor

### @TPOMAG.COM Page 10

Visit daily for exclusive news, features and blogs.

### PLANTSCAPES Page 16 Blending Right In

A decorative wall, abundant plantings and attractive roofs help a reclamation plant integrate with homes, businesses, parks and a county courthouse.

By Jeff Smith

### SUSTAINABLE OPERATIONS Page 24 Planning the Next Chapter

Cogeneration and solar power have brought big sustainability gains in Albuquerque — now operators are looking for more advances.

By Doug Day

### IN MY WORDS Page 26 Tapping a Rich Vein

Biogas from clean-water plants and other sources has potential to become a significant clean and renewable fuel in the nation's energy portfolio.

By Ted J. Rulseh

### TECHNOLOGY DEEP DIVE Page 36 Just One Look

Mobile Sensor Management technology makes it

easier for operators to keep tabs on process values and keep instruments well maintained and calibrated.

By Ted J. Rulseh

### HEARTS AND MINDS Page 44 Creating Water Stewards

A STEM curriculum and an annual water festival in Tucson have helped deliver messages about the value of water to more than 100,000 students.

By Craig Mandli

### Headworks and Biosolids Management Directory Page 46

### HOW WE DO IT Page 52 In Hot Water

Advanced cooling tower technology helps a Texas utility treat water from a deep geothermal aquifer, reducing temperatures while removing radon and H<sub>2</sub>S.

By Ed Sullivan

### PRODUCT FOCUS Page 54 Headworks and Biosolids Management

By Craig Mandli

### CASE STUDIES Page 60 Headworks and Biosolids Management

By Craig Mandli

### WORTH NOTING Page 64 People/Awards; Events

### PRODUCT NEWS Page 66

Product Spotlight – Water: Popular valve redesigned to meet industry standards  
Product Spotlight – Wastewater: Silos offer application flexibility

By Craig Mandli

### INDUSTRY NEWS Page 69

coming next month: September 2017

#### FOCUS:

#### Digital Technology/WEFTEC Pre-Show Issue

» Let's Be Clear: Leaving legacies

» Top Performers:

Water Operator: Brian Steglitz, Ann Arbor, Michigan  
Water Plant: W.R. Wise Water Plant, Greenwood, South Carolina

Wastewater Operator: Scott Thompson, Bend, Oregon

Wastewater Plant: Upper Occoquan Service Authority, Centreville, Virginia

» How We Do It: Air on autopilot

» How We Do It: Ozone system for odor control

» Sustainable Operations: LEED-certified wastewater treatment plant

» In My Words: WEF's new communications and outreach director

» PlantScapes: Raptor rescue site in Tallahassee, Florida

» Technology Deep Dive: Efficient approach to aeration



# ARSENIC IS **NOT** A GAME

## Ready to make the right move?

AdEdge is your one-stop resource for arsenic treatment systems for any size community. We now supply Bayoxide E33 adsorptive media and E33 media replacements for the largest and the smallest systems. As always, AdEdge offers competitive pricing, experienced engineers, and unparalleled support.

With AdEdge's arsenic treatment systems' global success history, why would you go anywhere else?

When you're ready to make the right move, call us at **866.823.3343**.



[www.AdEdgetech.com](http://www.AdEdgetech.com)

# We Efficiently Skim More BioProfits Into Your Pocket!

Sound impossible?  
Let us prove it to you:

see us at  
**WEFTEC BOOTH #8241**  
The Innovation Showcase Pavilion



**HERON INNOVATORS**  
The Clear Advantage

916 • 408 • 6601



The world's *only* manufacturer of  
**Suspended Air® Flotation (SAF) Systems**  
[www.heroninnovators.com](http://www.heroninnovators.com)

FREE INFO – SEE ADVERTISER INDEX



DEDICATED TO WASTEWATER & WATER TREATMENT PROFESSIONALS

Published monthly by COLE Publishing, Inc.

1720 Maple Lake Dam Rd., PO Box 220, Three Lakes, WI 54562

Call toll free 800-257-7222 / Outside of U.S. or Canada call 715-546-3346  
Mon.-Fri., 7:30 a.m.-5 p.m. CST

Website: [www.tpomag.com](http://www.tpomag.com) / Email: [info@tpomag.com](mailto:info@tpomag.com) / Fax: 715-546-3786

**SUBSCRIPTION INFORMATION:** A one year (12 issues) subscription to TPO™ in the United States and Canada is FREE to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that partakes in the consulting, design, installation, manufacture, management or operation of wastewater and water treatment facilities. To subscribe, return the subscription card attached to each issue, visit [tpomag.com](http://tpomag.com) or call 800-257-7222.

Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico and \$150 per year to all other foreign countries. To subscribe, visit [tpomag.com](http://tpomag.com) or send company name, mailing address, phone number and check or money order (U.S. funds payable to COLE Publishing Inc.) to the address above. MasterCard, VISA and Discover are also accepted. Include credit card information with your order.

**ADDRESS CHANGES:** Submit to TPO, P.O. Box 220, Three Lakes, WI, 54562; call 800-257-7222 (715-546-3346); fax to 715-546-3786; or email [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com). Include both old and new addresses.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact Nicole at [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com).

**ADVERTISING RATES:** Call 800-994-7990 and ask for Phil or Kim or email [phil.hahn@colepublishing.com](mailto:phil.hahn@colepublishing.com) or [kim.bruss@colepublishing.com](mailto:kim.bruss@colepublishing.com). Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.

**EDITORIAL CORRESPONDENCE:** Address to Editor, TPO, P.O. Box 220, Three Lakes, WI, 54562 or email [editor@tpomag.com](mailto:editor@tpomag.com).

**REPRINTS AND BACK ISSUES:** Visit [www.tpomag.com](http://www.tpomag.com) for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email [jeff.lane@colepublishing.com](mailto:jeff.lane@colepublishing.com). To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com).

**CIRCULATION:** 68,317 copies per month.

© 2017 COLE PUBLISHING INC.

No part may be reproduced without permission of publisher.



let's be clear

## The System Works

MANAGEMENT SYSTEMS OF VARIOUS KINDS  
TAKE TIME AND EFFORT TO PUT IN PLACE,  
BUT IN THE END THEY CAN PAY OFF IN SMOOTHER  
OPERATIONS AND BETTER PROBLEM-SOLVING

By Ted J. Rulseh, Editor

The treatment plant manager steps to the front of the staff meeting. “I’ve got some exciting news,” she says. “We’re going to implement an environmental management system.”

And you can just imagine the groans and rolls of the eyes. “Oh, great,” team members are thinking. “Another bureaucratic exercise. The next flavor of the month.”

That’s easy to understand, because in the public and private sectors, many management fads have come and gone. The reality, though, is that some management systems have been well proven and, once put in place, can deliver benefits for years.

### CASE IN POINT

One example is the environmental management system. It’s a concept promoted by the National Biosolids Partnership, and it has a number of adherents. As one example, the EMS deployed around the biosolids land application program in Fort Worth, Texas, has paid notable dividends (see the Top Performer profile in this issue).

Sure, putting an EMS together takes work. There are regimented steps to follow. Information to gather. Policies to adopt. Standard operating procedures to create and document. Responsibilities to define and apportion. All this and more takes time from operators who already have an abundance of daily work to do.

One way to look at the extra work, though, is as an investment that will pay off later, through continuous improvement in environmental performance, regulatory compliance, quality management, and relations with community members and other stakeholders. The Fort Worth biosolids team can attest to those benefits.

Another advantage of an EMS is that it lays down a roadmap to follow when problems inevitably occur. Imagine showing up one day to find an overwhelming odor problem, a serious treatment process upset, or some other calamity.





What do you do now? Where do you start? Who needs to get involved? An EMS sets out a procedure. It enables the team to say collectively, "Let's not panic. Let's work the problem. We can solve this."

Clean-water agencies that together manage more than 12 percent of the biosolids in the U.S. have EMS certified by the National Biosolids Partnership. Surely there's a reason — the system works.

### CUTTING OUT DEFECTS

An EMS or other similar management system isn't the only way to drive process improvements. Others include quality programs called Six Sigma and Lean, which have brought substantial results for private-sector companies but are much less common in the public sector.

Six Sigma is a disciplined approach to driving out defects (variation) in processes, a concept that should appeal naturally to water-related utilities. After all, what's more important to a clean-water plant than producing effluent of consistent quality and staying compliant with the permit? And what matters more to a drinking water plant than reliably high-quality product?

**A**n EMS lays down a roadmap to follow when problems inevitably occur. ... It enables the team to say collectively, "Let's not panic. Let's work the problem. We can solve this."

Six Sigma defines a defect as anything outside of required specifications. The aim of the Six Sigma method is to reduce variation through projects that rely on data and measurement, not intuition or "gut feel." The basic process is called DMAIC: define, measure, analyze, improve, control. Projects are led by specially trained people called Green Belts and Black Belts.

The Six Sigma Academy estimates that Black Belts' projects can save private companies \$1 million or more per year, but often the benefits go beyond savings, to include better quality products and more satisfied customers.

### TRIMMING THE FAT

Lean, meanwhile, focuses on creating more value for customers while keeping waste to a minimum. This method also relies on projects, and the people in charge of the projects are called lean implementers. The ultimate (and unattainable) goal is to provide perfect value to the customer with processes that generate zero waste.

When successful, lean creates processes that use less labor, occupy less space, require less capital investment, take less time, and yield lower-cost products with far fewer defects.

A common idea behind all these quality-enhancement approaches is that quality is built right into the processes — from design to raw material to finished product. While the approaches take time and energy to implement, the effort and expense can be well worth it. **tpo**

## REMOVE DEBRIS FROM YOUR SLUDGE



## STRAINPRESS INLINE SLUDGE SCREEN

**Remove** debris without breaking line pressure

**Reduce** maintenance downstream

**Fully** automated operation

**Simple** to operate

Learn more at:

[huberforum.net/strainpress](http://huberforum.net/strainpress)

[solutions@hhusa.net](mailto:solutions@hhusa.net)

704-990-2053

**HUBER**  
**TECHNOLOGY**  
WASTE WATER Solutions



Every day is Earth Day.™

Read about it. **FREE** subscription at [tpomag.com](http://tpomag.com)

Visit the site daily for new, exclusive content. Read our blogs, find resources and get the most out of *TPO* magazine.



## TAP WATER TAINTED

### Insecticides Found

Researchers have discovered the presence of neonicotinoid insecticides in samples of finished tap water, marking the first such peer-reviewed study in the nation. The study's announcement comes on the heels of a Gallup poll published in April which revealed Americans are more concerned about water pollution today than they've been in the past 16 years. See a summary of the study and its implications online.

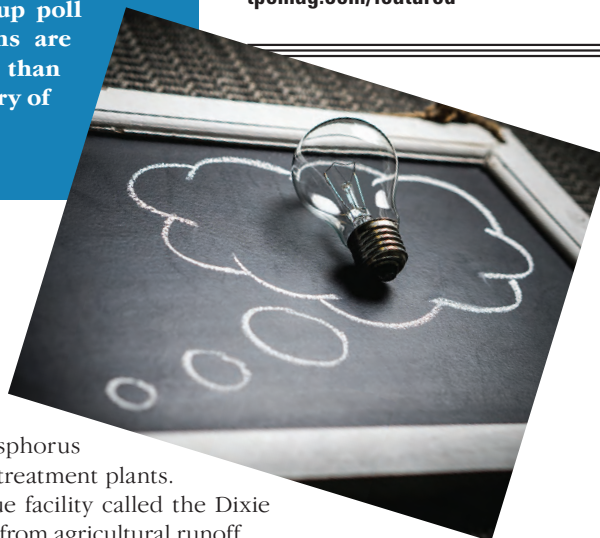
[tpomag.com/featured](http://tpomag.com/featured)

## PHOSPHORUS REMOVAL

### A Unique Approach

Boise, Idaho, is proving there's more than one way to approach phosphorus removal. Faced with tighter regulations, the city could have incorporated additional phosphorus removal equipment at its two wastewater treatment plants. Instead, Boise designed and built a unique facility called the Dixie Drain downriver that removes phosphorus from agricultural runoff.

[tpomag.com/featured](http://tpomag.com/featured)



## OVERHEARD ONLINE

"I'm furious about the fact that we are not funding the infrastructure. We absolutely have to have a movement in this country to address water."

*Water Security Highlighted at 10th Annual Water Leaders Summit*  
[tpomag.com/featured](http://tpomag.com/featured)

## RIVER RESTORATION

### Operator Spearheads Project

Managing water, wastewater and stormwater engineering keeps Martha Tasker looking toward the future. As director of utilities in Salina, Kansas, she sees the projects as intertwined and as assets to the community. One example is an effort she helped organize that worked to restore the original 6.8-mile Smoky Hill River channel through the heart of the city.

[tpomag.com/featured](http://tpomag.com/featured)



## Join the Discussion

[Facebook.com/tpomag](https://Facebook.com/tpomag)  
[Twitter.com/tpomag](https://Twitter.com/tpomag)



## Emails & Alerts

Visit [tpomag.com](http://tpomag.com) and sign up for newsletters and alerts. You'll get exclusive content delivered right to your inbox, and you'll stay in the loop on topics important to you.



# AquaPrime™

## CLOTH MEDIA FILTRATION SYSTEM



### ADVANCED TREATMENT FOR PRIMARY WASTEWATER AND WET WEATHER APPLICATIONS

The new AquaPrime™ filtration system utilizes OptiFiber® pile cloth media in a disk configuration with three zones of solids removal to effectively filter high solids waste streams without the use of chemicals. This system is designed to handle a wide range of flows in a fraction of space compared to conventional clarifiers. AquaPrime is ideal for primary wastewater treatment and wet weather applications due to its proven removal efficiencies and high quality effluent, even under varying influent conditions.

- Lower energy costs in the secondary process
- More solids for increased anaerobic digester gas production
- Dual use options for tertiary and wet weather applications
- Simple start-up with unattended operation for remote locations

**Primary Filtration • Primary Effluent Filtration • Stormwater • CSO • SSO • High Solids Applications**



A "Green" Advantage Product  
Lower Energy • Small Carbon Footprint



AQUA-AEROBIC SYSTEMS, INC.  
A Metawater Company

[www.aquaprimefiltration.com](http://www.aquaprimefiltration.com) | 815-654-2501

FREE INFO – SEE ADVERTISER INDEX

# RETIRED?

## NOT EXACTLY.

WILLIAM GRANDNER DEVOTES MANY HOURS IN HIS POST-EMPLOYMENT YEARS TO ADVANCING THE INDUSTRY AND HELPING OPERATORS HONE THEIR SKILLS

STORY: **Trude Witham**  
PHOTOGRAPHY: **James Robinson**

WHEN WILLIAM GRANDNER TOOK A TEMPORARY POSITION AT A NEW York City wastewater treatment plant in 1979, he wasn't sure he would like the job.

As it turned out, he loved the profession so much that he remained active even after retiring three years ago. "For 32 years, I've been involved with the New York Water Environment Association on various committees, which I enjoy very much," he says. "So, after I retired from the Owl's Head Wastewater Treatment Plant in 2014, I knew I wanted to continue mentoring operators."

Today, he serves on three state committees and a task force, and on two metropolitan chapter committees. Although this sounds like a lot, it averages about two to three days a month. "I like the interaction with young people. I was one of them once, and I know what the future is."

He especially enjoys teaching: "The most recent class I taught was for a stationary engineer electric (shift supervisor) civil service exam preparatory course. It involved two classes a week for eight weeks. More than 75 percent of the class passed the exam. That was very rewarding."

Grandner provides an example of how clean-water operators can keep contributing to the profession long after they leave full-time employment.

### LIKE FATHER, LIKE SON

Grandner followed his dad's footsteps into the clean-water profession. "I had been working as an electrician in the construction business in the 1970s, but it was slow, and I found it hard to stay working," he says. "My dad was an operator at the New-



William Grandner, a former wastewater treatment plant superintendent for the New York City Department of Environmental Protection, is now a mentor to operators around the state and region.

town Creek Wastewater Treatment Plant in New York City from 1966 to 1986. He was my mentor. After his retirement, I was assigned to that plant as a deputy plant superintendent."

Another mentor was John Ruggiero, former plant superintendent for the city's Red Hook Wastewater Treatment Plant. "He was my supervisor when I worked at that plant, and is still a friend today," Grandner says. "He got me involved in the NYWEA, and we both serve on the Conference Management Committee."

Grandner started his career at the 120 mgd Owl's Head plant as a temporary worker. "My training was all in-house with professional instructors," he recalls. "New York State requires that you work in the industry first and then get certified." He eventually earned his Grade 4A (highest) operator's license through the state Department of Environmental Protection. After a series of promotions took him to the Red Hook and the Newtown Creek plants, he returned to Owl's Head in 2002 as superintendent.

### SEEKING INCENTIVES

Grandner was responsible for operations, maintenance and supervision of 100 employees. "My greatest challenge was motivating my employees," he says. "As civil servants, there is no reward system, so you can't give anyone a raise or promotion. It's not like in private industry."

He found a motivational tool in the annual NYWEA Operations Challenge. Since 1988, he has served on the NYWEA Operators Committee, which oversees local training and the Operations



“ My greatest challenge was motivating my employees. As civil servants, there is no reward system, so you can't give anyone a raise or promotion. It's not like in private industry.”

**WILLIAM GRANDNER**



Grandner helps train teams to compete in the Water Environment Association's annual Operations Challenge. That includes teams at New York City's Jamaica Bay Water Pollution Control Plant that will take part in the New York State competition in Rochester.

**William Grandner,  
Staten Island, New York**



POSITION: | **Retired plant superintendent**

EXPERIENCE: | **35 years**

AWARDS: | **New York WEA Uhl T. Mann Award, 2004;  
New York WEA Hall of Fame, 2012**

CERTIFICATION: | **Grade 4A wastewater treatment operator**

GOAL: | **Continue volunteering in the industry;  
travel and spend time with family**



## HAVING A PLAN

Even before William Grandner retired as plant superintendent at the Owl's Head Wastewater Treatment Plant, he had a plan. For years, he volunteered on various New York Water Environment Association committees, and he saw that as a way to keep active once he left his full-time job.

He encourages other clean-water professionals thinking about retirement to have a goal. "You've been busy 40 hours a week your whole life, and there can be a real fear in stopping that," he says. "You know you will need to fill up your day, and not just with busy time."

Grandner suggests finding an organization, like the Water Environment Federation, that needs help: "There are programs where people who have worked in the industry can mentor young people. They have a wide reach. In New York, there are seven chapters in urban and rural areas. So wherever you live, there is an organization near you."

He suggests picking something familiar. "It doesn't have to be mentoring operators, but can be any job in the industry," he says. "And you only need to do a few hours a month. But, you stay active. Young people today don't have the mentors I had. Baby boomers are retiring, sometimes in groups of five or six at a time, leaving a terrible void."

From the moment he retired, Grandner knew that didn't mean staying home. He remains active in the New York Water Environment Association and in many industry activities that help operators learn and enhance their skills.

“ I would meet with the community boards and tell them, for example, that there could be odors during the day. My feeling was, give them the answer before the question comes, because otherwise you get phone calls.”

**WILLIAM GRANDNER**

Challenge. At the NYWEA spring conference, operators from all of the city's 14 treatment plants take part in the six skills events. The top two teams go to the state competition, and the winners there go to the national competition at WEFTEC.

Says Grandner, "It's motivational because the operators get to travel and interact with different operators from all over the state."

Another challenge Grandner faced as superintendent was dealing with multiple construction projects. "There are no new plants in the city," he says. "You rebuild what is in operation, which means big construction equipment on site and a lot of people walking around. I have a passion for using resources such as methane gas harnessed through the wastewater process. I was very involved in a project that used methane to produce

electricity for operating the wastewater treatment equipment. I see green infrastructure as a way to save the planet.”

### MAKING IT BETTER

Grandner has been recognized for excellence. He won the NYWEA Uhl T. Mann Award in 2004 for plants greater than 50 mgd. In 2012, he became the first operator inducted into the NYWEA Hall of Fame, now with 61 members.

Although he enjoyed the recognition, his greatest satisfaction was in making things better: “My immediate supervisor was off site, so I was the highest-ranking employee at the facility, which meant that I could improve things.”

Public education was a big part of the job. He dealt with the neighborhoods, giving updates on the plant and responding to complaints. “It’s nice to tell your neighbors ahead of time if something is going down,” he says. “I would meet with the community boards and tell them, for example, that there could be odors during the day. My feeling was, give them the answer before the question comes, because otherwise you get phone calls.”

### A GOOD BALANCE

For Grandner, being retired means staying active. “I knew when I retired that I didn’t want to just stay home,” he says. “Plus, I had been on various NYWEA committees, and knew I could continue with that.” Today, he divides his time among:

- The Conference Management Committee. During the annual three-day conference, he helps with overall operation, vendor setup, technical programs, functions and registration.
- Wastewater Facilities Committee. This committee focuses on training and certification, and conducts the Operations Challenge. Grandner is involved in setup, coordination and, if necessary, judging.
- Member Education Committee. Grandner works with committee members to develop training curriculum and locate teachers and training sites to make low-cost recertification available to operators.
- Operator of the Future Task Force. As co-chair, Grandner works with members to research operator recruitment and retention.

Grandner also volunteers on two metropolitan New York City chapter committees. The Operators Committee handles local operator training and conducts the city’s Operations Challenge. The Programs Committee plans and conducts chapter activities.

Grandner also enjoys teaching classes for municipal exams for operators seeking promotions. “These are sponsored by their union and come up every three to five years,” he says. “I make up the syllabus, and we review past exams. During the discussion, I give them advice on how to take a multiple choice civil service exam.”

Volunteering can take significant time. “The Operations Challenge is a week in New York or another city and a week at the annual conference,” Grandner says. “This year, the national competition is in Chicago, and I’ll be there five or six days. It’s a

“There are programs where people who have worked in the industry can mentor young people. They have a wide reach. ... wherever you live, there is an organization near you.”

**WILLIAM GRANDNER**

spending time with his two grandchildren: “They are my hobby.” His hopes for the future? To see wastewater technology brought to the classrooms. “Teach children the importance of clean water, and they will teach their parents. Show them at a young age the rewards derived from working on the front line.” **tpo**

good balance. It doesn’t monopolize my time, but I feel like I accomplish something. It’s rewarding to be an operator’s mentor. If we show them the way, they will make their own path.”

When he’s not volunteering, Grandner enjoys traveling with Marie, his wife of 44 years, and



Whether a marathon-runner or a sprinter, MBR or SBR system, the reliable and proven performance of AERZEN Turbo Blowers exceeds all expectations.



**AERZEN**  
EXPECT PERFORMANCE

AERZEN Turbos impress with up to 80% efficiency. As the core unit in compound systems they generate energy savings of up to 30%. AERZEN Turbo Blowers feature a small footprint and are engineered to integrate seamlessly, with other aeration blower technologies, as the base load blower.

