

TREATMENT PLANT OPERATOR

tpoTM

DEDICATED TO WASTEWATER & WATER TREATMENT PROFESSIONALS

tpomag.com
APRIL 2021

LET'S BE CLEAR:
When science
gets sidelined | 8

A Life of Dedication

REY DAVILA EXCELLED
AS AN OPERATOR,
TEAM LEADER, AND TRAINER
IN A 30-YEAR CAREER | 20

IN MY WORDS:
PFAS impacts on
biosolids programs | 16



Rey Davila
Recently retired Chief Solids Operator
Mesquite, Texas

TECHNOLOGY DEEP DIVE:
Laser level measuring devices | 28



AUTOMATION AND CONTROLS

It's your plant. Now take control.

With our broad family of reliable brands and deep expertise in managing a water utility's complex systems, only Xylem offers an integrated single-source solution for next-generation monitoring, controls, and automation.

Learn how we can help you do more with less.



SANITAIRE

xylem.com/utilitycontrols

xylem
Let's Solve Water



LOOKING FOR A SCREW PUMP UPGRADE? LAKESIDE REPLACES ALL BRANDS AND TYPES.

Lakeside's screw pumps offer the ideal and cost-effective "drop in" replacements for less reliable designs. Improve pumping performance and reduce maintenance costs with our superior dual upper bearing design and heavy-duty self-aligning lower bearing designs. For decades we've been the go-to source for replacing all screw pump brands. Replacements typically require little or no structural modifications. It's what you expect from Lakeside Equipment—known for nearly a century for efficient and dependable operation in all wastewater, drainage and industrial applications.



Cleaner Water for a Brighter Future®

For more information on how you can achieve Lakeside quality and performance, contact one of our experts at **630.837.5640**, email us at sales@lakeside-equipment.com or visit our website www.lakeside-equipment.com



Screw Pumps

Open Screw Pumps
Enclosed Screw Pumps



For Treatment Plant Air/Gas Flows, We're the One

FCI Flow Meters You Can Count On

In municipal wastewater and water treatment plants, FCI thermal flow meters are the leading solution specified by system operators and their engineering team for aeration, digester, ozone and disinfection gas systems applications. They measure flow rate in line sizes from 1/4" to 99", with unmatched installed accuracy, outputs and I/O compatible with your current, and future DCS, PLC, or SCADA system, 100:1 turn-down capable in both low and high flow rate applications, extensive safety pedigrees and require no routine maintenance to deliver the most dependable and long-life gas flow meter solution across the plant.

- Multi-function—mass flow and temperature
- Analog outputs and digital bus I/O communications
- Non-fouling, non-clogging, no moving parts
- Gas specific and installation conditions matched calibrations
- Rugged, NEMA 4X/IP66/IP67 rated, multi-port enclosures
- Best-in-class displays and user HMI
- Global agency approvals for Div.1/Div.2 [Zone 1/Zone 2] applications
- Flow conditioners to solve lack of straight-run

Call or visit FCI online today to discover more about how to solve your treatment plant's air/gas flow meter applications.

FCI FLUID COMPONENTS INTERNATIONAL LLC

Visit FluidComponents.com

1-800-854-1993 ■ 1-760-744-6950



© Copyright 2019 Fluid Components International, LLC. All rights reserved.

GET THE MOST OUT OF YOUR O&M SOFTWARE

- EXPERIENCED TECHNICAL SUPPORT
- PERSONALIZED TRAINING
- PROGRAM SETUPS
- CUSTOM REPORT BUILDING

ONE YEAR OF FREE TECHNICAL SUPPORT

ANTERO | OPERATOR10 | SYNEXUS
800-670-1867
ALLMAXSOFTWARE.COM

AIMax
 Software

advertiser index April 2021

AERZEN Aerzen 15	KELLER Keller America Inc. 19
AIMax Software, Inc. 4	Kohler Power Systems 7
Analytical Technology, Inc. 52	Komline-Sanderson Komline-Sanderson 47
BDP Industries, Inc. 17	LAKESIDE Lakeside Equipment Corporation 3
Charter Machine Company 25	Landia, Inc. 5
ChemScan, Inc., an In-Situ Company 8	MYRON L COMPANY Myron L Company 11
Charter Machine Company 25	Park Process 47
Definitive Deodorant 41	SAF-T-FLO Saf-T-Flo Chemical Injection 35
Eagle Microsystems, Inc. 41	Specialty Maintenance Products 9
FCI - Fluid Components International 4	Vaughan Vaughan Company, Inc. 51
Flomatic Valves 25	WEQ Fair 45
Ishigaki USA Ltd. 29	WWETT Show 43, 50
JDV Equipment Corporation 9	Xylem 2
JFH Distributing, Inc. 47	YSI, a Xylem brand 27
JWC Environmental JWC Environmental Inc. 29	CLASSIFIEDS 49

**HE
SAID**



“NON-CLOG”

★ ★ ★ **AND** ★ ★ ★

HE MEANT IT.



When Landia's founder, Christian Oelgaard, invented the Chopper Pump in 1950, he solved the problem of clogging manure pumps on dairy farms.

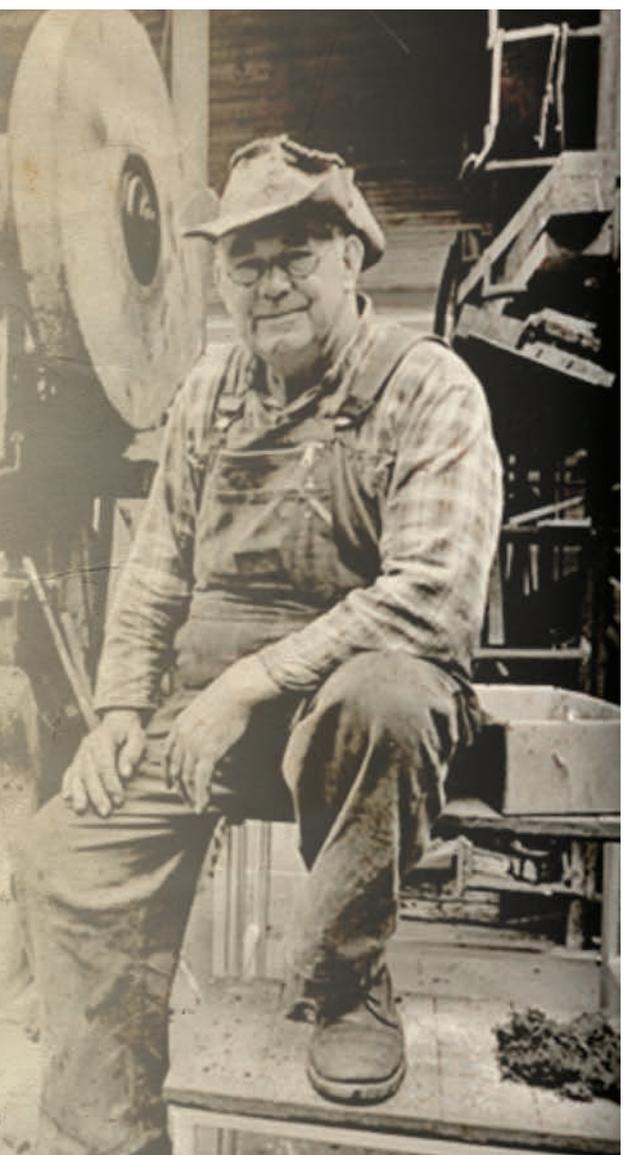
Christian was a forward-thinker, but even this distinguished pioneer might not have foreseen that 71 years later, the clog-free Landia Chopper Pump would be installed all over the world, in all types of wastewater applications.

Equipped with a unique hardened steel chopping system, the Landia Chopper Pump makes light of modern day nuisance waste such as wet wipes that bring lesser pumps to a clogging, grinding halt.

Christian Oelgaard knew that standard pumps could only pump standard waste, so if your pump can't cope with today's wastewater challenges, then invest in the original and the best – an ultra-reliable Landia Chopper Pump that keeps on working – and will not clog.

Landia – est. 1933. Still owned by the Oelgaard family (3rd generation).

World-leading manufacturer of heavy-duty chopper pumps, jet aerators and mixing solutions.



Landia[®]

U.S. MAIN OFFICE
(919) 466 0603
info@landiainc.com

TEXAS REGIONAL OFFICE
(919) 592 9955
asa@landiainc.com

www.landiainc.com

contents April 2021

- 8 **LET'S BE CLEAR: WHEN RATIONALITY IS CAST ASIDE**
Bad things happen when science is sidelined. Perhaps people in science-based professions, like wastewater treatment, need to become advocates for science itself.
By Ted J. Rulseh, Editor
- 10 **@TPOMAG.COM**
Visit daily for exclusive news, features and blogs.
- 16 **IN MY WORDS: A HEAVY BURDEN**
An industry study finds PFAS regulations having substantial impacts on clean-water agencies' beneficial biosolids reuse programs.
By Ted J. Rulseh
- 24 **PERSPECTIVE: DO YOU HAVE THE RIGHT STUFF?**
The first Mercury astronauts displayed exceptional qualities. What traits define the most proficient and effective water professionals?
By James Didawick
- 26 **SUSTAINABLE OPERATIONS: STEP BY STEP**
A sequential approach to energy efficiency helps the Edmonds Wastewater Treatment Plant secure substantial savings and earn industry recognition.
By Steve Lund
- 28 **TECHNOLOGY DEEP DIVE: ON THE LEVEL**
Laser measurement device combines accuracy, reliability and safety in a wide range of water and wastewater applications.
By Ted J. Rulseh
- 34 **HEARTS AND MINDS: PICKING UP STEAM**
A multifaceted outreach program from WSSC Water helps prepare the next generation for careers in engineering and environmental science.
By Sandra Buettner
- 36 **TECH TALK: WATER AND WASTEWATER PIPING RESTRAINTS: WHERE AND HOW?**
Restraining wastewater pipes can play a critical role in ensuring secure operations. Use these criteria to determine the right restraints to install.
By Cristi Bruns
- 38 **PRODUCT FOCUS: MONITORING AND INSTRUMENTATION**
By Craig Mandli
- 44 **CASE STUDIES: MONITORING AND INSTRUMENTATION**
By Craig Mandli

top performers



- 12 **WATER OPERATOR: A GOOD NEIGHBOR**
A public works director in a small Utah town creates a work environment of opportunity and makes the water supply secure for generations.
By Suzan Chin-Taylor

- 20 **WASTEWATER OPERATOR: A LIFE OF DEDICATION**
In a career of more than three decades, Rey Davila excelled as an operator, team leader and trainer to his team members and others.
By Jim Force

cover story

ON THE COVER: Wastewater treatment is a passion for William D. Hatfield Award winner Rey Davila. Recently retired, he loved his job as chief of solids operations at the South Mesquite Creek Regional Wastewater Treatment Plant, owned by the North Texas Municipal Water District. He's committed to operator associations and the Water Environment Federation's Operations Challenge. His mantra: "Train, train, train."
(Photography by Olivia Ogren-Hrejsa)

- 30 **WASTEWATER OPERATOR: WINS FOR THE HOME TEAM**
Brian Boyle and two homegrown colleagues ring up consistent success in quality effluent and trouble-free plant performance.
By Ted J. Rulseh

- 45 **EXAM STUDY GUIDE**
By Rick Lallish and Drew Hoelscher
- 46 **PRODUCT NEWS**
Product Spotlights:
Wastewater: An easier way to swap valves
Water: Radar level sensors bring increased accuracy
By Craig Mandli
- 48 **INDUSTRY NEWS**
- 49 **WORTH NOTING**
People/Awards; Events

coming next month: May 2021 FOCUS: **Annual Company Directory / ACE Pre-Show Issue**

» Let's Be Clear: Magic Dollars » TOP PERFORMERS: Water Plant: Membrane plant, Palm Coast Florida | Wastewater Operator: Tom Herbert, Moroni, Utah | Wastewater Plant: Municipal Protection Award, Coeur d'Alene, Idaho » How We Do It: An innovative approach to nutrient removal » In My Words: EPA study of nutrient removal technologies » Sustainable Operations: Reuse, rebates and rate structure in Round Rock, Texas » Hearts and Minds: Wastewater treatment plant in miniature » Technology Deep Dive: Odalog sensors for monitoring hydrogen sulfide



WATER IS LIFE. AND THAT'S WHY WE PROTECT IT.

The entire city depends on your treatment plant for water. That's why it's critical for KOHLER® power systems to back you up. Made entirely of KOHLER products, our systems are designed to work together. So when the grid goes down, your water goes on. And thousands of families enjoy the benefits of your decision.

From engines to generators, we give the world power.

KOHLER®
IN POWER. SINCE 1920.



MEET DEMAND WITH PRECISION

The ChemScan UV2250/S Chloramination Analyzer draws on decades of experience to optimize the challenging chloramination process.

Lower cost of ownership with combined sample lines AND parameters. Get timely data to ensure proper disinfectant levels. And view current parameters at a glance with our user-friendly graphic interface.

Outstanding customer service included. Learn more at in-situ.com/uv.

ChemScan
An In-Situ Brand

let's be clear

When Rationality Is Cast Aside

BAD THINGS HAPPEN WHEN SCIENCE IS SIDELINED. PERHAPS PEOPLE IN SCIENCE-BASED PROFESSIONS, LIKE WASTEWATER TREATMENT, NEED TO BECOME ADVOCATES FOR SCIENCE ITSELF.

By Ted J Rulseh, Editor



Consider this scenario: You arrive at work on a Monday morning and your plant manager gives you an order to shut down the blowers — the idea that wastewater treatment depends on oxygen is a hoax perpetrated by a political party.

What would you do? You would first of all think your boss had gone crazy. Then you would protest. Then you might report him or her to the regulatory authorities. You probably would resign sooner than carry out a directive you knew to be not just wrong but

destructive — a danger to the environment and public health.

A great deal of harm can be done when science is put on the sidelines. And yet that's exactly what is happening with a couple of absolutely critical issues facing the country and the world.

MAKING IT PARTISAN

First, consider climate change. Somehow we turned it into not just a political but a partisan issue. The Intergovernmental Panel on Climate Change asserts, "Scientific evidence for warming of the climate system is unequivocal."

NASA goes farther, stating, "The current warming trend is of particular significance because most of it is extremely likely (greater than 95% probability) to be the result of human activity since the mid-20th century and proceeding at a rate that is unprecedented over decades to millennia." However, if you subscribe to a particular political ideology, you are not supposed to believe this; global warming is a hoax, or part of a natural cycle that has no human cause.

It's possible to understand climate skepticism, since the change is slow in coming and is not obviously apparent. We don't on a daily basis see glaciers melting and sea levels rising. We still get days of 20-degrees-below-zero temperatures. "What global warming?"

Then there's COVID-19. By the time you read this, more than 500,000 Americans will have died from the coronavirus, yet many people, again based on a political ideology, believe it does not exist — it is a hoax. They persist in this belief even as people in their community die; even as they themselves are stricken: "It can't be COVID. It must be something else." They refuse to wear masks or keep social distance as instructed by the doctors and scientists. And more people get infected as a consequence.

GENUINE DANGER

Horrible things can happen when we reject science for ideological or other reasons. Consider how many people have died because they dismissed research that said smoking tobacco caused heart disease and lung cancer. Consider how diseases like measles and whooping cough are in danger of re-emerging — and how COVID-19 could persist — because growing numbers of people reject the science behind vaccines.



DEDICATED TO WASTEWATER & WATER TREATMENT PROFESSIONALS

Published monthly by COLE Publishing, Inc.

1720 Maple Lake Dam Rd., P.O. 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 / Email: 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 or call 800-257-7222.

Nonqualified 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 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 holly.gensler@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 Holly at holly.gensler@colepublishing.com.

ADVERTISING RATES: Call 800-994-7990 and ask for Phil or Kim or email phil.hahn@colepublishing.com or 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.

REPRINTS AND BACK ISSUES: Visit 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. To order back issues, call Holly at 800-257-7222 (715-546-3346) or email holly.gensler@colepublishing.com.

CONTROLLED CIRCULATION: 60,500 per month

© 2021 COLE PUBLISHING INC.

No part may be reproduced without permission of publisher.





SMP VALVE-OUT TOOL

FLANGE SPREADING & VALVE REPLACEMENT



Spread outside flanges & remove old valve



Prepare gasket surfaces



Reinstall new valve

VALVE-OUT TOOL WORKS ON FLANGES WITH BOLT HOLES FROM 3/4" TO 1-3/8" (STUD SIZES 5/8" TO 1-1/4")

CAN BE USED ON ANY VALVE WIDTH

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

SAFER, FASTER, EASIER

EMAIL: SALES@SMPTOOLS.COM

PHONE: 713-667-4402

SMPtools.com/valve-out-water

ASK ABOUT OUR **Water Service Kit**



Through the ages, science has solved innumerable problems, not the least of them being how to treat wastewater, making our waters fishable and swimmable after years of abuse, and protecting communities against outbreaks of disease.

And yet, many Americans seem to be growing up science-illiterate, or willing to set science to the side when it suits some kind of political or social agenda to do so. So despite all its benefits, does science itself need some sort of public information campaign to restore and amplify its reputation?

Believe in COVID-19 or not, science is what will get us out of the pandemic. Believe in climate change or not, science will be key in discovering and applying solutions.

CREDIBLE SOURCES

After all, believe in COVID-19 or not, science is what will get us out of the pandemic. Believe in climate change or not, science will be key in discovering and applying solutions. And who better to argue on behalf of science than people — like water and wastewater operators — working in science-driven professions? Who, in the end, is more credible?

Maybe, at the end of plant tours or classroom presentations, it would benefit the common good for water professionals to give a strong plug for the importance of science, and of listening to what the scientists say?

