

The background is a light blue technical drawing or wireframe illustration of various industrial components, including pipes, valves, flanges, and a large spherical tank, all rendered in white lines.

# **MPT**

**Modern Pumping Today®**

# **DIGITAL EDITION**





**INDUSTRIAL  
FLOW  
SOLUTIONS™**

visit us at [FlowSolutions.com](http://FlowSolutions.com)

AUGUST 2023

# MPT

MODERN PUMPING TODAY®

PROVIDING SOLUTIONS FOR THE WORLDWIDE PUMP INDUSTRY

**WEFTEC  
FEATURED  
EXHIBITORS**

**THE MUST-SEE COMPANIES  
FOR 2023**

**BOOMING  
CITIES GET A  
BOOST**

**XYLEM PUMPS UP  
THE PRESSURE**

**PROTECT YOUR  
IMPELLERS**

**COMMON CAUSES OF  
WEAR DAMAGE**

[WWW.MPTMAG.COM](http://WWW.MPTMAG.COM)

NEW PRODUCT  
**OBTANIUM**  
To Be Introduced At TPS • Booth #2626  
[www.plasticmoldingconsulting.com](http://www.plasticmoldingconsulting.com)





# Making it easy to get what you want

Let's face it, there's never a good time for failed equipment, especially when it's preventable. Clogged pumps lead to downtime and downtime leads to frustration, to say the least. With thousands of installations solving clogging issues, the XFP submersible pumps, utilizing the Contrablock Plus system, have proven themselves to prevent problems before they even start. With superior solids and rag handling and lower maintenance costs for long-term reliability, the choice is easy when it comes to replacing your failing equipment.

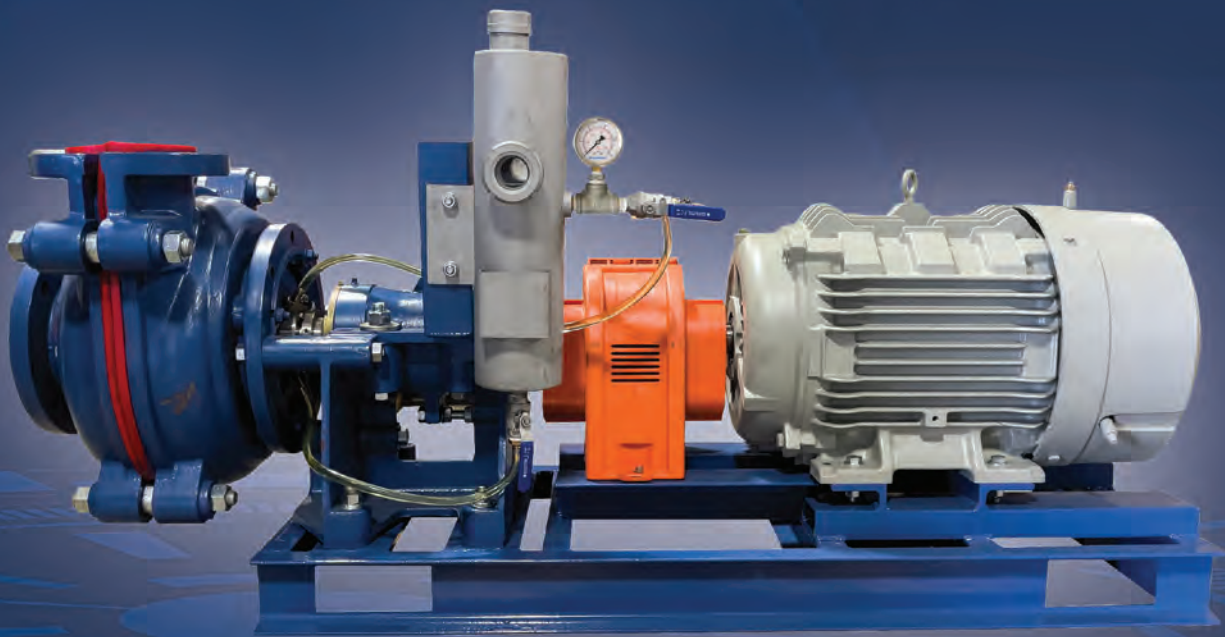
And to make it even easier, the XFP is available with a wide range of competitor retrofitting solutions for drop-in replacements, saving time and costly rehabilitation of a pump station. From retrofit brackets to controls to custom solutions, Sulzer makes it easy to get what you want. Don't you think it's time for change?