Request a quote from an Aerzen Turbo Blower Specialist:  
(610) 380-0244 [inquiries@aerzenusa.com](mailto:inquiries@aerzenusa.com)

Download The Aerzen Turbo Blower Brochure

[www.aerzenusa.com](http://www.aerzenusa.com)

PD Blowers | Hybrid Blowers | Turbo Blowers



The Collection Team (left) includes, from left, Angel Nazario, Victor Gonzalez-Vargas and Corky Kossen. The Water Reclamation Team includes, from left, Don Long, Jerry Matheny and David Duncan.

## Blending Right In

A DECORATIVE WALL, ABUNDANT PLANTINGS AND ATTRACTIVE ROOFS HELP A RECLAMATION PLANT INTEGRATE WITH HOMES, BUSINESSES, PARKS AND A COUNTY COURTHOUSE

By Jeff Smith

It's not easy to hide a wastewater treatment plant in the middle of a city. Just ask Dave Peters, assistant director of Public Works for the city of Stuart, Florida.

"The biggest compliment anyone can give us is to say 'I didn't know a wastewater treatment plant was behind that wall,'" says Peters.

An 8-foot-high precast concrete decorative wall now surrounds the plant's 3.5-acre site. Painted earthen gray and highlighted with beige borders, it includes 127 sections, each 20 feet long, joined at square columns painted beige and capped with decorative covers. The wall was part of a major upgrade project in 2010.

### AMPLE PLANTINGS

Landscaping also plays a big part in integrating the 4 mgd conventional activated sludge plant with the surrounding residential and business neighborhood.

Existing trees and vegetation were complemented by strategic plantings of 19 little gem magnolia trees, 12 dahoon holly trees, 40 sabal palm and 17 royal palm trees, 164 firebush plants, nearly 350 trinette plants, and 141 saw palmetto trees.

More than 160 awabuki hedge plants grow between the fence and nearby roads and walkways. Some taller trees block the view of the plant from the three-story county courthouse complex that adjoins and overlooks the plant.

Enhancing the view from above are attractive roofs on the digester and on the chlorine contact and blower buildings. The biosolids and maintenance buildings were re-roofed to match the new roofs' color. An odor-control system improves the overall environment. "We made it look like something it wasn't," says Peters. But the biggest part of winning commu-

nity acceptance was transforming the facility from a wastewater treatment plant into a water reclamation facility.

### COMPATIBLE WITH PARKS

Siemens LVN chlorinators and Kruger disc filters were added. Nearly 5 miles of 16-inch piping carries effluent to an interconnect with a utility for irrigation of golf courses and residential neighborhoods. Two 200 hp Peerless pumps move the effluent and are controlled by Cutler-Hammer variable-frequency drives (Eaton) with Allen-Bradley controllers (Rockwell Automation).

“Visitors and those who use the amenities of the parks often comment on the attractive appearance of the plant.”

DAVID PETERS

Being a good neighbor to the courthouse is important, Peters says, but so is neighborliness to the baseball complex that borders one side of the plant and a large public park on another side. Also attracting residents and visitors are a bandstand and a large pavilion; racquetball, shuffleboard and tennis courts; paved walkways and picnic areas; and a large Veterans Memorial Monument.

Plant staff members conduct frequent tours of the reclamation facility. "Visitors and those who use the amenities of the parks often comment on the attractive appearance of the plant," says Peters. He's proud of his staff and the more than a dozen awards they have won over the years, but the best recognition is not getting negative feedback from the residents.

"I guess it's out of sight, out of mind." tpo



# What Can You Create from a Napkin?

## Duperon Corporation

was founded on a customer, a need, and a napkin.

## LISTENTUIT (list-en-tu-it)

Duperon term for bringing an intuitive way of partnering and listening to a customer for a solution to their needs.

**We're still listening...  
Booth 1042 at  
WEFTEC 2017**



Founder & Inventor Terry Duperon

**30 years later...** a full line of preliminary liquids/solids separation technologies



Coarse Screen



Fine Screen



Perforated Plate



Low Flow



Washer Compactor





Operator Randy Bender empties mud from the thickening tank into the sludge holding basin at the Carlisle Borough Water Treatment Plant, which has achieved Phase IV in the Partnership for Safe Water program.

# Excellence Is SOP

PARTNERSHIP FOR SAFE WATER STANDARDS  
DRIVE EVERYTHING FROM OPERATING PROCEDURES  
TO EQUIPMENT SPECIFICATIONS AT A PHASE IV-  
RECOGNIZED WATER TREATMENT PLANT

STORY: **Jim Force**

PHOTOGRAPHY: **James Robinson**

ACHIEVING PHASE IV IN THE AWWA'S PARTNERSHIP  
for Safe Water is a big deal. But at Carlisle Borough, operating the water treat-  
ment plant according to Partnership goals and standards is even bigger.

“We were the first water treatment plant in Pennsylvania to reach Phase IV,” recalls Peter Selan, director of the water plant, who retired in late February. “But we did something that nobody has ever done when we built the Partnership standards into our equipment specs, and used the standards — which were more stringent than our permit — as the target for our operational performance.”

The key was getting everyone from the operations team to the members of the Water Authority to the Borough Council to buy into the standards: “We take the standards very seriously.”

## MULTIPLE UPGRADES

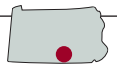
Public water treatment in Carlisle Borough can be traced back to 1853, when a dam was constructed on Conodoguinet Creek and the first waterworks plant was built. On the same site, more modern facilities were constructed in 1932, then expanded in 1946 and 1975. The current treatment train dates to a major upgrade in 1993-96. Improvements to the Long's Gap Road Dam were finished in 2002.

The borough draws water from the creek through a headrace — an open channel intake structure. Excess water taken in is recycled to the creek. Pumps transport the water to the plant where potassium permanganate and powdered carbon are added for taste and odor control. Coagulating chemicals are then added, and the water passes through flocculation, settling basins and inclined plate separators.



The plant's product water averages 0.04 to 0.05 NTU, better than its permit requires.

## Carlisle Borough (Pennsylvania) Water Treatment Plant



BUILT: | 1853; expansions and improvements 1932, 1946, 1975, 1993-1996

AREA SERVED: | Carlisle Borough; four townships

POPULATION SERVED: | 22,000

EMPLOYEES: | Eight

SOURCE WATER: | Conodoguinet Creek

TREATMENT PROCESS: | Conventional

PRODUCTION: | 2.5 to 3 mgd

DISTRIBUTION: | 77.2 miles of water mains, 564 hydrants and 1,329 valves

SYSTEM STORAGE: | 4.9 million gallons

ANNUAL BUDGET: | \$1.5 million (operations)

WEBSITE: | [www.carlislepa.org](http://www.carlislepa.org)

GPS COORDINATES: | Latitude: 40°14'8.84"N; longitude: 77°8'46.83"W

Two-stage sand and anthracite filters (Leopold) remove turbidity before the finished water is disinfected with gaseous chlorine and fluoridated in a basement clearwell. Ortho-polymer is added for corrosion control in the distribution system. Pumps then move the water to a pair of 1.3-million-gallon reservoirs.

New SCADA and monitoring systems control and analyze plant operations, enabling operators to ensure the production of the highest-quality water. Continuous monitoring and laboratory testing is performed to control

taste and color and to ensure that water quality requirements are met. Operation and maintenance of all water treatment, pumping and storage facilities is performed continuously.

Average daily output is 2.5 to 3 million gallons, and the water is distributed through 77.2 miles of mains to about 18,000 users in Carlisle Borough, plus another 4,000 customers in the townships of North and South Middleton, Middlesex and West Pennsboro. The distribution system includes a 2.3-million-gallon standpipe and two smaller storage tanks.

The borough maintains emergency interconnects with South and North Middleton townships, which can supply up to 2 mgd in case of an emergency. A contractor hauls waste solids from the treatment process to farms. “We try to keep the solids levels down,” says Selan. “We haul about once a week and try to stay ahead of the game.”

“Turbidity drives everything with us. All our controls and chemical feed processes are tied into turbidity. Our operators read values on the screen and make changes automatically.”

**PETER SELAN**

### EXPANDING NEEDS

The capacity of the Carlisle Borough plant was doubled in 1965 with the addition of four filters, bringing the total to eight, and two new sedimentation basins, for a total of four. Filter media was replaced, new pumps were added, and a new SCADA system with PLCs was installed to give operators better control.

“The new SCADA works very well for us,” says Selan. “We brought in a professional consultant (Carlisle Consulting) to help us with it. They’ve been great to work with and have provided advice on better operational control. It was all manual before.”

Even though the plant staff is not responsible for distribution, the borough has made improvements to the standpipe. Pumping and mixing equipment was added to improve water turnover. The improvements were primarily driven by Pennsylvania Department of Environmental Protection regulations. More



Carlisle Borough Water Treatment Plant produces an average of 2.5 to 3 mgd for distribution through 77.2 miles of mains.



Rick Horn, plant mechanic, works on a control panel (Leopold) from the filter gallery.



The team at the Carlisle Borough Water Treatment Plant includes, from left, Rick Horn, mechanic; Peter Selan, director; and Randy Bender and Haroon Pakhtiawal, operators.

recent upgrades have been aimed at meeting the higher standards of the Partnership for Safe Drinking Water.

The borough started the Partnership process in 2002. “We met people, started gathering data, and submitted our application,” Selan says. Since then, in addition to building the standards into equipment specifications, borough officials have made numerous improvements and upgrades to the process train, some of them solely to meet the Partnership standards.

“You have these standards, which review and treat each process individually,” Selan says. “It’s great to look at the plant that way. It’s easier to make improvements.” The plate settlers received major attention: “They were old, with plastic plates. They were hard to clean. Pieces of plastic kept flaking off.”

The Partnership standards also led to more precision in the plant’s various chemical feed stations. “We had to optimize our chemical feed and be more precise,” Selan says. “We can’t overdose and waste money, or underdose and not meet the standards.”

That has led to the installation of new chemical feed and monitoring equipment, including the carbon feed process where a new Stranco unit (Evoqua) has improved operations. The staff closely monitors its filtration system, too, and has changed backwashing methods to help meet turbidity

## PERFORMANCE EXCELLENCE

The Carlisle Borough Water Treatment Plant is the first in Pennsylvania to reach Phase IV of the Partnership for Safe Water program, the highest achievable and a recognition of optimized performance. The goal of the Partnership is excellent drinking water quality. Water experts provide utilities with guidance, advice and technical assistance for fine-tuning water treatment.

Partnership members must commit to continuous water treatment improvements, meet state and U.S. EPA water-quality standards and comply with the surface water treatment rule. They are also subject to assessment by outside water professionals and must make improvements identified in the assessments.

The program consists of four phases of achievement. In Phase I, plants agree to participate and to at least complete Phases II and III, and notify their customers of progress. Phase II involves data collection, and Phase III is a comprehensive self-assessment of operations that leads to improvements.

Phase IV recognizes a fully optimized treatment plant, eligible for Presidents and Excellence awards.



“Once our operators started seeing that we were very serious about this, they understood what we were doing and they bought in.”

**PETER SELAN**

standards. The plant has new Hach turbidimeters and particle counters.

“Turbidity drives everything with us,” Selan says. “All our controls and chemical feed processes are tied into turbidity. Our operators read values on the screen and make changes automatically.” The plant achieves 0.01 NTU out of the filters. While the permit calls for 0.1 NTU out of the pump house, the plant averages 0.04 to 0.05 NTU. “With the Partnership program, you have to be at those types of levels,” Selan says.

The need for such high-quality water drove the borough to tie Partnership standards into the construction and performance specifications for new equipment. Selan recalls one case where the equipment was slightly off on the turbidity requirements, and the borough withheld a portion of the final retainage.

### EVERYONE ON BOARD

The most critical factor in adopting the Partnership for Safe Water performance standards — and building them into plant operating procedures — was getting buy-in that extends through all levels of the operation.

First, says Selan, there must be buy-in from the governing body that provides the funds.

“Our Water Authority gives recommendations to the Borough Council, which controls the funds and approves construction,” Selan says. “As long as everybody’s on board and you give them regular updates, you’ll get their buy-in.”

The plant’s processes and the operators’ focus are on achieving low turbidity, with the help of control automation and diligent lab analysis.

Operators are just as important. “At first, the extra work may seem frustrating and unnecessary,” says Selan. “We had to carefully monitor the filters, and we add more media when needed. But once our operators started seeing that we were very serious about this, they understood what we were doing and they bought in.”

Today, the Carlisle staff members — mechanic Rick Horn and operators Scott Hart, Randy Bender, Jamy Handsheiw, Haroon Pakhtiwai, Eugene Zeiders and Travis Kauffman — fully embrace the standards. Selan says training is mostly face-to-face and stresses the Partnership goals. “It’s noticeable,” he says. “When a new operator comes on, the person he’s replacing talks about the standards and the differences between them and the DEP regulations.

“In the long run, we have a sort of cushion to work with. There’s a difference between what the DEP requests and what the Partnership program requires. We realize we’re doing better than the DEP regulations and it gives us a sense of pride.” **tpo**

featured  
products from:

**Evoqua Water  
Technologies LLC**  
800/466-7873  
www.evoqua.com

**Hach**  
800/227-4224  
www.hach.com  
(See ad page 5)

**Leopold - a Xylem Brand**  
855/995-4261  
www.xylem.com/treatment

# ROBUSCHI®



## Blower Products for Wastewater Treatment

Featuring **ROBUSCHI** Robox Energy and Screw High Efficiency Blower Packages and Robox Evolution Blower Packages

Ideal for: Aerobic Digestion, Grit Aeration, Sludge Digestion, Filter Backwash, Channel Aeration

**Visit us at WEFTEC booth #2343**

[www.Robuschi.com](http://www.Robuschi.com)

©2017 Gardner Denver. All rights reserved.

FREE INFO – SEE ADVERTISER INDEX

# Planning the Next Chapter

COGENERATION AND SOLAR POWER HAVE BROUGHT BIG SUSTAINABILITY GAINS IN ALBUQUERQUE — NOW OPERATORS ARE LOOKING FOR MORE ADVANCES

By Doug Day

As the Southside Water Reclamation Plant taps biogas and solar resources, operators are looking for ways to make it even more sustainable. The plant, New Mexico's largest, treats an average of 50 mgd (76 mgd design) for some 650,000 customers of the Albuquerque Bernalillo County Water Utility Authority. Only 7 percent of the plant's daily 5 MW electrical demand comes from the local utility, Public Service Company of New Mexico. The remainder comes from a pair of cogeneration units and a solar photovoltaic array.

Built in 1962 as a trickling filter plant, the facility was expanded and converted to an activated sludge process. It has 14 anaerobic digesters for creating biogas, according to Jeffrey Romanowski, chief engineer. Its South cogeneration system, built in 1985, is powered by a pair of 1.1 MW Cooper Superior (Eaton) engine-generators burning biogas. The North unit, built in 2002, uses mainly natural gas in two 2.2 MW Caterpillar generator sets. Both systems can burn either fuel or a blend.



Heat recovered from the plant's cogeneration engine-generators provides hot water for digester heating and reduces natural gas consumption.



Aeration basins at the Southside plant may undergo an upgrade to a new process with anammox bacteria.

## HEAT RECOVERED

"It wasn't really done as a money-saving measure," says Romanowski. "The point was to beneficially use the biogas and provide a reliable secondary power source. We also have an engine heat recovery system that generates hot water for some of the process buildings and for heating the digesters. That's a cost savings over burning natural gas in a boiler."

“Looking at the relative costs, grid power is 10 cents per kilowatt-hour on peak, natural gas-generated electricity is about 6 cents, solar is 5.4 cents, and biogas-generated electricity is about 1.7 cents.”

JEFFREY ROMANOWSKI, P.E.

Across the plant, 63 percent of the energy comes from natural gas, and biogas provides 24 percent. The 1 MW solar installation, built in 2014, provides 6 percent of the energy under a 20-year power purchase agreement with SunEdison.

"We have to either buy power from our local utility or make it ourselves," Romanowski says. "When you run the numbers, you get into upwards of \$400,000 in savings. Looking at the relative costs, grid power is 10 cents per kilowatt-hour on peak, natural gas-generated electricity is about 6 cents, solar is 5.4 cents, and biogas-generated electricity is about 1.7 cents."

Most of the effluent from the Southside plant goes to the Rio Grande. About 1 to 1.5 mgd is reused, half in the plant and half for landscape irrigation in the community. Biosolids are sent to the authority's Soil Amendment Facility, where 75 percent is land-applied and 25 percent is turned into compost.

## THE FUTURE

There's more to the Southside plant's drive for sustainability than cogeneration and solar power. All metal halide and sodium vapor lamps are being changed over to LEDs to save energy and money. There have been discussions about replacing the cogeneration sets with high-efficiency gas turbines.

"We had a consultant do a study on our blowers," adds Romanowski. "We have these old 500 hp blowers and we've talked about going to the new high-efficiency turbo blowers. We've done some preliminary studies on transition-





Two 1.1 MW biogas-fueled Cooper Superior engine generators (Eaton) power the plant's South cogeneration system.

ing, but there's obviously a huge capital cost, so that's on the horizon.

"When we first looked at it, they were pretty expensive. We hope that over time those prices will come down. The reality is that our blowers are getting old and at some point will have to be replaced. We've replaced a couple over the years. Even though turbo blowers are a big outlay, they're more efficient and that plays into the decision."

### PROCESS CHANGES

Romanowski is also following industry research into the de-ammonification process, which uses anammox bacteria and ammonia-oxidizing bacteria to produce nitrogen gas. It makes it easier to remove nitrogen and requires much less energy for aeration.

"By doing that, you reduce your air requirement considerably, and if you can do that you can save a ton of energy," says Romanowski. "We're always looking at industry trends, and they seem to be migrating that way in Europe. Our plant would be a good candidate to switch over to use that process, but it's in the five- to 10-year horizon."

All told, the water authority has spent about \$20 million on renewable energy projects over the years and saves about \$2 million a year over buying electricity. Annual savings are about \$1.34 million by using natural gas, \$400,000 from using biogas, and \$113,000 from solar energy. More solar power is under consideration. **tpo**



Like something?  
Hate something?  
Agree? Disagree?

Share your opinions about *TPO* articles through our Letters to the Editor.

Send a note to [editor@tpomag.com](mailto:editor@tpomag.com)



## fo·CUS [foh-kuhs]

NOUN

The center of interest or activity:

*"Centrisys has made dewatering technology its primary focus over the last 30 years."*

To service your centrifuge,  
you need an experienced team  
**focused** to understand all brands.

Discover more at

**WEFTEC '17 CHICAGO**

Booth: #7708

Tour: Kenosha, WI | Tues., Oct. 3, 2017

Presentation: Wed., Oct. 4, 2017

Room N426 @ 10:30 a.m. | PONDUS & THK



**centrisys**<sup>®</sup>  
CENTRIFUGE SYSTEMS

Discover more at [Centrisys.com](http://Centrisys.com)

# Tapping a Rich Vein

BIOGAS FROM CLEAN-WATER PLANTS AND OTHER SOURCES HAS POTENTIAL TO BECOME A SIGNIFICANT CLEAN AND RENEWABLE FUEL IN THE NATION'S ENERGY PORTFOLIO

By Ted J. Rulseh

**B** iogas-to-energy systems are common at clean-water plants, but not nearly as prevalent as they could be.

That's the assessment of Patrick Serfass, executive director of the American Biogas Council. Serfass and his organization work to expand the use of biogas from anaerobic digesters at wastewater treatment plants, live-stock farms and food waste recycling facilities.

The council's mission is to create jobs, and foster environmental sustainability and energy independence by growing the biogas industry in the U.S. Serfass notes that the nation has more than 2,200 sites producing biogas in all 50 states.

However, he says, that volume of projects lags far behind Europe, which has more than 10,000 operating digesters, some of which make their communities fossil-fuel free. Serfass talked about biogas, its potential as a main-stream renewable fuel, and obstacles to its broader adoption in an interview with *Treatment Plant Operator*.

**tpo:** Taking a broad view, how would you describe the status of biogas energy in the U.S.?

**Serfass:** While we have more than 2,000 operational biogas systems, there is potential to develop almost 14,000 new systems. Biogas-to-energy is a technology that is commercial and mature. There is always room for research and development, but it is a mature technology that has not been rolled out as much as it could be.

**tpo:** Where are these existing biogas systems?

**Serfass:** In addition to the systems at wastewater treatment facilities, there are 259 on farms, 39 stand-alone systems that digest food waste, and 645 systems at landfills. That sounds like a lot, but on farms there is potential for about 10,000, and in food waste there is potential for about 1,000. We have potential for biogas systems to be built all over the country, but a lot of places are only experiencing their first systems because there is no permitting process in place for building new systems. Several speed bumps along the way are slowing down development. The industry could be growing a lot faster than it is today.

**tpo:** What does the biogas picture look like in the wastewater treatment sector?

**Serfass:** The wastewater sector has 1,269 anaerobic digesters operational today, but only about 800 to 900 treatment plants are using the biogas they produce. The others tend to be facilities that are just flaring the gas. We estimate that another 3,000 to 4,000 biogas systems could be developed at

treatment facilities greater than 2 mgd. There is a great deal of latent energy available in every wastewater treatment facility that could be better used.

**tpo:** Is there a minimum treatment plant size at which biogas energy becomes feasible?

**Serfass:** People differ on the minimum size, anywhere from 1 mgd to 5 mgd. We believe in the lower threshold because some treatment facilities are adding food waste to their digesters. When you do that you can have a feasible project even below 1 mgd because food waste produces 10 to 35 times more biogas than sludge does. Sludge is basically food waste from people that has already been digested once. Food waste hasn't been digested and so contains a lot more energy. You can add about 10 percent food waste to a wastewater treatment biogas system and double the biogas yield. That basically doubles the revenue, or doubles the savings in the case of wastewater facilities, since they use biogas to offset their electricity and heating costs.

**tpo:** In the wastewater sector, what are the main factors holding back development of more biogas energy?

**Serfass:** For wastewater treatment systems, running a biogas system is outside their primary job, which is to clean up the water, remove contaminants and return fresh, clean water back into the waterways. They don't want to have a more complex system to operate. They want to stick to what they



Patrick Serfass

“You can add about 10 percent food waste to a wastewater treatment biogas system and double the biogas yield. That basically doubles the revenue, or doubles the savings.”

PATRICK SERFASS

know and make sure that it's as reliable as possible. And yet the energy cost at a treatment facility is almost always the second highest cost behind labor, and usually the largest energy cost for the entire city. The other main deterrent is the extra capital cost.

**tpo:** Are there any obvious ways to get around those issues?

(continued)

# RHINO LININGS...

# WE DON'T JUST DO IT IN THE BED.

Rhino Linings High Performance Protective Coatings  
Cover more assets than just your truck.



WHETHER WORKING IN ARCTIC COLD OR DESERT HEAT, Rhino Linings® protective coatings stand up to some of the toughest field service conditions.

Our spray-applied 100% solids (Zero VOC) coatings offer durable protection against corrosion, petroleum leaks and spills. Once applied, our coatings tenaciously adhere to various substrates to offer lasting, maintenance-free protection for your facilities and equipment.