No need to engage in arguments on topics that unfortunately have become contentious. Just emphasize the role science plays in treating water and the role it has historically played in soothing all manner of our societies' ills. Something to think on, anyway. **tpo**



JDV LEVEL LODOR™

*Design for Even Distribution
&
Odor Control*

www.jdvequipment.com



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



OPTIMIZING WASTEWATER TREATMENT

MABR Technology Research

Wastewater treatment systems that combine conventional setups with a relatively new technology could reap a host of benefits, including smaller plant sizes, lower energy costs and more nitrogen pollution removed, according to recent research from the University of Michigan.

tpomag.com/featured



BUG OF THE MONTH

Learn About Nematodes

Nematodes are a metazoan commonly found in wastewater treatment processes in small numbers. It is believed that nematodes typically enter wastewater treatment processes through attachment to soil associated with inflow and infiltration. Read about how nematodes interact with wastewater treatment processes in this online exclusive article.

tpomag.com/featured



OVERHEARD ONLINE

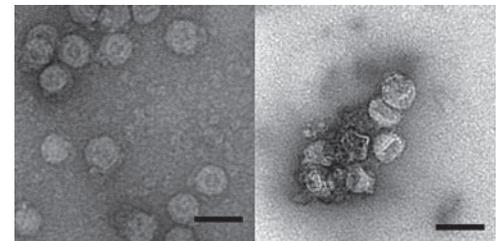
“Recognition of wastewater as a resource, opposed to as ‘waste,’ will be key to driving improved treatment going forward.”

Half of Global Wastewater Is Treated, Says New Study
tpomag.com/featured

TREATMENT TECHNIQUES

Removing Enveloped Viruses

Enveloped viruses have been detected in untreated wastewater, but scientists still don't fully understand the fate and infectivity of these viruses during water purification at treatment plants. Now, researchers have discovered that iron(III) coagulation and iron(0) electrocoagulation can efficiently remove and inactivate a model enveloped virus.



tpomag.com/featured



Join the Discussion

Facebook.com/tpomag
Twitter.com/tpomag



Emails & Alerts

Visit 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.

900 Series MULTI-PARAMETER MONITOR/CONTROLLER™

*Available
Now!!!*



Conductivity, Resistivity,
TDS, pH, ORP, Salinity,
ISE, Flow, Pressure,
with Touch Screen LCD

+more!



Download on the
App Store



GET IT ON
Google Play



www.myronl.com
760-438-2021

**MYRON L®
COMPANY**
Water Quality Instrumentation

Since 1957

Accuracy

Reliability

Simplicity



Ultrapen™

- PTBT1
- PTBT2
- PTBT3
- PTBT4
- PTBT5
- PTBT6
- PTBT7





Zane DeWeese made development of a water master plan a top priority when he became Coalville public works director. He's shown at the controls of the clean-water plant's TrojanUV3000Plus disinfection system.

A Good Neighbor

A PUBLIC WORKS DIRECTOR IN A SMALL UTAH TOWN CREATES A WORK ENVIRONMENT OF OPPORTUNITY AND MAKES THE WATER SUPPLY SECURE FOR GENERATIONS

STORY: **Suzan Chin-Taylor**

PHOTOGRAPHY: **Douglas Barnes**

From humble beginnings as a seasonal worker, Zane DeWeese has helped his hometown create a sustainable water management plan and secure safe drinking water supply.

As public works director and head of the Water Department in Coalville, Utah, DeWeese has drawn on opportunities provided by mentors, and on lifelong study, to build a long and rewarding career.

His achievements include working with the city's consulting engineers to create a water master plan, setting Coalville up for future growth and the ability to meet its water requirements in a

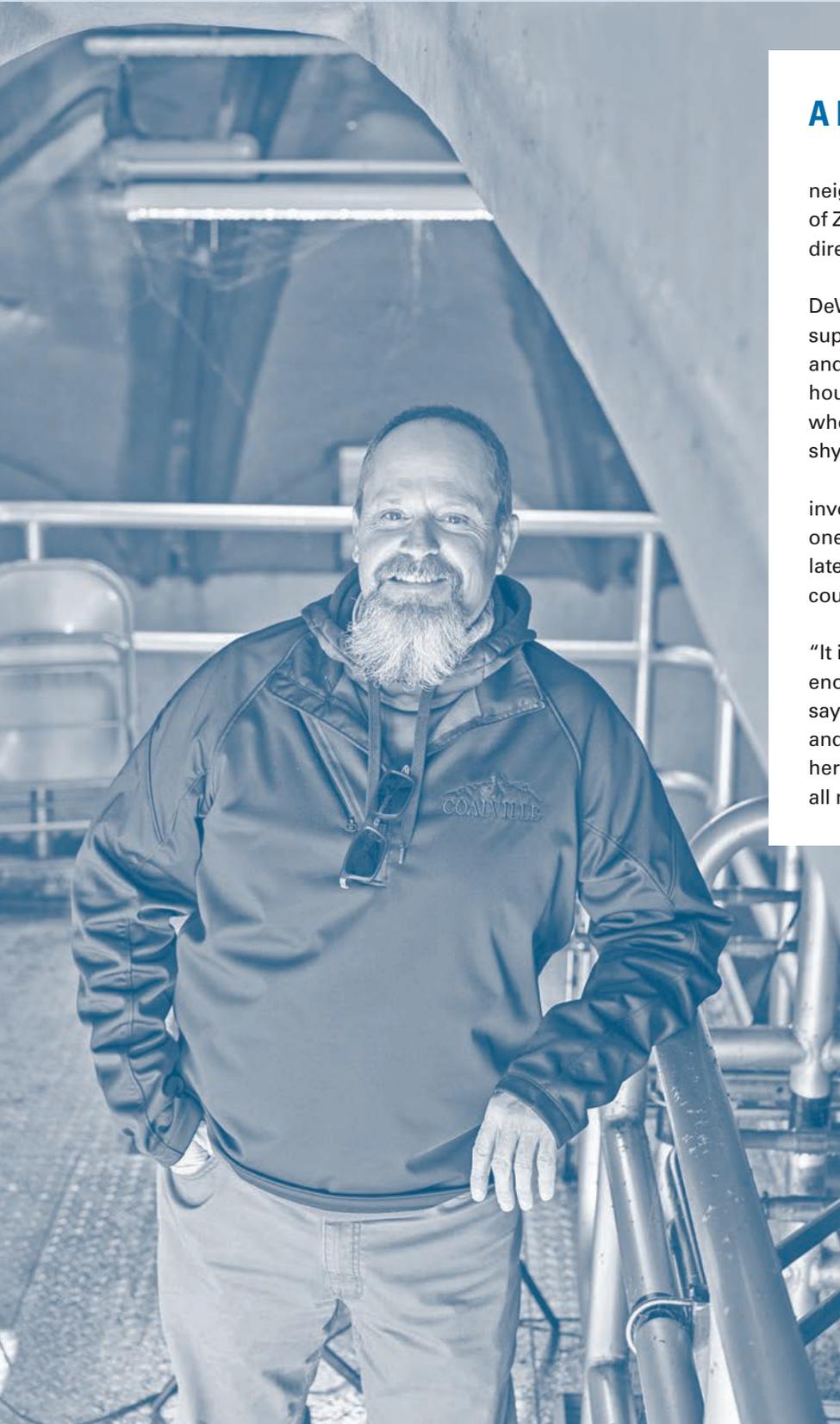
sustainable manner. For his efforts he received the 2020 Water Operator of the Year award from the Rural Water Association of Utah.

DIVERSE EXPERIENCE

DeWeese entered public service in 1986 as a part-time seasonal worker in Coalville. After three months of hard work and on-the-job training, he earned a full-time position. In 1997 he took an opportunity to work with the Summit County (Utah) Health Department as an environmental health technician, a position he enjoyed for seventeen years.

“ I was blessed to have many mentors along the way. Without them I wouldn't have been able to learn what I needed to handle the job I have today.”

ZANE DEWEESE



A BEAUTIFUL DAY IN THE NEIGHBORHOOD

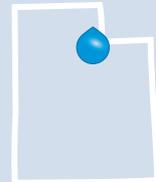
The immortal words of Fred Rogers — “Won't you be my neighbor?” — epitomize the demeanor and modus operandi of Zane DeWeese, public works and water department director in Coalville.

As a native of this small mountain town (population 1,500), DeWeese has a unique advantage as the caretaker of its water supply and critical infrastructure. Everyone knows DeWeese and that he has an open-door policy, not just during business hours but as a neighbor on call to all residents. They know where he lives and his direct phone number, so people aren't shy about calling upon him.

A prime example was during a large construction project involving water line replacement. The crews forgot to turn one customer's water back on. The customer arrived home late in the evening to find no water service; she knew she could knock on DeWeese's door for help.

Of course he was available to resolve the issue immediately. “It is such a good feeling that our customers feel comfortable enough to come right to your doorstep and ask for help,” he says. “They see us as their neighbors and not just city workers, and that's what we are. I've been truly fortunate to have lived here all my life, build a great career and serve my friends and all my neighbors.”

Zane DeWeese,
Coalville, Utah



POSITION:

Public Works Director, Water Department

EXPERIENCE:

34 years

DUTIES:

Manage staff of five; manage wastewater treatment and collection; manage water treatment and distribution

CERTIFICATIONS:

Drinking Water Operator, Distribution Grade 4; Water Treatment, Grade 2

AWARDS:

2020 Water Operator of the Year, Rural Water Association of Utah

GOALS:

Create a great work environment and community support; ensure a sustainable water supply



Zane DeWeese applies lessons he learned from the mentor/apprentice approach to leading his own plant team.

During that time he wore many hats and learned a great deal about water standards, treatment processes and distribution systems. He developed a keen interest in drinking water and, with the help of mentors and schooling, he obtained his drinking water certificate. In 2013, he returned to Coalville as public works director.

“I was blessed to have many mentors along the way,” he says. “Without them I wouldn’t have been able to learn what I needed to handle the job I have today.” Three mentors stand out as instrumental to his career growth. Doug Moore, his first boss at Coalville, went to bat for him to be hired full-time and provided his introduction to the water industry.

Roy Dixon, his senior co-worker at Summit County, was a generous teacher, working side-by-side with DeWeese in the field and coaching him on the finer points of water chemistry and biology. Steve Jenkins, health director for the county, gave him responsibilities that were a catalyst to expand his technical knowledge and acquire management skills.

Today, DeWeese incorporates the lessons learned from the mentor/apprentice approach to leading his own crew.

SMALL BUT MIGHTY

Coalville is a bedroom community of 1,500 people, 45 miles east of Salt Lake City and 20 miles east of Park City. Being born and raised in a rural mountain community, DeWeese understands and accepts the accompanying challenges. The city must run lean with small crews; leaders and team members need to multitask and cross-function.

Besides DeWeese, the team consists of Kyle Clark, public works foreman; Samuel Adams, lead wastewater treatment plant operator; and Russell Larson and Colby Smith, maintenance operators. DeWeese gives his crew opportunities to learn and try new things, working with them in the field just as his mentors did so that everyone can share knowledge, implement ideas and grow.

This approach keeps morale high and team members accountable to each other. DeWeese set up a financial rewards program to recognize staff members who take the extra steps to ensure projects’ success and make a difference in the community.

DeWeese admits that although it can be stressful, he enjoys the problem-solving aspects of his position and, on the flip side, the simple maintenance tasks. “There are days that I go out there and work side by side with my guy,” he says. “It can be some of the simplest tasks, maybe in some people’s minds

menial tasks, but I enjoy those days, the camaraderie, working with my team, interacting with the residents. It’s great.”

THE RIGHT TOOLS

DeWeese’s first priority when he stepped into his director role was to work on the water master plan. To execute the plan he needed to equip his team with the right tools. The bulk of the equipment on hand when he took the job was at the end of or past its service life. He acquired a new John Deere 310S backhoe, a John Deere 50G mini excavator, tool trailers, updated safety gear and new service vehicles.



The team at the Coalville Wastewater Treatment Plant includes, from left, Russell Larsen and Colby Smith, maintenance operators; Kyle Clark, public works foreman; Zane DeWeese, public works director; and Samuel Adams, lead wastewater treatment plant operator.

The water master plan was aggressive and extensive. It included the replacement and upsizing of the Icy Springs No. 1 storage tank to a capacity of 600,000 gallons; the rehabilitation of the Lewis Well, which provided the city's water supply; and the upgrading and upsizing of almost all water distribution lines within the city limits.

Most of the potable system (or culinary water system as it is called in Coalville) was 40 to 50 years old or more, and crews typically repaired several leaks each month to keep it functioning. "Coalville is kind of a geological wonder," DeWeese says. "Some of our older lines had been in the ground for more than 50 years, and because of the depth and terrain, leaks going on in the system would never surface and be detected," Deweese shares.

In 2019, nearly 20,000 linear feet of pipe was replaced, and most of the city's system is now new. Unlike major metropolitan areas that can afford cutting-edge assessment and reporting technology, Coalville relied heavily on its crews' knowledge of the system's history to assess and analyze the results of the master plan and in particular the effects of the line replacements.

“For me, it’s about knowing the difference we can make, even if no one else can see it.”

ZANE DEWEESE

“We hoped that the replacement and upsize would be a two-for-one solution,” DeWeese says. “So changes in our storage tank levels against historical usage would be a strong indicator of success.”

Sure enough, the city immediately noted a decline in water loss because of the line replacements in the form of a steady increase in tank water levels.

FROM RELIANCE TO INDEPENDENCE

During the plan development, the city also recognized that its water supply from underground springs and wells was becoming unstable. The city consumed an average of 275,000 gpd of culinary water, and DeWeese spent many sleepless nights concerned about adequate water supply during drought years.

Studies determined that the existing sources would have to be augmented, but the new source would require treatment, something Coalville previously had not needed. Water is delivered straight from underground into holding tanks to receive chlorination before distribution. The new water treatment plant will draw from the Weber River by way of a pump station and will treat both river water and shallow well water.

In addition to concerns over adequate supply, Coalville had been paying the Weber Basin Water Conservancy District, a wholesaler, \$15,000 per year to hold 300 acre-feet of Weber River water in reserve, and more than \$29,000 per year to use 110 acre-feet of its water. The new water source and treatment plant will eliminate those costs, make the city more water resource independent, and help the utility maintain financial health.

JOB WELL DONE

The community's citizens and leaders took notice of DeWeese's work to set a course to independence

and to create a strong plan for the future. The mayor, city engineer and city staff members nominated him for the Operator of the Year award, a recognition he was surprised and humbled to receive.

“It comes down to taking pride in what you do,” DeWeese says. “Know going in that water and wastewater is a challenging industry that offers not just a job but a meaningful career. A career in our industry has many demands. Our customers are not aware of what it takes to deliver that clean, healthy water to the tap. For me, it’s about knowing the difference we can make, even if no one else can see it.” **tpo**

featured products from:

John Deere
800-503-3373
www.johndeere.com

TrojanUV
888-220-6118
www.trojanuv.com

HOW EFFICIENT IS YOUR AERATION PROCESS?

LET'S TALK

Tom McCurdy, Director of Environmental Sales
+1 610 656 1683 | tmccurdy@aerzenusa.com

Real efficiency means operating the consumption profiles in wastewater treatment plants with precision. Aeration consumes up to 80% of total energy requirements; the greatest savings potential can therefore be found here.

With our Performance³ product portfolio consisting of Blower, Hybrid, and Turbo technologies, we always find the most efficient and tailor-made solution for you. Benefit from up to 30% energy savings!

LET'S TALK! We'll be happy to advise you!



AERZEN
EXPECT PERFORMANCE

www.aerzen.com/en-us

A Heavy Burden

AN INDUSTRY STUDY FINDS PFAS REGULATIONS HAVING SUBSTANTIAL IMPACTS ON CLEAN-WATER AGENCIES' BENEFICIAL BIOSOLIDS REUSE PROGRAMS

By Ted J. Rulseh

PFAAS is topic of significant public concern and a challenge for municipal water and wastewater utilities charged with protecting public health and the environment.

Biosolids management programs have seen substantial impacts from new regulations, including rising costs, administrative burdens and negative public perceptions of land-applied products. Some states have imposed regulations that in effect ended beneficial use programs.

To gain a better understanding of the financial and other impacts of PFAS on biosolids programs, the Water Environment Federation collaborated with the National Association of Clean Water Agencies (NACWA) and the North East Biosolids and Residuals Association (NEBRA) on an in-depth survey of affected facilities. The CDM Smith engineering firm conducted the survey.

The survey team contacted water resource recovery facilities, residuals haulers, biosolids land appliers, and facilities dedicated to incineration, composting, landfilling and agriculture, asking for detailed information on the cost and operational impacts from PFAS policies and regulations at the federal and state levels.

The team spoke with staff members at 29 solids management facilities or operations, choosing participants based on impacts from PFAS policies they expected or had experienced. Based on the data provided, the average biosolids management cost increased by about 37%, although the impacts varied greatly with the type of biosolids management, geographic location, and other factors.

Eric Spargimino, chair of the New England Water Environment Association Residuals and Biosolids Committee and a project manager and biosolids specialist at CDM Smith, talked about the survey in an interview with *Treatment Plant Operator*.

tpo: What was the motivation for conducting this survey?

Spargimino: WEF, NACWA and NEBRA realized that their memberships were seeing more and more impacts from PFAS, especially related to managing biosolids. The U.S. EPA several years ago put out a health advisory level related to drinking water. Since then, some states have seemingly engaged in a race to zero in imposing PFAS limits on biosolids. So they all saw a need to look holistically at how much costs have gone up and what the unintended consequences are of these regulations.

tpo: What was the essential purpose of this study?

Spargimino: We wanted to put something in front of regulators, politicians and the public saying: Let's pause for a minute, because while we need to protect public health, we also need to make sure any regulation is

based on facts and on science. We can't just race to zero because PFAS are harmful. We have to respond based on all the available science and research, so that we're not detrimentally affecting beneficial reuse programs and all the environmental benefits that are happening because of land application.



Eric Spargimino

tpo: What was the geographic focus of this study?

Spargimino: We tried to get a sampling of states that have been impacted by PFAS. New England and the Mid-Atlantic states are ahead of the curve because their regulators have been more aggressive. So many of the survey participants are in those states, but we did reach out to California, Arizona, Michigan and some other states.

tpo: What channels did you use for gathering information?

Spargimino: Mostly we used email and phone interviews. Between NEBRA, NACWA and WEF, we have a very strong network, and CDM Smith has a very strong client network throughout the country. We tried to call on all our connections to help get feedback and make everyone comfortable that this report was designed to help us, as water and wastewater engineers and stewards of the environment, in educating the public and regulators. We had to get over the hurdles of: Why do you want to know this information? Who is asking? Once we did, everyone was incredibly helpful, and we got some really great responses and feedback.

“We can't just race to zero because PFAS are harmful. We have to respond based on all the available science and research ...”

ERIC SPARGIMINO

tpo: How strict have some of the state PFAS regulations been?

Spargimino: Maine led the pack by putting a moratorium on land application of biosolids. That impacted the whole state. Since then they have had the various programs test their biosolids for PFAS, and on that basis some have been allowed to continue land-applying. They have also implemented screening levels that have helped a couple of programs get back up and running and continue beneficial reuse.