## Most Durable, Longest Lasting Slurry Pump on the Market Today!



### DuroLast RB™ /NE™ Abrasion Resistant Slurry Pump

- Premium Mechanical Seal
- Polyurethane BlueProof RB™ Liner for Water-Based Slurry
- Nitrile Rubber BlueProof NE™ Liner for Oil-Based Slurry
- Thermal Siphon Technology
- Split Casing Design

Onboard Thermal Siphon  
Technology Prevents  
Run-Dry Damage to Pump

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

Natural Resource Recycling • Product Classification • Dewatering • Fluid Recovery  
Waste Management • Material Handling • Liquid/Solid Separation • Crushers • Feeders







**COVER PHOTO**  
Courtesy of Homa Pump

## A NOTE ON THIS ISSUE:

Welcome to August's edition of MPT! Even though we're in the dog days of summer, we're looking ahead to the fall, which, for our industry, means the kick-off of an impressive round of trade shows and related exhibitions. With that in mind, check out our special section (pg. 13) featuring MPT's choices for must-see exhibitors at this year's WEFTEC. You'll want to block off time in your schedule to visit each one.

In our Case Studies section, Xylem's James Deloach explains how his company helped meet the growing water needs of a booming industrial park and its surrounding municipalities (pg. 18). The local water utility operators needed a clean water-boosting upgrade to increase pressure during peak water usage, and Xylem's e-XC Double Suction Centrifugal pumps proved they were up to the job.

Also, EASA's Eugene Vogel brings another insightful contribution with an examination on the common causes of surface damage in pump impellers (pg. 42). As he points out, the three most common causes of surface damage—erosion, corrosion, and cavitation—each present characteristics that will help indicate the primary cause of the damage. Whether you're preparing for a new install, routine maintenance, or emergency repair, you'll benefit from what he has to say.



**J. Campbell, Editor**  
*Modern Pumping Today*

## EDITORIAL ADVISORY BOARD:

**TERRY BELL** Product Manager, ABB

**ROBERT G. HAVRIN** Director of Technology, Centrisys Corporation

**MICHAEL MANCINI** Consultant and Trainer, Mancini Consulting Services

**JOHN M. ROACH** Engineering Manager for New Product Development, Trebor International, Inc.: A Unit of IDEX

**LISA RILES** Business Development Manager, Wastewater Pumps, Xylem Inc.: Flygt

**FRANK KNOWLES SMITH III** Executive Vice President, Blacoh Surge Control

**GREG TOWSLEY** Director of Regulatory and Technical Affairs, Grundfos

**TREY WALTERS, P.E.** President, Applied Flow Technology

# MPT

## Modern Pumping Today®

[WWW.MPTMAG.COM](http://WWW.MPTMAG.COM)

3100 Lorna Rd., Ste 101  
Birmingham, AL 35216

**J. CAMPBELL** Editor

[jay@mptmag.com](mailto:jay@mptmag.com)

**TONYA BROWNING** Vice President

[tonya@mptmag.com](mailto:tonya@mptmag.com)

**JEFF FLETCHER** National Sales Manager

[jeff@mptmag.com](mailto:jeff@mptmag.com)

**LISA AVERY** Art Director

**SETH SAUNDERS** Digital Media Specialist

**INGRID BERKY** Office Manager

## SUBSCRIPTIONS

For all changes, go to:

[WWW.MPTMAG.COM](http://WWW.MPTMAG.COM)

Click the **SUBSCRIPTIONS** button  
in the main menu



[WWW.HIGHLANDSPUBLICATIONS.COM](http://WWW.HIGHLANDSPUBLICATIONS.COM)

3100 Lorna Rd. Ste. 101 | Birmingham, Alabama 35216

**TIM GARMON**

CEO

**RUSSELL HADDOCK**

President

**CHRIS GARMON**

CFO

**DONNA CAMPBELL**

Vice President, Editorial

**TONYA BROWNING**

Vice President

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage-and-retrieval system without permission in writing from the publisher. The views expressed by those not on the staff of Modern Pumping Today, or who are not specifically employed by Highlands Publications, Inc., are purely their own. All Industry News material has either been submitted by the subject company or pulled directly from their corporate website, which is assumed to be cleared for release. Comments and submissions are welcome, and can be submitted to [jay@mptmag.com](mailto:jay@mptmag.com).