[www.rhino linings.com](http://www.rhino linings.com) | 1-800-422-2603

TO REQUEST A QUOTE OR LEARN ABOUT BECOMING AN APPLICATOR, CALL 1-800-422-2603 OR VISIT [RHINOLININGS.COM/INDUSTRIAL](http://RHINOLININGS.COM/INDUSTRIAL)

**Serfass:** Yes. One way we've seen that happen is for a private company to build or upgrade the digesters and manage the biogas at no up-front cost to the municipality. A good example of this is the village of Ridgewood, New Jersey. They had a digester and they wanted to accept food waste to help cities in the region recycle food waste and to increase the potential for biogas to offset their energy cost.

**tpo:** How did that community accomplish its goals?

**Serfass:** They brought in a private developer who promised them a long-term low and predictable energy cost. The developer upgraded their existing digester and got a long-term lease to run and manage the facility. The developer built it at no cost to the municipality. The system meets more than 100 percent of the facility's energy needs. It includes a solar array that boosts energy production. The developer also gets an upside in that they can profit from tipping fees for taking the food waste and from running the biogas system very efficiently.

**tpo:** Are there any other creative development approaches?

**Serfass:** One concern of wastewater facilities is that they don't want the complexity of dealing with variability in food waste — they don't want to handle the receiving end of it. That's where a company like Waste Management comes in. They create a transfer station, separate the food waste from the trash they're hauling anyway, and create a liquid slurry from the food waste. Then they deliver that high-energy slurry to the treatment plant. One place they're doing this is at the Los Angeles County Sanitation District's wastewater treatment facility.

**tpo:** Is there any momentum toward plants converting from aerobic to anaerobic digestion in order to produce biogas?

**Serfass:** It depends mainly on the age of the system. If the aerobic system is old, there is substantial benefit in turning it into an anaerobic system. Historically, digesters were installed in wastewater facilities to reduce the volume of sludge, and not to produce energy. Aerobic systems were often put in to do just the bare minimum needed to treat the material. But when you look at all the benefits of an anaerobic digester, it becomes clear pretty quickly that it might make sense to invest in one.

**tpo:** What would be a good way to quantify the potential benefits of greater biogas system development?

**Serfass:** We see biogas systems having potential to electrify 7.5 million homes or to reduce greenhouse gas emissions by the equivalent of removing more than 15 million passenger cars from the road. Optimal development would catalyze an estimated \$40 billion in capital deployment. It would also generate 335,000 construction jobs and 23,000 permanent operations jobs. That's for all potential biogas systems, not just the wastewater sector.

**tpo:** As for stand-alone biogas systems, such as food waste digesters, what factors tend to hinder development?

**Serfass:** First, being able to sell all the energy as gas or electricity. Many states have difficult net metering policies like net metering caps. Also, facilities looking to sell the biogas to a utility need to be able to access the natural gas pipeline easily and at reasonable cost. And long-term feedstock contracts are essential. To finance a food waste system, for example, it's necessary to show the bank that feedstock will come in very consistently for five to 10 years. Some states have policies that require commercial organic waste to be recycled, and those policies can really help in getting feedstock contracts.

**tpo:** What forces are driving or hindering development on the agricultural side?

**Serfass:** There are plenty of farmers who just want to farm. Like wastewater operators, they don't want to operate a biogas facility — and yet they have manure and nutrients that need to be managed. A lot of issues with spreading raw manure on fields can be alleviated by first digesting the manure.

**tpo:** Can local politics and public objections get in the way of biogas projects?

**Serfass:** Most biogas systems are well run and valued in their communities, but some biogas facilities around the country have experienced objections. Some complaints they hear are unbelievable, like a complaint about odor when the wind is blowing in the opposite direction. But sometimes there's an issue with the digester that the operator hasn't noticed. So it's necessary to have a validation process and an openness on both sides to reach an understanding. The most common issue is fear of the unknown. So, communication with the local community when putting in a digester is key. If people are unfamiliar with the technology, you need to tell them about it, be available to answer questions and respond quickly to any issues after startup.

“We see biogas systems having the potential to electrify 7.5 million homes or to reduce greenhouse gas emissions by the equivalent of removing more than 15 million passenger cars from the road.”

PATRICK SERFASS

**tpo:** Are most biogas-to-energy facilities combined heat and power projects?

**Serfass:** Yes. A digester has heating needs, and the engine-generator is usually right there, so CHP is easy to do. You're almost always producing renewable heat as a part of the biogas system.

**tpo:** Are there any issues in meeting standards for export of biogas to utility pipelines or using it for vehicle fuel?

**Serfass:** No. Biogas upgrading systems can meet all those standards. We have a pipeline specification on our website ([www.americanbiogascouncil.org](http://www.americanbiogascouncil.org)) that is a mix of gas quality standards from all across the country. In practice, every utility has a different standard. There's not much standardization among utilities, and they tend to have a lot of autonomy to do what they want. And while electric utilities are required to allow interconnection, gas utilities are not required to allow renewable gas into their pipelines, even though gas from biogas facilities that has been processed properly is of higher quality than the gas already in the pipeline. So the issue is usually not the gas quality, but getting permission to inject into the gas pipeline.

**tpo:** In your opinion, how important is it to maximize the use of biogas in terms of energy supply, clean energy, and reducing carbon emissions?

**Serfass:** It's so very important that we utilize our resources to their highest potential. At present, less than 3 percent of food waste is recycled in our country. So we have a huge opportunity to use that material. In the process, we'd probably save businesses money because they have to pay to handle that material anyway. In biogas systems we create renewable energy and lots of great products that return nutrients to the soil, turning food back into food.

**tpo:** What parting advice would you offer to operators of clean-water facilities?

**Serfass:** I would encourage them to be bold and to explore how adding or upgrading a digester could benefit not only their facility but also the community. We are rolling out a series of operations and maintenance training programs for digesters this year. Operators can learn more by visiting our website. **tpo**



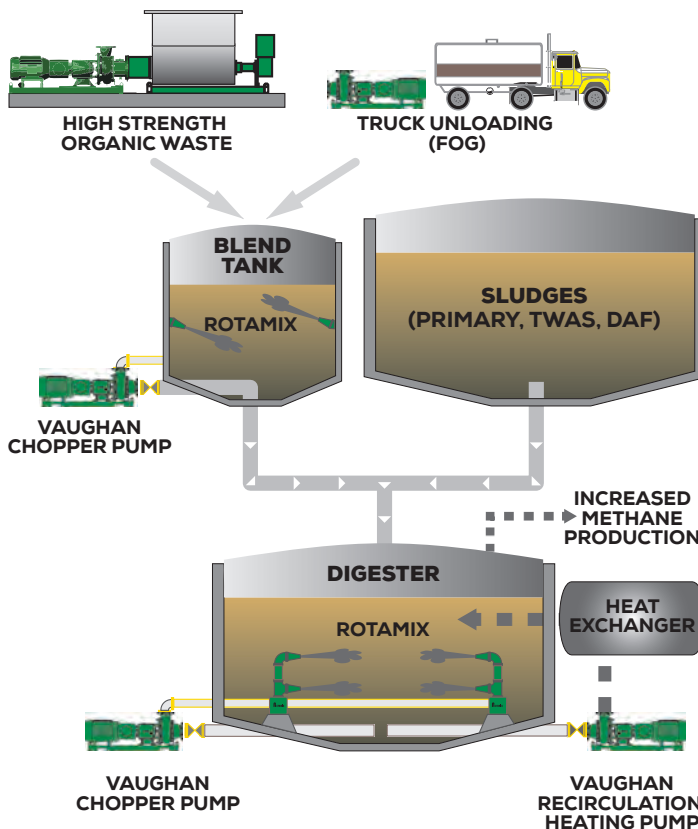
# DON'T WASTE ORGANIC WASTE.



## PROCESS MIXING SYSTEMS USING VAUGHAN CHOPPER PUMPS

### FOG & Organics Processing

From conditioning to mixing to blending, Vaughan has the products and experience to process your high strength wastes and FOG into a usable, renewable energy source, resulting in increased methane production to create power and bio-fuels.



### Vaughan Pumps

- Truck Unloading
- Digester Recirculation

### Vaughan Systems

- Rotamix
- Hopper Chopper
- Auger Chopper

Call Vaughan today to find out which system will work best for your project.

ChopperPumps.com | 360.249.4042 | info@chopperpumps.com



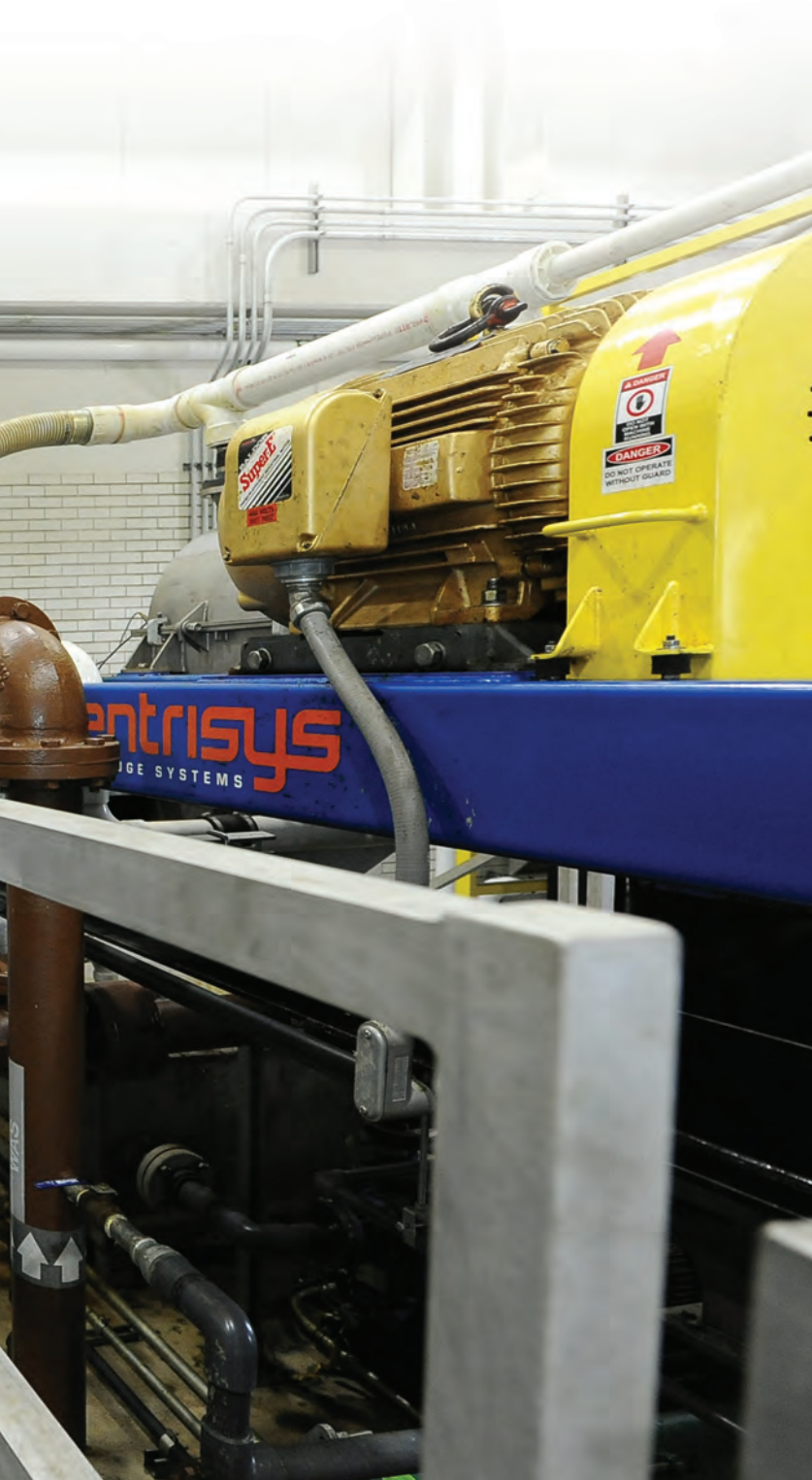
FREE INFO – SEE ADVERTISER INDEX



# Recovering the Resources



Curt Czarnecki, Kenosha Wastewater Treatment Plant director of Engineering Services, talks with plant operator Matt Paul in front of one of two centrifuges (Centrisys Corp.). The plant has installed and pilot tested a variety of new technologies and has an active energy optimization program.



## A PLANT ON LAKE MICHIGAN'S SHORE USES A MIX OF INNOVATIVE TECHNOLOGIES TO MAKE THE MOST OF NUTRIENTS AND ENERGY CARRIED IN WASTEWATER

STORY: **Jim Force**

PHOTOGRAPHY: **Michael McLoone**

DRIVEN BY A PASSION FOR INNOVATION, THE KENOSHA Wastewater Treatment Plant team has converted a messy, inefficient biosolids process into a state-of-the-art resource recovery and energy production system.

The technology includes thickening centrifuges; thermal-chemical hydrolysis; high-solids anaerobic digestion with mechanical hydraulic mixing; biogas conditioning, dewatering and drying; and combined heat and power generation. The system has been humming along for just under two years, generating all the electricity and heat required for biosolids handling, and surplus electricity for about one-third of other treatment plant needs.

Humming is the right word. It's clean and quiet as Curt Czarnecki, director of engineering services, shows off the new units in the old dewatering building. Ear protection isn't required as he explains how the new system has improved sludge consistency and reduced the number of digesters needed, while producing a 90 percent solids Class A end product that has cut biosolids landfilling costs by at least two-thirds, based on volume reduction alone.

"We like to be on the cutting edge of technology," Czarnecki says.

"Our general manager, Ed St. Peter, takes a lot of pride in being an industry leader." Kenosha gets good value because equipment manufacturers are eager to demonstrate new technology at the plant and make sure it functions as designed. Since training and technical assistance are important, it helps to have local suppliers. Centrisys Corporation of Kenosha supplied the thickening and dewatering centrifuges.

“We wanted to increase our biogas production, generate electricity and use waste heat as our primary thermal energy supply.”

**CURT CZARNECKI, P.E.**

### CONVENTIONAL TREATMENT

The 22 mgd (average) Kenosha treatment plant occupies 29 acres on Wisconsin's Lake Michigan shore just south of the city center. Permitted average is about 28 mgd. The liquid end is straightforward: headworks screening and grit removal, primary settling tanks, secondary aeration and settling, gas chlorination and discharge to the lake. BOD removal averages 92 percent, TSS 96 percent, ammonia 89 percent, and phosphorus 84 percent. The plant serves about 110,000 people along with many industries in the 86-square-mile urban area.



The operations team at the Kenosha plant includes, from left, Wayne Greisen, George Morgan, Rich Kositzky, Don Kordecki and Garrett Gilbertson.

## Kenosha (Wisconsin) Wastewater Treatment Plant



BUILT: | 1939; expanded 1967, 1985, 2015

FLOWS: | 28 mgd design, 22 mgd average

SERVICE AREA: | City of Kenosha and surroundings

POPULATION SERVED: | 110,000

TREATMENT LEVEL: | Secondary

TREATMENT PROCESS: | Activated sludge

RECEIVING WATER: | Lake Michigan

BIOSOLIDS PROCESS: | Thermal drying

BIOSOLIDS USE: | Landfilled (land application pending)

ANNUAL BUDGET: | \$7.7 million

WEBSITE: | [www.kenosha.org](http://www.kenosha.org)

GPS COORDINATES: | Latitude: 42°33'31.98"N; longitude: 87°48'55.10"W

Previously, the plant's solids handling process included dissolved air flotation thickening, which brought the solids content of waste activated sludge from 1 percent to 3.5 to 4 percent.

The thickened sludge was digested in four primary and two secondary digesters, operated in batch runs. Then it was conditioned with lime and ferric chloride, and dewatered in batches in plate-and-frame presses. The cake was trucked to a landfill.

In 2009, with the old equipment needing repair or replacement and energy and landfill costs rising, the utility replaced the plate-and-frame presses with

a Centrisys CS21-4HC dewatering centrifuge. The new units reduced dewatering costs, but the utility was still spending some \$340,000 a year in land-fill tipping fees.

### NEW LOOK

The plant team continued to upgrade the biosolids process in 2011, when Centrisys completed a full-scale pilot test of a THK 200 centrifuge for waste activated sludge thickening. Next, the utility entered a design-build contract with Centrisys to provide a system able to tap the full energy potential locked in the biosolids waste stream.

"We wanted to increase our biogas production, generate electricity and use waste heat as our primary thermal energy supply," Czarnecki says. The utility also aimed to produce Class A biosolids while maintaining or reducing noise, odors and particulate emissions.

Important to the system is a PONDUS thermochemical hydrolysis process provided by CNP Technology Water and Biosolids Corporation (a division of Centrisys). The unit breaks down the cell walls of the thickened waste activated sludge before digestion. Through a hot-water heat exchanger, the thickened material (6 to 7 percent solids) is heated to about 155 degrees F, ideal for the hydrolysis process.

Caustic soda is added to adjust pH. Then, at atmospheric pressure, the solids circulate in the PONDUS reactor for 2 to 2.5 hours. New material is added to the reactor periodically at a ratio of one part new solids to three parts circulating solids. "The process releases internal organic acids, which brings pH of the stream back to neutral," says Czarnecki. "After hydrolysis,



the pH is 6.8 to 7, and no more chemical addition is necessary before digestion.” A second Centrisys THK 200 centrifuge thickens primary sludge from 3.1 to 6.1 percent solids.

## EFFICIENT DIGESTION

The primary thickened solids join the hydrolyzed solids and are pumped to the two primary digesters and then to the single secondary digester. Digester contents are fully mixed using a Rotamix unit (Vaughan Company). “The system consists of a chopper pump, internal piping and six nozzles per digester,” Czarnecki says. “We get even heating of the contents, improved volatile solids reduction and increased gas production.” As opposed to the previous batch operation, the process is continuous feed and draw.

The composition of the biosolids is critical. New perforated plate band screens improve removal rates at the headworks, important to downstream solids processing. “The capture rate has been fantastic,” says Czarnecki. “The difference is night and day.” The screens are manufactured by Envirocare, just south of Kenosha in Gurnee, Illinois.

After digestion, the solids are dewatered on a CS21-4HC Centrisys centrifuge to 26 to 29 percent solids. The cake is fed to a compact SÜTZLE KLEIN GmbH belt dryer (distributed by Centrisys) operating at 185 degrees F and achieving all the requirements for Class A biosolids. While the 90 percent solids granules are being landfilled (at far lower volume and expense), Kenosha has verbal approval of the material as a Class A product from the state Department of Natural Resources, clearing the way for land application.



ABOVE: The Kenosha plant, on 29 acres along Lake Michigan, treats an average of 22 mgd and has a design capacity of 28 mgd. BELOW: The grit basins and primary clarifiers.

## ENERGY RECOVERY

Smooth operation and a Class A end product are only part of the story. Energy recovery was a major objective and is being realized big-time. “Our energy costs have been going up 2 to 3 percent every year,” says Czarnecki. “Plus we wanted to reduce our dependence on natural gas and electrical energy from the local utility. The utility prides itself on keeping rates low. We’re among the lowest-cost operations in the state.”

## BANG FOR THE BUCK

For the size of the payback in energy recovery, facilities usage, and biosolids handling costs, Kenosha gets a lot for its money. The solids project was implemented on a design-build basis at a cost of \$5.4 million.

“The state allows design-build for energy recovery projects,” says Curt Czarnecki, director of engineering services. “We worked with Centrisys as our design-build partner.” The contract called for design, assistance with permits, procurement, construction and installation, integration with the existing SCADA system, startup and commissioning, operation and maintenance manuals and warranties.

Czarnecki believes working with local manufacturers on a cutting-edge project added to the savings. “Manufacturers want to get the new technologies installed and operating successfully,” he says. “They guaranteed cost savings.” He calculates savings of up to 50 cents on the dollar.

Using existing buildings and reducing space and the number of facilities also saved on costs. The new thickening centrifuges occupy about 50 square feet each, while the old dissolved air flotation system required 10,000 square feet.

The city secured a \$500,000 grant from Wisconsin Focus on Energy and a smaller grant for LED lighting in the solids handling building. One provision of the Focus on Energy grant was that the work be completed by the end of 2015. To meet that date, the team had to move the dewatering equipment out of the building and operate outside in winter until the new equipment was installed.





New technology at the plant goes hand-in-hand with basic maintenance. From left, Brian Lequia, Centrisys field technician; Curt Czarnecki and Matt Paul, operator.



Curt Czarnecki, director of Engineering Services

**Kenosha Wastewater Treatment Plant  
PERMIT AND PERFORMANCE**

	INFLUENT	EFFLUENT	PERMIT
<b>BOD</b>	180 mg/L	13 mg/L	30 mg/L monthly avg. 45 mg/L weekly avg.
<b>TSS</b>	180 mg/L	8 mg/L	30 mg/L monthly avg. 45 mg/L weekly avg.
<b>Ammonia</b>	27 mg/L	3 mg/L	16.2 mg/L daily max.
<b>Phosphorus</b>	3 mg/L	0.5 mg/L	1.0 mg/L initial limit 0.6 mg/L final interim limit

In the old plant, biogas from the six digesters was only used to heat the plant with boilers or to fuel the raw water pump engines. In summer most of the biogas was flared. “We couldn’t use all our biogas unless it was really cold,” says Czarnecki.

That has changed. Two new engine-generators, manufactured by f.u.n.k.e. Senegie GmbH and supplied by Kraft Power Corporation, use 100 percent of the biogas, first compressed and cleaned in a gas conditioning unit (Unison Solutions). Heat captured from the 330 kW generator meets the needs of the PONDUS system, and a dryer provides most of the heat for the digesters.

One generator operated at full load and the second at less than capacity, for a total of about 500 to 550 kW at current biogas production levels. “We’re not entirely off the grid, but about half the power we generate is exported back to the main switchgear at the treatment plant,” Czarnecki says.

He suggests that even more power could be exported if the plant began accepting high-strength waste — and the utility is considering doing so. Hydrogen sulfide odors are not a problem with the new system. A KWT 1000/3000 chemical scrubber (SÜLZLE KLEIN GmbH) uses water, caustic soda and sulfuric acid to cool the exhaust and remove moisture, particulates, ammonia and sulfur compounds.

**SIMPLE OPERATIONS**

As robust as the new system is, it is relatively easy to operate. The operations team includes Mat Paul, Rich Kositzky, Don Kordecki, Ray Granado, Dustin Stockwill, Bill Peters, Darrick McCarthy and George Morgan (Mike Christel recently retired).

Paul says the process is simple even though all the process elements are integrated and must work together: “With the new equipment, everything is

easier. We’ve had just a couple of hiccups. And Centrisys, being local, is here nearly every day to check on operations.”

The new technology has not added to the staff requirements. The process is fully automated, requiring just one operator during the first shift. On second and third shift, the process is simply monitored by an operator who is responsible for the entire plant as well as satellite operations.