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

Email: info@bdpindustries.com



www.bdpindustries.com

tpo: What other approaches have states taken?

Spargimino: Vermont has established background levels of PFAS. They've said: Our background PFAS soil concentration is X, so if your biosolids level is less than that, it may be safe to continue to land-apply. Maine has established screening levels that are a little different. Instead of looking at it the same as a drinking water limit where people have direct exposure to the material, they acknowledge that with biosolids the risk is contact with the skin, or that a toddler might eat a handful of soil. So the limit is an order of magnitude higher than what you would expect to see in a drinking water limit.

tpo: To what extent do you feel these restrictions are justified scientifically?

Spargimino: There is a lot of great research going on right now. CDM Smith is doing a handful of projects with the Water Research Foundation, one of which is looking at the fate and transport of PFAS in the wastewater treatment plant, looking to identify how it gets from the influent side of the plant to the effluent and biosolids side.

tpo: What about the fate of PFAS in the environment after land application?

Spargimino: We're doing another project looking at the leachability of PFAS from land-applied biosolids — how it moves in soil column and leaches into the groundwater or is taken up by plants that a person or an animal might eat. There's a whole body of research being done right now into those exposure pathways.

tpo: Have these projects yielded any meaningful findings so far?

Spargimino: There are some findings that the longer-chain molecules tend to stay in the soil column; the shorter chains migrate farther down. The farther down you go in the soil column, depending on the molecule, the more it gets hung up, so not all of it ends up leaching down.

PFAS REPORT: THE BOTTOM LINE

Here is a summary of the key findings of the report, "Cost Analysis of the Impacts on Municipal Utilities and Biosolids Management to Address PFAS Contamination:"

- The average biosolids management cost increased by about 37% because of PFAS concerns.
- Facilities that saw minimal to no cost impacts generally were those managing biosolids other than for beneficial reuse or operating in states without quantifiable PFAS rules.
- Facilities forced to landfill biosolids have seen their management costs at least double.
- Common concerns about PFAS regulations were lack of capacity for biosolids handling, public perception, political rather than science-based decisions, and the threat of liability and cost burdens.

To find the full report, visit wef.org and search under "Biosolids PFAS."

tpo: What have you learned about the behavior of PFAS in treatment processes?

Spargimino: Different PFAS molecules partition in different ways. Because some of the PFAS molecules tend to go to the air-water interface, then possibly there is a way to skim it off the surface. That may be more cost-

effective than trying to treat the effluent or treat the biosolids before it goes to beneficial use.

tpo: How would you describe the impacts of PFAS regulations on costs and administration of beneficial reuse programs?

Spargimino: We interviewed some communities where the costs went up 300%. Some were applying biosolids on a farm adjacent to their plant, and now they're hauling it up to Canada. That was one side of it. But then there are the unintended consequences. Land-applying on site significantly reduces greenhouse gases and sequesters carbon from the atmosphere. But if you're trucking it to faraway places, or putting it in a landfill, or incinerating it, all those generate more greenhouse gases.

tpo: What has happened to community acceptance of biosolids as a result of PFAS?

Spargimino: Some of these biosolids products go to farms, and it's how some small farms are able to survive, because biosolids is a very low-cost fertilizer. In some cases the farms just had to stop taking it because of the perception of the community. And their cost to operate went up because now they had to buy synthetic fertilizers.

tpo: Have concerns about PFAS affected any consumer-based composts and other biosolids products?

Spargimino: I haven't seen any quantification of that. I know qualitatively that some folks have stopped taking it and putting it on their lawns in residential areas. I've heard of some compost facilities that are now putting all their biosolids material in landfills instead of distributing to the community. In the U.S. we have limited landfill capacity, and now our biosolids and composts are going to landfill because there isn't as much a demand for them anymore.

tpo: Are there costs to the PFAS regulations beyond trucking and landfilling?

Spargimino: Yes. For example, Michigan and Massachusetts require sampling of biosolids for PFAS. The EPA just published a letter recommending to each state that they implement PFAS monitoring and best practices. Analysis of samples for PFAS is definitely not cheap. Not all labs are capable of doing it, and since there is no EPA-approved method, the validation of any data is really difficult.

tpo: How would you characterize the way survey respondents were feeling about PFAS and the regulations?

Spargimino: Overall, folks were anxious to get guidance. Every state is acting independently right now, and utilities are frustrated that there hasn't been a lot of guidance from the EPA. There seems to be a race to the bottom for who can regulate the tightest and the lowest. The frustration is that we need to make sure any regulations are science-based. We want to make sure that we're protecting human health, but we need to do it appropriately.

tpo: Beyond the cost impacts of PFAS, what would you say are the key take-aways from this survey?

Spargimino: States that don't have regulations right now and only have monitoring are not seeing dramatic effects financially, but they know the writing is on the wall, and so they are putting in tremendous man-hours to get prepared and to educate and work with their regulatory agencies. One of the biggest take-aways is that community education needs to be a big part of this. PFAS contamination starts with us, the consumer. PFAS is in a lot of great products, and so through education of the public we can start to influence change in how we use these products responsibly, while we wait for the science to catch up.

tpo: Are any manufacturers starting to phase out certain PFAS compounds?

Spargimino: Yes. EPA has taken steps toward limiting some of these products — their use and manufacturing and what can be brought into the country. Over the last couple of years we've seen PFAS concentrations in wastewater and in people's blood reduced with some of these efforts. The improvement is already there. We just need to keep doing it.

tpo: Have any of these substances been banned or restricted?

Spargimino: I believe some of the PFAS compounds have been phased out, at least in the U.S. They've been replaced by other compounds with similar benefits to the consumer, but the science is still out on their toxicology. Are we going to ban one product and replace it with something worse? Fire-

“The frustration is that we need to make sure any regulations are science-based. We want to make sure that we're protecting human health, but we need to do it appropriately.”

ERIC SPARGIMINO

fighting foam is another issue. The Federal Aviation Administration still requires it to be on site and used at airports. That is one of the more harmful PFAS compounds, but it's also very effective at fighting fires. Should we have a foam that's not as effective at fighting fires, or one that is better for the environment?

tpo: What advice would you give to a utility or a biosolids program manager about dealing with PFAS and related issues?

Spargimino: I would say be proactive. Gauge your community early and start educating. Work with your regulators. Let them know the impact it would have if you could no longer land-apply biosolids, so that they get a well-rounded picture. Work with your politicians to help fund the research programs that are ongoing. Be transparent with your community about the implications and potential costs of PFAS. As operators and sanitary engineers, we're the original environmentalists. It's our job to protect the environment, so we want to make sure that PFAS is taken care of appropriately. That means continuing all the benefits of land application and beneficial reuse programs, with regulations founded in science. **tpo**



Are you ingenious?

Have you solved a tough problem with a creative solution?
Share your story with 68,000 other professionals.

Send a note to editor@tpomag.com or call 877-953-3301 | **tpo**



Know pressure.

ECONOLINE- Low-cost compact pressure transmitter

- Available in pressure ranges from 30 to 10,000 PSI
- Absolute, sealed, and vented gauge versions
- Built to order in the U.S. with a short 3-day lead time
- 2 year warranty covering materials and craftsmanship
- Better than $\pm 1\%$ FS Total Error Band over 0...50° C
- Durable 316L stainless steel construction
- mPm-393, M12, or cable electrical connections
- 4-20mA output compatible with most systems

877-2-KELLER

 **KELLER**

KELLERAMERICA.COM



A Life of Dedication

IN A CAREER OF MORE THAN THREE DECADES, REY DAVILA EXCELLED AS AN OPERATOR, TEAM LEADER AND TRAINER TO HIS TEAM MEMBERS AND OTHERS

STORY: **Jim Force**

PHOTOGRAPHY: **Olivia Ogren-Hrejsa**



“It’s a great industry and a huge network. Get involved. There are classes and workshops that will help you resolve issues and do your job better.”

REY DAVILA



Rey Davila, right, chief solids operator, and Jeremy Thompson, plant supervisor, discuss the performance of the disc filtration system (Kruger USA) at the South Mesquite Creek treatment plant.



Rey Davila, North Texas Municipal Water District Mesquite

Wastewater treatment is Rey Davila’s passion.

Recently retired, he loved his job as chief of solids operations at the South Mesquite Creek Regional Wastewater Treatment Plant. He’s committed to operator associations and the Water Environment Federation’s Operations Challenge.

And he’s so devoted to training that he has signed on with the local college to help train new operators to fill the positions left by those retiring. His local utility will need 30 to 40 new operators in the next two years.

“He’s very passionate and giving to others,” says Sharon Miller, P.E., regional operations engineer with the North Texas Municipal Water District in Mesquite, which operates the South Mesquite Creek plant. “You can see it in his mentorship of others. Rey is the first person to help if there’s a question. He’s great at explaining to the staff why we’re doing something. He gives the bigger picture.”

As for the challenges he has faced and the successes attained in 34 years in the wastewater profession, Davila says, “I love it. I basically dedicated my life to the wastewater industry, especially training. Train, train, train!”

POSITION:
**Chief solids operator,
South Mesquite Creek
Regional Wastewater
Treatment Plant
(recently retired)**

EXPERIENCE:
**34 years in wastewater
operations and
management**

RESPONSIBILITY:
**Manage staff and
biosolids process**

EDUCATION:
**Studying toward degree
in environmental science**

CERTIFICATION:
**Class A Wastewater
Operator**

AWARDS:
**David Barber Competitive
Spirit Award and Operator
of the Year award, Water
Environment Association
of Texas; William D.
Hatfield Award, WEF**

GOALS:
**Train operators to fill gaps
caused by retirement;
“Do the best I can to
help people.”**



“ I love it. I basically dedicated my life to the wastewater industry, especially training. Train, train, train!”

REY DAVILA

ENVIRONMENTAL WARRIOR

If you were a beginning student in Rey Davila's operations course, he would challenge you to become an Environmental Warrior.

“Every day,” he would say, “you will fight the challenges that it takes to treat, decontaminate and disinfect raw sewage water and return it safely to the environment. Without water, there would be no life in this world.”

He would tell you that besides taking home a paycheck every week, you would be proud that you have helped save lives because of the clean water you are providing and have enabled families to enjoy the clean water necessary for outdoor recreation. His closing thought: “Water is our most valuable resource on the planet,”

Davila is a certified wastewater operations instructor and is working with Collin College to recruit and train new operators. Once students are past the basics, Davila advocates training tailored to specific plants and processes.

“Every wastewater treatment plant has different types of operational processes,” he says. “The better that you customize that training the specific operator needs, the better the operators will operate the plant to meet the plant effluent parameters set by the state.

For example, the South Mesquite Creek Plant has an A2O biological nutrient removal system. So, we concentrated on training in the operations and troubleshooting for BNR.”

His enthusiasm for wastewater extends to his family. Daughter Jessica is a chemist in Dallas and a member of the utility's state and national championship tapping team. Son David is an apprentice operator in Dallas and plans to compete in the WEF Operations Challenge next year.

FROM SOUTH OF THE BORDER

Davila's career began in Mexico, where he studied electrical engineering. After coming to the United States, he worked for three years on traffic signals for the city of Dallas, but he developed a curiosity for wastewater treatment. The city's Central Wastewater Treatment Plant had openings only for operators, not electricians.

Undaunted, Davila signed on and earned his license, and the seeds were planted. He excelled at operations at the Central Plant, and later, as shift

The team at the South Mesquite plant includes, from left, Jeremy Thompson, plant supervisor; Maurice Moore, plant operator; Rodney Bass, transport driver; Alex Verduzco and Adolfo Arriaga, plant operators; Rey Davila, chief solids operator; Zachary Jackson, lead plant operator; Robert Weishaupt, transport driver; Joshua Deaver, plant operator; and Robert Livingston, transport driver.

supervisor at the utility's Southside Plant, he became a certified trainer with the city, teaching classes and taking part in internet training. He also became active in the Operations Challenge.

He sees that program as an outstanding training opportunity. “It's a great tool,” he says. “It's designed to train other operators, and it helps create more professionalism in the field, enabling operators to achieve their goals.”

CROSSING BORDER

He's not just talking about the U.S. competition. In 2012, Davila represented the country at the International Operations Challenge in Argentina. “There were two of us from Texas and two from Los Angeles,” he recalls. “We had two days to get familiar with the equipment. I was the only one who spoke Spanish, so I could read the instructions.” It paid off, as his team finished in the top 10 against entrants from all over Argentina.

After taking early retirement from Dallas, Davila joined the North Texas Municipal Water District to head solids handling operations at the South Mesquite Creek plant, a regional 33 mgd facility.

The plant employs primary treatment followed by separate trains of conventional activated sludge and A2O biological nutrient removal. Traveling sand and disc filters (Kruger) polish the effluent, and a newly installed TrojanUV3000 system disinfects the flow before discharge to South Mesquite Creek.

Waste activated sludge is thickened to about 3% solids on gravity belt thickeners (Charter Machine Co.) and pumped to a blend tank; it is later pumped to BDP Industries belt filter presses for dewatering. The cake, at about 24% solids, is stored in 25- and 30-cubic-yard containers. Twelve to 16 truckloads per day are hauled to landfill in utility-owned trucks.

Davila managed a crew of nine: Zachary Jackson, solids lead operator; Joshua Deaver, Alex Verduzco, Maurice Moore and Adolfo Arriaga, operators; and Eddy Maupin, Rodney Bass, Robert Livingston and Robert Weishaupt, truck drivers.

OPTIMIZING CHEMICALS

One of his most recent challenges was optimizing the chemical feed process that promotes dewatering. “We were spending too much on polymers,” he says.

Committed to reducing costs, he started calling colleagues and suppliers and jar-testing polymers. He used an outside laboratory to verify the results.

After paring the possibilities down to three candidates, Davila and his team decided on an emulsion polymer to replace the cationic polymer they had been using. The results were dramatic. The new polymer improved dewatering and saved money because less chemical dosing was required. Davila estimates annual savings of \$500,000.

Miller worked on the project as well and lauds Davila's efforts: "I worked with him on the conversion. Rey set up a protocol for testing with emulsion polymers. I helped him with a new pumping system." Then they evaluated and created a skid-mounted system containing pumps, mixers, controls and piping. "We worked together, walking through the system and working with vendors."

At first, they estimated a cost of \$150,000 for new equipment, but then realized they only needed to change out the feed pumps (Watson-Marlow) at a cost of \$9,000. Rick Painter, senior mechanic, designed new racks for the polymer totes to sit on. Miller observes, "If you have process questions, Rey is a great resource to call on."

SOURCE OF ADVICE

Davila's work hasn't gone unnoticed. He says his greatest career rewards include receiving the David Barber Competitive Spirit Award (2012) and Municipal Operator of the Year award (2015) from the Water Environment Association of Texas. Last year, he received the WEF William D. Hatfield Award, selected by the WEAT.

With such experience and recognition in his pocket, Davila is in a good position to offer advice to others in wastewater management. Treatment plants are like fingerprints, he says. "Every plant is different." That means operators need to be ready to face unique challenges.

Besides solving the polymer issue at South Mesquite Creek, Davila faced challenges during his time at Dallas, as he and the staff learned to manage new acid-mode anaerobic digesters.

The answers often lie within the industry itself, Davila believes. He believes the WEF and WEAT represent decades of knowledge and expertise that operators and managers should take advantage of: "It's a great industry and a huge network. Get involved. There are classes and workshops that will help you resolve issues and do your job better. It's valuable training, and it will bring out the best in you."

He also points to the support he has received from his upper management: "Mike Rickman, our deputy director; Jenna Covington, P.E., our assis-



Rey Davila (left) and Zachary Jackson, lead plant operator, inspect a Watson-Marlow Qdos 20 Universal pump. The plant's processes are supported by Siemens instrumentation. This equipment, installed as part of a system conversion, is projected to save \$75,000 annually in chemical costs.

tant deputy director; and Jeremy Thompson, plant supervisor, have been very supportive. They're strong leaders and form a great team."

ACTIVELY RETIRED

While Davila has retired from his operations position at South Mesquite Creek, he's hardly sitting in a rocking chair. Instead, he has started working with Steve Rummel and Mike Helms of the district's training team to establish a waterworks training program at Collin College for new operators, with funding support from a state grant.

The program involves classes and internships that students can use to learn about opportunities in wastewater and water operations. "This is hands-on training," Davila says. "Students shadow operators. They experience lab work, process control and testing — how the industry works. Then they can decide what departments they are interested in and whether they want to stay with us or not. We already have four students hired for internships, and we've started our second group of classes."

He's teaching that course, but he's also on the other side of the classroom, finishing his studies in environmental science. He will receive his associate degree in spring. "This is what I want to do right now," he says. "I just plan to keep on going." **tpo**



From left, Alex Verduzco, Caeleb Butler and Rey Davila discuss the readings off the TrojanUV3000Plus disinfection system in the newly constructed UV main control center.

featured products from:

BDP Industries, Inc.
518-695-6851
www.bdpindustries.com
(See ad page 17)

Charter Machine Company
732-548-4400
www.chartermachine.com
(See ad page 25)

Kruger USA
919-677-8310
www.krugerusa.com

Siemens Process Instrumentation
800-365-8766
www.siemens.com/pi

TrojanUV
888-220-6118
www.trojanuv.com

Watson-Marlow Fluid Technology Group
800-282-8823
www.wmftg.com

Do You Have the Right Stuff?

THE FIRST MERCURY ASTRONAUTS DISPLAYED EXCEPTIONAL QUALITIES.

WHAT TRAITS DEFINE THE MOST PROFICIENT AND EFFECTIVE WATER PROFESSIONALS?

By James Didawick

Many of you remember author Tom Wolfe's book and the movie titled *The Right Stuff*. The story chronicles the original Mercury Seven astronauts and the selection process that they went through to be chosen by NASA.

As we all know, our industry is faced with a significant number of openings in the not-too-distant future as operators retire and move on to their next chapters. How will those hiring their replacement define the qualities that will give them "the right stuff?"

TECHNOLOGY

Probably the biggest change new operator trainees will face is the need to use technology. Communication and electronic capabilities have progressed to the point where plant operations can be monitored and controlled using smartphones. Today's new operators have grown up with this technology and will be ready to use it when making any number of operational control changes.

New plant personnel will need a basic familiarity with electronics such as tablets, smartphones and laptop computers to be able to interpret and store the data collected and then apply it to operating scenarios. This applies to inventory management, maintenance, laboratory analysis, the generation of reports and more. SCADA systems using telemetry and instrumentation are now routine, so knowledge of these systems will be beneficial, as well.