@modpumpmag





**Come See us at WEFTEC:  
Booth# S-1412 & N-6831**



**weftec**  
the water quality event™

**OPERATIONS  
CHALLENGE**



**CLOGS?**  
**NOT ON OUR WATCH.**

 **Chopper**

When the going gets tough, turn to the toughest pump on the planet. Since 1960, the unrivaled Vaughan Chopper Pump has been on the cutting edge. This original chopper pump was built first and made to last in any application, including:

- Municipalities
- Housing Developments
- Pulp and Paper Mills
- Hospitals
- Prisons
- And more

*Choose the unmatched reliability of Vaughan.  
Ask about our free trial program and on-site demos.*

**SEE CHOPPER  
IN ACTION**



**GUARANTEED PERFORMANCE | EXPEDITED DELIVERY | ELIMINATES COMMUNICATORS**

**888-249-CHOP | CHOPPERPUMPS.COM**



# CONTENTS

## INDUSTRY NEWS

**What's happening in the industry** ..... 6

## TRADE SHOW

**WEFTEC 2023 Featured Exhibitors**..... 13

## CASE STUDIES

**Booming Alabama cities get a boost** ..... 18

*Xylem solutions help pump up the pressure*

**eMAXX-imizing semiconductor production reliability** ..... 20

*Industry consultant improves client performance through Almatec AODD pumps*

## WATER & WASTEWATER FOCUS

**Reducing your carbon footprint**..... 24

*Combining multiple heat exchanges provides enormous energy benefits*

## MAINTENANCE & RELIABILITY

**The importance of adopting new automation and AI technology** ..... 26

*Key trends and solutions in the food and beverage industry*

**Come hail or high water**..... 30

*Extreme weather's impact on utility production and revenue Part 2 of 2*

**Sourcing electronic components post-pandemic** ..... 34

*Extreme weather's impact on utility production and revenue Part 2 of 2*

## PUMP SOLUTIONS

**Power to the people** ..... 40

*Briggs and Stratton's Vanguard engines bring oomph to dewatering pumps*

**Erosion, corrosion, and cavitation—oh my!**..... 42

*Common causes of surface damage in pump impellers*

## SEALING SOLUTIONS

**Versatile solution for the entire production process** ..... 46

*World leading dairy company switches to FaBLINE for better hose life*

## MODERN PUMPING PRODUCTS

**Featured Product: Plastics Molding Consulting** .... 50

*Obtanium Wear Components*

## EFFICIENCY POINT

**Running smooth even in seawater** ..... 52

*Taiwanese power plant keeps cool with Thordon Bearings*



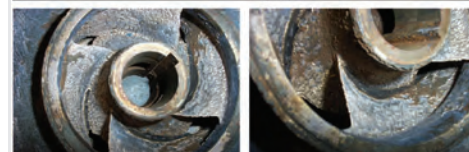
18



24



26



42



50





Portable Gas Detectors You Can Count On

gascliptech.com +1.972.775.7577 1.877.525.0808



# Durable. Affordable. Reliable.

At Gas Clip Technologies, we believe that quality and budget-friendly should go hand-in-hand, which is why we create top-of-the-line gas detection solutions that have a low cost of ownership. Each detector is compliance-based and designed to withstand the roughest treatment in the harshest environments.

All of our products are available through distributors worldwide.