Operator input was important during the design phase. Czarnecki says plant staff was involved in such decisions as valve location and placement of pumps: “It was not your typical design-build. Our operators provided feedback, ensured redundancy and shared performance criteria. We’ve kept the operators and mechanics involved throughout installation and startup. As a result, we have a system that’s easily maintained. Overall, it has been a very positive project.”

The utility has been able to keep the staff level the same while recovering energy, saving on operations, and keeping wastewater rates as low as possible, Czarnecki observes: “It’s a green project. It’s in everybody’s best interests.” tpo

**featured products from:**

**Centrisys Corporation**  
262/654-6006  
www.centrisys.com  
(See ad page 25)

**Unison Solutions, Inc.**  
563/585-0967  
www.unisonsolutions.com

**CNP - Technology Water and Biosolids Corporation**  
262/764-3651  
www.cnp-tec.com  
(See ad page 53)

**Vaughan Company, Inc.**  
888/249-2467  
www.chopperpumps.com  
(See ad page 29)

**Kraft Power Corporation**  
800/969-6121  
www.kraftpower.com

# Custom Dewatering & Composting Solutions.



DSP Screw Press



Rotary Drum Thickener



Agitated and Aerated In-vessel type Composting System (ICS)



3DP Belt Press



Enclosed Gravity Belt Thickener



Skid-Mounted 3DP

- Belt Presses
- Screw Presses
- Rotary Drum Thickeners
- Gravity Belt Thickeners
- Equipment Restoration
- On-Site Service & Mobile Demos
- Complete Compost Facility Design



Sales: 518-796-1440

Factory: 518-695-6851

Fax: 518-695-5417

Email: dan@bdpindustries.com

[www.bdpindustries.com](http://www.bdpindustries.com)

FREE INFO - SEE ADVERTISER INDEX

## ■ Steam Boilers

*The Consulting Engineers First Choice*

**DIGESTER GAS  
NATURAL GAS  
METHANE  
BIO GAS  
FUEL OIL**



☛ [hurstboiler.com](http://hurstboiler.com)



**COAL, SLUDGE, BIOMASS, SOLID WASTE**

**HURST**BOILER

100 Boilermaker Lane • Coolidge, GA 31738-0530

Tel: (229) 346-3545 • Fax: (229) 346-3874

email: [info@hurstboiler.com](mailto:info@hurstboiler.com)

**50**  
**YEARS**  
*...the solid-fuel people*

FREE INFO - SEE ADVERTISER INDEX



“On any web-enabled device, operators can check the current status of their sensors, whether any maintenance needs to be done in the near future, and whether any maintenance is overdue that is affecting the performance of a sensor or analyzer.”

SAM UTLEY

Information about sensors is displayed on mobile devices on screens that are easy to understand and navigate.

## Just One Look

MOBILE SENSOR MANAGEMENT TECHNOLOGY MAKES IT EASIER FOR OPERATORS TO KEEP TABS ON PROCESS VALUES AND KEEP INSTRUMENTS WELL MAINTAINED AND CALIBRATED

By Ted J. Rulseh

Today’s clean-water plant operators deal with multiple priorities at once. That includes keeping track of information coming throughout the day from multiple process measurement instruments.

To maintain consistently high-quality effluent, it helps to have easy access to data from inline sensors and analyzers. Regular cues to perform required maintenance and calibrations provide further help in running a plant efficiently and in compliance.

Toward this end, Hach offers Mobile Sensor Management, a cloud-based software solution that gives operators clear visibility into their process measurements from any 3G/4G or internet-connected smartphone, tablet or computer. Among other benefits, the system synchronizes process instruments with lab values so that operators can verify readings against grab samples and so make well-informed decisions.

The system also provides service diagnostics and maintenance instructions in real time. Sam Utley, software application development manager with Hach, talked about the offering in an interview with *Treatment Plant Operator*.

**tpo:** What need in the marketplace does this offering address?

**Utley:** In the wastewater space, and in drinking water and industrial applications, the desire among operators for access to more data and big data is becoming stronger and stronger. While the aging workforce and loss

of knowledge were market drivers we considered in creating this offering, the major need was for customers to have greater access to data and to focus on their highest priorities. This offering is designed to simplify a facility’s daily work so it is clear to operators where and how they should spend their time.

**tpo:** Please describe in practical and concrete terms what this offering is and does.

**Utley:** Mobile Sensor Management is a new software that enables instrument data to be accessed on any mobile device. So on any web-enabled device, operators can check the current status of their sensors, whether any maintenance needs to be done in the near future, and whether any maintenance is overdue that is affecting the performance of a sensor or analyzer. The solution also provides guidance on how to maintain those instruments.

**tpo:** How does the software provide that maintenance guidance?

**Utley:** Suppose you have an AN-ISE probe for ammonium and nitrate that needs calibration. The software will alert you that in, say, three days, a calibration is due. Then it will walk you through the steps. The instructions are right there in the palm of your hand. It also provides a list of tools and materials needed for the calibration. In all, this ensures that the calibration steps are performed completely and accurately.

# Wastewater Treatment and Sludge Management Solutions from Komline-Sanderson



## Pump. Thicken. Dewater. Dry.

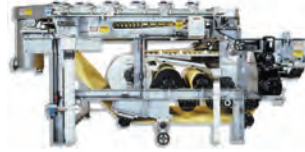
### Paddle Dryer

- indirectly heated
- produce Class A product
- high efficiency



### Belt Filter Press

- sludge dewatering
- high cake solids
- low polymer cost



### Gravity Belt Thickener

- sludge thickening
- high rates
- low polymer cost



### Dissolved Air Flotation

- sludge thickening
- wastewater clarification
- high float solids



### Rotary Vacuum Filter

- sludge dewatering
- wastewater clarification
- continuous operation



### Plunger Pump

- sludge transfer
- positive displacement
- high suction lift



FREE INFO – SEE ADVERTISER INDEX

**tpo:** Does this solution apply only to your company's devices?

**Utley:** Currently, yes. It's available on products heavily used in wastewater, but we're looking to continually expand. We're releasing new functionality with this software on a three-month cycle, adding sensors and analyzers and adding functionality very rapidly. We aim to move into other areas, including some specific applications in wastewater, as well as drinking water and industrial applications.

**tpo:** Which sensors are covered by the solution today?

**Utley:** It covers the majority of our wastewater sensors. That includes our DO probes and ISE probes for nutrients: AN-ISE, A-ISE and ISE. It also covers Amtax ammonium and Phosphax phosphate analyzers, the Nitratix nitrate sensor, and the Solitax sensor for suspended solids.

**tpo:** How does this offering make connections between field measurements and the lab?

**Utley:** As an example, if there's a need to calibrate that AN-ISE probe, Mobile Sensor Management lets you start the job right there on your mobile device. It locks in the values you measure in the field and sends a job to the instrumentation in your process control lab. Then the lab technician can start getting things ready for the job. The sample from the field is taken to the lab. When the analysis is complete, the mobile device displays the field and lab values side by side and asks if you want to update your instrument. When you update, the value that was obtained in the lab is pushed out to the field. At that point there is no reason to go back out and manually punch in that calibration. From a quality control standpoint, that helps limit the errors that can be made, such as from unclear handwriting on a note and putting in numbers incorrectly.

**tpo:** What do operators actually see when they open the software on their device?

**Utley:** They see a list of all the sensors with the names they have assigned, a photo of the sensor, the parameter it's measuring, and the current value in real time. In addition, they see a status bar at the top of the screen, titled Critical and Severe. When they click on the Critical bar, for example, it will show the instruments that need attention. Next to each sensor it tells what the issue is, such as Factory Calibration Lost, or Cleaning Due in Three Days. This helps operators see in a very quick manner what the highest priorities are.

**tpo:** Can they click on any individual instrument and drill down for more detail?

**Utley:** Yes. The system logs all the relevant information so that operators have a historical track record of what has happened to the sensor.

**tpo:** Can users receive alarms or alerts to abnormal conditions with their instruments?

**Utley:** Absolutely. Customers are able to receive emails about the critical and severe notices.

**tpo:** How have customers who have used this technology reacted to it?

**Utley:** It has been received rather warmly. It's a very different value proposition depending on what the user wants to achieve. One customer was thrilled that they could see their remote facilities. They're responsible for multiple sites, and they don't go to them every day. So they appreciate the ability to pick up a phone and see if anything is out of the ordinary or if any maintenance is overdue. That's peace of mind for them. Another customer was excited about the ability to focus on those highest priorities: What's going on right now and what do I need to focus on? **tpo**



# Prescription for *Excellence*

FORT WORTH'S ENVIRONMENTAL MANAGEMENT SYSTEM FOR BIOSOLIDS PROVIDES A ROAD MAP FOR SOLVING PROBLEMS AND STEADILY IMPROVING PROCESSES

STORY: **Ted J. Rulseh**

PHOTOGRAPHY: **Olivia Ogren-Hrejsa**

THE FORT WORTH (TEXAS) BIOSOLIDS LAND application program ran smoothly for more than 15 years. Then along came an odor problem that led to stories on the evening news and complaint calls to the mayor's office from neighbors of application sites.

It was a challenging problem, but the biosolids team had the recipe for the solution. An environmental management system (EMS) laid out a structured path to help identify the root cause, evaluate potential remedies, and put the best ones into practice.

Today, after the addition of chemical treatment processes, the odor problem has been greatly reduced and the biosolids program is back on track, delivering more than 28,000 dry tons of U.S. EPA Class A material to farm and ranch lands in neighboring counties.

The city's EMS was first certified by the National Biosolids Partnership in 2005. Last year it passed a third-party reverification audit. "An EMS doesn't come free," observes Steven Nutter, biosolids EMS manager in Fort Worth. "There is manpower and paperwork involved. But we have definitely seen value. The EMS provides a structure and a mechanism to continually improve a biosolids program."

## HIGH VOLUME

The city's biosolids are generated at the 166 mgd (design) Village Creek Wastewater Treatment Plant, a regional facility serving Fort Worth and 22 surrounding communities. Primary and waste activated sludges are stabilized in 14 1-million-gallon anaerobic digesters at about three weeks' retention time. The digested material is pumped through a buried pipeline to a biosolids management facility about 1 mile north.

“An EMS doesn't come free. There is manpower and paperwork involved. But we have definitely seen value.”

**STEVEN NUTTER**

Contractor Renda Environmental operates the site, dewatering the material on six belt filter presses (Andritz). Renda also handles all aspects of land application, including trucking of the biosolids and all activities related to site permitting and monitoring. In the 2015-16 program year, Fort Worth produced 28,100 dry tons of biosolids, land-applying 80.35 percent and sending 19.65 percent to landfills.

Renda also operates the Village Creek plant's two 5.2 MW Taurus 60 gas turbines that burn digester gas to generate about 50 percent of the plant's electricity. A recently installed heat recovery steam generator captures heat from the turbine exhaust to produce steam that powers two centrifugal blowers supplying process air to the aeration basins.

Together, the HRSG and turbine generators meet more than 70 percent of the plant's overall energy demand.

The biosolids program's modern history goes back to the early 1990s, when the city spread the digested sludge on drying beds before applying it

Mustapha Muhammad, senior water systems technician, collects samples from the Village Creek Wastewater Treatment Plant, source of biosolids for the Fort Worth land application program.





along highways. “We started having problems with that program,” says Nutter. “One year we had lots of rain, and obviously drying beds don’t work under those conditions. That really backed us up. The need for more drying bed capacity was another issue. So my predecessor and the plant manager at the time looked for alternatives.”

In 1995, the city turned to producing Class A biosolids by way of lime stabilization. “For the longest time, that was a great program,” says Nutter. “It was economical. We were beneficially reusing our biosolids. We got relatively few odor complaints — maybe half a dozen in a bad year. We were going great.”

### UNWELCOME CHANGE

Then in 2012-13, things changed for the worse, for reasons not fully or immediately clear. “The first thing we noticed was that our biosolids were not dewatering very well,” Nutter says. “The wastewater coming into Village Creek had changed over the past decade, and that meant our biosolids also changed.”

## Village Creek Wastewater Treatment Plant, Fort Worth, Texas



BUILT:	1958; multiple expansions and upgrades
POPULATION SERVED:	900,000 (22 communities)
PLANT FLOWS:	166 mgd design, 124 mgd average
BIOSOLIDS PROCESS:	Ferric chloride and chlorine dioxide addition, dewatering, lime stabilization
BIOSOLIDS VOLUME:	28,100 dry tons (program year 2015-16)
BIOSOLIDS USE:	Land application
WEBSITE:	<a href="http://www.fortworthtexas.gov">www.fortworthtexas.gov</a>
GPS COORDINATES:	Latitude: 32°46'22.14"N; longitude: 97°8'39.27"W



In 2015, Fort Worth received a National Biosolids Partnership Platinum Award honoring its 10 years of excellence. In 2016 the Village Creek Wastewater Treatment Plant earned a Platinum Peak Performance Award from the National Association of Clean Water Agencies recognizing 26 years of perfect permit compliance.

One likely culprit was a significant rise in influent phosphorus, along with a decline in the fiber and ash content. Solids content in the dewatered material dropped from about 16.5 percent on average to 14 percent.

“The difference was like night and day,” Nutter says. “The material was just fundamentally different. We were making mud. When biosolids dewater poorly, that leads to other problems, primarily odor. There are two key issues. One is that the more water you have in biosolids, the more you can get reactivation of the microorganisms. The other issue is polymer. To get the biosolids to dewater, we were having to add a lot more polymer. Then when we added lime to stabilize it, we were creating odors in the field — a kind of a dead fish smell.

“The cationic polymer we use contains a compound called amine. When you add lime to a pH of 12, it attacks the polymer and cuts off that amine. Amine is a precursor to other compounds that create the dead fish smell.” That odor could travel for miles, generating complaints even though the application sites were in sparsely populated areas.

Ben Davis, environmental program manager for Renda Environmental, notes that a state regulatory change in 2007 compounded the problem. Previously, under U.S. EPA rules, when using vector attraction reduction alternative 6, pH-adjusted biosolids could be removed for land application as soon as the pH reached 12.

The new rule from the Texas Commission on Environmental Quality (TCEQ) required 100 percent of the treated biosolids to be raised to at least pH 12 for two hours. The material then had to be maintained above pH 11.5



Steven Nutter,  
Environmental  
Program Manager

and kept on site for another 22 hours, in place of performing a regular test to make sure it was meeting the pH requirement. That delay enabled more odor to develop.

### MAKING THE FIX

The solution to the odor problem had three main components. First is addition of ferric chloride as the biosolids leave the digesters. That has the effect of binding phosphorus into the solids and improving dewatering performance.

Says Davis, “We achieved a 2 percent and sometimes almost 3 percent bump in percent solids. It’s no longer like mud. It’s more of a compost-like material that we can stack on a concrete pad before we load it into trucks.” Besides reducing odor and improving handling, the ferric chloride has cut polymer consumption by 25 percent and has helped prevent struvite buildup in piping.

Next came dosing with chlorine dioxide, a strong oxidizing agent that attacks odor-causing compounds. It is used for odor control in a variety of industries, notably rendering plants. The chlorine dioxide gas, generated on site, is added to a 500,000-gallon tank next to the dewatering building that is fed by the sludge pipeline from Village Creek. An aqueous solution of the gas is metered into the tank to match the incoming flow rate.

“What sold me on that chemical was that if rendering plants use it, then it’s got to work for us,” says Davis. “Sure enough, it did. It’s really, really effective





Migdalia Jackson, environmental specialist, works in the on-site laboratory testing samples for a pilot program for automatic odor control in the gravity thickener area. She prepares to use an OdaLog (Thermo Fisher Scientific) to test for hydrogen sulfide levels.

as long as we can get the dosage just right and incorporate it the right way.”

Chlorine dioxide is also a powerful disinfectant, effective against bacteria and enteric viruses. Nutter says, “In the very near future we hope to rely on chlorine dioxide to give us pathogen kill and thus start reducing our dependence on lime. I don’t know if we’ll be able to get away from lime completely, but if we can add lime to achieve pH 10 while adding chlorine dioxide, that’s a one-two punch to give us good pathogen kill and superior odor performance.”

Meanwhile, the city has received approval from the TCEQ to change its vector attraction reduction alternative from lime stabilization to achieving at least 38 percent volatile solids reduction in the anaerobic digesters. That has now been documented through lab testing. As a result, the biosolids no longer have to be stored on site for 24 hours before land application.

### MAKING IT ALL HAPPEN

Instrumental in resolving the odor issue was the biosolids program EMS.

## STILL GETTING BETTER

An environmental management system is all about driving continuous improvement. The Fort Worth biosolids program has plans for upgrades in the years ahead.

Most significant is the exploration of increasing dewatering capacity. That dovetails with a project that would add a 5-million-gallon liquid sludge storage tank at the biosolids management facility operated by Renda Environmental.

“Here in Texas, sometimes it can rain for days on end, and we can’t land-apply biosolids when that’s happening,” says Steven Nutter, biosolids EMS manager. “And when it’s raining we don’t want to have stockpiles of dewatered biosolids sitting on site getting rained on. That leads to odors and other problems.”

During rain events, the tank would store liquid sludge pumped to the biosolids site from the Village Creek Wastewater Treatment Plant. After the rainfall, the increased dewatering capacity would enable processing of that stored material along with the flow arriving from Village Creek around the clock. “We would need the additional capacity to get caught up,” Nutter says.

“We’re evaluating all dewatering technologies, belt presses being one of them. We’re also looking at centrifuges, though we realize that centrifuges can have odor issues. We’re examining that very closely.”

In the more distant future, Nutter and his team plan to evaluate biosolids drying: “That may or may not happen. There is lot of capital involved in drying.”



The Village Creek Wastewater Treatment Plant administration building.

“Once we do the root cause analysis, the next step is: What are we going to do to fix it? Sometimes that’s easy, sometimes it’s not. Sometimes it’s cost-prohibitive. Then the final step is implementing whatever solution we’ve found.”

**STEVEN NUTTER**

Nutter’s predecessor Gary Rockers spent about three years creating the EMS with help from a consultant.

“In developing an EMS, there are a series of things that need to be codified,” Nutter says. “You’ll have an EMS manual, which is a living document. Underneath that you need goals and targets and standard operating procedures, such as for properly treating, dewatering and applying biosolids. It takes a lot of effort, and a lot of training to make sure all team members are familiar with the procedures.”

Finally, there is an audit process: Every five years an auditor spends several days on site to ensure that the EMS is properly constructed and is being implemented correctly.

Davis emphasizes that the EMS is about more than just dealing with issues: “It also deals with things that aren’t problems — it helps you look at things that could be better, ways to improve the way things already are.”

The EMS came into play as the biosolids site added its sixth belt filter press (Andritz) and fine-tuned its operation earlier this year. The newly designed low-profile press is designed to save space and enable higher throughput of cake higher in solids content. It runs on electricity instead of hydraulics or pneumatics. Renda Environmental and Andritz specialists are working together during the initial setup and operation to

help optimize production.

The team will also follow the EMS in a near-future project to potentially increase biosolids dewatering capacity (see sidebar). For Nutter, Davis and colleagues, the EMS is part of a constant effort to improve biosolids product quality and sustain a world-class biosolids management program. **tpo**



The Village Creek plant treats an average flow of 124 mgd and produces some 28,000 dry tons per year of Class A biosolids for beneficial use.

It lays out the process to follow for solving problems or making improvements that can enhance efficiency, save money and improve performance. “When something comes up, what we call a nonconformance, something that’s causing us issues, we do a corrective action notice,” Nutter says. “It identifies the issue and triggers a root cause analysis: Why are we having this problem? Sometimes it’s a simple answer, and sometimes it’s more complicated.

“Once we do the root cause analysis, the next step is: What are we going to do to fix it? Sometimes that’s easy, sometimes it’s not. Sometimes it’s cost-prohibitive. Then the final step is implementing whatever solution we’ve found. Sometimes that involves money, and other times it can be just a quick process change.”

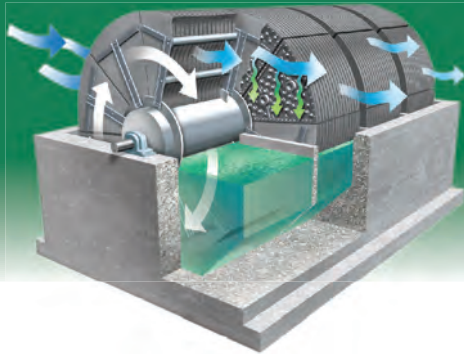
### featured products from:

**Andritz Separation, Inc.**  
800/433-5161  
[www.andritz.com/separation](http://www.andritz.com/separation)

**Renda Environmental, Inc.**  
817/571-9391  
[www.rendaenvironmental.com](http://www.rendaenvironmental.com)

**Thermo Fisher Scientific**  
800/556-2323  
[www.thermoscientific.com/water](http://www.thermoscientific.com/water)

**EnviroDisc®**  
**Rotating Biological Contactor**  
**Lowest Installed Energy**  
**For the Right Process**



- Low Energy, Low Maintenance.
- Longest Successful Operating History of any RBC manufactured today.
- Used for Municipal, Industrial and Land Development Applications.



**Walker Process Equipment**  
[www.walker-process.com](http://www.walker-process.com)



FREE INFO – SEE ADVERTISER INDEX

**IBC Tote Scales™ & Drumm-Scales™:**  
**STOP WASTING EXPENSIVE**  
**POLYMER!**



- ◆ Accurately monitor amount of polymer being fed
- ◆ Maximize solids yield with minimal polymer use
- ◆ Feed Rate alarms warn when off target



For more information,  
 Call (925) 686-6700 or  
 visit [www.forceflowscales.com](http://www.forceflowscales.com)

**FORCE FLOW**

CHECK. CONTROL. COMPLY.

FREE INFO – SEE ADVERTISER INDEX

There are a lot of **Holes** in our story...



**Perforated  
 Plate  
 Filterscreen**

**By design.**

Put these holes to work  
 for you and get 85%  
 solids capture.

**weftec** | 2017 Booth 1342  
the water quality event™

**Enviro-Care™**

A WAMGROUP® Company

[ecsales@enviro-care.com](mailto:ecsales@enviro-care.com) • 815-636-8306

FREE INFO – SEE ADVERTISER INDEX



PHOTOS COURTESY OF ARIZONA PROJECT WET

Tucson Water Festival attendees get a lesson in topography's role in water.

# Creating Water Stewards

A STEM CURRICULUM AND AN ANNUAL WATER FESTIVAL IN TUCSON HAVE HELPED DELIVER MESSAGES ABOUT THE VALUE OF WATER TO MORE THAN 100,000 STUDENTS

By Craig Mandli

**W**ater is precious in southern Arizona. That's why the leaders of Tucson Water have invested in water and wastewater education aimed at area public school teachers.