EDUCATION AND TRAINING

The right candidates must be able to fulfill all of their prospective employers' physical and educational requirements. Entry-level positions usually require a high school diploma or GED, but some employers may prefer a higher level of education. For those who wish to be promoted, a college degree will help. Those who choose not to pursue a four-year degree can pursue vocational and technical degrees that apply directly to water and wastewater treatment.

In addition, new hires should obtain the level of licensure needed to operate their facilities. License requirements may vary from state to state. New operators will also need long-term on-the-job training. In-house mentoring can ensure that trainees receive adequate instruction in performing all their duties. Practical experience or formal training in plumbing, electricity or mechanics will certainly be a plus.

Many facilities also now require a commercial driver's license (CDL) needed to transport biosolids and other materials and supplies. For tank trucks, an additional endorsement is necessary.

ATTENTION TO DETAIL

Many of an operator's day-to-day duties involve repetition, whether in the laboratory, in performing maintenance duties, or preparing reports. Therefore, new candidates must be detail-oriented and able to accurately and legibly record information on plant performance.

New personnel should also understand the visual appearance of their plant processes and what the processes sound and smell like. Keen observation and monitoring can help them minimize or avoid problems. Such thoroughness can help in addressing little problems before they become big problems.

ATTENDANCE

Regular and predictable attendance and punctuality are critical. Anyone can be late on any given day for any number of reasons — that's life. But habitual tardiness and absence without good cause is a bad habit. It is disrespectful to co-workers who have to pick up the slack, and to the organization that pays the person's salary.

The new crop of operators must be willing to work nights, weekends, holidays and to be on-call as needed. Because this is a sometimes-daunting schedule, adequate time off must be built into the schedule whenever possible.

DIRECTION AND DECISION-MAKING

Operator trainees must be open to taking direction from seasoned personnel who are in a position to instruct and offer knowledge and guidance. Much like being on a movie set, a new trainee must be able to take direction, apply it and then carry out an assignment capably.

Because operators often work alone or with limited supervision, sound decision-making skill is a must. A trainee will have to be able to make critical operational decisions, sometimes without the benefit of all needed information, and err on the side of caution when possible. They must also understand and adhere to OSHA safety standards and follow established standard operating procedures.

TRUST

The preservation of public health and safety and the environment is a sacred public trust and the paramount duty of every clean-water operator. Operators must conduct their duties in a manner that is beyond reproach. No system wants to be the lead story on the six o'clock news because someone failed or tried to cut corners. Expectations about the required responsibilities must be laid out clearly during the initial interview.

ADVERTISING AND RECRUITMENT

Many of today's positions are advertised on job sites or sites like Indeed or LinkedIn, and job openings can obviously be promoted through email and text notifications. With many people maintaining multiple social media account profiles, a great deal of information about a potential candidate can be found out by searching on Facebook or other sites.

A quick view of an applicant's profile may provide answers to questions that legally cannot be asked during an interview. Still, the tried-and-true method of word-of-mouth remains a good way to attract high-quality applicants.

A GOOD FIT

A new operator coming into an established setting will take a little bit of time getting used to. Finding the right stuff also means finding the right fit. It is not a good idea to hire a "warm body" just to fill a position. No amount of forcing can fit a square peg into a round hole; having the wrong person in the wrong role can be worse than having no one at all.

The old saying that "Attitude makes the difference" is certainly true. The aforementioned qualities are far from a complete profile of a qualified candidate, but they provide a good roadmap to finding the people who make the best match for your facility. **tpo**



The Evolution Has Begun

Reduce All Costs In:

Transporting
Disposal
Incinerating

Installation
Energy Use
Space Use

50%+ Sludge Reduction
in Under 10 Minutes!

*Proven solutions in
Biosolids treatment*



www.chartermachine.com

732-494-5350

55 Wester Ave., Metuchen, New Jersey 08840

MANUFACTURING IN AMERICA *not just an idea* IT'S OUR COMMITMENT

With an extensive offering of American Iron and Steel Act compliant valve products, we are dedicated to engineering and manufacturing lasting and reliable valves - ready to perform and meet your ever-changing needs.

From Ball Check Valves, to Swing Check Valves, to Control Valves and more, **no matter how complex the application we can help you select the most efficient valve product for your application.**

FLOMATIC VALVES

High Quality Valves Built To Last...



WWW.FLOMATIC.COM

Step by Step

A SEQUENTIAL APPROACH TO ENERGY EFFICIENCY HELPS THE EDMONDS WASTEWATER TREATMENT PLANT SECURE SUBSTANTIAL SAVINGS AND EARN INDUSTRY RECOGNITION

By Steve Lund

The Edmonds Wastewater Treatment Plant has taken big steps toward sustainability.

Those steps were outlined several years ago in a document called the Pathway to Sustainability, prepared with the Washington Department of Enterprise Services and Ameresco, an energy services company.

As Edmonds prepares to take its next big step down the path — conversion from incinerating solids to a gasification process — the outline is proving its value. In 2020 Edmonds, a short drive from Seattle, was honored as a Utility of the Future Today in the category of energy efficiency by the Water Environment Federation.

“Basically, we followed a planned sequential order of process equipment upgrades designed to move us closer to having the ability to replace the incinerator with a gasification process” says Pamela Randolph, wastewater treatment plant manager. “Had we not upgraded our solids equipment first, we would not have been in a position to install a gasification system at all, because our older equipment did not have the ability to dewater solids dry enough for a future gasification project.”

MAJOR UPGRADES

The Edmonds treatment plant sits in the downtown area; the city (population 43,000) has grown up around it. The location of the activated sludge plant (11.8 mgd design, 4 mgd average in summer, 6.5 mgd in winter) makes limiting truck traffic a priority. The plant does not accept waste from septic haulers. Solids are dewatered and incinerated, and the ash is landfilled; the effluent discharges to Puget Sound. The plant serves about 75,000 people.

Edmonds has completed three big energy-saving projects that were the basis for its Utility of the Future Today award:

- Replacing several blowers with smaller, high-efficiency Aerzen blowers
- Replacing and repairing the entire aeration system piping
- Replacing the diffusers with Sanitaire Gold diffusers (Xylem)
- Replacing the biosolids dewatering equipment with a more energy efficient system that includes two Ishigaki screw presses and Austin Mac conveyors.

Those projects have saved about \$200,000 a year, cutting the plant’s electric bills by about 45%. The next big project, solids gasification, is to be completed in late 2021. Along the way there have been numerous smaller projects,

The solids process upgrade includes two Ishigaki screw presses; space has been reserved to add a third one if necessary.



including upgrades to the nonpotable water system, valve replacements, lighting changes, and the rebuilding of a fountain. “We are trying to create a culture of energy efficiency,” Randolph says.

PLENTY OF SUPPORT

The wastewater utility has received support from the city government. In 2017, the City Council passed a resolution committing the city to achieve or exceed the goals established in the Paris Climate Accord at the local level.

Randolph says it is important for everyone from top to bottom to keep energy savings in mind all the time: “If we stay diligent, it has a better opportunity for success. You can’t let it be second. It’s hard to keep everybody involved in moving it forward.”

Edmonds plant team members stay engaged with peers from other utilities through a Wastewater Energy Cohort that meets regularly. “It’s a group of people who come together, and share stories and best practices to try to lower the cost of the industry,” Randolph says.

“We have no space to expand. So, when we retrofit a process, we right-size it for current operations and planned growth and leave options for the future.”

PAMELA RANDOLPH

LIMITED SPACE

Although Edmonds has generally stayed on its path, one step was contemplated but not taken. Conversion to UV disinfection was deemed unsuitable. “It wasn’t viable for a couple of reasons,” Randolph says. “One, it was energy intensive. We were going to try to offset that with less truck traffic and better process control and other things.

“But the real issue was the way the plant was constructed. Our chlorine contact channel was buried underground. To do UV, we would have to retrofit, and it would have been outrageously expensive. We would have had to daylight the chlorine contact channel. We’re in downtown Edmonds; that wasn’t going to happen.”

The relatively small plant site drives some decision-making around energy efficiency and process changes. For example, when the solids-handling process



a xylem brand

You ALWAYS HAVE A CHOICE

Process Monitoring with YSI IQ SensorNet

You have a choice in process monitoring.

YSI has been developing and manufacturing water quality monitoring instrumentation in the U.S. for over 70 years.

It's time to partner with YSI.



▲ IQ 2020 Controller

TO LEARN MORE ABOUT PARTNERING WITH YSI:



877.926.9753



info@YSI.com



YSI.com/IQSN

xylem
Let's Solve Water



was changed, only two screw presses were installed, because at current flows two are sufficient. Space was left for a third, which the plant would need if the average flows increased significantly.

Similarly, the plant has three aeration basins, but the aeration upgrades were done on only two of them. That's because the plant can handle its normal flows with just two basins, and the operators believe the third may be needed to add more nutrient removal processes in the future.

"We have no space to expand," Randolph says. "So, when we retrofit a process, we right-size it for current operations and planned growth and leave options for the future." The plant team has been replacing aging equipment and upgrading processes, always with energy efficiency in mind.

INCENTIVES FOR SAVINGS

One partner is the Snohomish County Public Utility District, the local electricity provider, which offers financial incentives for energy-saving projects, such as putting variable-frequency drives on the clarifier drives.

"If you put a VFD on a clarifier drive, you can slow it down so it's not working so hard, which means you are saving energy," Randolph says. "SnoPUD offered a \$2,000 incentive. The project cost \$7,000, but we get a lower energy bill and we also get better process control."

Whatever changes come along, the Edmonds team stays on the path it laid out years ago.

"The major processes in the treatment plant have been upgraded," Randolph says. "The aeration basins, the blowers and solids processing have been upgraded. If we had started with the incinerator first, we couldn't have done those other things. We had to start with a sequential approach. That's why we have this Pathway to Sustainability." **tpo**

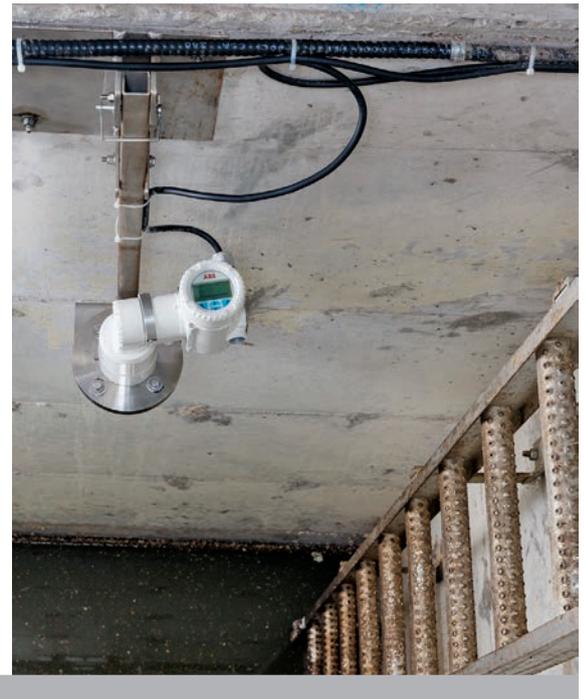
Aerzen blowers help save energy at the Edmonds Wastewater Treatment Plant.



1

1. The LLT100 laser level measurement device is designed for accurate measurement of level, distance and position.
2. A laser device can measure clean or dirty water and can measure foam buildup in a pumping station.

2



On the Level

LASER MEASUREMENT DEVICE COMBINES ACCURACY, RELIABILITY AND SAFETY IN A WIDE RANGE OF WATER AND WASTEWATER APPLICATIONS

By Ted J. Rulseh

Automated measurement of liquid and solid levels is important to the smooth and safe operation of water and wastewater treatment facilities and their distribution and collection networks.

These devices enable accurate measurement in a wide variety of applications including inventory in bunkers, reactor vessels and silos, volumetric measurement, and others. They meet the requirements of numerous industries, including water and wastewater.

ABB has introduced the LLT100 laser level measurement device, designed to accurately measure level, distance and position over short or long ranges. It is a noncontact instrument suited for industrial applications and harsh environments.

Mohit Manglani, regional manager for ABB Measurement & Analytics, talked about the product in an interview with *Treatment Plant Operator*.

tpo: How does this level measurement device fit into the marketplace?

Manglani: Facility operators need accurate level measurement inside pumping stations, in lift stations, in chemical tanks, in water towers, in screening rooms and in other settings to make sure processes don't get backed up or clogged. Primary noncontact technologies available include ultrasonic, radar and laser level measurement.

tpo: Where might laser measurement devices be found in the water and wastewater sector?

Manglani: They are suitable for water and wastewater treatment plants, water reuse and desalination plants, water distribution networks and wastewater collection systems. The main applications are deep wells, lift stations and pump stations, sludge processing facilities and storage tanks. It can also

“Laser level measurement technology is not based on waves. It's based on optical pulses.”

MOHIT MANGLANI

be used to measure the depth of stormwater ponds and the depth of the water inside the pond.

tpo: How does laser level measurement differ from the other two technologies?

Manglani: Laser level measurement technology is not based on waves like radar or ultrasonic methods. It's based on optical pulses.

tpo: In basic terms, how does a laser measurement device function?

Manglani: Laser pulse time of flight is measured to determine distance from measured surface to the transmitter. Among the technologies, this technique yields the best results in the presence of light dust, mist or fog. The sensor has a narrow field of view, and it only detects returns from the surface. The laser beam is narrow, so that surrounding objects do not interfere with it. The devices are inexpensive to install and enable automated measurement in settings that otherwise would be difficult.

tpo: What are some of the key advantages of laser measurement?

Manglani: No. 1, it doesn't require a process called echo mapping. Ultrasonic and radar devices require mapping, where you have to empty out the pump station or vessel and map any pipes or other structures that would be in the way, so that when the device takes the level reading, it ignores them; it filters them out. No. 2, laser devices have greater range as a default, so they



Trust the best with your solids dewatering needs!

- 800+ Screw Press Installations Worldwide
- 30+ Years of Screw Press Experience
- Exceptional Customer Support



Portsmouth, NH | www.IshigakiUSA.com | 603-433-3334

can be installed at higher elevations from the surface to be measured — 100 feet for liquids and up to 330 feet for solids, such as in biosolids silos.

tpo: What are the benefits of that greater mounting height?

Manglani: When a wave device is mounted down in a pit, then heavy condensation or spider webs can actually block the reading. With the laser, you can mount it up higher and out of the way of those interferences. There's also a maintenance benefit. When technicians come to maintain and clean the device and make sure it's reading properly, they don't have to pull it on a wire all the way out of the pit as with remote ultrasonic or radar devices. They can work on the device where they're standing.

tpo: What kinds of material can a laser device measure?

Manglani: A laser device can detect any material, even low-dielectric material. It can measure clean water. It can measure dirty water. In a pumping station, if there is a foam buildup, the laser will read foam. We've even done biogas volume measurement. If a customer has a digester with a biogas balloon tank, we have the capability to do a table build inside the device. We're able to correlate the balloon height to the associated volume.

tpo: Is this device suitable to operate in hazardous environments?

Manglani: Yes. It has an explosion-proof rating; so for example, in an application where you may have methane gas coming out of a pit, the device is rated for that hazardous atmosphere.

tpo: Are any optional accessories available for specific applications?

Manglani: Yes. There is a dust tube to protect the lens. There is a pivot bracket to be used for mounting inside a vessel, pumping station or lift station. There is a swivel-mount flange for those who want to control the alignment of where the laser beam is hitting. And there is a purge ring that blows air onto the lens to prevent any kind of buildup there. **tpo**

WASTEWATER SOLUTIONS FOR TODAY'S WASTE STREAM



JWC ENVIRONMENTAL HAS YOUR SOLIDS REDUCTION AND REMOVAL SOLUTIONS

High-flow grinding solution: The Channel Monster® Flex maximizes flow capacity while minimizing any solids and wipes bypass.

All-in-one pump station solution: The Vertical Auger Monster® captures solids, conveys waste vertically out of the lift station, and launders and dewateres screenings.

High-flow coarse screening solution: The Chain & Rake Monster® provides quick removal of heavy slugs of material in order to protect downstream processes.



www.jwce.com/tpopumpprotection | 833.779.1135

Protecting pumps and system components from clogging, blockages, and damage for over 45 years.

Wins for the Home Team

BRIAN BOYLE AND TWO HOMEGROWN COLLEAGUES RING UP CONSISTENT SUCCESS IN QUALITY EFFLUENT AND TROUBLE-FREE PLANT PERFORMANCE

STORY: **Ted J. Rulseh** | PHOTOGRAPHY: **Amy Voigt**

The Michigan city of Jonesville didn't have to look far to find a top-notch team to operate its water and wastewater systems.

Superintendent Rick Mahoney, his assistant Brian Boyle, and operator Ed Hughes all come from the local area and have pooled their expertise to give the city efficient and reliable operations, while discharging high-quality effluent to the St. Joe River.

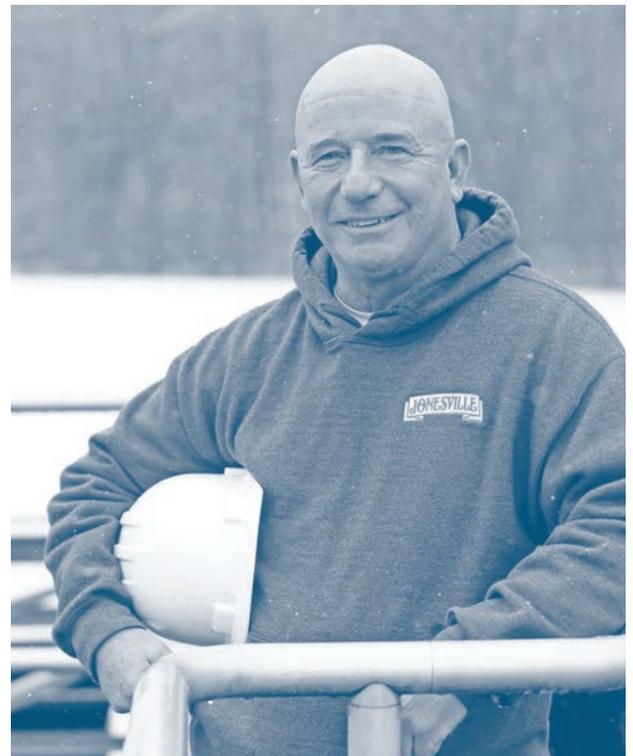
Boyle, backed by 39 years of experience, received the 2020 Operations Professional of the Year award from the Michigan Water Environment Association. Mahoney, who retired at the end of October, contributed knowledge from operating a variety of clean-water facilities around the state. Hughes came on board three years ago, bringing mechanical aptitude from the construction and heating/air conditioning industries.