## UPCOMING EVENTS:

**nsc Safety**  
Congress & Expo  
New Orleans, LA 2023  
Professional Development Seminars: Oct. 20-22 and 25-26  
Congress & Expo: Oct. 23-25

Booth  
#1219

**Safety+**  
VPPPA Presents  
An Integrated Safety & Health  
Management Systems Symposium

Booth  
#617

**A+40**  
24. - 27. OKTOBER 2023  
DÜSSELDORF, GERMANY

Booth  
#4D12



## NETZSCH CELEBRATES 150 YEARS

From a small workshop in Selb to an internationally successful mechanical engineering group: Netzsch is ringing in its 150th anniversary year and over 4,100 employees worldwide are joining in the celebration. What began in 1873 in a workshop in Selb has, of course, long outgrown its infancy. But Netzsch wants to remain true to its family values and roots. In this anniversary year, Moritz Netzsch emphasizes, "It is important to me that we have a stable, continued development of what we do today. My wish is that, with all the reflection, with all the necessary rethinking and new thinking, we grow organically, and bring the company into the next generation stronger than ever."

CFO Jens Niessner is convinced: "You can feel our Netzsch spirit at every location. Our values, the economic success, the perspective for the employees—this pairing sparks an aura that makes us competitive even in places where other companies with a high international profile are located."

In its anniversary year, Netzsch is planning extensive celebrations, including at all major international locations.

## BS&B LAUNCHES WEBSITE WITH INTERACTIVE PRODUCT SELECTION GUIDE

BS&B Safety Systems has launched a new website ([www.bsbsafety.co](http://www.bsbsafety.co)) that features an interactive product selection guide focused on helping process engineers select the

correct rupture disk product from the many options the company offers. The web-based tool allows users to input basic application needs, such as product size and set pressure, to find the solutions that best match their requirements. Additional application inputs refine the search. The guide accelerates rupture disk product selection without need for registration.

The website allows visitors to identify the core application requirements using drop-down menus using their preferred technical units for pressure and temperature to ensure they arrive at the correct product. The menus are comprehensive and include product size, burst pressure, connection type, and service phase (gas, liquid, or two-phase flow).

Further simplifying product selection, BS&B's online sizing software runs both ASME and European Pressure Equipment Directive style pressure relief device sizing calculations directly through the BS&B server, then allows the user to save the output as a data sheet PDF file. In addition, the full range of valves, tank protection, and explosion protection products are also included.

## BLACOH BUILDS ENGINEERING TEAM

Blacoh Industries, Inc. is privileged to introduce three new engineers to our team: Michael Harvilla, Ruben Fernandez, and Melanie Arriaga.



**Run Dry and Keep on Running**

**Pumps fitted with GRAPHALLOY® wear parts survive upsets.**

- Self-lubricating
- Non-galling
- Won't swell
- Corrosion resistant
- Dimensionally stable
- Improved efficiencies
- -400°F to 1000°F (-240°C to 535°C)

**GRAPHALLOY®**  
GRAPHITE METALLIZING CORPORATION  
Yonkers, NY USA

**+1.914.968.8400 • [www.GRAPHALLOY.com](http://www.GRAPHALLOY.com)**

P2



**VISIT US AT WEFTEC**  
 << Booth #4262 >>

**SUN STAR**  
SUBMERSIBLE MOTORS

**SUN STAR ELECTRIC, INC.**  
 An Employee Owned Company  
[SUNSTARUSA.COM](http://SUNSTARUSA.COM)  
 7722 34th Street, Lubbock, TX 79407  
 1-800-782-9675



# SLICE IT. DICE IT. PASS IT.

ORGANIC SOLIDS ARE NO MATCH FOR  
GORMAN-RUPP SUPER T SERIES®  
PUMPS EQUIPPED WITH  
THE ERADICATOR PLUS™  
RETROFIT KIT.