By supporting science, technology, engineering and math (STEM) education and organizing the annual Tucson Water Festival, they aim to foster generations of good water stewards. "Our STEM Academy is open to 25 fourth- through 12th-grade teachers each year in June and includes a robust week of water education to incorporate into their class curriculums," says Valerie Herman, public information specialist, who manages youth education programs.

"More than 100,000 students have been reached through our STEM Academy teachers over the years. That's 100,000 students who have developed their STEM skills while learning about water stewardship, Tucson's water management plans and STEM careers within Tucson Water."

## SUPPORTING GROWTH

STEM takes an interdisciplinary and applied approach. Teachers in the STEM Academy explore Tucson Water's reliability mission, focusing on the urban water cycle. They use maps and well data to understand the groundwater gradient, and they tour water reclamation system locations.

They also analyze drinking water quality and gain an understanding of Tucson Water's quality parameters. A hands-on lesson using Google Earth teaches educators about the operation of groundwater recharge basins and the engineering design of the piping systems that deliver water. The course culminates in a tour of Tucson Water's potable and reclaimed water operations. A segment on water conservation and efficiency tells how to perform bathroom faucet and irrigation audits with Tucson Water professionals.

"The teachers relay the lessons they learn to their incoming classes and to future classes as well," says Herman. "They are very enthusiastic about conveying these lessons and are willing to assign water-focused projects as homework that potentially impact family member behaviors."

Teachers who implement a water STEM unit receive further education to help them teach more effectively. Those lessons are built upon at the Tucson Water Festival, held in March. Educators receive seven hours of additional instruction to prepare for the festival day and for follow-up.

The water festival covers topics such as conservation, groundwater management, the water cycle, transportation, watershed management, treatment plants, groundwater health and topographic modeling. "Bringing these components together is the goal of the STEM Academy and our other water stewardship education programs," says Herman.



STEM Academy participants receive a lesson in water quality testing.



Tucson Water STEM Academy students get an up-close look at the water treatment and reuse facilities.

### BRINGING IT TOGETHER

More than 900 Amphitheater School District fourth-graders took part in the 2017 water festival, held at James D. Kriegh Park in Oro Valley as part of the statewide Arizona Water Festival. It is sponsored by Arizona Project WET and Tucson Water.

“We want to make students, who are our future ratepayers, cognizant of water issues,” says Herman. “Teachers use the lessons provided by Project WET and the STEM Academy to create a strong foundation for learning. It’s a cooperative effort that distributes information in a manner where everyone wins.”

The festival includes a variety of stations that reinforce the lessons. One lesson centers on the Colorado River, source of about 95 percent of Tucson Water’s supply. “We purchase 144,491 acre-feet of water, so it’s important that kids know how important it is to keep the river clean.”

Another lesson focuses on the water cycle. “Students at that age know how the water cycle works from the outside, but sometimes find it difficult to figure out where they fit in,” says Herman. “The lessons we teach help to broaden students’ understanding of the cycle and the roles they play.”

As part of that, kids explore models showing that they live in a watershed and need to be water managers. “The kids know to turn off the water when they brush their teeth, but these lessons teach them to save water in new ways,” says Herman.

“We want to make students, who are our future ratepayers, cognizant of water issues. Teachers use the lessons provided by Project WET and the STEM Academy to create a strong foundation for learning.”

**VALERIE HERMAN**

### PROOF OF SUCCESS

Progress has been steady since Tucson leaders began dedicating resources to water conservation about 30 years ago. Herman credits the utilities ratepayers for buying in: “In the late 1980s, average use peaked at nearly 120 gallons of water per day. Now it’s less than 80 gallons per day. That’s the direct result of our water education programs.”

The area’s booming population continues to strain water resources. Fortunately, Tucson residents have embraced conservation. “Behaviors in Tucson are very different than a lot of places in the country,” says Herman. “Our residents are very educated on what to plant in their yards. Many take advantage of incentives and rebates we provide to take out their lawns and pools to conserve water. All that starts with the teachers. They provide the tools for students to make good choices.” **tpo**



These Tucson area public school teachers participated in the 2016 Tucson Water STEM Academy.

# Headworks/Biosolids Management

**DIRECTORY**

# 2017

	Bins/Hoppers/ Silos	Biosolids Treatment/ Application	Centrifuges/ Separators	Chemical/Polymer Feed Equipment	Coagulants/ Flocculants/ Polymers	Composting Equipment	Conveyors	Digesters
<b>Acrison, Inc.</b> 20 Empire Blvd., Moonachie, NJ 07074 800-422-7476 201-440-8300 Fax: 201-440-4939 informail@acrison.com www.acrison.com	✓			✓				
 <b>AdEdge Water Technologies LLC</b> 2055 Boggs Rd., Duluth, GA 30096 866-823-3343 678-835-0052 Fax: 678-835-0057 sales@adedge technologies.com www.adedgetech.com See ad page 7				✓				
 <b>Alfa Laval</b> 5400 International Trade Dr., Richmond, VA 23231 866-253-2528 customerservice.usa@alfalaval.com www.alfalaval.us		✓	✓					
 <b>Aqualitec Corp.</b> 3415 S Sepulveda Blvd., Ste. 1100, Los Angeles, CA 90034 855-650-2214 info@aqualitec.com www.aqualitec.com								
 <b>BDP Industries</b> 354 Rte. 29, Greenwich, NY 12834 518-695-6851 Fax: 518-695-5417 dan@bdpindustries.com www.bdpindustries.com See ad page 35		✓				✓		
 <b>Blue-White Industries</b> 5300 Business Dr., Huntington Beach, CA 92649 714-893-8529 Fax: 714-894-9492 sales@blue-white.com www.blue-white.com See ad page 2				✓				
 <b>Boerger, LLC</b> 2860 Water Tower Pl., Chanhassen, MN 55317 612-435-7300 Fax: 612-435-7301 america@boerger.com www.boerger.com		✓		✓	✓			
 <b>Bright Technologies Specialty div. of Sebright Products, Inc.</b> 127 N Water St., Hopkins, MI 49328 800-253-0532 269-793-7183 Fax: 269-793-4022 julie@brightbelpress.com www.brightbelpress.com See ad page 59	✓						✓	
 <b>Carylon Corporation</b> 2500 W Arthington St., Chicago, IL 60612 800-621-4342 312-666-7700 Fax: 312-666-5810 info@caryloncorp.com www.caryloncorp.com								
 <b>Centrisys Corporation</b> 9586 58th Pl., Kenosha, WI 53144 262-654-6006 Fax: 262-764-8705 info@centrisys.us www.centrisys.us See ad page 25			✓					
 <b>CleanTek Water Solutions</b> 7984 University Ave., Fridley, MN 55432 866-929-7773 info@cleantekwater.com www.cleantekwater.com							✓	
 <b>CNP - Technology Water and Biosolids Corp.</b> 9535 58th Pl., Kenosha, WI 53144 262-764-3651 Fax: 262-764-8705 info@cnp-tec.us www.cnp-tec.com See ad page 53		✓						
 <b>Duperon Corporation</b> 1200 Leon Scott Ct., Saginaw, MI 48601 800-383-8479 989-754-8800 Fax: 989-754-2175 sales@duperon.com www.duperon.com See ad page 17								
 <b>Eagle Microsystems, Inc.</b> 366 Circle of Progress Dr., Pottstown, PA 19464 610-323-2250 Fax: 610-323-0114 info@eaglemicrosystems.com www.eaglemicrosystems.com See ad page 61				✓				

Grinders/ Shredders	Grit Handling/ Removal/Hauling	Headworks	Pumps - Archimedes/ Screw	Screens/Strainers/ Screening Systems	Screw Conveyors	Septage Receiving Stations	Sludge - Dewatering/ Presses	Sludge - Dryers	Sludge - Hauling/Disposal	Sludge - Heaters	Sludge - Land Application	Sludge - Mixers/Thickeners	Other
							✓		✓			✓	
		✓		✓			✓						
							✓						
							✓						
							✓						Pumps - Rotary Lobe
							✓						
								✓					
	✓	✓		✓	✓	✓	✓	✓			✓	✓	Heat Exchangers
		✓		✓	✓								Washer Compactors

(continued)

# Headworks/Biosolids Management

**DIRECTORY**

# 2017

Bins/Hoppers/  
Silos

Biosolids  
Treatment/  
Application

Centrifuges/  
Separators

Chemical/Polymer  
Feed Equipment

Coagulants/  
Flocculants/  
Polymers

Composting  
Equipment

Conveyors

Digesters



**Enviro-Care Company**  
1570 St. Paul Ave., Gurnee, IL 60031  
815-636-8306 Fax: 847-672-7968  
ecsales@enviro-care.com www.enviro-care.com



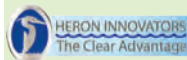
**FKC Co., Ltd.**  
2708 W 18th St., Port Angeles, WA 98363  
360-452-9472 Fax: 360-452-6880  
mail@fkcscrewpress.com www.fkcscrewpress.com



**Force Flow**  
2430 Stanwell Dr., Concord, CA 94520  
800-893-6723 925-686-6700 Fax: 925-686-6713  
info@forceflow.com www.forceflowscales.com



**Headworks International, Inc.**  
11000 Brittmoore Park Dr., Houston, TX 77041  
713-647-6667 Fax: 713-647-0999  
www.headworksintl.com



**Heron Innovators, Inc.**  
1025 Nichols Dr., Rocklin, CA 95765  
916-408-6601 916-408-6991  
jennifer@heroninnovators.com www.heroninnovators.com



**Huber Technology, Inc.**  
9735 NorthCross Center Ct., Ste. A, Huntersville, NC 28078  
704-949-1010 Fax: 704-949-1020  
marketing@hhusa.net www.huberforum.net



**Hurst Boiler & Welding Company, Inc.**  
100 Boilermaker Ln., Coolidge, GA 31738  
877-994-8778 229-346-3545 Fax: 229-346-3874  
info@hurstboiler.com www.hurstboiler.com



**Hydro International**  
2925 NW Aloclek Dr., Ste. 140, Hillsboro, OR 97124  
866-615-8130 503-615-8130 Fax: 503-615-2906  
questions@hydro-int.com www.hydro-int.com



**JDV Equipment Corporation**  
1 Princeton Ave., Dover, NJ 07801  
973-366-6556 Fax: 973-366-3193  
sales@jdvequipment.com www.jdvequipment.com



**Kifco, Inc.**  
700 S. Schrader Ave., Havana, IL 62644  
800-452-7017 309-543-4425 Fax: 309-543-4945  
sales@kifco.com www.kifco.com



**Komline-Sanderson**  
12 Holland Ave., Peapack, NJ 07977  
800-225-5457 908-234-1000 Fax: 908-234-9487  
info@komline.com www.komline.com



**Kuhn North America, Inc.**  
PO Box 167, Brodhead, WI 53520  
608-897-2131 Fax: 608-897-2561  
chris.searles@kuhn.com www.kuhnorthamerica.com



**Lakeside Equipment Corporation**  
1022 E Devon Ave., Bartlett, IL 60103  
630-837-5640 Fax: 630-837-5647  
sales@lakeside-equipment.com www.lakeside-equipment.com



**Landia, Inc.**  
111 Triangle Trade Dr., Cary, NC 27513  
919-466-0603 Fax: 919-460-1666  
info@landiainc.com www.landiainc.com



	Grinders/ Shredders	Grit Handling/ Removal/Hauling	Headworks	Pumps - Archimedes/ Screw	Screens/Strainers/ Screening Systems	Screw Conveyors	Septage Receiving Stations	Sludge - Dewatering/ Presses	Sludge - Dryers	Sludge - Hauling/Disposal	Sludge - Heaters	Sludge - Land Application	Sludge - Mixers/Thickeners	Other
		✓	✓		✓	✓	✓	✓						Sludge - Screening
								✓					✓	
			✓		✓	✓								
						✓								Suspended Air Flotation
		✓	✓		✓	✓	✓	✓	✓				✓	Sludge - Screening
														Heat Exchangers
		✓	✓		✓			✓						
		✓	✓		✓	✓	✓			✓	✓		✓	
								✓	✓				✓	
										✓		✓	✓	
		✓	✓	✓	✓	✓	✓							Sludge/Grease Screening
													✓	






(continued)

# Headworks/Biosolids Management

**DIRECTORY**

# 2017

Bins/Hoppers/Silos  
Biosolids Treatment/Application  
Centrifuges/Separators  
Chemical/Polymer Feed Equipment  
Coagulants/Flocculants/Polymers  
Composting Equipment  
Conveyors  
Digesters

 <p><b>Mud Cat</b> 1750 Madison Ave., New Richmond, WI 54017 866-483-0014 913-642-5100 Fax: 913-642-5119 sales@mudcatdredge.com www.mudcatdredge.com</p>									
 <p><b>Ovivo USA, LLC</b> 2404 Rutland Dr., Austin, TX 78758 512-834-6000 Fax: 512-834-6039 info.us@ovivowater.com www.ovivowater.com</p>		✓							✓
 <p><b>Park Process</b> 7015 Fairbanks N Houston Rd., Houston, TX 77040 855-511-7275 713-849-7189 Fax: 713-937-4254 russ@parkprocess.com www.parkprocess.com</p> <p>See ad page 69</p>				✓					
 <p><b>Parkson Corp.</b> 1401 W Cypress Creek Rd., Ft. Lauderdale, FL 33309 888-727-5766 Fax: 954-974-6182 technology@parkson.com www.parkson.com</p>		✓							
 <p><b>PAXXO Inc.</b> 1924 Millard Farmer Rd., Newnan, GA 30263 770-502-0055 Fax: 770-502-0088 chris.pettigrew@paxxo.com www.paxxo.com</p> <p>See ad page 70</p>									
 <p><b>Roto-Mix, LLC</b> 2205 E Wyatt Earp Blvd., Dodge City, KS 67801 620-225-1142 Fax: 620-225-6370 info@rotomix.com www.rotomix.com</p> <p>See ad page 65</p>							✓		
 <p><b>Schwing Bioset, Inc.</b> 350 SMC Dr., Somerset, WI 54025 844-246-7381 715-247-3433 Fax: 715-247-3438 marketing@schwingbioset.com www.schwingbioset.com</p>	✓	✓						✓	
 <p><b>ScreenCo Systems LLC</b> 13235 Spur Rd., Genesee, ID 83832 208-790-8770 sales@screencosystems.com www.screencosystems.com</p> <p>See ad page 69</p>									
 <p><b>SEEPEX.</b> ALL THINGS FLOW See ad page 53</p>									
 <p><b>Vaughan</b> Unmatched Reliability See ad page 29</p>									✓
 <p><b>Walker Process Equipment, A Div. of McNish Corp.</b> 840 N Russell Ave., Aurora, IL 60506 800-992-5537 630-892-7921 Fax: 630-892-7951 walker.process@walker-process.com www.walker-process.com</p> <p>See ad page 43</p>									✓
 <p><b>Wangen America, Inc.</b> 855 N Wood Dale Rd., Ste. A, Wood Dale, IL 60151 847-201-3121 info.usa@wangen.com www.wangen.com</p> <p>See ad page 4</p>									



“ The team members are the greatest resource at this plant. They know it. They’ve been here forever. They do the work. I’m support staff. I coordinate what they do, and the best way for me to do that is to listen to what they have to say.”

**Nate Tillis, Operations and Maintenance Supervisor**  
Beloit (Wis.) Water Pollution Control Treatment Facility

Grinders/ Shredders	Grit Handling/ Removal/Hauling	Headworks	Pumps - Archimedes/ Screw	Screens/Strainers/ Screening Systems	Screw Conveyors	Septage Receiving Stations	Sludge - Dewatering/ Presses	Sludge - Dryers	Sludge - Hauling/Disposal	Sludge - Heaters	Sludge - Land Application	Sludge - Mixers/Thickeners	Other
													Dredges
	✓	✓		✓								✓	
	✓			✓			✓						Sludge Dewatering Containers
		✓		✓	✓	✓	✓	✓				✓	
	✓	✓		✓									
						✓	✓	✓	✓		✓		Sludge Pumps
	✓	✓	✓	✓		✓							
✓			✓										
		✓				✓						✓	Chopper Pumps Hydraulic Mixing Systems
												✓	
							✓						

# People.

The greatest natural resource.

[tpomag.com](http://tpomag.com)

SUBSCRIBE FOR FREE

# In Hot Water

ADVANCED COOLING TOWER TECHNOLOGY HELPS A TEXAS UTILITY TREAT WATER FROM A DEEP GEOTHERMAL AQUIFER, REDUCING TEMPERATURES WHILE REMOVING RADON AND H<sub>2</sub>S

By Ed Sullivan

Not all the water in aquifers is cold. In geothermal regions, water emerges from deep wells at temperatures that can exceed 100 degrees. That's how it is in Montgomery County, Texas, about 40 miles north of Houston. And the very warm water contains radon and hydrogen sulfide, making treatment a challenge.

The Montgomery County Municipal Utility District has solved the problem with a cooling tower technology that simultaneously lowers the water temperature and strips out the radon and H<sub>2</sub>S.

## HEAT BELOW THE SURFACE

Montgomery County lies over a geothermal field that includes much of eastern Texas. The underground water is heated by processes similar to but less violent than volcanic activity. In general, the deeper the water source, the higher the temperature.

The county increasingly depends on groundwater from deep wells to meet the needs of a fast-growing population. Cities including Conroe, Shenandoah, Oak Ridge North and Willis find it difficult to keep up with potable water demand from a population increasing at about 10 percent per year.

Although a portion of the surface water from nearby Lake Conroe will add to the county's total supply, water pumped from deep wells remains an important source. That water's temperature can reach 110 degrees F.

## PROBLEM CONSTITUENTS

The presence of radon and H<sub>2</sub>S complicates the situation. H<sub>2</sub>S in the amounts present is not considered a health hazard, but it does impart an

The cooling tower systems, now proven in place, demonstrate a technology that can benefit other municipalities sitting on previously untapped sources of deep geothermal water.

odor of rotten eggs. Radon gas, a naturally occurring radioactive material, is the nation's second-leading cause of lung cancer after smoking, according to the U.S. EPA and the Surgeon General. It can escape from water into the indoor air through washing, showering and laundering.

After learning that H<sub>2</sub>S and radon can be removed by air stripping, district officials wanted to learn which technology could best accomplish a significant reduction. Air strippers — pumping systems that remove gasses and volatile organic compounds through aeration — are commonly used for purification of groundwater.



Cooling towers from Delta Cooling reduce the temperature of water from geothermal while also reducing radon and hydrogen sulfide levels.

## Share Your Ideas

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

Send your ideas to editor@tpomag.com or call 877/953-3301

While air stripping was a viable solution for Montgomery County wells, an investigation determined that cooling tower technology would meet both the county's objectives, greatly reducing radon and H<sub>2</sub>S while lowering the groundwater temperature by about 20 degrees F.

## PROVING THE CONCEPT

A cooling tower expels heat from water into the atmosphere by pumping the warm water to the top of the tower, then spraying it into droplets that are exposed to the cooling ambient air. Cooling towers most often provide cooled water for air conditioning, chemical processing and other industrial applications.

In 2014, the utility district deployed a cooling tower supplied by Penco Equipment for a well that required only cooling. The tower reduced the water temperature from 110 degrees F to 85 degrees F with throughput of 600 gpm. The cooling tower was a factory-assembled TM Series system from Delta Cooling Towers with a double-wall seamless shell and sump composed of

**SEEPEX.**  
ALL THINGS FLOW

# PROVEN RELIABILITY BN RANGE



Our BN range progressive cavity pumps are used in many industries and applications, moving thin to highly viscous liquids and materials, with or without solids.

Because of their plug-in shaft connection, they also simplify the replacement of rotating wearing parts and the shaft sealing. Reversible rotation and fluid flow is also available, which improves the NPSHr and sealing.

#### ADDITIONAL BENEFITS

- Minimal pulsation, uniform flow
- High self-priming capabilities
- Mounted either horizontally or vertically
- Large entrance ports for solids handling
- Low shear rates

Contact us to purchase your pump with economical operation.



CONVEYING CAPACITY  
**UP TO 2,200 USGPM**

PRESSURE  
**UP TO 720 PSI**

SEEPEX Inc.  
sales.us@seepeex.com  
T +1 937 864-7150  
www.seepeex.com

FREE INFO – SEE ADVERTISER INDEX

high-density polyethylene. It also includes adjustable-pitch fan blades and a totally enclosed direct-drive motor.

Soon afterward, the district needed a system at another well to lower the water temperature and reduce the radon concentration. Calculations confirmed that the cooling tower would reduce the radon concentration by 90 percent.

Two additional projects required cooling and the reduction of radon and H<sub>2</sub>S. Because the radon calculations had already been performed, and because H<sub>2</sub>S has a greater affinity for air removal than radon, Penco and Delta engineers were confident in an H<sub>2</sub>S reduction greater than 90 percent.

#### LASTING SOLUTION

Utility district officials expect the cooling tower systems to operate for many years with minimal maintenance, mainly because of their engineered plastic HDPE shells. The Texas Commission on Environmental Quality required the cooling tower intake and exhaust for the applications to have engineered mesh screens to exclude contaminants such as insects and debris.

The commission also required the top of the tower to be protected by mesh screening in case the fans should be turned off. Because the fans normally thrust upward, they had to be directional in design so that they could be discharged sideways.

The design of both the louvered panels and the protective mesh screening were provided by the Delta factory as part of the complete package. The cooling tower systems, now proven in place, demonstrate a technology that can benefit other municipalities sitting on previously untapped sources of deep geothermal water.