Together they have brought sound maintenance practices and up-to-date SCADA control to a clean-water plant upgraded in 2005 with 0.61 mgd design capacity and 0.34 mgd average flow. They also maintain the collection system, operate the water treatment plant, and maintain the water tower.

APPROACHING FOUR DECADES

Jonesville (population 2,300) lies just north of the Indiana-Ohio border, on U.S. Highway 12, which follows the route of the Old Sauk Trail from Detroit to Chicago. Boyle has the longest tenure among his team. He grew up in nearby Mosherville and attended Jonesville High School.

"When I graduated in the late '70s, there wasn't a whole lot going on in the job market," Boyle recalls. "I



Brian Boyle, assistant superintendent, Jonesville (Michigan) Wastewater Treatment Plant

took a summer job at the high school. I tried college for a year, but it wasn't anything I was interested in at the time. When I came back, I went to work at the high school for another summer."

“ I thought it would be a good, steady job until something else came along. And I just fell in love with it.”

BRIAN BOYLE

Boyle won the 2020 Michigan Water Environment Association Operations Professional of the Year award.



Brian Boyle

Jonesville, Michigan

POSITION:
Assistant superintendent

EXPERIENCE:
39 years in the industry

AWARDS:
2020 Operations Professional of the Year, Michigan WEA

CERTIFICATIONS:
Class C (third highest) wastewater operator

MEMBERSHIPS:
AWWA, Michigan WEA

GOAL:
Put out good-quality effluent and make the waters safe



The Jonesville team includes, from left, Rick Mahoney, former superintendent; Ed Hughes, lab technician and plant operator, and Brian Boyle, assistant superintendent.

MAKING UP FOR LOWER FLOW

Around the time of the 2008 recession, two tool companies that were large water users in Jonesville closed down. That made the wastewater plant more challenging to operate because there was a shortage of food for the secondary treatment process.

Brian Boyle and his team were up to the task. “What we started doing with our trickling filter towers was to bring decant back off the top of our biosolids storage tanks. It strengthened the sewage a little bit, and it helped with the growth in the trickling filters. Instead of increasing flow, we just made it a little stronger. It has worked.

“If you make it too strong, then you can’t treat it and you’re going to violate your permit limits. We didn’t let it get to that point. We monitored very closely, and we could tell when we got to where we couldn’t bring back any more decant; the solids were starting to get into it.

“Those storage tanks settled out really well, and we could bring basically clear liquid water back. It wasn’t a solids issue, but we had to be careful how much ammonia and phosphorus we returned with it. We did it during times of day when the flow was a little higher.

“It also helped with our storage, because now instead of having tanks full of water, we have tanks full of biosolids.”

A staff member there left, and Boyle was hired full-time; he stayed for three years. Then a friend who worked at the wastewater treatment plant told him about a job opening there. “The village president was my high school counselor, so I guess I had an in,” Boyle says. “I filled out an application, had an interview and they hired me.

“I thought it would be a good, steady job until something else came along. And I just fell in love with it. I became very aware of Michigan and the quality of water, and it became important to me to make sure all those things were taken care of. That’s what my real goal was: to put out a good-quality effluent and make the waters safe.

“It’s ever-changing. The technology is completely different than it was 39 years ago. I’m fairly certain there wasn’t a computer anywhere in this building when I got here. The whole place is run by computers now.”

A PLANT’S EVOLUTION

The wastewater treatment plant was built with a trickling filter, replaced in 1980 with two rotating biological contactor (RBC) trains. The 2005 upgrade installed two trickling filter towers (WesTech Engineering) and replaced the RBCs with pressure filters (Tonka Water) for final treatment. The upgrade also included a pair of circular final clarifiers (WesTech), a UV disinfection system (TrojanUV), and a boiler fueled with biogas or methane to heat the anaerobic digester.

Influent passes through a Channel Monster grinder (JWC Environmental), a grit building, and an Auger Monster screening system (also JWC). That is followed by primary clarification, the trickling filters, secondary clarification, and final filtration. Effluent typically contains 3 mg/L BOD, 3 mg/L TSS, 0.5 mg/L phosphorus, and 0.15 mg/L nitrogen.

Liquid biosolids are applied to farmland by a contractor, usually just once a year in late fall. The digested material is stored in three tanks.

The water treatment system draws from two deep wells. In 2020, the facility was completely refurbished with new piping and high-service pumps, and both well houses were retrofitted with new pumps and motors. A pair of greensand filters (Tonka Water) remove iron, followed by chlorine and fluoride dosing.

ALWAYS IMPROVING

Boyle spent his first 10 years with Jonesville working mainly in the lab. During that time he initiated a quality assurance program that, with periodic revisions, is still in use. “I developed a standard operating procedure for each of the tests,” he says. “So even someone with limited laboratory skills and knowledge of the equipment should be able to run any test just by going step by step through each procedure.”

Next he transitioned into maintenance, where he set up a planned maintenance schedule and took care of regular equipment checks, lubrication, component replacements and other tasks. He has been assistant superintendent for the past 29 years.

Boyle appreciates the varied challenges and the art of keeping a complex facility running: “Maybe a piece of equipment isn’t operating properly, or maybe we’re not getting the removal somewhere in the process that we should. What are we doing different?

“Sometimes, especially when it’s equipment, you can just sit and watch it for some time. Maybe it’s making a different noise. If you hear something you’re not used to hearing, it probably ought to be checked out; maybe you’ve got a problem coming.”

One big benefit of the 2005 plant upgrade was the addition of redundancy. “Before, we had one primary and one final clarifier,” says Boyle. “We have two of those now, so if we need to do work on the flights or the scraper arms, we can isolate one and use the other. Before, we would have to stop the flow to the plant and then hustle to make the repair before we started backing up the system.”

Another improvement was to add variable-frequency drives to the pumps: “That has really helped the operation and performance of the plant. With on-off pump control, our detention times were kind of variable. The VFDs have made everything a lot smoother.”

ADVANCING AUTOMATION

The newly installed FactoryTalk View system from Rockwell Automation enables automated control and easy checks on equipment operation, whether in the plant or remotely. “Suppose I’m looking at a pump, and at 40 Hz it should be pumping this many gallons per minute, and it’s not attaining that. Maybe there’s a vibration, or a bearing that’s making it work harder than it needs to. Nine times out of 10 it’s got rags in it — that’s one of the biggest headaches in this business.”

The system includes a wide assortment of alarms activated according to criticality. Top priority goes to alarms for high wet well levels, pump failures and other events that could interrupt the process during unstaffed hours. The facility is staffed every day from 7 a.m. to 3:30 p.m.

On the collections side, the system is all gravity flow — there are no lift stations. A few years ago the city bought a used Vactor truck that can be deployed in emergencies to deal with blockages. “We farm it out to other communities that have lift stations if they need a hand getting things cleared out,” Boyle says. “That has come in handy for pretty much everybody else in the county.”

“I work with some really quality people. You don’t have success by yourself. It takes all of us here.”

BRIAN BOYLE

and we’re getting ready to start the second round,” Boyle says.

“We’ve made a few repairs. We had Insituform line a stretch of main in a high-water-table area that was fractured. It was super fast, super simple and not very intrusive. We’ve since gone back in there with a camera, and it still looks like brand new.”

A COHESIVE TEAM

Boyle is grateful for his two colleagues and for the support they receive from the city leadership. “Rick (Mahoney) has his Class A license,” Boyle says. “He was superintendent at the Hillsdale plant for some time. Then he went to work for an engineering firm and did contract operations. He got the chance to move around the state.

“We were very fortunate that he came here. He arrived just as we were starting our 2005 upgrade. He had been through an upgrade at Hillsdale, so his experience was invaluable in keeping things moving through here while different processes were being taken offline and replaced. He’s a Grade A professional, and he’s got a pretty good sense of humor, too. We’ve certainly had a lot of fun.”



The Jonesville Wastewater Treatment Plant was upgraded in 2005 with 0.61 mgd design capacity; it now has a 0.34 mgd average flow.

Hughes worked in a local electric power plant until it closed down. “He was more skilled in industrial than sanitary waste treatment, but he brought some very good knowledge with him,” Boyle says. “He’s very skilled mechanically. He fell into the profession like I did; he didn’t realize how much he would like the job.”

Meanwhile, Boyle keeps in close touch with Jonesville officials, and that has paid off handsomely. “The councils and city managers we’ve had over the years have been on the same page with us,” he says. “They see results in that we don’t have failures and our sewers and water mains are in good shape because we try to head off problems before they happen.

“They come out to the wastewater treatment plant occasionally, just to say hello. They see that things are taken care of. When we say we need money for something to make the place better, they know we’re going to get the most production out of it that we can.

“Rick gave them monthly reports at the council meetings on what our effluent was, what repairs we made, and anything we replaced, so they were aware of what’s going on here and at the water treatment facility. We keep them informed, and they have really been on board. It has made our jobs so much nicer.”

RIGHT AT HOME

Boyle has enjoyed his career in his home territory and looks forward to more good years. “All I know is this place, but I think I know it pretty well,” he says. “I work with some really quality people. You don’t have success by yourself. It takes all of us here. These guys have been just great to work with, and everybody in the city has been that way.

“We have several city employees who have been here 20, 25 and 30 years. Everybody likes their jobs. They like who they work for, and they have a tendency to stay long term, our office staff included. The whole city seems to be on the right track.” **tpo**



Boyle performs maintenance on the TrojanUV3000 disinfection system.

featured products from:

Insituform Technologies

800-234-2992
www.insituform.com

JWC Environmental Inc.

800-331-2277
www.jwce.com
(See ad page 29)

Rockwell Automation

414-382-2000
www.rockwellautomation.com

Tonka Water, a U.S. Water Brand

763-559-2837
www.tonkawater.com

TrojanUV

888-220-6118
www.trojanuv.com

WesTech Engineering

801-265-1000
www.westech-inc.com



High school students perform primary treatment lab experiments during the Sewer Science Program.

Picking Up STEAM

A MULTIFACETED OUTREACH PROGRAM FROM WSSC WATER HELPS PREPARE THE NEXT GENERATION FOR CAREERS IN ENGINEERING AND ENVIRONMENTAL SCIENCE

By Sandra Buettner

The Washington Suburban Sanitary Commission’s comprehensive youth outreach program started out with career-day visits. That led to a water festival. Now multiple programs reach youth groups and students of all ages.

“We are deliberate and intentional in STEAM outreach to schools as we work to build our talent pipeline,” says Carla Reid, general manager of the utility, now branded as WSSC Water. “Our outreach programs also speak to our efforts to connect to the communities we serve and create a more diverse and inclusive workforce.”

“All of our programs were created to get students interested in water careers at a utility,” says Angela Ballard-Landers, STEAM education coordinator. Staff members from different parts of the organization were already making career-day visits, so the utility centralized the visits and created a STEAM (science, technology, engineering, arts and math) program and department.

Nicole Horvath, environmental outreach coordinator, observes, “Our goals included college and career readiness, so every one of our programs, including our Girl Scouts program, has a career component.”

WSSC Water, based in Laurel, Maryland, is among the largest water and wastewater utilities in the nation with 5,816 miles of water pipeline and 5,606 miles of sewer mains. It serves 1.8 million residents in Prince George’s and Montgomery counties.

ANNUAL FESTIVAL

The STEAM programs have been around since 2005. In the year before that, Ballard-Landers attended a camp on how to start a children’s water festival. Today, the festival attracts more than 800 fourth graders every year.

The two-day event, held the first week in May to coincide with National Drinking Water Week, includes multiple activities. Each student gets a goodie bag of water-themed items that include pencils, flags and coolers, along with a water festival T-shirt.

Mascot Willy Water (in the shape of a water drop) walks around and talks to the kids. Local agencies have stations that cover different water and wastewater careers. The day ends with a *Jeopardy*-like competition in which the children answer questions about what they learned.

HIGH SCHOOL PROGRAMS

The utility offers three programs for high school students. Water Works Academy, started in 2010, is a daylong program held at the utility’s field service facility. It teaches students in grades 9-12 about water quality and basic utility infrastructure. Students see how a hydrant works and help put a meter back together.

The H₂O Engineers program is for high school students interested in learning about an engineering role in a utility. Developed by the community outreach department and the utility’s engineers, it teaches students

about infrastructure design and planning, water flow and pressure, and the role of technology in the water sector.

Sewer Science is a daylong program in which students get a snapshot of a day in the life of a wastewater treatment plant operator. They spend a half-day at a water resource recovery facility and then learn about primary, secondary and advanced treatment. The day ends with a tour of the facility.

YOUTH GROUP ACTIVITIES

Another audience for outreach on water careers includes Girl Scouts, Boy Scouts and environmental groups. The Wonders of Water Girl Scout Journey Day is held in fall and in spring. The one-day program contributes to the girls' requirements for the Wonders of Water Journey.

During the program Girl Scout Brownies (second and third grade) do hands-on activities to help them learn about water filtration, wastewater treatment, watersheds and the water cycle. The day includes a Water Heroines presentation where the girls hear from women at WSSC Water who work in nontraditional careers such as meter readers, chemical engineers, truck drivers, welders and pipe technicians.

The scouts who attend take back what they learn and share it with their community through stream cleanup days, creating posters and in various other ways.



Students use water and other ingredients to make human-size bubbles at the Children's Water Festival.



Willy Water poses with students arriving at the Children's Water Festival.

SAF-T-FLO

CHEMICAL INJECTION



SAF-T-FLO retractable injection quills are designed to provide a maintenance friendly way of maintaining injection feeds prone to scale and clogging.

Rarely are any two injection points the same. Our wide range of sizes, materials, and unique features allows each quill to be configured for the intended application. No compromises, just the right tool for the job.

Key Features

- 1/2" to 3" Connection Sizes
- Restraint ratings of both 150psi and 250psi.
- Integrated check valves on select sizes.
- Does not require the main to be depressurized for insertion/removal.
- SAF-T-Seal Elastomeric Tip for excessive scale prone feeds.

Learn More

call: 800-957-2383

visit: www.saffflo.com

view: youtube.com/saffflo

The utility also assists with teacher professional development programs in the summer. During the trainings, educators learn about watersheds and how WSSC Water takes care of the environment.

POPULAR PROGRAMS

The programs are so popular that the utility instituted a lottery system to make sure all public, private and home-schooled children get a chance to take part. Due to the COVID-19 virus, several programs have become virtual; the water festival for now is on hold.

The programs started out attracting 500 to 600 students per year; they now reach 2,500. The utility continues to receive positive feedback about its STEAM initiatives. Horvath recalls, "One young girl came up to us after a program and said, 'I really thought I was not going to like this, but now I'm really glad I came!'" **tpo**

Some circumstances require pipes to be restrained, including fire hydrants. The HYMAX GRIP coupling uses a chain of gripping teeth to apply counter pressure to prevent axial pipe motion.



Water and Wastewater Piping Restraints: Where and How?

RESTRAINING WASTEWATER PIPES CAN PLAY A CRITICAL ROLE IN ENSURING SECURE OPERATIONS. USE THESE CRITERIA TO DETERMINE THE RIGHT RESTRAINTS TO INSTALL.

By Cristi Bruns

Restraining techniques ensure that piping stays connected and helps prevent breaks that can shut down wastewater systems.

Mechanical joint piping connections such as 45s, 90s, end caps and hydrant connections are common points of restraint as are connections in lift stations and treatment plants.

Restraint of inline piping is so widely used that it has become standard procedure among city or project engineers. Instead of using restraints for specific applications, some engineers use them throughout force main wastewater systems. However, adding restraints in this way can increase project costs significantly. There are standards to follow and techniques to apply for restraining pipe connections in specific conditions and environments.

RESTRAINING CRITERIA

Although engineers typically decide when and how to restrain pipes, utility managers should be part of the process, since it is up to them to make sure the system works properly and to make repairs once it is completed. The first things to examine are factors that may pose a risk of pipe movement and separation.

The nature of the piping system

In a pressurized buried pipeline such as a wastewater force main, axial-thrust forces act on the pipe based on changes in fluid velocity, pipe size, demand and pipeline direction. This generally happens at fittings such as plugs, caps, valves, tees, bends or reducers. Such hotspots categorically need to be restrained.

Ground movement

Earthquakes and ground movement can cause connection failures, beam or shear breaks, and cracks along the length of a pipe. A region's geographic trends greatly affect how much the ground moves. Some regions regularly see movement, while others are relatively stable.

California, for example, experiences dramatic earthquakes, and it is no surprise that a high level of restraint is used on sewer pipes in many areas along the West Coast. Other areas on major fault lines incur ground movement that, although less dramatic, can still stress pipelines.

The New Madrid Fault Line is notable since it affects more than 15 million people in Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi,

Several techniques are available for restraining pipes, each with advantages and disadvantages in cost, time and labor.

Missouri and Tennessee. Along the Ramapo Fault, which runs about 70 miles through New Jersey, New York and Pennsylvania, ground movement has stressed piping systems even without full-blown earthquakes. In addition, scientists have warned of earthquake risk from hydraulic fracturing operations.

Ground movement can also be caused by seasonal weather changes, such as freeze-thaw cycles in winter and spring. Ground movement also can accompany extreme weather changes.



The HYMAX GRIP is a coupling restraint that can be used on several types of metal and plastic pipes. It offers continuous dynamic deflection so that the connecting pipes can flex within the coupling.

Other ground stresses

Pipe also can be affected by the ground in various other ways. The amount of ledge or rock in the ground can harm piping. In the presence of a high level of ledge, even slight movements caused by traffic or weather can cause piping to break. Swampy areas with moist and spongy ground that moves easily can also stress pipes.

Environments that lead to pipe uncoupling include tidal areas, bridge crossings and pipes running underwater. For these circumstances, it is best to consult with engineers on how to evaluate the risks.

PIPE RESTRAINING TECHNIQUES

Several techniques are available for restraining pipes, each with advantages and disadvantages in cost, time and labor.

Rodding

Until relatively recently, rodding was the most used restraining technique. Thrust rods are usually all-thread rods with washers and bolts that dog-ear into connections for restraint. Some installers even use rodding for flanged connections. The main drawback of rodding is that it is costly in time and materials.