#### ABOUT THE AUTHOR

Ed Sullivan is a writer based in Hermosa Beach, California, specializing in technology, healthcare, finance and real estate. **tpo**

## Capture the Most P-Recovery

**CalPrex™**  
Pre-Digestion  
P-Recovery

**AirPrex®**  
Sludge Optimization  
& P-Recovery

Reduce Phosphate  
Recycle Load  
up to **90%**

Reduce Polymer  
Consumption  
up to **30%**

Recover Over **50%**  
of Phosphorus

Reduce Disposal  
Costs up to **20%**

Discover more at  
**WEFTEC '17  
CHICAGO**  
Booth: #7711  
Tour: Woodridge, IL  
Tues., Oct. 3, 2017

**CNP**  
CARBON | NITROGEN | PHOSPHORUS  
A division of Centrisys Corporation

Discover more at **CNP-Tec.com**

FREE INFO – SEE ADVERTISER INDEX

# Headworks and Biosolids Management

By Craig Mandli

## Aftermarket Parts/Service

### ANUE WATER TECHNOLOGIES FULL-SCALE PILOT TESTING

Anue Water Technologies has the capability of full-scale pilot testing at customers' facilities using one of its fleet of mobile trailer-mounted systems. Each system is equipped for full-scale treatment using ozone and oxygen for municipal wastewater applications. This demonstration also serves as a proof of concept, especially for larger systems — to confirm oxygen and ozone demand calculations and system capacity requirements. The study includes mobilization and installation with a dedicated trained technician; daily monitoring, including on-site testing and data collection for vapor phase hydrogen sulfide, dissolved oxygen and sulfide levels; a daily log of all performance data and observed results; and demobilization and removal from the site. A final report is submitted five days after completion, including optimal ozone or oxygen system size to achieve desired results, the best demonstrated infusion system design and location, and a daily wet test and sensor monitoring data log of system chemistry. **760/727-2683; [www.anuewater.com](http://www.anuewater.com)**



Full-scale pilot testing from Anue Water Technologies

## Belt Filter/Rotary Presses



Skid-mounted belt filter press from Bright Technologies

### BRIGHT TECHNOLOGIES 0.6-METER SKID-MOUNTED BELT FILTER PRESS

The compact 0.6-meter skid-mounted belt filter press from Bright Technologies has stainless steel frame and roller construction, and radius wedge zone and wing roller for sludge dewatering. Components include a sludge pump, polymer system and wash-water booster pump. Options include a sludge flowmeter, air compressor and discharge conveyors. The compact walk-around skid design can be utilized in as little as a 20- by 10-foot floor area. The Boerger rotary lobe sludge pump has a maintain-in-place design offering ease of maintenance. A Gould's belt wash booster pump can handle small solids and operate with recycled water from the process. Allen Bradley controls and touch screen integrate the components to make an operator-friendly design that is intuitive to operate. Cake solids of up to 35 percent can be achieved. Rates of 25 to 50 gpm (depending on biosolids type) make this ideal for small applications or when a processor has outgrown dewatering containers. **800/253-0532; [www.brightbeltpress.com](http://www.brightbeltpress.com)**



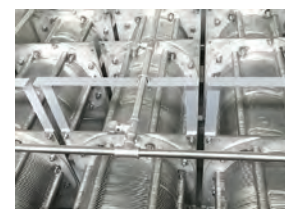
Tower Press from Charter Machine Company

### CHARTER MACHINE COMPANY TOWER PRESS

The Tower Press from Charter Machine Company is steered via a center pivot actuator, allowing the belts to be steered from the center and track better. Belt life with this design is over 4,000 hours of operation. The gravity section uses plows to furrow biosolids back and forth. These plows are all connected to a grid that is pneumatically/hydraulically controlled so that an operation only has to turn a switch to lift the entire grid off the press for cleaning and maintenance. This same feature is used for the discharge doctor blades. The operator just has to flip a switch and the blades release off of the belt for cleaning and maintenance. This gravity section is placed only 4 feet off the floor so no platforms and/or stairs are needed. **732/548-4400; [www.chartermachine.com](http://www.chartermachine.com)**

### TRIDENT PROCESSES MD PRESS 454

The MD Press 454 dewatering press from Trident Processes can process 250,000 gpd with up to 4,000 pound of dewatered solids per minute throughput. It has four dewatering cylinders, each powered by a 1.5 kW motor. The cylinders are strategically designed to allow efficient thickening and dewatering in a single operation. Maintenance requirements are drastically reduced due to its self-cleaning design. The equipment can accept highly diluted biosolids and, depending on the requirements, produce cake with 20 to 30 percent TS. The press operates fully automated, requiring little operator attendance and simple maintenance procedures. It is available with an optional flocculation tank and mixer unit. **800/799-3740; [www.tridentprocesses.com](http://www.tridentprocesses.com)**



MD Press 454 dewatering press from Trident Processes

## Biosolids Handling/Hauling/ Disposal/Application



BLUEline Rotary Lobe Pump from Boerger

### BOERGER BLUELINE ROTARY LOBE PUMP

The BLUEline Rotary Lobe Pump from Boerger is a self-priming, valveless, positive displacement pump used for the conveyance of viscous and abrasive materials. There are 21 pump models in six series with pulsation-free operation, fully reversible rotation, dry-run capabilities and flow rates up to 7,500 gpm. The pumps are stable and wear-resistant with maintenance-in-place design that allows for all wetted parts to be easily replaced through the front cover without the removal of pipe or drive systems. **612/435-7300; [www.boerger.com](http://www.boerger.com)**

### LYSTEK INTERNATIONAL THERMAL HYDROLYSIS SYSTEM

The thermal hydrolysis system from Lystek International reduces costs, volumes and greenhouse gases by converting municipal and industrial wastewater treatment facilities into resource-recovery centers. This is achieved by transforming organic waste streams into value-added products and services, such as the



Thermal hydrolysis system from Lystek International

LysteMize process for optimizing digester performance, reducing volumes and increasing biogas production; LysteGro, a high-value, nutrient-rich biofertilizer and LysteCarb, an alternative source of carbon for BNR systems. **888/501-6508; www.lystek.com**



**LEVEL LODOR cover system from JDV Equipment Corporation**

### JDV EQUIPMENT CORPORATION LEVEL LODER

The LEVEL LODOR cover system from JDV Equipment Corporation helps contain odors by covering standard dump containers used for hauling processed material.

The design allows for even distribution, increasing the fill percentage without having to manually even out material.

Enclosing containers allow outdoor installation without exposing material to the environment or pests. **973/366-6556; www.jdvequipment.com**

### PAXXO LONGOFILL

The Longofill continuous bag system from Paxxo can connect to the discharge point of machines used to move, dewater or compact screenings, grit and biosolids. Material is then deposited in a 295-foot-long continuous bag for odor containment and spillage control. The cassette bag is easy to seal, and the material and odors are trapped inside, cutting down development of bacteria and fungus spores.

**770/502-0055; www.paxxo.us**



**Longofill continuous bag system from Paxxo**

## Biosolids Heaters/Dryers/Thickeners



**THK Series Thickening Centrifuge from Centrisys**

### CENTRISYS THK SERIES THICKENING CENTRIFUGE

The THK Series Thickening Centrifuge from Centrisys is designed to achieve high-performance thickening of biosolids using hydropneumatic technology so no polymer is required under normal conditions. It is nonconical for greater comparative capacity,

providing hydropneumatic control of cake solids. It provides independent control of the liquids and solids weir, leading to reduced operating and maintenance costs. It has an optional internal polymer injection system. It comes with tungsten carbide wear plows for grit and trash. **262/654-6006; www.centrisys.com**

### GILLTRADING.COM BELT BLASTER

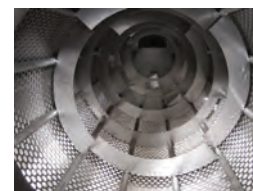
Using the Belt Blaster belt-thickening dynamic needle spray rotating spray bar from GillTrading.com on belt or fabric thickening machines can improve the dewatering ability of the fabric. By spraying the roller side of the belt, the weave porosities are flushed back out the top of the belt. This keeps the back of the belt clean, maintains the rollers and allows for better tracking. Additional belt cleaning is greatly reduced or possibly eliminated and belt life can be extended by years with one application. Water pressure and volume can be reduced, and additional booster pumps can be eliminated due to the increased impingement force. Gravity and press thickening machines can be retrofitted in hours. **866/447-2496; www.gilltrading.com**



**Belt Blaster spray bar from GillTrading.com**

## PARKSON CORPORATION THICKTECH ROTARY DRUM THICKENER

The ThickTech Rotary Drum Thickener from Parkson Corporation is ideal for biosolids thickening and can be used to increase capacity of other solids-handling equipment, such as dewatering. Fabricated of stainless steel, it is engineered to provide years of reliable service. The updated drum design allows for higher efficiency and reduced floc shear. Internals include roll bars and split augers to ensure complete sludge turnover in three dimensions and flights to regulate flow. It uses woven wire mesh screens, which have small individual opening sizes, yet possess high overall open area. As a result, sludge volume reduction of 90 percent and a 98 percent capture rate are achievable, all with very low polymer usage. **888/727-5766; www.parkson.com**



**ThickTech Rotary Drum Thickener from Parkson Corporation**

## Chemical/Polymer Feeding Equipment

### ADEGE WATER TECHNOLOGIES ADIN CO2

The ADIN CO2 injection system from AdEdge Water Technologies is an alternative to other methods of alkalinity control and pH reduction. It's ideal for the reduction of alkalinity prior to primary treatment components for optimizing contaminant removal. The system uses carbon dioxide gas, which when released in water forms carbonic acid, a weak acid that immediately reacts with alkalis to reduce pH. As a gas, carbon dioxide is inert, noncorrosive and easy



**ADIN CO2 injection system from AdEdge Water Technologies**

**866/323-3343; www.adedgetech.com**

to store. With the use of the included monitoring equipment and injector, the control panel can be used in several different configurations to reduce pH. The automatic systems use a pH probe downstream of the system to regulate the amount of carbon dioxide being injected into the water. An injector and mixer are provided with all systems for optimal injection.

A manifold and regulators are provided for carbon dioxide cylinders.

### BLUE-WHITE INDUSTRIES FLEXFLO A-100N

The FLEXFLO A-100N polymer pump from Blue-White Industries efficiently and accurately meters high-viscosity polymers. Its built-in tube failure detection system senses tube failure, automatically shutting off and energizing a relay or switch. This permits communication with external equipment, such as a backup pump or alarm. The pump will not resume operation until the problem is resolved. This eliminates costly polymer spills and downtime for cleanup, with no false triggering. It is self-priming, even against back pressure. Its tube assemblies are stamped with clearly visible part numbers for easy reorder. It offers precise chemical feed to 124 gph, with a max working pressure of 100 psi. The A-100NFP offers a variable-speed motor, dial knob control and on/off switch, while the A-100NVP comes with variable-speed motor, digital control with remote and local control. **714/893-8529; www.blue-white.com**

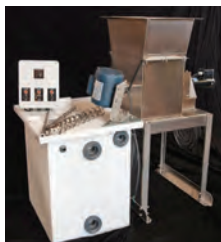


**FLEXFLO A-100N polymer pump from Blue-White Industries**

(continued)

### EAGLE MICROSYSTEMS VF-100 DRY CHEMICAL FEEDER

The Eagle Microsystems VF-100 Dry Chemical Feeder is constructed of 304 stainless steel and uses a direct drive to ensure optimum performance and durability in harsh chemical-feed environments. It can be optimized for any dry feed application with a wide range of options and accessories. The chemical feed rate is controlled by manual electronic SCR speed control, or 4-20mA DC flow pacing control for increased accuracy and automation. With no external gears, pulleys, chains, belts or lubricants required, it is user-friendly and low maintenance. **610/323-2250; www.eaglemicrosystems.com**



Eagle Microsystems VF-100 Dry Chemical Feeder

### FORCE FLOW TOTE BIN SCALE

The TOTE BIN SCALE from Force Flow allows plant operators to accurately monitor the amount of polymer being fed from IBC-type totes for dewatering. Simply place the tote on the platform and monitoring begins, as there is nothing to install inside the tote. Monitoring systems prevent costly over-feed conditions and enable the documentation of the



TOTE BIN SCALE from Force Flow

actual amount fed, which keeps the plant in compliance with federal and state reporting requirements. Users can remotely monitor from SCADA or PLC. The unit is available with the SOLO G2 digital display or with the advanced Wizard 4000 Chemical Inventory Monitoring System. **800/893-6723; www.forceflow.com**

### LUTZ-JESCO AMERICA CORP. LJ-POLYBLEND POLYMER SYSTEM

The LJ-PolyBlend Polymer System from Lutz-JESCO America Corp. is a dependable, motorized mixing machine with a corrosion-resistant housing, large turbine and multizone mixing chamber that provides uniform dispersion energy at the moment of initial polymer wetting. The prime mixing zone fully activates the polymer, while the second mixing zone promotes gentle polymer activation via a small turbine, lessening molecule fracturing. Its stainless steel injection valve prevents agglomerations and reduces the need for extended mixing time. The system includes a clear mixing chamber that provides visual monitoring of mixing polymer feed. Its compact design — only 1 to 1.5 square feet — means it's light and allows for easy installation and transportation. It has automatic pump speed adjustment via 4-20mA input, water flow sensor and priming port. **800/554-2762; www.lutzjescoamerica.com**



LJ-PolyBlend Polymer System from Lutz-JESCO America Corp.

### PEABODY ENGINEERING AND SUPPLY GEMINI2 MCU

The Gemini2 MCU from Peabody Engineering and Supply is a dependable solution for small chemical feed applications. It allows users to store multiple chemicals in a single, multicompartment dual-containment tank, enabling users to configure two, three or even four liquids in one compact space,



Gemini2 MCU from Peabody Engineering and Supply

with separate containment. The dual-containment system simplifies feed systems when having to feed multiple chemicals with limited storage or usage space. It is customizable with individual modules of 6- and 12-gallon sizes, and three different assembly configurations. All units have a finished size of 25 by 26.75 inches, making them ideal for compact spaces. Options include the PumpDeck to manage spills, and a leak alarm. **800/473-2263; www.4peabody.com**

### PULSAFEEDER PULSABLEND

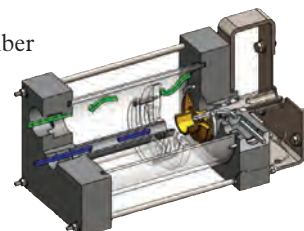
PULSAbend polymer makedown systems from Pulsafeeder are available in three control options — automatic, manual or dry contact. All systems feature a three-step static blending system that provides dilution without harming the polymer chains. With a wide range of dilution utilizing three different water flow rates to choose from (0 to 5, 5 to 10 and 10-plus gpm) they are custom sized to provide activation of all types of polymers, without the sometimes damaging effects of motorized mixing devices. Five neat polymer pump flow rates ensure the right makedown for any application. They include an auto-fill calibration column, an adjustable flowmeter and a neat polymer back pressure regulator to maintain a consistent, repeatable final product. **800/333-6677; www.pulsatron.com**



PULSAbend polymer makedown systems from Pulsafeeder

### UGSI SOLUTIONS POLYBLEND MAGNUM MIX CHAMBER

The PolyBlend MAGNUM Mix Chamber polymer activation system from UGSI Solutions includes an expanded low-energy mix zone that increases polymer residence time and accelerates hydration/relaxation of the activated polymer chains, resulting in increased viscosity and performance. Testing has demonstrated polymer savings of up to 30 percent. The design includes direct coupling of the motor, eliminating the need for shaft alignment, and also a quick-disconnect check valve, eliminating the need for tools and time for periodic cleaning. Complete new units and field retrofit chamber kits are available. **855/669-3845; www.ugsichemicalfeed.com**



PolyBlend MAGNUM Mix Chamber polymer activation system from UGSI Solutions

## Composting Equipment

### BROWN BEAR CORPORATION R31 SERIES



R31 Series paddle aerator attachments from Brown Bear Corporation

R31 Series paddle aerator attachments from Brown Bear Corporation can be used for biosolids drying and aeration of compost windrows. It attaches to high-flow skid-steers and high-flow compact track loaders, and is designed for flows of up to 50 gpm and pressures up to 5,500 psi. It is available with or without the universal skid-steer hitch and in either 8- or 10-foot widths. The 31-inch-diameter unit provides an economical mechanical solution for accelerated air drying on pads and in drying beds, forming windrows, blending bulking agents or additives, pulverizing and aerating or water mixing for aerobic windrow composting. The rapid handling rate exposes all of the material to oxygen



so noxious odors are minimized. Drive to the aerator rotor is through the high-flow hydraulic system of the carrier, via piston motor to a planetary gear reduction and then via an oil bath-lubricated final chain drive. **641/322-4220; [www.brownbearcorp.com](http://www.brownbearcorp.com)**

### KUHN NORTH AMERICA KNIGHT PROTWIN SLINGER SLC 132

The 3,200-gallon Knight ProTwin Slinger SLC 132 truck-mounted, side-discharge spreader from Kuhn North America maximizes productivity and performance. A truck-mounted machine provides fast, convenient travel for longer hauls. With the free-swinging hammer discharge, each forged steel hammer swings down into the material, peeling it off, pulverizing and slinging it underhand for an even spread. The easily adjustable hydraulic deflector provides complete control of the discharge pattern from 3 to 50 feet to fit any application. An optional scale system allows easy monitoring and documentation of spreading activity. Its low-discharge pan not only helps prevent spilling material on roadways, but hides material from public view. **800/544-9710; [www.kuhnnorthamerica.com](http://www.kuhnnorthamerica.com)**



**Knight ProTwin Slinger SLC 132 spreader from Kuhn North America**

## Dewatering Equipment

### AQUA-ZYME DISPOSAL SYSTEMS ADS

The ADS 30-yard open-top roll-off dewatering unit from Aqua-Zyme Disposal Systems can be filled with 22,000 to 25,000 gallons of biosolids at 1 to 2 percent solids in about two hours. After draining 24 hours, the unit can be picked up using a standard-capacity roll-off truck and transported for solids disposal. Sludge volume can be reduced by 80 percent with reductions to 98 percent in BOD, COD, FOG and TSS. Effluent is clear, the unit has few moving parts, and the size of filter media can be selected according to job requirements. Standard equipment includes a roll-over tarp system; side, floor and center screens; 1/4-inch floor plate; 7-gauge side plates; four door binder ratchets; eight drain ports; two inlet ports; and a long-handle scraper. Units are also available in a 15-yard size. **979/245-5656; [www.aqua-zyme.com](http://www.aqua-zyme.com)**



**ADS dewatering unit from Aqua-Zyme Disposal Systems**

## Digesters



**BCP12 anaerobic digester from Bionetix International**

### BIONETIX INTERNATIONAL BCP12

BCP12 anaerobic digester from Bionetix International contains facultative anaerobic bacteria with a total count of 5 billion CFU/g that can digest sludge aerobically and anaerobically. They can be used for reduction of mass and volume of sludge in aerobic, anaerobic and facultative lagoons. Bioaugmentation with BCP12 can increase the efficiency of overloaded treatment systems by breaking down proteins, carbohydrates and lipids mostly through hydrolysis and further through acidogenesis. In addition, bioaugmentation reduces unpleas-

ant odors. It also increases the production of biogas, increasing wastewater treatment plant productivity. It is applied to the primary digester, and application rate is based on digester volume. **514/457-2914; [www.bionetix-international.com](http://www.bionetix-international.com)**

### SHAND & JURTS SPIRAL FLAME ARRESTER

Spiral Flame Arresters from Shand & Jurts are designed to provide a positive flame stop on low-pressure tanks, storage tanks and anaerobic digesters containing flammable liquids, solvents or gases having a low flash point. The spiral-wound technology allows for a straight-through flow path for less clogging and reduced pressure drop. Vertical and horizontal configurations are available in a wide range of materials, including aluminum, 304 stainless steel and 316 stainless steel. The arrester core (Tube Bank) consists of unitized construction, ensures flame-quenching capability, and is removable to facilitate easier inspection, cleaning and replacement. The unit has optional taps for temperature sensor mounting or for measuring differential pressure flow. Units have Factory Mutual/ATEX/ISO 16852 approvals in 2- through 12-inch sizes. **708/236-6000; [www.ljtechnologies.com](http://www.ljtechnologies.com)**

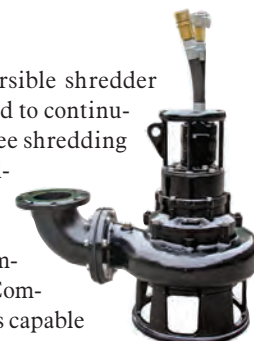


**Spiral Flame Arresters from Shand & Jurts**

## Grinders/Shredders

### HYDRA-TECH PUMPS S6SHR

The S6SHR 6-inch hydraulic submersible shredder pump from Hydra-Tech Pumps is designed to continuously rip and shear solids with a 360-degree shredding action. The pump's carbide-tipped impeller and hardened macerator suction plate produce a violent shredding action that keeps the discharge open. A guide rail assembly is available for stationary applications. Combined with HT35 to HT75 power units, it is capable of flows up to 1,000 gpm. The safe and variable-speed hydraulic drive can be used where electric power is hazardous or impractical. **570/645-3779; [www.hydra-tech.com](http://www.hydra-tech.com)**



**S6SHR shredder pump from Hydra-Tech Pumps**

### NOV EZSTRIP TR MUNCHER

To minimize the time and cost involved when maintaining a conventional grinder/macerator, the EZstrip TR Muncher from NOV can easily be maintained in place, without disconnecting or removing any pipework. The complete cutter stack can be inspected and replaced within 2 1/2 hours. Cutter materials and thickness options are available for effective and efficient grinding of solids. The lower cutter tip speeds dramatically reduce wear rates, ensure low noise and vibration and good abrasion resistance. The rotational speed produces high torque, resulting in lower operating power at 1.5 or 2.2 kW, which are available with energy-efficient motors. **832/424-7300; [www.nov.com/industrial](http://www.nov.com/industrial)**



**EZstrip TR Muncher from NOV**

(continued)

## Grit Handling/Removal/Hauling

### SMITH & LOVELESS PISTA 360

The grit chamber design on the PISTA 360 from Smith & Loveless has a circular flat floor and V-FORCE BAF-FLE that creates a hydraulic vortex action providing for 95 percent removal efficiency for particles down to 100 microns. The V-FORCE BAFFLE ensures the proper velocity (in varying flow conditions) and extended flow path necessary for effective grit removal. Grit is swept along the flat chamber floor and into a center core opening for removal to the lower collection hopper. Lighter organic material is separated and lifted up by nearby paddles (enabling it to continue downstream) while heavier grit particles are removed. No additional downstream flow-control devices are required to keep the velocity in the ideal range (between 2 and 3.5 feet per second). The system possesses a 10-1 turn-down ratio, reducing the overall footprint, including number of units required. **800/898-9122; www.smithandloveless.com**



PISTA 360 from Smith & Loveless

## Headworks

### PARK PROCESS VORTAFLO



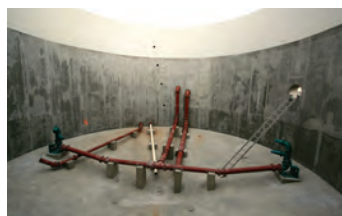
VortaFlo static mixer from Park Process

The VortaFlo static mixer from Park Process combines two mixing nozzles of different sizes to create turbulence and induce mixing. The addition of the injection quill allows chemicals or polymer to be injected in the mixing zone past the turbulence-creating nozzle, prior to passing through the mixing

nozzle. In the case of polymer flocculating biosolids, the turbulence nozzle causes the biosolids to roll in the mixing chamber so the polymer has maximum contact with biosolids particles prior to passing through the mixing nozzle, where flocculation is promoted. It is available in sizes ranging from a 1-inch inlet/outlet and 2-inch mixing chamber to a 12-inch inlet/outlet and 20-inch mixing chamber. **855/511-7275; www.parkprocess.com**

### VAUGHAN COMPANY ROTAMIX SYSTEM

The Rotamix System from Vaughan Company provides reliable, cost-effective hydraulic mixing for septage receiving stations, sludge tanks, digesters and other high-volume wastewater treatment and industrial applications. The system allows continued mixing until a tank is empty, with no moving parts within the tank. System components include Vaughan's chopper pump, which produces continuously chopped solids to eliminate nozzle clogging and enhance biosolids quality and digester efficiency; fixed nozzle assemblies with no adjustment required after installation; and Vaughan's Foambuster nozzles with a stainless steel splash plate located below the nozzle to create a broad spray of biosol-