Thrust blocks

Thrust blocks are engineered concrete blocks placed at either end of a line of pipes or beside a joint to prevent pipes from pulling out. Whereas rodding strings pipes together so they stay connected, thrust blocks provide a solid mooring at the end or at a bend to prevent movement. Thrust blocks are typically made of concrete, but makeshift versions are made from steel posts, pressure-treated wood posts or bags of ready-made concrete.

The materials are inexpensive, but it takes time to construct the blocks, pour the concrete, and wait for it to cure. The wastewater system must be turned off to ensure that concrete cures properly before connecting the pipe. Additional costs are incurred in the time it takes to complete the job. In some cases, there is not enough space for thrust blocks, such as where utility lines are close by.

Concrete can also be used to restrain pipes by pouring it on the connection itself. While this can be effective, repairing the connection in the future can be tricky. At the very least, a pipe must be surrounded by plastic before

the concrete is poured — otherwise the entire pipe and connection must be cut out and replaced when repairs are needed.

Mechanical restraints and sleeves

Mechanical restraints and sleeves involve connecting a sleeve using multiple lugs. Several such products are on the market, and they are effective for joining pipes. However, the process is time-consuming. The larger the mechanical restraint device, the more bolts there are to tighten. This technique is particularly effective for large-diameter pipes that need significant reinforcement to stay connected.

The biggest drawback to mechanical restraint and sleeves is their high labor cost; the material cost of the lugs is also substantial. In addition, when using a product with lugs, the gripping mechanism creates stress points on the pipe. It can also take crews a long time to connect the lugs to the sleeves and so ensure that the lugs are tightened properly.

Coupling restraints

Coupling-restraint products use a mechanism to grip the pipes to restrain them. They are effective and relatively low-cost. Offered in a wide range of diameters, coupling restraints can be used on several types of metal and plastic pipes where utility lines either cross or run parallel to water and wastewater pipes. These close pipe-to-pipe settings make it difficult or impossible to install thrust blocks and rodding.

The coupling restraints also offer continuous dynamic deflection, meaning the pipe can flex within the coupling to maintain a strong connection while preventing pipe pullout. This can substantially reduce breaks, given that ground movement is a key cause for pipes pulling out.

The restraint's chain of gripping teeth applies counter-pressure that prevents axial pipe motion. In addition, a progressive hydraulically assisted gasket self-inflates using existing water pressure. As water pressure rises in the pipe, water enters the gasket, which self-inflates and allows for dynamic deflection of the pipes while maintaining a secure seal.

TO RESTRAIN OR NOT TO RESTRAIN?

Some circumstances require pipes to be restrained. These include wastewater lift stations, wells, piping in water and wastewater treatment plants, and industrial applications that involve hydrants and valves. In all these situations, water flow can fluctuate and create stresses in daily use.

The question of whether to restrain does not always have an obvious answer. Restraint makes the system stronger, but if the risk is relatively small, it might not be worth the cost. It is worthwhile to evaluate the areas of the system that need to be restrained and which restraint technique will be the most appropriate.

By looking at all factors, engineers and system operators can determine the costs and benefits of each solution before deciding what kind of restraint is optimal.

ABOUT THE AUTHOR

Cristi Bruns (cristi.bruns@krauszusa.com) is HYMAX training and technical field support manager for Mueller Water Products. tpo

It's your magazine.
Tell your story.

TPO welcomes news about your water or wastewater treatment operation.
Send your ideas to editor@tpomag.com or call 877-953-3301

Monitoring and Instrumentation

By Craig Mandli

Analytical Instrumentation

DE NORA WATER TECHNOLOGIES MICROCHEM

Designed with experience gained through decades of chlorine management and analysis, the multiparameter MicroChem water analysis system from De Nora Water Technologies can be configured as either a transmitter or a controller to easily manage and make data-driven operating decisions. Available packaged as a complete residual analyzer or as individual components, flexible configurations measure up to three of the following parameters: pH, ORP, chlorine, chlorine dioxide, conductivity and 4-20 mA. The controller uses a standard PID algorithm in conjunction with the sensor input signal, or a PID compound loop controller utilizing the signal from the sensor and an optional 4-20mA process flow signal. Easily tailored to meet unique instrumentation needs, set up is as simple as a USB connection. It includes an intuitive touch screen user interface and six language options. **215-997-4000; www.denora.com**



MicroChem water analysis system from De Nora Water Technologies



HawkEye365 inventory asset and monitoring portal from Hawk Measurement

HAWK MEASUREMENT HAWKEYE365

The HawkEye365 online inventory asset and monitoring portal from Hawk Measurement is a complete remote and in-plant measurement and monitoring system. It has communications capabilities and compatibility with HAWK's Power over Ethernet

level sensors, allowing for secure in-plant and remote monitoring, as well as remote sensor setup, diagnostics and troubleshooting abilities. The portal is not only compatible with PoE transmitters but is also sensor agnostic and can monitor any type of field device such as level, flow, pressure, temperature and pH. The multiple communication methods include RS485, HART, Modbus, Ethernet TCP/IP, cellular, Bluetooth and PoE. If any troubleshooting is required, it will communicate to remote service technicians for off-site diagnostics, sensor health and reconfiguration, without the need to climb a tank or enter the facility. **888-429-5538; www.hawkmeasurement.com**

SENSAPHONE SENTINEL PRO

The cloud-based Sentinel PRO monitoring system with supporting iPhone/Android app from Sensaphone provides 24/7 remote monitoring of equipment and environmental conditions. Users easily can view data values in real time, set alarms, acknowledge alerts, review data and generate reports from their mobile device. The system seamlessly interfaces with any processing equipment that uses a PLC with Modbus sensors. It supports both Modbus RTU-485 and TCP protocols, and can



Sentinel PRO monitoring system from Sensaphone

monitor up to 64 Modbus registers and 12 different digital or analog status conditions, including power, pump status, tank level, turbidity, flow rate, pressure, temperature, humidity and water leaks. The system immediately notifies users via text, email or call when sensor readings move outside of preset parameters. It is available for Ethernet or cellular connectivity. **877-373-2700; www.sensaphone.com**

YSI, A XYLEM BRAND 3017M

The 3017M analyzer from YSI, a Xylem brand continuously measures free or total chlorine in municipal drinking water or wastewater effluent using the proven DPD colorimetric method of analysis. It uses EPA-approved DPD methodology that conforms with standard method 4500-CL-G, US EPA method 334.0, and ISO method 7393-2. It is compliant with U.S. EPA regulation 40 CFR 141.74 for drinking water and 40 CFR 136.3 for wastewater. The analyzer is built with Flow Injection Analysis, factory calibration, and simplified tubing which lowers reagent use and maintenance requirements. It can operate as a stand-alone analyzer or be integrated into the IQ SensorNet system of online controllers, analyzers and sensors for better visibility and control of your process. **937-767-7241; www.ysi.com**



3017M analyzer from YSI, a Xylem brand

Controllers

ADEGE WATER TECHNOLOGIES INGENIUS

InGenius control panels from AdEdge Water Technologies are custom-engineered programmable logic control panels designed to meet site specifications for monitoring and integrating treatment systems with auxiliary equipment and controls for water systems. The panels integrate the process in one place for safety, monitoring, ease of service and installation. They are NEMA 1-4, 4X, 12 and 13 certified and constructed from thermoplastic, stainless steel, painted steel and fiberglass. They have a hand on/off selector, backwash indicator, LED lamps, a security key latch and probe-mounted displays for flow, pH, chlorine, TDS and turbidity. They include level and relay controls, auxiliary power supplies, power converter (110- to 24-volt or 12-volt and AC to DC), surge protection, Ethernet networking, audible/visual alarm indicators and a SCADA interface. **866-823-3343; www.adedgetech.com**



InGenius control panels from AdEdge Water Technologies



Control panels and alarms from Delta Treatment Systems

DELTA TREATMENT SYSTEMS CONTROL PANELS AND ALARMS

Delta Treatment Systems' control panels and alarms are easy to install and operate, and they provide intelligent monitoring and alarm functions for residential, commercial and industrial wastewater treatment systems. Panels are available in several models engineered for use with advanced wastewater treatment systems and custom packaged plants. All panels can be supplied with UL and/or Canadian UL 508A listings upon request, and customized control panels are available. The CP20/40/50 Series monitors

air pumps and effluent pumps on the Whitewater treatment system. The Series CP22 panels monitor the air blower on ECOPOD systems with options for controlling and monitoring UV lights for disinfection after treatment. Series CP8000/9000 control the ECODRIP pre-engineered disposal systems' headworks filter system and effluent dosing pump using a programmable logic controller for time-dosing drip disposal fields. **800-219-9183; www.deltatreatment.com**

ELECTROSWITCH TD-CSR

The Time Delay Control Switch Relay (TD-CSR) from ElectroSwitch provides a safe and effective means of mitigating arc flash danger in local circuit breaker operation by allowing for a manually initiated time-delayed trip or close. A flashing LED notifies the operator of the pending trip or close operation and serves as a warning to evacuate the arc flash area. By allowing an operator time to leave and be outside the room during the trip or close operation, it provides a measure of safety against arc flash danger. The relay's pushbutton design simplifies personnel training. No special wiring is required for installation. It includes a standard mechanical target (flag) to show the last operating position and a lighted nameplate. The nameplate includes local LED indication, a remote SCADA contact alarm, and a single or dual-T trip coil monitoring option. Self-cleaning, double-wiping contacts provide very low contact resistance for low-level control applications. **781-335-5200; www.electroswitch.com**



Time Delay Control Switch Relay (TD-CSR) from ElectroSwitch

GORMAN-RUPP INTEGRINEX ADVANCED

Integrinex Advanced lift station controls from Gorman-Rupp are custom-engineered to meet unique system requirements. When equipped with FloSmart technology, the control system can detect a pump obstruction and run a cleaning cycle until the debris clears. Upon detection, the device initiates a cleaning operation without interfering with the operation of the pump station. When the cycle is complete, the pump is ready to return to normal operation. If the clog remains, the cleaning sequence repeats until the blockage is cleared. FloSmart helps maximize uptime while reducing maintenance costs. **419-755-1011; www.grpumps.com**



Integrinex Advanced lift station controls from Gorman-Rupp



TOPAX MC multichannel controller from Lutz-JESCO America

LUTZ-JESCO AMERICA TOPAX MC

The TOPAX MC multichannel controller from Lutz-JESCO America has a modular design that makes it an adaptable and effective solution for all measurement and control technology requirements. It offers automated efficiency — freedom from repetitive control tasks while providing accuracy and reliability. Users can actuate the dosing pumps using an optocoupler or relay and servomotors by using a relay or a 20mA output. The high-resolution, 5-inch color display offers a user-friendly operating interface, with a simple touch-control and intuitive navigation menu that can be set to multiple languages. Use four analogue outputs (0/4-20mA) or the network capability to transfer measured values to a web browser or a telemaintenance point. A programmable interval timer can be used to set automatic alerts for wear-related sensor change. **800-554-2762; www.lutzjescoamerica.com**

ORENCO CONTROLS OLS CONTROL PANELS

OLS Control Panels from Orenco Controls come with the choice of either integrated starters or variable-frequency drives that optimize system operation. These panels are suitable for a variety of pumping applications, such as lift stations, storm-water pump stations, water boosting, dewatering or sludge pumping. They can also be used as a SCADA patch, connecting peripheral equipment to future or existing SCADA systems. Parameters can be configured via a human-machine interface and include a user-friendly startup wizard. Engineers can preprogram user interfaces to the site-specific needs of an installation, making the panel virtually plug-and-play. Maintenance staff can easily adjust settings and monitor the system remotely. These weatherproof control panels are UL 508A listed and include service-rated circuit protection, phase and voltage protection, and level controls. **877-257-8712; www.orenco.com**



OLS Control Panels from Orenco Controls

Flow Control and Software

ALLMAX SOFTWARE ANTERO

Antero from AllMax Software accurately tracks maintenance data, allowing plant operators to streamline maintenance programs, all while providing peace of mind that equipment is being maintained efficiently and effectively. The newest version of the software includes a number of new sections and a complete redesign of the entire program. The improved My Work section is a one-stop place for a user to view all assigned work, manage their workload, and complete work orders. Manage maintenance tasks in new sections such as Work Management, Work Order Review and Procedures. Changes to the Parts, Calendar and Home Screen sections make the program easier to navigate. **800-670-1867; www.allmaxsoftware.com**



Antero software from AllMax Software

ASSURED AUTOMATION ABC-2020 AUTOMATIC BATCH CONTROLLER

The ABC-2020 Automatic Batch Controller from Flows.com and Assured Automation works with a water meter with pulse output and a valve. Simply set the volume of water to be dispensed, then press the start button. Common municipal applications include truck and pool filling. It can be used whenever a specific amount of water needs to be dispensed accurately and repeatedly. The big blinking blue start/stop button indicates the controller status through blinking patterns: one blink per second while dispensing and 10 blinks per second when nearing completion. The controller can be purchased as part of a complete batching system with a variety of valves and meters. Custom systems are also available. **855-871-6091; www.flows.com**



ABC-2020 Automatic Batch Controller from Assured Automation

(continued)

HACH DATA DELIVERY SYSTEM

The Data Delivery System (DDS) from Hach is an efficient flow monitoring service tailored to deliver relevant data when needed. For a fixed monthly fee, it provides all of the equipment, data transmission and technical support needed to acquire flow data — delivered in real time for immediate analysis. It allows operators to know their flow status anytime, anywhere, for either long- or short-term applications. **800-368-2723; www.hach.com**



Data Delivery System (DDS) from Hach

SMITH & LOVELESS FORCE MAIN SYNC



Force Main Sync from Smith & Loveless

Force main pressures vary; and without accounting for the variable conditions, reduced service life and a multitude of other issues arise. These phenomena result in impeller and volute erosion, reduced bearing and seal life, excessive pump noise, and vibration. Force Main Sync from Smith & Loveless monitors hydraulics in the common force main to keep pumping at the required flow rate. Using

a PLC touch-screen human-machine interface, a VFD and a force main sensor, it constantly senses force main pressure and automatically adjusts the VFD to maintain a constant flow rate, no matter how many stations are online. **800-898-9122; www.smithandloveless.com**

Gas/Odor/Leak Detection Equipment

GAS CLIP TECHNOLOGIES MGC SIMPLE PLUS

The MGC Simple Plus from Gas Clip Technologies is a simple-to-use, portable multigas detector that runs for three years without needing to be recharged. Its longevity comes from advanced low-power LED photometric infrared technology, which in turn provides 1,095 days of continuous use without recharging. After the detector's initial calibration (conducted during manufacturing), the sensors — including the combustible gas sensors — do not require routine calibrations. They do not suffer from poisoning after repeated exposure to gas or sensor inhibitors, which allows it to more reliably detect the presence of combustible gases. **972-775-7577; www.gascliptech.com**



MGC Simple Plus gas detector from Gas Clip Technologies

MSA SAFETY TG5000 GAS MONITOR



TG5000 Gas Monitor from MSA Safety

The TG5000 Gas Monitor from MSA Safety reliably detects oxygen, combustible and toxic gases. It offers multiple sensor and installation options. Its modular single or dual sensor design doubles sensing power and reduces wiring costs. The intuitive design of the local interface makes it simple to install, use, and maintain. Its OLED display and LED indicators show power, fault or alarm; gas readings; and Bluetooth connection. A touch button accesses all functions. It operates in stand-alone mode or can be connected with a 4-20mA output to a PLC or DCS. HART is available, and it supports

remote monitoring, where the sensor must be separated from electronics. It has XCell TruCal sensors, which respond rapidly to gases. Self-diagnostics and SafeSwap capability enables sensor replacement without turning off the instrument. It includes a 95 dB audible alarm with horn silence control. **800-672-4678; www.msasafety.com/detection**

Meters

BADGER METER DYNASONICS TFX-5000

The Dynasonics TFX-5000 ultrasonic clamp-on flowmeter from Badger Meter accurately measures the volumetric flow of clean liquids and those with small amounts of suspended solids or aeration, such as surface water or raw sewage. It is suitable for water and wastewater applications such as lift stations, booster pump stations and water mains. This meter provides accuracy up to 0.5% and flow rates ranging from 0.07 to 33,000 gpm on pipes as large as 48 inches. Designed to clamp onto the outside of pipes, the meter does not contact the internal liquid, allowing for installation without shutting down operations in new and retrofit applications. It is equipped with an internal clock and built-in 8 GB data-logging capabilities to log flow down to one second. It also pairs with dual clamp-on resistance temperature detectors for Btu energy measurement. **877-243-1010; www.badgermeter.com**



Dynasonics TFX-5000 flowmeter from Badger Meter

BLUE-WHITE INDUSTRIES MS-6

The MS-6 ultrasonic flowmeter from Blue-White Industries uses transit time ultrasonic technology to offer a broad flow range. It has measurable flow rates down to 0.15 gph and up to 158.5 gph. Accurately monitoring the amount of chemical being dosed into the system is crucial to ensure effective treatment. An overdose or underdose of chemical can adversely affect the quality of the treated water and leads to wasted chemical, which has a financial impact. **714-893-8529; www.blue-white.com**



MS-6 flowmeter from Blue-White Industries

FORCE FLOW WIZARD 4000

The Wizard 4000 from Force Flow is a powerful chemical inventory system for monitoring chlorine gas, sodium hypochlorite, hydrofluosilicic acid and all other chemicals used in water treatment. It can help ensure a safe process and a safe plant by providing essential information such as current chemical feed rate, how much chemical has been fed and how much chemical remains. With four separate channels, it can be used to simultaneously monitor levels in up to four separate tanks. Each tank can be monitored independently while monitoring combined totals for all the tanks. The daily-usage function allows for easy recordkeeping, and a days-until-empty function makes it simple to anticipate tank refilling and chemical reorder points. A feed-rate function allows early warning of dangerously low or high feed-rate conditions, preventing hazardous underdosing or overdosing of chemicals to the water supply. **925-686-6700; www.forceflowscales.com**



Wizard 4000 system from Force Flow

SIEMENS PROCESS INSTRUMENTATION FLOWMETERS

Leak detection technology offered in Siemens Process Instrumentation flowmeters allows municipalities to promptly and accurately locate leaks or breaks in their distribution systems. In addition, efficient pumping algorithms built into Siemens pump controllers allow implementation of economy pumping routines to best suit electricity peak pricing. High-accuracy flow measurement systems can save money and improve chemical treatment systems. Together, these technologies result in more cost-efficient plant operation, helping solve inefficient energy practices that can result in excess energy costs of up to 30%. **800-365-8766; www.usa.siemens.com**



Flowmeters from Siemens Process Instrumentation

Process Control Equipment



Cerus X-Drive variable frequency drive from Franklin Electric

FRANKLIN ELECTRIC CERUS X-DRIVE

The Cerus X-Drive variable frequency drive from Franklin Electric offers an extensive range of amperage and configuration options, making it versatile enough for nearly any constant or variable torque application up to 700 hp. Industry standard application settings

are pre-configured for submersible or centrifugal pumps, supply or exhaust fans, cooling towers, vacuum pumps, and constant torque motors. The controller is loaded with application-specific firmware with enhanced settings for the most demanding applications. In addition, many input/output and control options are available for application specific features, such as PID speed control, pressure control, temperature or fluid level controls, and scheduling. Native Modbus RTU and BACnet MSTP communication protocols allow integration with many automated control and building management systems. They are available in multiple packaged configurations. **866-271-2859; www.franklinengineered.com**

SEEPEX TOUCH

Touch is SEEPEX's adaptable solution for smart process control. It is a programmable process controller with integral touch screen and can be furnished as an accessory with SEEPEX pumps or BRAVO metering skids. It is pre-configured with a variety of control algorithms commonly associated with progressive cavity pumps, and it can also be custom-programmed for specialized applications. It can be linked to a customer's SCADA system or plant control network via TCP/IP. Process control routines are built into the controller. Pump start/stop and speed control is available with a local-remote selector. It offers lead/lag pump operation with auto alteration, tank level control, closed-loop control (pH, flow, ORP, residual, turbidity and pressure), cake pump hopper level control, ratio dosing control, pump protection interlocks, high discharge and low suction pressure, a low flow, variable-frequency-drive fault, bridge breaker manual/auto control, and boundary layer interjection manual/auto control. **844-473-3739; www.seepex.com**



Touch process controller from SEEPEX

(continued)



Monitor and control costly IBC tote containers with the Eagle Microsystems LP-4300 TSC. An integrated polyethylene spill containment deck allows for leaks to be contained, while the polyurethane enamel coated scale accurately monitors the weight of the tote.

FEATURES:

- 400 gallon sump capacity
- Capacities up to 8,000lbs
- Stainless-steel loadcells
- Accuracy of .1% capacity
- Low height, rugged scale deck



YOUR SOURCE FOR PRECISION PROCESS SOLUTIONS

800.780.8636

EAGLEMICROSYSTEMS.COM

Formula 105™ WASTEWATER ODOR CONTROL

Formula 105™ controls wastewater odors in:

- » Sludge and Sewage
- » Scrubbers
- » Lift Stations
- » Wastewater Lagoons

- Safe for employees
- Safe for the environment
- Reduces odors
- Reduces suspended solids
- Enhances aerobic bacteria
- Deodorizes digested sludge making it suitable for land application and earning of carbon credits



The Definitive Deodorant Company

800-844-4032 | info@odorless.com

www.odorless.com

Sensors

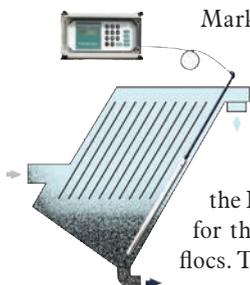
KELLER AMERICA ECONOLINE

The Econoline pressure transmitter from Keller America combines a media-isolated piezoresistive silicon sensor with signal-conditioning electronics to provide a compact pressure transmitter with less than plus or minus 1% total error band accuracy over 32 to 122 degrees F. The industry standard 4-20mA analog output is compatible with most existing monitoring infrastructure and SCADA systems, and it provides meaningful output in ranges from 30 to 10,000 psi. Its design makes it suitable for use under harsh environmental conditions, including those with high levels of electromagnetic radiation, both conducted and radiated. As a result, it provides trouble-free service and sufficient accuracy for almost any application, including those involving aggressive media and/or high levels of electromagnetic interference and where small size, low weight and reasonable cost are required. It provides versatility for customer-specific applications and is produced using modern lean manufacturing methods, allowing short lead times, negating the need to maintain extra inventory on site. **877-253-5537; www.kelleramerica.com**



Econoline pressure transmitter from Keller America

MARKLAND SPECIALTY ENGINEERING AUTOMATIC SLUDGE BLANKET LEVEL DETECTOR



The Automatic Sludge Blanket Level Detector from Markland Specialty Engineering uses high-intensity infrared light that, along with its slim profile, enables it to measure the sludge bed depth even in water/wastewater clarifiers and tanks that have obstructed or constricted areas, such as the inclined plates of lamellas. The beam intensity of the LED-phototransistor sensors automatically adjusts for thick or thin biosolids concentration or even light flocs. This detector allows operators to program desludge pumps to run only when necessary for maintaining the preferred liquid-solids interface level, saving wear and tear on pumps. It helps maximize water removal and optimize feed density. In dissolved air flotation units, it can adjust surface skimmer speeds to match variations in the thickness of the floating sludge layer. In sequencing batch reactors, it can control the decant valve to minimize cycle times. Calibration is not required. **855-873-7791; www.sludgecontrols.com**

Automatic Sludge Blanket Level Detector from Markland Specialty Engineering

POLYLOK 3014AB FILTER ALARM (SMART ALARM)

The 3014AB Filter Alarm (Smart Alarm) from Polylok is a wired indoor/outdoor filter alarm that provides audio/visual warning notifying operators that a tank filter needs cleaning. The Smart Alarm Switch activates when the filter cartridge is near capacity (approximately 90% full) with solids. The Smart Alarm Switch installed in the filter sends a signal to the panel, activating the audible and visual alarm. It offers a manual alarm test switch and horn silence, an alarm horn rated to 82 dB at 10 feet, and 15 feet of cable, with longer lengths available. **888-765-9565; www.polylok.com**



3014AB Filter Alarm (Smart Alarm) from Polylok

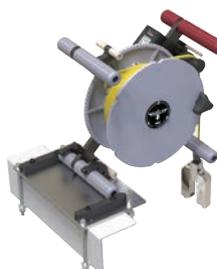
PULSAR MEASUREMENT OCF 6.1

The OCF 6.1 open-channel flow and tank level meter from Pulsar Measurement allows the user to continuously monitor, display, totalize, and data log flow through any flume or weir, or measure the level or range of fluids in tanks or vessels. Use the isolated 4-20mA to transmit flow to remote chart recorders or displays, and the control relays are programmable for level/flow alarm and flow proportionate pulse for samplers, chlorinators, or remote totalizers. New features include a built-in 26-million-point data logger with software for easy reporting, expanded flume and weir selections, CE approvals, and optional Modbus RTU communications. **888-473-9546; www.pulsarmeasurement.com**



OCF 6.1 meter from Pulsar Measurement

RAVEN ENVIRONMENTAL PRODUCTS SID ROTARY S-40100



SID Rotary S-40100 detector from Raven Environmental Products

The portable SID Rotary S-40100 from Raven Environmental Products uses a rail-mounted base plate to hold the instrument during sludge level measurement. It uses a reel to lower and raise a sensor, and measures sludge level with a digital readout in inches. The portable instrumentation requires no calibration, no heavy lifting and no touching of wet surfaces when taking a sludge sample to measure the blanket. **800-545-6953; www.ravenp.com**

SWAN ANALYTICAL USA AMI TURBIWELL

The AMI Turbiwell from SWAN Analytical USA uses a white LED method to measure turbidity in potable water, surface water and wastewater. It includes both a source and detector that are mounted in the cover of the measurement chamber with a drain mounted in the bottom. This means sediment settles to the bottom of the flow chamber while all optics are kept out of the path of potential coating substances. The bottom-mounted drain can be opened periodically to flush out sediment before it can become a problem, with an automated drain option available to further simplify operations. When cleaning or maintenance is needed, the measuring chamber is readily accessible from the front of the analyzer, with no tools required. With a push on the locking pin, the entire measuring chamber swings out for easy access. Quick fastener screws can be hand-turned to open the chamber for cleaning or verification. **847-229-1290; www.swan-analytical-usa.com tpo**



AMI Turbiwell monitor from SWAN Analytical USA

QUICK SEARCH

for more manufacturers and dealers at **tpomag.com**

Find Manufacturers or Dealers:

View By **CATEGORY**

Quick Search By Letter

View All Companies >

A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R
S	T	U	V	W	X	Y	Z	09



A STRONGER FUTURE STARTS AT **WWETT**

You're the lifeline for customers. The unsung heroes of keeping systems safe and clean so customers can get back to life as usual. Just as you're there to help support your customers, the WWETT Show is here to help and support you and your business.

- ✔ Surround yourself with other wastewater and environmental service professionals who understand your daily challenges
- ✔ Uncover the most effective treatment processes through educational insights, innovative techniques and groundbreaking tools
- ✔ Learn best practices for sustaining and growing your business so it can continue to serve your customers for generations to come



wwett™ 21

Water & Wastewater Equipment, Treatment & Transport Show

CONFERENCE: **JUNE 29-JULY 1**
MARKETPLACE: **JUNE 29-JULY 2**
INDIANA CONVENTION CENTER

LEARN MORE at www.wwettshow.com

   @wwettshow

Flow rate monitoring helps minimize water pollution

Problem

In heavy rainfalls, a wastewater treatment plant near Cleveland could not handle the deluge; combined wastewater and stormwater flowed directly into the lake. To gain control, the sanitary district needed to measure the flow at various points in the system and correlate the data with rainfall.

Solution

CAS DataLoggers supplied an automated flow rate monitoring solution in a sewer line as part of an environmental project. A **dataTaker DT82E Intelligent Environmental Data Logger** was packaged in a waterproof enclosure with a bracket that allowed it to be installed in a manhole, mounted on the sewer wall or used outside. One of the analog inputs was connected to an ultrasonic sensor with a 4-20mA output to measure the water height in the channel. A tipping-bucket rain gauge was then connected to the digital/counter input of the data logger.



RESULT:

Operators were able to measure the output from the height sensor and the precipitation measured by the rain gauge. This enabled the district to accurately determine the channel's flow rate, know the time between rainfall and flow changes, and measure the changes in the channel's water level. This enabled targeted modifications to the system and reduction of sewage overflows. **800-956-4437; www.dataloggerinc.com**

Municipality seeks continuous chlorine analyzer

Problem

A Florida municipality needed a new analyzer to continuously monitor free chlorine for more than 20 groundwater treatment plants.

Solution

After a free demonstration, an **HF scientific CLX chlorine analyzer** was installed, and JAW reagent was provided for evaluation at the plant with the most potential hardness issues. During the demonstration lasting more than three months, the analyzer proved easy to install, required little maintenance, and improved reliability.



RESULT:

The CLX analyzer was determined to have the lowest cost of operation among analyzers, considering maintenance, time and parts. The municipality now has a durable and reliable monitoring system for its groundwater treatment plants. **888-203-7248; www.hfscientific.com**

Real-time control optimizes extended aeration processes

Problem

The Valrico Advanced Wastewater Treatment Plant, which serves several small communities west of Tampa, Florida, was built with a 4 mgd capacity. It was expanded several times to accommodate growth and is now rated at 12 mgd. To achieve optimal efficiency and prepare for heightened demand, operators looked at alternatives to hands-on adjustments to handle peak flow.

Solution

The extended aeration plant has two nitrification/denitrification basins; surface aerators in both are controlled with real-time information from a single **Online Process Analyzer** from **ChemScan, an In-Situ Co.** After the nitrification/denitrification processes, the analyzer tests the nitrate and ammonia levels using fully automated UV-visible spectrometry. It then sends control signals via SCADA to increase or decrease aerator speeds.



RESULT:

"Before we had access to real-time information on our processes, our operators relied on their experience and educated guesses to adjust the process," says Kevin Grant, plant manager. Real-time data now gives them current information and the confidence to adjust the process even during times of significant change in influent flows. **800-665-7133; www.chemscan.com**

Remote monitoring and control reduces false alarms

Problem

False alarms from lift station pumps required frequent evening and weekend operator attention at a California community services district. Seven lift stations had aging instrumentation comprised of auto-dialers with traditional SCADA, which required operators to respond in person to each alarm. Operators needed a reliable way to monitor wet well levels and pumps remotely to address alarms efficiently and act when needed to avoid overflows.

Solution

The district installed **XiO's Lift Station Control System** throughout the collection system. The cloud-based system allows operators to view statuses on sensors and pumps, as well as wet well levels, from any web-enabled device. They can receive alarms and control equipment, such as turning pumps on and off, via smartphones, greatly reducing the time required to respond to alarms.



RESULT:

The system immediately reduced false alarms. Data collected gave operators insights to the health of the pumps, enabling a proactive maintenance schedule. **877-946-0101; www.xiowatersystems.com**



WEQ Outdoor Equipment Demonstrations
York, Pennsylvania
June 22-23, 2021
WASTEWATER EQUIPMENT FAIR

YORK FAIR

WEO FREE TO QUALIFIED INDUSTRY PROFESSIONALS!

Confirmed York, PA Exhibiting Companies:

Allan J. Coleman Co.	Harben, Inc.	Prime Resins
Bald Eagle Pellet Co.	ISG Rents	Prokaso Services USA, Inc.
Bucher Municipal North America	TI Trailers & Truck Bodies, Inc.	Sewer Equipment
CIJS, Inc.	Imperial Industries, Inc.	SewerProShop, LLC
Durable Manufacturing Co.	KEG Technologies, Inc.	Super Products LLC
Electric Ed Mfg.	Logibell, Inc.	TruGrit Traction Inc.
Enz USA Inc.	National Vacuum Equipment, Inc.	TRY TEK Machine Works, Inc.
GapVax, Inc.	Picote Solutions	Vivax-Metrotech Corp.
	Pik Rate, Inc.	As of 02/25/21

Future Locations and Dates:



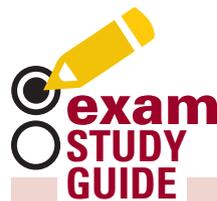
Nashville, TN
Sept. 14-15, 2021



Jacksonville, FL
Jan. 12-13, 2022

Register for FREE online at:
weqfair.com

COLEpublishing | Pumper Cleaner PRO installer | tpo | I&I | Plumber digDIFFERENT



Licensing exams can be challenging. Our **Exam Study Guide** helps you prepare by presenting questions similar to those on an actual exam. You can find many more sample questions on the *TPO* website at www.tpomag.com/study.

WASTEWATER

By Rick Lallish

In fixed-film processes, what must be reduced before nitrification can occur?

- A. Organic loading rate
- B. Hydraulic loading rate
- C. AOB and NOB bacteria
- D. Endogenous respiration

ANSWER: A. Higher organic loading rates (OLR) favor the growth of heterotrophic bacteria over nitrifying bacteria. In most fixed-film systems, the higher OLRs cause rapid growth of heterotrophic bacteria, forcing the weaker nitrifiers to go deeper into the biomass. This process slows their growth rates. By reducing the OLR, the heterotrophic bacteria will slow, and this prevents the nitrifiers from being overtaken. Operating the system in a series mode where the OLR is reduced after the first stage will allow nitrification in later stages of the process. More information may be found in the *WEF Wastewater Treatment Fundamentals 1 – Liquid Treatment* textbook, Chapter 9.

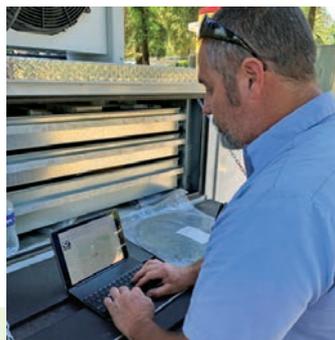
Asset management software helps keep track of control valve information

Problem

The city of Redlands, California, has two water supplies that feed into seven pressure zones. Tim Neumann, a water plant mechanic, studied 18 automatic control valves and produced a maintenance database, recording everything relating to the valves. Using his own spreadsheet program, he spent hours inputting records and pictures of the valves. He soon was responsible for 92 control valves, but his program was not an efficient way to log valve data.

Solution

Cla-Val was just launching its **Link2Valves asset management software** for control valves. It enables operators to log data and photographs using a mobile phone app; the data is uploaded to a database via the app or a dedicated website portal.



RESULT:

Neuman can record all the valve settings, log the maintenance, take pictures, include the valves' geolocations, and know when a valve is due for maintenance. The system graphically lets him know by changing the map icon color and sends him email reminders. **800-942-6326; www.cla-val.com tpo**

DRINKING WATER

By Drew Hoelscher

How many turns are required to close a 6-inch gate valve?

- A. 7.5
- B. 14.5
- C. 20.5
- D. 27

ANSWER: C. Gate valves are most commonly used to isolate sections of the distribution system during emergency and nonemergency operations. Knowing the exact location and current operating condition of each valve in the distribution system will pay great dividends in an emergency. The size of the valve is also important so an operator will have an idea how many turns will be required to fully open or close it. The gate valve open/close operating formula is three times the valve size plus two or three turns. Example: $6 \times 3 = 18 + 2$ or $3 = 20-21$ turns.

ABOUT THE AUTHORS

Rick Lallish is water pollution control program director and Drew Hoelscher is program director of drinking water operations at the Environmental Resources Training Center of Southern Illinois University Edwardsville. tpo



Franklin Electric VR SpecPAK Pressure Boosting System

Franklin Electric's VR SpecPAK Pressure Boosting System is a pump-and-drive package that combines the benefits of its high-performance VR Series Vertical Multi-Stage Pump with an efficient TEFC motor and variable frequency drive specifically designed for pump applications. It is ASHRAE 90.1-2010 compliant and is designed with NSF/ANSI 61 and 273 certified isolation valves. Users can easily configure it to comply with pressure-boosting needs in most commercial, industrial or multiresidential applications for constant-pressure operation with several available options according to flow needs, control enclosures, interfaces (Touchscreen HMI/PLC) and additional communication ports.

260-824-2900;

www.franklinengineered.com



QED Environmental PolarGuard insulating wellhead cover

QED Environmental Systems' PolarGuard insulating wellhead cover protects and prevents frozen condensation on wellheads and gas collection hoses by tightly wrapping them. The PolarGuard cover allows for quick and easy installation using Velcro closures and web buckle straps, allowing for convenient monitoring and maintenance. The covers are available for both Precision Control and Accu-Flo wellheads and can accommodate wellheads of up to 3 inches.