Rotamix System from Vaughan Company

ids which wets and breaks up foam which can form on the surface of the digester. **888/249-2467; www.chopperpumps.com**

## Screw Conveyors

### LAKESIDE EQUIPMENT SCREW PUMP

Screw pumps from Lakeside Equipment have a built-in variable capacity that automatically adjusts the pumping rate and power consumption while operating at a constant speed to match the incoming flow. They have a high rate of acceptance for their ability to lift water efficiently at any stage of the treatment process. They can be used in wastewater plant lift stations, return activated sludge, stormwater pumping, land drainage and industrial applications. They efficiently lift large quantities of water at low heads. Patterned after the Archimedean screw, the pump's assembly consists of a simply designed screw, upper bearing, lower bearing and drive arrangement. They offer lower operating costs, reduced maintenance, nonclogging operation, minimal head and the elimination of variable-speed electrical controls. **630/837-5640; www.lakeside-equipment.com**



Screw pumps from Lakeside Equipment

## Septage Receiving Stations

### SCREenco SYSTEMS MEGA SCREEN

The Mega Screen septic receiving station from Screenco Systems has 40.5 square feet of screening area and is fed through a 6-inch inlet with dual fan spreaders. The front screens are self-cleaning, processing up to 1,000 gpm. The dual screen design is nonmechanical and uses gravity to separate trash from the waste stream. The unit is constructed from aluminum and utilizes stainless steel 3/8-inch gapped bar screens at opposing angles, meeting the 503 regulations for septic screening. It can be set up with a single 6-inch inlet hose or two 4-inch inlet hoses capable of off-loading two trucks simultane-



Mega Screen septic receiving station from Screenco Systems

ously. It will not plug with rags or hair, and simple raking to the trash drain tray with provided custom tools makes clean-out simple. Built-in forklift skids make it portable. An OSHA-compliant catwalk is included. **208/790-8770; www.screencosystems.com**

## Screening Systems

### AQUALITEC RAKETEC

The Raketec multiple rake screen from Aqualitec offers up to 80 mgd flow capacity. It is highly resistant to clogging and debris damage because it has no submerged moving parts. Its design increases debris capture efficiency, preventing costly downtime and repairs, and allowing safer and more efficient wastewater treatment plant operation. **855/650-2214; www.aqualitec.com tpo**

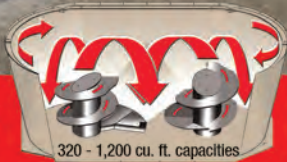


Raketec multiple rake screen from Aqualitec

**THOROUGH MIXING AND MATERIAL BREAKDOWN.  
TOUGH, LONG-LASTING DESIGN.**



**VT & VTC SERIES  
VERTICAL TWIN-AUGER MIXERS**



320 - 1,200 cu. ft. capacities

- Withstands continuous operation while mixing and breaking down tough materials
- Vertical sides, steep baffles and redesigned augers ensure a fast, complete mix
- Large, replaceable knives provide outstanding particle breakdown



Kuhn North America • Brodhead, WI • 608-897-2131 • [KuhnNorthAmerica.com](http://KuhnNorthAmerica.com)

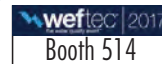
FREE INFO – SEE ADVERTISER INDEX

**Do It Once!  
Do It Bright!**



Mobile Belt Filter Press with  
Operator Room  
Dewatering Solutions for  
Bio Solids, Sludge & Slurries

**Sales, Rentals,  
& Leasing Options**



Phone: 269-793-7183 Fax: 269-793-4022  
127 N. Water St., Hopkins, MI 49328

[www.brightbeltpress.com](http://www.brightbeltpress.com)



FREE INFO – SEE ADVERTISER INDEX

**For FREE information on these products, check the box(es) below:**

**Aftermarket Parts/Service**

- Anue Water Technologies full-scale pilot testing

**Belt Filter/Rotary Presses**

- Bright Technologies skid-mounted belt filter press
- Charter Machine Company Tower Press
- Trident Processes MD Press 454 dewatering press

**Biosolids Handling/Hauling/Disposal/Application**

- Boerger BLUEline Rotary Lobe Pump
- Lystek International thermal hydrolysis system
- JDV Equipment Corporation LEVEL LODER cover system
- Paxxo Longofill continuous bag system

**Biosolids Heaters/Dryers/Thickeners**

- Centrisys THK Series Thickening Centrifuge
- GillTrading.com Belt Blaster spray bar
- Parkson Corporation ThickTech Rotary Drum Thickener

**Chemical/Polymer Feeding Equipment**

- AdEdge Water Technologies ADIN CO2 injection system
- Blue-White Industries FLEXFLO A-100N polymer pump
- Eagle Microsystems VF-100 Dry Chemical Feeder
- Force Flow TOTE BIN SCALE
- Lutz-JESCO America Corp. LJ-Polyblend Polymer System
- Peabody Engineering and Supply Gemini2 MCU
- Pulsafeeder PULSAblend polymer makedown systems
- UGSI Solutions PolyBlend MAGNUM Mix Chamber polymer activation system

**Composting Equipment**

- Brown Bear Corporation R31 Series paddle aerator attachments
- Kuhn North America Knight ProTwin Slinger SLC 132 spreader

**Dewatering Equipment**

- AQUA-Zyme Disposal Systems ADS dewatering unit

**Digesters**

- Bionetix International BCP12 anaerobic digester
- Shand & Jurs Spiral Flame Arrester

**Grinders/Shredders**

- Hydra-Tech Pumps S6SHR shredder pump
- NOV EZstrip TR Muncher

**Grit Handling/Removal/Hauling**

- Smith & Loveless PISTA 360

**Headworks**

- Park Process VortaFlo static mixer
- Vaughan Company Rotamix System

**Screw Conveyors**

- Lakeside Equipment screw pump

**Septage Receiving Stations**

- Screenco Systems Mega Screen septic receiving station

**Screening Systems**

- Aqualitec Raketek multiple rake screen

**FREE subscription to TPO magazine**

PRINT NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

FACILITY NAME: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ CELL PHONE: \_\_\_\_\_

FAX: \_\_\_\_\_ EMAIL: \_\_\_\_\_

**Scan and email to:** [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com) / **Fax to:** 715-546-3786

**Mail to:** COLE Publishing Inc., P.O. Box 220, Three Lakes WI 54562

TPO0817

## Unit provides aeration and mixing to equalization basin

### Problem

Big Park Domestic Wastewater Improvements District in Arizona built a 500,000 gpd biological wastewater treatment system in 1997. In 2012, the district hired Sunrise Engineering to upgrade the equalization basin and digester/thickener.

### Solution

The district installed **AIRE-O2 Triton equalization basin and digester systems** from **Aeration Industries International**. They enable aeration and mixing in one piece of equipment that can be easily accessed from the surface. The process achieves significant volatile solids destruction and consistent treatment. To decant, the equipment is turned off and the solids settle to the bottom, allowing the supernatant to be removed.



#### RESULT:

The operators saw a significant decrease in biosolids volume. The facility had run the belt press three times a week but now does so once every two weeks. Lower volume means less biosolids to land-apply biosolids. The system has reduced maintenance and freed time to optimize the treatment process. **800/328-8287; www.airo2.com**

## Adsorption system helps community meet arsenic level standard

### Problem

With arsenic at 13.25 and 13.5 ppb in its two wells, the Crescent Valley Water System in Nevada needed to meet the U.S. EPA drinking water standard of 10 ppb.

### Solution

The district chose **De Nora's SORB 33 arsenic removal system** after a successful pilot test. The fixed-bed adsorption system uses a simple pump-and-treat process that flows pressurized water through a fixed-bed pressure vessel containing iron oxide media.



#### RESULT:

Two 8-foot-diameter SORB 33 adsorption vessels, each containing 169 cubic feet of SORB 33 and with 175 gpm capacity, run in parallel. The district blends the treated 13 ppm Well 5 water with untreated 8 ppm Well 4, maintaining an average result of 5 ppb. "Everything is working excellently," says Bruce Harland system operator. "I haven't had to backwash the system for a month because the differential pressures haven't approached 10 psi." **412/788-8300; www.denora.com**

## Continuously cleaned bar screen solves ragging downstream

### Problem

The perforated fine screen at the Bell County (Texas) WCID South Wastewater Treatment Plant was not performing and needed significant maintenance. Grease and rags passing through created issues downstream. At the headworks, the screen "moved debris around, back and forth, rather than removing it," says Bruce Sorenson, chief operator.

### Solution

Facility management chose the **FlexRake FPFS-M screen** with 1/8-inch openings from **Duperon**. It captures up to 37 percent more debris than 1/4-inch screening.



#### RESULT:

"We were surprised that we could see the difference right at startup," says Sorenson. "The back side of the screen cleared up immediately; we could always see debris coming through before, but once the FlexRake was installed, we haven't seen anything. We're seeing clear water. It really catches everything." **800/383-8479; www.duperon.com**

## Submicron filtration system allows brewery to expand water reuse

### Problem

A large brewery in the northeast U.S. sought to expand water reuse, but the application required a reduction of TSS load in water reclaimed from processes and evaporator condensate. A filtration system needed to handle each stream independently or combined. The differing TSS loads of the two streams required the system to be flexible.

### Solution

A laser particle analysis demonstrated that a **Vortisand submicron filtration system** from **Evoqua Water Technologies** would deliver. The flexible system can handle flows from two water sources. The system was designed to handle 80 to 350 gpm.



#### RESULT:

Submicron high-efficiency filtration helped reduce TSS by 98 percent. Fine filtration reduced the requirement for chemicals. The system also helped eliminate the purchase and maintenance cost of replacing cartridge filters. The system's small footprint enabled low construction costs. **888/876-9655; www.evoqua.com**

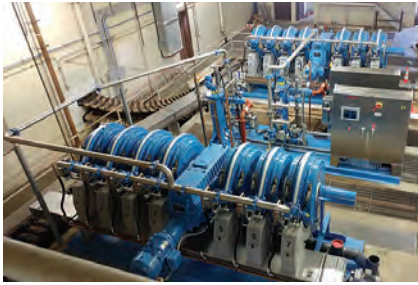
## Rotary press ideal in retrofit situation

### Problem

The city of Becker, Minnesota, needed to replace two belt presses but wanted to use the existing building and existing conveyors.

### Solution

**Fournier Industries** used an eight-channel **rotary press**. Skid mounting enabled the presses to be installed without reworking the concrete floor where the old presses stood. It also expedited installation and commissioning. New conveyors receiving the cake solids feed the existing conveyor system, saving money.



#### RESULT:

“In the short time the presses have been in operation, staff has been very pleased with the quality of biosolids produced, the ease of operation, and how quiet the equipment is,” says Dave Pesola, water/wastewater supervisor. “The low water usage is also an added benefit. It has reduced humidity in the press room that was contributing to problems with electrical and HVAC equipment.” 418/423-4241; [www.rotary-press.com](http://www.rotary-press.com)



## JDV LEVEL LODOR™

Design for Even Distribution

&

Odor Control

weftec 2017  
Booth 3840

## Fine screen saves wear on membrane bioreactor

### Problem

Idaho's Star Water and Sewer District had obsolete in-channel grinder technology. The needed repairs could force two weeks of downtime. It could not compete with newer screening technology.

### Solution

On the advice of consultant, the district chose the **RPPS fine screen** from **Huber Technology** to prevent harmful screenings from reaching the membrane bioreactor.



#### RESULT:

With the previous unit in place, the screenings dump container had to be emptied every two weeks. The new unit requires emptying weekly and protects the MBR. A STAR basket with a zigzag folded surface allows for a compact design. 704/949-1010; [www.huberforum.net](http://www.huberforum.net)

## Receiving station stops pump clogs at private treatment plant

### Problem

In the town of Haverhill, Massachusetts, John DiVicenzo and his crew at Stewart's Septic Service handle 60,000 to 100,000 gpd in the company's own wastewater treatment plant. Constant problems occurred because of the high volume of solids in the wastewater. “The pumps were clogging with all sorts of stuff, 20 times a day,” DiVicenzo reports. (continued)

[www.jdvequipment.com](http://www.jdvequipment.com)



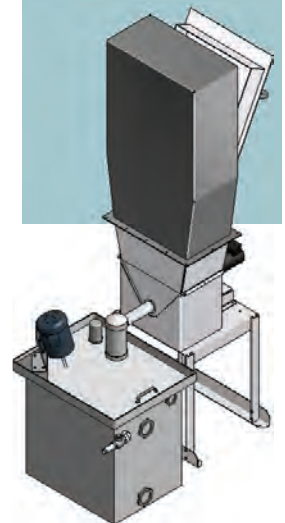
FREE INFO - SEE ADVERTISER INDEX

## FEED IT!

The Eagle Microsystems VF-100 Dry Chemical/Polymer Feeder is rugged, simple to use, and very versatile. Available with a wide range of options and accessories, the VF-100 can fit any dry feed application!

### FEATURES:

- Direct drive
- Flex-wall agitation
- Accurate SCR speed control
- Stainless steel construction
- 2 year warranty
- Multiple configurations



**eagle**  
MICROSYSTEMS

YOUR SOURCE FOR PRECISION PROCESS SOLUTIONS

800.780.8636

[EAGLEMICROSYSTEMS.COM](http://EAGLEMICROSYSTEMS.COM)

FREE INFO - SEE ADVERTISER INDEX

## Solution

The company installed a **Honey Monster septage receiving system** from **JWC Environmental** that grinds, screens and washes the flow and sends the liquid into the treatment plant and its settling tanks. The facility serves seven trucks a day, 10 hours a day. A 2-cubic-yard dump container of screened solids is emptied several times a week. Inside the Honey Monster, the Muffin Monster grinder and Auger Monster work together to grind and remove tough solids, which are then washed, dewatered and ground to reduce volume.



### RESULT:

“The Honey Monster processes the sludge easily, and my guys don’t need to unclog the pumps,” says DiVecenzo. **800/331-2277; www.jwce.com**

## Mixers used to process wastewater in gold mining area

### Problem

In northeastern Nevada, the city of Elko wastewater treatment facility contends with more suspended solids and gold mining waste in its influent than is typical.

### Solution

At the facility’s activated sludge process, **Model POP-I mixers** from **Landia** are used to suspend solids, homogenizing the sludge in the anoxic tanks without issues. This proved valuable during severe floods that saw flows up to 12 mgd from infiltration into the collections system.



### RESULT:

“The mixers do a very good job and are extremely reliable,” says Mike Haddenham, wastewater superintendent. “Landia’s Ken Jacobs worked out a maintenance program and trained up our team on how best to service the mixers. We know that help is always at hand if we need it.” **919/466-0603; www.landiainc.com**

## Push-floor bin and biosolids pumps help plant stabilize operations

### Problem

The city of High Point, North Carolina, was pumping biosolids to an incinerator using hydraulically actuated piston pumps. The pumps were aging and spare parts were difficult to obtain. The plant also lacked buffering capacity for dewatered biosolids ahead of the pumps.

## Solution

The city purchased a **push-floor storage bin and piston pump arrangement** offered by **Schwing Bioset**. A new push-floor bunker with 60 cubic yards of storage capacity handles the centrifuge-dewatered biosolids. Directly coupled to the bottom of the push-floor bunker are two SD 350 screw feeders and KSP 17 piston pumps.



### RESULT:

The piston pumps have dual discharges that allow the biosolids flow to be split and fed into the incinerator at four injection points for more efficient incinerator operations. If the incinerator goes down, biosolids can discharge to a new truck loading facility. The system has operated effectively. **715/247-3433; www.schwingbioset.com**

## Process helps facility harvest struvite from wastewater

### Problem

The South Durham Water Reclamation Facility in Chapel Hill, North Carolina, uses biological phosphorus removal, but a sizable fraction of phosphorus removed in the secondary process is resolubilized during anaerobic digestion and returned to the secondary treatment train via centrate from biosolids dewatering. This means the plant must remove the recycled phosphorus a second time and deal with struvite in piping and equipment.



### Solution

The facility installed the **Struvia process** from **Veolia**, a compact precipitation system that uses magnesium chloride solution and sodium hydroxide where required to precipitate phosphorus from filtrate, creating a clean struvite-based product.

### RESULT:

The process consistently reduced orthophosphate from 180 mg/L down to 30 mg/L. **919/653-4574; www.veoliawatertech.com tpo**





# SAVE THE DATE!

## INDIANAPOLIS 2018

The WWETT Show - Water & Wastewater, Equipment, Treatment & Transport - is the world's largest annual trade show for wastewater and environmental services professionals. With 600 exhibiting companies, 110 conference sessions, and a schedule of great events, the WWETT Show provides value to professionals from every facet of our field.



**wwett™18**

EDUCATION: FEBRUARY 21-23

EXHIBITS: FEBRUARY 22-24

INDIANA CONVENTION CENTER

### WHY SHOULD YOU ATTEND?

- ✓ **Explore the Marketplace** for tools and resources you need for your business
- ✓ **Education** taught by some of the best and brightest in the industry
- ✓ **Events** to network with your peers - or just kick back with friends.

MORE INFORMATION AT [WWW.WWETTSHOW.COM](http://WWW.WWETTSHOW.COM)

FREE INFO - SEE ADVERTISER INDEX



## people/awards

The **Metropolitan Water Reclamation District of Greater Chicago** received the Distinguished Budget Presentation Award for its 2016 budget (32nd consecutive year) from the Government Finance Officers Association of the U.S. and Canada. The district also received a Certificate of Achievement for Excellence in Financial Reporting (41st consecutive year).

The city of **Cle Elum** received an Outstanding Performance Award from the Washington State Department of Ecology for its Upper Kittitas County Regional Wastewater Treatment Facility.

**Dr. Shyam V. Dighe**, founder and president of AquaSource Technologies Corp., received the 2017 Inventor of the Year award from the Pittsburgh Intellectual Property Law Association for designing a treatment system using plasma technology to clean and commercialize water that is not fit for human consumption. The treatment system products are distilled water and salt; it is designed for the shale gas industry.

**Element Six**, a member of The De Beers Group of Companies, earned the Gold Prize in the environmental quality category in the Edison Awards for its Diamox wastewater treatment technology for highly contaminated industrial wastewater. Diamox is an electrochemical cell that uses synthetic industrial diamond electrodes to mineralize dissolved pollutants.

The **Concord General Services Wastewater Treatment Division** received the 2017 Outstanding Public Outreach Award from the New Hampshire Department of Environmental Services. The division was recognized for facility tours, brochures, website updates, social media, news releases and participation at community events.

An upgrade to the **Manchester Wastewater Treatment Facility** earned a Gold Level Engineering Excellence Award from the American Council of Engineering Companies of New Hampshire. The Wright-Pierce consulting firm provided design and construction phase engineering for a \$22.4 million upgrade to the aeration system, increasing secondary treatment capacity by 23 percent while reducing aeration energy usage by 48 percent. The system uses ultrahigh-efficiency fine-bubble diffused aeration. Penta Corporation was general contractor.

**Marshall Municipal Utilities** received a Wastewater Treatment Plant of the Year award in the category of 5 mgd or less from the Missouri Water Environment Association.

**Joseph Pearce** was hired as the Public Works director in Elizabeth City, North Carolina.

The **Washington County (Virginia) Service Authority** received a 2016 Excellence in Waterworks/Operations Performance Award, its seventh consecutive, after a 12-month analysis of data by the Virginia Department of Health Office of Drinking Water.

The **Apache Junction Water District** facility received the Small Treatment Plant of The Year award from the Arizona Water Association. Carollo Engineers and Garney Construction received the Project of the Year award.

The **F.G. Doggett Water Plant** and **S.L. Spencer Water Plant** in Mount Airy received the North Carolina Area Wide Optimization Award.

## events

### Aug. 9-10

Water Environment Association of Texas' Biosolids and Odor and Corrosion Control Conference, Embassy Suites, San Marcos. Visit [www.weat.org](http://www.weat.org).

### Aug. 10-12

Water Environment Federation Intensification of Resource Recovery Forum, Manhattan College, Riverdale, New York. Visit [www.wef.org](http://www.wef.org).

### Aug. 22-24

Indiana Water Environment Association Annual Conference, Westin Indianapolis. Visit [www.indianawea.org](http://www.indianawea.org).

### Aug. 23-24

AWWA Effective Utility Management Seminar, California American Water, Monterey. Visit [www.awwa.org](http://www.awwa.org).

### Aug. 29-30

AWWA Best Practice Water Audits and Loss Control Programs Seminar, Saskatoon Inn & Conference Centre, Saskatchewan. Visit [www.awwa.org](http://www.awwa.org).

### Aug. 29-31

Kansas Water Environment Association and AWWA-Kansas Section Joint Annual Water and Wastewater Conference, Hyatt Regency, Wichita. Visit [www.kswaterwastewater.com](http://www.kswaterwastewater.com).

### Aug. 29-Sept. 1

AWWA-Chesapeake Section Tri-Association Conference, Roland E. Powell Ocean City (Maryland) Convention Center. Visit [www.chesapeaketicon.org](http://www.chesapeaketicon.org).

### Aug. 30-31

The Water Expo 2017, MACC Convention Center, Miami, Florida. Visit [www.thewaterexpo.com](http://www.thewaterexpo.com).

The **Indian Run Water Treatment Plant** operated by the **Schuykill County Municipal Authority** received a Directors Award from the Partnership for Safe Water.

The city of **Nanaimo, British Columbia**, and **Associated Engineering** won an Award of Merit in the civil and municipal infrastructure category from the Association of Consulting Engineering Companies of British Columbia.

The **Cave Rock Water Treatment Plant** operated by **Douglas County Utilities** won the Best Tasting Water award for Nevada for the second time in four years from the Nevada Rural Water Association.

The city of **Glendale (Arizona)** received the Large Water System of the Year award from the Arizona Water Association.

The **Carmichael (California) Water District** in California was recognized by the Sacramento Environmental Commission for outstanding efforts to improve the environment during the American River Pipeline Project.

The **San Diego County Water Authority** received the Clair A. Hill Water Agency Award from the Association of California Water Agencies for its Carlsbad Desalination Project.

**Bill Maxwell**, a Pasco water treatment plant operator, was named Operator of the Year by the Washington Department of Health Office of Drinking Water.



# Composting Performance

**Staggered Rotor Industrial Series Mixers**  
Superior blend with reduced maintenance and operating cost.



Patented Staggered Rotor

**Waste Pro Series Mixers** quickly and efficiently process food waste, cardboard and yard waste.

**Vertical Compost Series** process and incorporate coarse carbon sources quickly and efficiently.



Watch videos  
[www.rotomix.com](http://www.rotomix.com)



Take time today,  
call for more information!  
**620.338.0090** Cell  
**620.225.1142**

Depend on the Leader

FREE INFO – SEE ADVERTISER INDEX

The **Buchart Horn** York office and **Columbia Water Co.** received Diamond Awards for Engineering Excellence in the water resources category from the American Council of Engineering Companies of Pennsylvania for a \$15.3 million water treatment plant expansion.