800-810-9908; www.qedenv.com

product spotlight

wastewater

An easier way to swap valves

By Craig Mandli

Prying flanges apart to replace leaking valves without the right tools is often a time-consuming procedure. It can also be dangerous, as the come-alongs, wedges, screwdrivers and crowbars typically used for the job can slip out if not operated perfectly. The **Valve-Out flange-spreading tool** from **Specialty Maintenance Products** takes the time and danger out of doing the job.

The cold-rolled steel tool consists of four spreader plates, eight bolt-hole pins (two for each spreader plate) that come in various diameters and fit into the flange bolt holes, and two spacer bars, which connect the pairs of spreader plates. Two jack bolts connect the spreader plates, exerting roughly 7 tons of pressure to pull apart the flanges on either side of a valve. This allows workers to slide out a damaged valve and replace it, along with any gaskets, if needed.

"Water and wastewater plants are comprised of multiple flanged valves and meters and their associated piping," says Tyler Hemann, director of operations for Specialty Maintenance Products. "The safest way to spread the flanges is by grabbing the bolt holes. That is what the Valve-Out does."

After removing all of the flange bolts, crews select the appropriate-size bolt-hole pins and slide them through the spreading plates, which are essentially two pivoting arms that butterfly out to fit various bolt-hole patterns. The pins are secured by pushing



Valve-Out from Specialty Maintenance Products

them through the spreader plates and then into the flange bolt holes. After each of the four spreader plates is affixed to the flanges and connected by the spacer bars, the tool operator simultaneously tightens two jack bolts, one attached to each pair of spreader plates via the threaded ends of the two spacer bars. As the jack bolts turn, they slowly expand the length of the spreader bars, which in turn forces the bolted-on spreader plates to spread the flanges apart.

"The municipalities using this in the field are blown away with the time and effort this tool saves," says Hemann. "Many are actually leery of loaning it out to other cities because they don't always get it returned."

The system comes in three kits. The VOC 1 kit is designed to handle flanges with 3/4-, 7/8- and 1-inch-diameter bolt holes. The VOC 2 kit is designed to handle flanges with 1 1/8-, 1 1/4- and 1 3/8-inch-diameter bolt holes. The VOC 1-2 kit includes all six of the previously mentioned bolt-hole pins.

713-667-4402; www.smptools.com



Greene Tweed WR and AR pump components

Greene Tweed offers Wear Resistant and Abrasion Resistant pump components engineered from high-performance thermoplastic composite materials for centrifugal pumps and magnetic drive pumps. These composites are available across a variety of materials, temperature ranges and operating pressures to meet pump requirements across numerous applications. The WR line offers excellent wear and friction properties, along with superior non-galling and nonseizing performance. The AR composites are a recom-

mended abrasion-resistant solution when pumping in a watery media with the presence of abrasive materials like sand or sludge.

800-220-4733; www.gtweed.com



RWI Enhanced Evaporation PittBoss evaporation system

RWI Enhanced Evaporation's Apex 2.0 system, the PittBoss, enhances pond evaporation rates without pumps, filters, or nozzles that clog, or other costly maintenance issues. The PittBoss uses a powerful fan to take less-humid air from above the containment pond and

force it down onto the water's surface, boosting evaporation in several ways. The high volume of moving air increases evaporation rates, as a strong wind would. The drag from subsurface liquids causes waves that crest and crash, forming droplets that increase surface area, thereby boosting evaporation. The ripples also increase surface area, further enhancing natural evaporation. By evaporating the water content, the system significantly reduces the volume and weight of the waste material, reducing disposal costs, and without releasing any particulate pollutants into the air.

970-245-7104;

www.resourcewest.com tpo

Check out more manufacturers and dealers at:

tpomag.com

product spotlight water



Radar sensors from VEGA Americas

Radar level sensors bring increased accuracy

By Craig Mandli

Radar level measurement is a safe solution even under extreme process conditions and vapors. But as with any measurement device, accuracy is key. **VEGA Americas** has introduced a series of noncontact **radar sensors** designed to virtually eliminate any unwanted or interfering reflections thanks to its precise 80 GHz focus. Getting accurate level measurements suddenly became much easier and more reliable.

VEGAPULS instruments work with both liquids and bulk solids. These sensors are available in a compact version with cable connection housing and in a standard version with a fixed IP68 cable connection. The radar sensors maintain steady, accurate measurements, unaffected by external influences like solar heating, air temperature fluctuations, fog and mist, buildup, and condensation. Users can choose from 420mA, HART, SDI-12 or Modbus as the direct output signal, and ATEX versions are also available. These units are used for level measurements and pump control in lift stations in collections, and also for chemical tank level measurements where they can read through the tank lid to provide accurate and reliable measurements to the maximum fill height.

“VEGA took our 80 GHz technology and placed it into smaller sensors at an affordable price,” says Steve McCuskey, VEGA’s municipal industry manager. “Municipal facilities use these radars in digesters, solids collection, and in bulk tanks of all kinds. They’re even used for flow measurements in flumes and weirs, where their accuracy and reliability are key due to regulatory reporting needs.”

The sensors are compact devices, and optional VEGAMET controllers complement them. The controllers feature a large graphic display that can be used to visualize all measured values. They allow simple implementation of pump control, flow measurement in open channels, and overflow protection. These are designed for operation in outdoor environments and are supplied in a weather-resistant housing.

Both the sensors and the controllers can easily be operated via Bluetooth with a smartphone or tablet. This makes setup, display, and diagnostics considerably easier, especially in harsh environments or hazardous areas. According to McCuskey, the VEGAPULS series offers reliability in any environment, along with ruggedness and simple operation.

“Changing a process or a technology can be difficult, especially when operators are used to a certain technology or type of sensor,” he says. “But the feedback from customers has been overwhelmingly positive. Hesitant customers will often purchase only one sensor to start, and we know they’re pleased with the results when they come back for more.” **800-367-5383; www.vega.com**



SludgeKing II

SPECIALLY DESIGNED DEWATERING CONTAINER



- 33% more filter area
- 90° turn filter bottoms
- Faster drying time
- Double filter walls



855.511.PARK
www.ParkProcess.com

For Immediate Sale: New, Positive-Displacement Blower Packages

(3 in stock!)



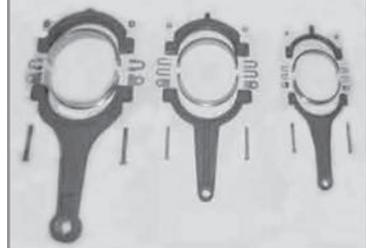
60 HP,
Up to
1750 CFM,
Up to
13 PSIG.
With
Acoustic
Enclosure.

Only \$12,100 each!

JFH Distributing Inc.

Lakewood, CO • 800.279.7796
gtk@jfeco.com • www.swam-usa.com

Rebuilds Parts



Belts



Komline-Sanderson

1 800 225 5457
www.komline.com



GET EMAIL
NEWS ALERTS

FOR
tpo

Go to
tpomag.com/alerts
and get started today!



LIVE! LOCAL! FREE!

Brought to you by:
COLE Publishing

LIVE OUTDOOR DEMONSTRATIONS & EQUIPMENT EXHIBITS

866-933-2653
www.weqfair.com

SEEPEx makes sales organization changes

SEEPEx announced some changes to its sales organization. Chris Karasch, national sales manager, continues to lead the group with the addition of two key roles. John Salyers transitioned from a regional sales manager to the director of sales. He will be leading the territory managers and developing and implementing strategic plans to achieve corporate objectives for products and services. Aaron Renick transitioned from director of sales, Western region to the newly developed role of director of business development. He will focus on forging new pathways and creating new relationships to assist in new opportunities of growth.



John Salyers



Aaron Renick

Analytical Technology acquired by Badger Meter

Analytical Technology announced it has been acquired by Badger Meter. With global headquarters in Milwaukee, Badger Meter serves water utilities, municipalities, and commercial and industrial customers worldwide. There will be no significant changes to operations, and customers will continue to interact with the same members of the staff that they have partnered with in the past. ATi offices and manufacturing will remain in Collegeville, Pennsylvania.

Kaman Distribution Group announces new executive

Kaman Distribution Group announced the appointment of Chris Henson as the vice president of business development. Most recently, he served as a vice president in The Timken Co.'s industrial bearings business, leading product management and engineering. As a member of the KDG executive team, Henson will be critical in driving growth strategy, with a particular focus on executing key acquisitions.



Chris Henson

Xylem donated 300,000 units of PPE to essential workers

Xylem donated and delivered more than 300,000 pieces of PPE to front-line workers in 2020, working alongside its partners. The personal protective equipment went to health care facilities and to water utility operators working to keep essential services flowing in local communities. Last March, Xylem began repurposing some internal manufacturing capacity, including 3D printing and injection molding, to develop protective face shields for essential workers. The program has continued through 2020, as Xylem worked with distribution partners to deliver 150,000 shields across the U.S., Europe and Latin America.

Asahi/America welcomes new business development manager

Asahi/America welcomed the addition of Shane McDaniel to its business development team, as business development manager for actuation products. McDaniel brings a diverse set of skills and experience with him to Asahi/America, ranging from instrument and controls technician to outside sales, and aftermarket sales and service. He will work closely with the company's sales and engineering teams to further promote Asahi/America's actuation product line across a variety of industries in the U.S.



Shane McDaniel

Mazzei Injector and Technology Sales Associates team up

Mazzei Injector announced that Technology Sales Associates has exclusive rights to sell Mazzei systems to the municipal water and wastewater markets in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

A.Y. McDonald acquires Val-Matic Valve & Mfg.

A.Y. McDonald acquired Val-Matic Valve & Mfg. of Elmhurst, Illinois, on Dec. 31. Each company will continue to operate independently with separate management, market strategies and sales operations.

Endress+Hauser invests in sales and service support

Endress+Hauser and its U.S. representative partners will invest \$4.5 million to grow its sales and service support around the country. This investment will reinforce and increase Endress+Hauser's sales channel by more than 25%. The added personnel increase within Endress+Hauser's sales channel will add more resources in project management, inside sales, outside sales, application engineering, industry, solutions and services.

SUEZ completes acquisition of LANXESS RO membrane portfolio

SUEZ announced it finalized the purchase of the reverse osmosis membrane product line from LANXESS. The purchase includes the RO membranes product line and production facility located in Bitterfeld, Germany. The acquisition will allow SUEZ to further help customers address water treatment challenges.

DeZURIK plans to acquire Red Valve

DeZURIK, headquartered in Sartell, Minnesota, announced plans to acquire Red Valve from Hillenbrand, a public company headquartered in Batesville, Indiana. Red Valve's two main brands are Red Valve and Tideflex.

Centrisys to provide centrifuges for three US plants

Centrisys Corporation announced it will be providing centrifuges in plants located in Chino, California; Waterloo, Iowa; and Lancaster County, South Carolina. Inland Empire Utilities' upgrade and expansion of its Regional Water Recycling Plant No. 5 in Chino will include five custom CS30-4DT decanter centrifuges and one spare rotating assembly unit. Shipment and installation are planned to take place in July 2022. Lancaster County's Indian Land Wastewater Treatment Plant received one CS26-4HC 2PH decanter centrifuge, and shipment and installation was in December 2020. The city of Waterloo's Easton Avenue Wastewater Treatment Plant will receive two CS26-4HC 2PH decanter centrifuges with shipment and installation planned for March 2021.

Orenco Systems announces company changes

The year 2021 marks four decades of protecting the world's water for Orenco Systems. After 40 years, founder Hal Ball announced his retirement from day-to-day involvement in the company. Co-founder and former executive vice president Terry Bounds will serve as both chairman of Orenco's board of directors and president over the research and development, operation and maintenance, and facilities departments of the company. In addition, the company will now operate in three distinct divisions to provide more focused service. Jeff Ball will serve as president of Orenco Water, while Eric Ball has been named president of Orenco Composites. Travis Wood, former president of Franklin Control Systems, is the new president of Orenco Controls. And former legal counsel Scott Saulls will serve as corporate president. Lastly, the company stated that its wastewater-focused operations will now be known as the Orenco Water division. **tpo**

- ✓ New & Used Equipment
- ✓ Free Subscription
- ✓ Digital Editions
- ✓ Online Exclusives
- ✓ Editor's Blog

tpomag.com

people/awards

Four **City of Houston** wastewater treatment plants won Peak Performance Awards from the National Association of Clean Water Agencies:

- **Kingwood Cedar Bayou Plant**, Platinum Award
- **Forest Grove Plant**, Gold Award
- **Kingwood West** and **West Lake Houston** plants, Silver Awards

The **Clayton County Water Authority** earned four awards from the Georgia Association of Water Professionals: Excellence awards for its collection and distribution systems, Lab QA/QC Award (wastewater systems larger than 20 mgd), and Best Consumer Confidence Report Award (large systems).

The **East Bay Municipal Utility District** was recognized for exemplary execution commitment to public safety and water services with the Association of California Water Agencies 2020 Huell Howser Best in Blue Award.

Rhonda Carter Adams, workforce and supplier diversity program manager with Illinois American Water, received the Jerry Garland Award for Excellence in Supplier Diversity from the Illinois Utilities Business Diversity Council.

The **Chickasha Water Treatment Plant** received a Water Fluoridation Quality Award from the Oklahoma State Department of Health.

New Jersey American Water received the annual Governor's Environmental Excellence awards from the New Jersey Department of Environmental Protection.

Jefferson City, Missouri, received an award for water fluoridation quality from the U.S. Centers for Disease Control and Prevention.

Randy Conner, Chicago water commissioner, retired after 25 years with the city, mostly in the transportation and streets and sanitation departments.

Roy Hesemann was named Utilities Director in Cedar Rapids, Iowa. He has served as water pollution control plant manager, water utility plant manager, project engineer and, most recent, as interim water utility plant manager.

**FIND IT
BUY IT
POST IT
SELL IT**

AVAILABLE ANYTIME,
ANYWHERE, ANY DAY

www.tpomag.com/classifieds/place_ad

TREATMENT PLANT OPERATOR
tpo

AVERAGE MONTHLY
CIRCULATION REACHES
65,000+
READERS!

POSITIONS AVAILABLE

Bright Technologies, a waste & recycling equipment manufacturer, is seeking a talented, highly motivated individual to fill a full-time **Sales/Field Technician**. Individual would be focused on rentals and startups of the Belt Filter Press Division. The individual should have a solid background in water and wastewater to help oversee the design and management of various projects within that division. We manufacture a reliable, user friendly, and efficient belt filter press for the industrial and municipal markets. Send resumes to **stuart@sebrightproducts.com** or **PO Box 296, Hopkins MI 49328 Attn: Stuart Sebright.** (004)

Submit your classified ad online!
www.tpomag.com/classifieds/place_ad

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

Join us online

- Facebook.com/TPOmag
- Twitter.com/TPOmag
- Youtube.com/TPOmagazine
- Linkedin.com/company/treatment-plant-operator-magazine



events

April 6-8

The WaterNow Alliance Virtual Summit, online. Visit www.waternow.org.

April 7

Virginia WEA Collection Systems Seminar: The Collection System of the Future, Lewis Ginter Botanical Garden Auditorium, Richmond, Virginia. Visit www.vwea.org.

April 7-8

AWWA Virtual Summit: Lead and Water Quality, online. Visit www.awwa.org.

April 13

Central States WEA 26th annual Education Seminar, online. Visit www.wef.org.

April 14

AWWA Leading Research in the Field of Potable Reuse Research Webinar, online. Visit www.awwa.org.

April 19-21

AWWA Indiana Section Annual Conference, Marriott Hotel – East Indianapolis. Visit www.inawwa.org.

April 20-23

WEF Odors and Air Pollutants Conference 2021, online. Visit www.wef.org.

April 21

AWWA Mobile Membrane Systems Used for Humanitarian Aid and Military Operations Webinar, online. Visit www.awwa.org.

April 22

Virginia WEA Stormwater Seminar, Westin Richmond. Visit www.vwea.org.



A STRONGER FUTURE STARTS AT **WWETT**

You're the lifeline for customers. The unsung heroes of keeping systems safe and clean so customers can get back to life as usual. Just as you're there to help support your customers, the WWETT Show is here to help and support you and your business.

- ✔ Surround yourself with other wastewater and environmental service professionals who understand your daily challenges
- ✔ Uncover the most effective treatment processes through educational insights, innovative techniques and groundbreaking tools
- ✔ Learn best practices for sustaining and growing your business so it can continue to serve your customers for generations to come



wwett™ 21

Water & Wastewater Equipment, Treatment & Transport Show

CONFERENCE: **JUNE 29-JULY 1**
MARKETPLACE: **JUNE 29-JULY 2**
INDIANA CONVENTION CENTER

LEARN MORE at www.wwettshow.com

   @wwettshow



WE STIR UP EVERYTHING BUT TROUBLE.

Rotamix

For hydraulic mixing without headaches, choose the reliable Vaughan Rotamix System. Blend lower operating and maintenance costs with a more efficient breakdown of solids. Your digesters, sludge storage tanks, and equalization basins won't know what hit them.

Choose the unmatched reliability of Vaughan. Free sample CFD's upon request.



888-249-CHOP | ChopperPumps.com

GUARANTEED PERFORMANCE | NO MOVING PARTS IN THE TANK | FOCUSED MIXING

Keep Chemical Cost Under Control With The

Residual Sulfite Monitor

The Q46S/66 prevents costly chemical overfeed by controlling the amount of chemical added for process dechlorination. Unique design prevents sensor fouling, which reduces system maintenance.

FEATURES

- Gas Phase Sensing - No Contact between Sensor & Sample
- Internal Sequencing & Relay for Auto Sample Line Cleaning
- Cut Chemical Costs by Eliminating Costly Overfeeds



Total Chlorine Monitor



Reagent Free Measurement

The Q46/79PR is ideal for controlling chlorine addition in disinfection chamber.

FEATURES

- Submersible or Flowcell Type Sensor
- Optional pH Measurement
- Easy Installation and Low Operating Cost

Dissolved Oxygen Monitor



Automatic Sensor Cleaning

Optical Sensor with **Q-Blast**

FEATURES

- Self-contained, High Pressure Autocleaner
- Optical Luminescence or Membraned Sensors
- Factory Assembled for Easy Installation

Sludge Blanket Monitor



Interface Level Analyzer

Continuous sludge level measurement supports effective process control.

FEATURES

- Prevent sludge washout
- Control blanket loss from over-pumping
- Maintain underflow sludge density