The **Central Iron Range Sanitary Sewer District** was recognized by the Minnesota Pollution Control Agency for outstanding operation, maintenance and management of its wastewater treatment system.

**Rick Lallish**, program director of the Water Pollution Control Operations Program at the Environmental Resources Training Center at Southern Illinois University Edwardsville, received the Kenneth Meredith Award from the Illinois Water Environment Association.

**Ryan Mogard**, wastewater treatment plant operator for the city of Morris, received a 2016 Wastewater Treatment Facility Operator Award from the Minnesota Pollution Control Agency.

**Luis Colon**, a wastewater treatment plant operator, was named Employee of the Year in Pottstown, Pennsylvania.

The **Kenosha (Wisconsin) Water Utility** received the Grand Award from the American Council of Engineering Companies for its Energy Optimized Resource Recovery Project.

TPO welcomes your contributions to Worth Noting. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements as well as event notices to [editor@tpomag.com](mailto:editor@tpomag.com). **tpo**



weftec 2017  
Booth 7721

# AeriGator

The new low-cost way to bust through all that Lift Station scum!

- » No crust - Guaranteed
- » Macerates rags and debris while injecting air to freshen everything up
- » No additional chemicals needed
- » No more vac trucks to remove scum
- » Less Maintenance and far less mess!

**Please contact Landia now to arrange a drop-in from this versatile and highly effective pump.**

Landia, Inc.  
111 Triangle Trade Drive  
Cary, North Carolina 27513  
Tel. +1 (919) 466-0603  
[info@landiainc.com](mailto:info@landiainc.com)  
[www.landiainc.com](http://www.landiainc.com)



FREE INFO – SEE ADVERTISER INDEX



**1. ENDRESS+HAUSER UPGRADES LEVEL TRANSMITTERS**

Endress+Hauser added Heartbeat Technology to its Micropilot FMR5X free-space radar and FMP5X Levelflex guided radar level transmitters. Heartbeat is an onboard diagnostics and instrument verification system that continuously monitors the status of mechanical, electromechanical and electronic components in the sensor, and sends alerts when it detects a problem. Alerts are sent in accordance with NAMUR recommendation NE 107 and are displayed at the device. Verification information, reports, diagnostics alerts and instrument data can be viewed at the control monitoring system, or via a web browser running on a PC, tablet or smartphone. **888/363-7377; www.us.endress.com**

**2. NEPTUNE'S ABAQUE SERIES PERISTALTIC PUMPS**

The redesigned Abaque Series peristaltic heavy-duty pumps from Neptune have a new hose connection system with an improved clamping feature, with fewer parts to simplify hose replacement. It has a redesigned pump rotor to decrease weight and increase strength, and an oval viewing window that allows shoe adjustment without removing the cover. The seal-free design eliminates leaks and product contamination. The pumps are self-priming and can run in forward or reverse, and offer suction-lift capabilities up to 25.5 feet. It can run dry without adversely affecting performance, pressure and accuracy. It is available in ductile iron and stainless steel, allowing higher discharge pressure up to 217 psi. **215/699-8700; www.neptunel.com**

**3. GRUNDFOS MLE PERMANENT-MAGNET MOTOR FOR THE HYDRO MPC BOOSTERPAQ**

Grundfos' new MLE motor for the Hydro MPC BoosterpaQ systems include ECM technology and covers 1 through 15 hp in three-phase 460 to 480 volts and up to 2 hp in one-phase 200 to 240 volts. The motors exceed IE5 motor efficiency standards, currently the highest level for electrical motors. BoosterpaQ systems use controls to stop pumps dur-

ing low flow, run in a more economical mode, stage pumps on when it is more efficient, and lower setpoint pressure at lower flows when pipe friction loss is less. **800/921-7867; us.grundfos.com**

**4. BJM PUMPS RAD-AX SKG SUBMERSIBLE PUMPS**

The SKG Series from BJM Pumps feature RAD-AX Dual Shredding Technology and are designed to obliterate flushable wipes and other difficult solids in municipal and industrial wastewater applications. The radial and axial shredding elements are constructed of hardened 440C stainless steel with a Rockwell hardness of 55C plus. They have an efficient, high-solids passage impeller and volute design, coupled to a high-torque four-pole motor available in 2, 3 or 5 hp. Hardened cast iron construction stands up to rough handling and pumping gritty water. An automatic thermal switch turns the pump motor off if the temperature and/or amp draw rises too high. When the motor cools, the switch will automatically reset and the pump will turn back on. **877/256-7867; www.bjmpumps.com**

**5. IWAKI AMERICA AIR-OPERATED DIAPHRAGM PUMP**

IWAKI America's TC-X800 Series pump offers a heavy-duty body design, operation at variable air pressures, and is suited for both start/stop and fully continuous-duty pumping applications. With maximum flow rates at 211.3 gpm and maximum discharge head of 280 feet, it can handle high head pressure and long discharge lines. The 3-inch diaphragm pump is available in stainless steel, aluminum, polypropylene and cast iron. **508/429-1440; www.iwaki-air.com**

**6. NIDEC MEDIUM-VOLTAGE TITAN TEFC HORIZONTAL LARGE MOTORS**

Nidec Motor's new line of TITAN totally enclosed fan-cooled motors are offered in 150 through 600 hp and have cast iron frames, conduit boxes, bearing caps and end shields. They are designed to operate in 104

FREE INFO ON THESE PRODUCTS — RETURN FOLLOWING FORM

## water: product spotlight

### Popular valve redesigned to meet industry standards

By Craig Mandli

**Asahi/America's Omni ball valve** is well known in the water and wastewater industry. It's likely that anyone who performs maintenance at a plant would recognize it. However, as tooling changes, there's often a need to update materials to match. Asahi/America's Omni Type-27 makes those needed updates, while providing the same characteristics the Omni name has become known for.

"The Omni ball valve has been in existence since the 1970s," says Dave Hurley, valve product manager for Asahi/America. "For the Type-27, the body was redesigned to accept an ISO 5211 bolt pattern mounting plate for actuation mounting. Also, the stem was upgraded to feature dual O-ring seals with stem shear protection, the ball opening was enlarged to be considered a full port ball opening, and Teflon seats were redesigned to withstand higher velocity."

Ideal for water treatment, landfills, aquariums, chemical processing, power plants, swimming pools, water features and fountains, the Omni Type-27 can be electrically actuated with Asahi/America's Electromni Series 83 electric actuator.

"It's really a fit anywhere a ball valve is needed," says Hurley. "It is ideal for OEMs and skid units, as the compact size and rugged design provide a quality valve for long life. This could be treated or untreated water and also chemical feed such as sodium or potassium hydroxide."

The Type-27 ball valve is available with socket or threaded end connections in 3/8 through 2 inches. Available body materials are PVC and



Omni ball valve from Asahi/America

CPVC, both with EPDM seals and PTFE seats. It is NSF-61 certified and rated for 150 psi at 70 degrees F. According to Hurley, it is relatively new to the market.

"It was actually introduced in March 2017, so it is very fresh," he says. "It is designed as a durable valve with lower costs and virtually no maintenance. A short face-to-face dimension permits installation in tight locations."

Despite its recent debut, Hurley was able to get the valve in potential customer hands at a spring tradeshow, and the response was positive.

"Well we have had no complaints," he says. "Potential customers liked the newly designed handle, the robust feel of the valve body, the smooth stem torque and that the valve is truly designed for automation with the ISO bolt pad attachment," he says. "The valve has an engineered look and feel, and functions at a high level." **800/343-3618; www.asahi-america.com**

degrees F ambient temperature and at a maximum altitude of 3,300 feet above sea level. Motors rated Class B rise at 1.0 service factor and Class F rise at 1.15 service factor with full Class F or better insulating materials, and the company conducts a short commercial test on each one. The tests consist of no-load current, locked rotor current performed at reduced voltage, winding resistance, high potential and a vibration check. **888/637-7333; www.usmotors.com**

#### 7. CONVEYOR COMPONENTS MODEL TA BELT ALIGNMENT CONTROL

The model TA (Tilt Action) belt alignment control by Conveyor Components is for use on most belt conveying systems and wastewater filter presses, biomass transfer conveyors or other associated equipment. It is available in weatherproof or explosion-proof enclosures, with 120- or 240-volts AC input power rated microswitches. The TA has dry, unpowered 20 amp SP/DT microswitches, or 15 amp DP/DT microswitches, to allow control of four separate output functions. It can operate in either direction, and the trip points are field-settable with a simple set-screw adjustment on the cam. The housing is cast aluminum, with optional epoxy coating available for corrosive environments. **800/233-3233; www.conveyorcomponents.com**

#### 8. BIONETIX INTERNATIONAL MACRO N/P BIOSTIMULANT

Macro N/P from Bionetix International is a free-flowing powder with the optimal 5-1 nitrogen/phosphorus ratio for nourishing helpful bacteria in wastewater. This combination of macronutrients enhances

biological wastewater treatment processes and soil bioremediation by helping existing bacteria, including those introduced as supplements, to grow, reproduce and stimulate the bioremediation cycle. Reclamation crews can speed environmental cleanup without the use of harmful chemicals. **514/457-2914; www.bionetix-international.com**

#### 9. AQUA-AEROBIC AEROBIC GRANULAR SLUDGE SYSTEM

The AquaNereda aerobic granular sludge system from Aqua-Aerobic replicates the same effluent quality as an enhanced BNR facility, but without the use of chemicals. The reduced footprint and low energy requirement of the AquaNereda process provides an alternative for high-performance plants. The biological treatment technology purifies water based on bacteria growing the compact granules. **800/940-5008; www.aqua-aerobic.com**

#### RONK ELECTRICAL NANO2 AERATION PROCESS

The Nano2 from Ronk Electrical provides enhanced levels of dissolved oxygen for increased biological activity, enhanced organic sludge reduction, oxidation of various contaminants, and wastewater odor management. Potable or wastewater is pressurized, then atomized and passed through a concentrated gas zone within the Nano2 process vessel. This creates the nanobubbles in the high-density, two-phase solution that is discharged as determined by the process control. Nano2 nozzles can be adapted to produce a range of bubble sizes to meet the requirements of many applications. **800/221-7665; www.ronkelectrical.com**

(continued)

wastewater:  
product spotlight

## Silos offer application flexibility

By Craig Mandli

As treatment regulations continue to evolve, wastewater treatment operators are required to outfit their plants with more equipment. That equipment takes valuable space, which is why **Dual Dry Bulk Chemical Storage Silos** from **Acrison** make sense for plants that need to provide storage for multiple bulk chemicals. The silos include integral feeding and dissolving systems designed to offer maximum application flexibility.

“The dual silo systems can be used to significantly reduce the overall height profile of a single-rate application,” says Joe Krudys, Acrison’s sales manager for their water and wastewater treatment division. “They can also facilitate the feeding of two different chemicals to one or more application points.”

Acrison dual silos are typically mounted close enough to each other to allow for a single ladder with safety cage to access one silo roof, and a catwalk spanning the two silos to allow for access to the second roof. Fill lines are routed to a single loading point, with a single truck-fill panel operating both systems. A security keypad, wired to automatic valves on the fill line, ensures that dry chemicals are being delivered to the correct silo. According to Krudys, the silos are a fit for both water and wastewater treatment applications.

“Examples of typical dry chemicals that we feed are hydrated lime and powder-activated carbon for both water and wastewater systems, and microsand for ballasted clarification applications,” says Krudys.

As with all of Acrison’s silo systems, means for promoting material flow into the silo’s integral feeders is provided strictly on an as-needed basis without the use of air. This eliminates problems that can occur when flow promotion devices operate continuously, or on a fixed-time basis.



Dual Dry Bulk Chemical Storage Silos from Acrison

Optional custom control packages and ancillary equipment are available with the dual silo system. Controls are typically located inside the skirted silo, along with necessary piping and wiring, requiring minimal installation of some external components prior to operation. According to Krudys, Acrison has sold its silo systems for the last 15 years, but only started providing the dual, catwalk-connected silos in 2014. He says those systems being used in the field are drawing positive reviews.

“Feedback has been very positive,” he says. “Customers are particularly pleased that they are able to obtain custom control packages and ancillary equipment with our silo packages. They also like the fact that our packages are supplied with all necessary piping and wiring, making them virtually ready to use after minimal setup.”

201/440-8300; [www.acrison.com](http://www.acrison.com)

FREE INFO ON THIS PRODUCT — RETURN FOLLOWING FORM

### For FREE information on these products, check the box(es)

- 1. Endress+Hauser Heartbeat Technology for Micropilot FMR5X and FMP5X Levelflex level transmitters
- 2. Neptune’s Abaque Series peristaltic pumps
- 3. Grundfos MLE motor for the Hydro MPC BoosterpaQ
- 4. BJM Pumps SKG Series submersible pumps
- 5. IWAKI America TC-X800 Series pump
- 6. Nidec MOTOR TITAN motors
- 7. Conveyor Components model TA belt alignment control
- 8. Bionetix International Macro N/P biostimulant
- 9. Aqua-Aerobic AquaNereda aerobic granular sludge system
- Ronk Electrical NanO2 aeration process
- Asahi/America Omni ball valve
- Acrison Dual Dry Bulk Chemical Storage Silos

**FREE subscription to TPO magazine**

TPO0817

PRINT NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

FACILITY NAME: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ CELL PHONE: \_\_\_\_\_

FAX: \_\_\_\_\_ EMAIL: \_\_\_\_\_

Scan and email to: [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com) / Fax to: 715-546-3786 / Mail to: COLE Publishing Inc., P.O. Box 220, Three Lakes WI 54562

Connect with us



Facebook.com/TPOmag [Twitter.com/TPOmag](https://twitter.com/TPOmag)  
Plus.google.com [Youtube.com/TPOmagazine](https://www.youtube.com/TPOmagazine)  
[Linkedin.com/company/treatment-plant-operator-magazine](https://www.linkedin.com/company/treatment-plant-operator-magazine)

industry news

**Wilo USA announces Stapula as director of marketing**

Wilo USA welcomed Tim Stapula as its new director of marketing. He will be responsible for the company's overall marketing program, including new content creation, social media management, news releases, trade shows, and developing advertising campaigns and sales materials.



Tim Stapula

**Themec expands and upgrades research facility**

Themec Co. opened the doors of its new research and development facility in March. The expansion of the plant in North Kansas City, Missouri, includes an upgrade that doubles the size of its previous R&D laboratory and office space. Among the upgrades is a new chemical immersion room and several updated fume hoods to conduct more expansive performance testing.

**Badger Meter agrees to acquire D-Flow Technology AB**

Badger Meter announced that it has signed a definitive agreement to acquire D-Flow Technology AB of Lulea, Switzerland. The acquisition will enable the company to further enhance its existing E-Series Ultrasonic product line and continued advancement of its ultrasonic capabilities.

**Grundfos partners with TaKaDu**

A partnership between Grundfos and TaKaDu will combine Grundfos' technological expertise and experience with TaKaDu's analytical event management solutions to help optimize operations with real-time information. The two companies are currently running a joint pilot project at Frederikshavn Forsyning, a Danish water utility company.

**Dust Control Technology changes name to BossTek**

Dust Control Technology has changed its name to BossTek to better reflect all of the company's product lines. Headquartered in Peoria, Illinois, the company maintains a domestic rental fleet of industrial-strength misting cannons of all sizes for dust and odor suppression. **tpo**

Check out the **TPO** operator wear at [shop.tpomag.com](http://shop.tpomag.com)

EAT.  
SLEEP.  
SAVE THE  
ENVIRONMENT.  
REPEAT.

**tpo** Subscribe for FREE at [tpomag.com](http://tpomag.com)

ScreenCo Systems

208-790-8770  
[www.ScreenCoSystems.com](http://www.ScreenCoSystems.com)  
[sales@screenco.com](mailto:sales@screenco.com)

MEGA DUAL SCREEN RECEIVING STATION

- No Other System Matches Our GPM Capacity
- 40.5 sq. ft. of Screen
- Off-Loads At Up To 1000 GPM

- NEW Universal Trash Exit
- 6" Offload Through Dual Fan Spreaders

---

GRIT ELIMINATOR

- Removes Grit From Flow Stream
- Keeps Onsite Storage Grit Free 15-72 cu. ft. Capacity

- Enlarged suction housing
- ANSI connections

---

PROGRESSIVE CAVITY PUMP

- Geared motor, flanged to pump
- Pin joint sealed with elastomeric boot
- Hardened steel, chrome plating rotor

---

SHAFT DRIVE PUMPS & AGITATORS

- Move septic and grease waste from underground tanks
- Handles sand grit & slurry type materials
- Great for transferring to land application site
- Mix while dewatering
- Agitate fast, transfer fast, load fast
- Pit depths 3 - 12 ft.

FREE INFO - SEE ADVERTISER INDEX

855.511.PARK

AquaCat<sup>™</sup> SludgeKing

Specially Designed Dewatering Container

Features

- Drier Cakes
- Faster Drying Time
- 30% More Filter Area
- No Cake Sticking When Dumping

Available Package With PolyCat<sup>™</sup>

Just Flocc It!

Batch Mixing Polymer System

Features

- Ages Polymer
- Skid Mounted
- Includes VortaFlo<sup>™</sup> Static Mixer

PARK PROCESS

[www.ParkProcess.com](http://www.ParkProcess.com)

FREE INFO - SEE ADVERTISER INDEX

MUNICIPAL SEWER & WATER

Dig into our pages.

Each issue shows you:

- New technologies that boost efficiency and drive out costs.
- Tips for building a stronger, more productive staff.
- Bargains on a wide range of tools and equipment.
- And much more.

Plus, you'll learn from other successful people in your industry — how they do it, and how you can, too.

FREE Subscription — sign up today!

800.257.7222

[www.mswmag.com](http://www.mswmag.com)

WATER-REEL

Redistribute Waste Water with Superior Uniformity

KIFCO

[www.kifco.com](http://www.kifco.com)

800.452.7017 • [sales@kifco.com](mailto:sales@kifco.com)

FREE INFO - SEE ADVERTISER INDEX

GET EMAIL NEWS ALERTS FOR

tpo

Go to [tpomag.com/alerts](http://tpomag.com/alerts) and get started today!



The closed bag system for screenings, grit and sludge screenings.

- Mounts to existing equipment.
- Increased odor control.
- Minimized mess.
- Very robust, 90m (295') long continuous feed, non-porous, polythene bag.
- Over 20,000 installations worldwide.

Visit [www.paxxo.us](http://www.paxxo.us) for more information.



PAXXO (USA) INC. 1924 Millard Farmer Road, Newnan, GA 30263  
[www.paxxo.us](http://www.paxxo.us) Tel +1 770 502 0055 Fax +1 770 502 0088

FREE INFO - SEE ADVERTISER INDEX



# CLASSIFIED ADVERTISING

AUGUST

## AERATORS

Four (4) Solar Bee SB 10,000 (2004) solar circulation systems. Est. \$4,000 apiece to refurbish. \$10,000 per unit. Call 530-432-7878. (o08)

## COVERS

**POND & TANK COVERS:** Industrial & Environmental Concepts (IEC) makes gas-collection covers, odor-control covers, heat-retention covers and clarifier covers. Call 952-829-0731 [www.ieccovers.com](http://www.ieccovers.com) (oBM)

## DEWATERING

**FOR SALE:** Two (2) Andritz 2.2-meter belt presses, unused after complete refurbishing to Andritz factory specifications throughout. Dyer Equipment Co. 970-454-3784, Ault, CO or [dyerequipment@aol.com](mailto:dyerequipment@aol.com) (o08)

## EDUCATION

RoyCEU.com: We provide continuing education courses for water, wastewater and water distribution system operators. Log onto [www.royceu.com](http://www.royceu.com) and see our approved states and courses. Call 386-574-4307 for details. (oBM)

## POSITIONS AVAILABLE

Wastewater Treatment Plant Operator, Niskayuna, NY. See [www.niskayuna.org](http://www.niskayuna.org) for details. (o08)

## PRESSURE WASHERS

Industrial Pressure Washer - New w/warranty \$9,500. 2,000psi, 18gpm. 999cc Kohler & AR pump. Will deliver. 321-800-5763(CBM)

Honda horizontal GX engines, new in-the-box w/warranty. GX200QX - \$399; GX270QAG - \$579; GX390QA - \$599 delivered price. 800-363-9855 or [GXParts.com](http://GXParts.com) (CBM)

## SERVICE/REPAIR

**Dynamic Repairs - Inspection Camera Repairs:** 48 hour turn-around time. General Wire, Ratech, RIDGID, Electric Eel Mfg, Gator Cams, Insight Vision, Vision Intruders. Quality service on all brands. **Rental equipment available.** For more info call Jack at 973-478-0893. Lodi, New Jersey. [www.dynamicrepairs.biz](http://www.dynamicrepairs.biz) (CBM)

**Submit your classified ad online!**  
[www.tpomag.com/classifieds/place\\_ad](http://www.tpomag.com/classifieds/place_ad)

# WEQFAIR

Wastewater Equipment Fair

OCT. 17-18, 2017  
NASHVILLE, TN

Live demonstrations and operational equipment for the water and wastewater industries!

**\$20**  
per person

**TUESDAY Oct. 17th**  
Fair Hours: 12 p.m. - 5 p.m.

**WEDNESDAY Oct. 18th**  
Fair Hours: 9 a.m. - 1 p.m.

★ **OUTDOOR EVENT** ★  
**RAIN OR SHINE**

Call **866-933-2653** or view complete details at: **WEQFAIR.COM**

# SUCCESS in the end means KELLER from the beginning



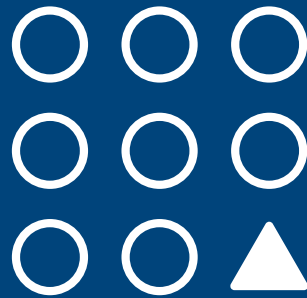
#### LEO-3 Pressure Transmitter + Digital Indicator

- Pressure ranges up to 15,000 PSI
- Excellent 0.1%FS (0.2%FS Total Error Band) accuracy
- Scalable 4-20mA output + RS485 MODBUS interface
- Selectable units of measure with Max/Min function
- Externally powered through 4-20mA loop.

Keller manufactures quality level and pressure instrumentation built to provide years of low-maintenance, worry free operation for water and wastewater professionals who need to monitor and control processes where reliable measurements are critical. For the very best in level and pressure instrumentation, think Keller...from the beginning.

 **KELLER**

BORN SWISS · MADE AMERICAN · [WWW.KELLERAMERICA.COM](http://WWW.KELLERAMERICA.COM)



# Is all grit created equal?

Conventional design guidelines specify that treatment plants target removal of solids larger than 210  $\mu\text{m}$ , but wastewater grit can be as small as 50  $\mu\text{m}$ . If you're not removing fine grit then you're paying for it in abrasion damage, clogging and increased maintenance.

**Challenge convention:** visit [advancedgritmanagement.com](http://advancedgritmanagement.com) or search **advanced grit management** online.

**Hydro**   
International <sup>®</sup>