REMOVABLE,  
LIGHTWEIGHT  
INSPECTION  
COVER

EXTRA-THICK, AGGRESSIVE,  
SELF-CLEANING WEARPLATE

SHIMLESS  
ADJUSTMENT  
DESIGN

HEAVY-DUTY  
CONTINUOUS  
VANE IMPELLER

**ERADICATOR<sup>®</sup>  
PLUS**

Flushable wipes, trash bags, mop heads, rags and other stringy materials can be hard on pumps – that's why your facility needs a dependable solution for handling solids-laden wastewater. Gorman-Rupp is now offering Eradicator Plus™ solids reduction upgrade kits for existing Super T Series® self-priming pumps currently installed in wastewater treatment, industrial by-product and agricultural applications. The extra-thick, self-cleaning wearplate is designed to cut and shred organic solids entering the pump, while the rugged, continuous vane impeller prevents the build-up of debris and keeps your pump operating at peak efficiency. A lightweight inspection cover allows for easy access to the inside of the pump without disturbing wearplate-to-impeller clearance. Trust Gorman-Rupp to keep your operation running smoothly month after month, year after year.



**For more information, call Gorman-Rupp at 419-755-1011  
or visit [GRpumps.com](http://GRpumps.com) to find a distributor near you.**

**GR<sup>®</sup>**  
**GORMAN-RUPP**  
**PUMPS**

*The Pump People<sup>®</sup>*







NEW  
PRODUCT

## OBTANIUM

will be introduced at the  
Turbo Pump Show in Houston



Carver Pump has been testing  
**OBTANIUM** wear components for 15  
years with **NO WEAR** to pump shafts.

# Do you want ZERO WEAR\* to pump shafts?

- **OBTANIUM** uses a unique method to reduce the contact area between bushing and shaft.
- **OBTANIUM** is filled with perfectly round ceramic spheres.
- **OBTANIUM** bearings have been in the field for 15 years, running dry and wet, with **NO WEAR** on the shaft or wear components.
- **OBTANIUM**, in a side-by-side test, has out-performed every other product in the market.

Learn more about  
**OBTANIUM**  
visit  
[plasticsmoldingconsulting.com](http://plasticsmoldingconsulting.com)

**PRLC, LLC**

*"Near perfect components for the elimination of wear."*

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

\*We have thus far experienced no wear but cannot guarantee this for every application.

industry under the lead of new managing director Darren Lewis. The new division offers design, engineering, and project management business, with the ability to create and manage sophisticated and industry-compliant environments.

Leading a multi-skilled team of like-minded industry professionals, Lewis will be a vital part of such a purpose-led business: "I am incredibly excited to be at the helm of a highly expert team with the potential to do everything we set out to do from the start, and more," states Lewis.

With thirty-five years of pharmaceutical design and build experience, Lewis brings a wealth of relevant expertise to the role, managing every stage of a project, from engagement and estimating to delivery and validation, and beyond.

Coupled with his design background, Lewis has twenty-five years of clean room design and construction experience, possessing a keen awareness of all regulatory requirements and overall compliance, as well as setting and maintaining standards.

## OLDCASTLE INFRASTRUCTURE PARTNERS WITH FIDO TECH ON LEAK DETECTION TECH

Oldcastle Infrastructure, a CRH Company, and a leader in innovative infrastructure solutions, has entered the smart water market through a strategic partnership with

FIDO Tech, a UK-based artificial intelligence (AI) and technology solutions provider, to deliver unparalleled leak detection and broader water management and conservation solutions in the United States.

Oldcastle Infrastructure's comprehensive suite of smart water solutions, powered by FIDO Tech's advanced technologies with actionable AI at the core, will provide municipalities, water utilities and industrial clients with real-time monitoring, leak detection and predictive analytics to address treated drinking water losses.

Leveraging its national footprint, Oldcastle Infrastructure will facilitate and accelerate the rollout of FIDO Tech's AI-led non-revenue water (NRW)2 detection service across the US market. This will allow more US utilities to benefit from FIDO Tech's current leakage reduction levels of more than 50 percent.

"We are excited about this partnership and its impact on the water infrastructure technology market as a whole," says Jeff Petrosky, vice president strategic marketing, Oldcastle Infrastructure. "Our nationwide footprint and expertise in water management solutions combined with the smart AI-based technology FIDO Tech brings to the table, creates a game-changing solution."

"Solving non-revenue water losses is a guaranteed way to improve water security," adds Victoria Edwards, founder and CEO of FIDO Tech. ■



**HIGH CAPACITY  
INDUSTRIAL DEHUMIDIFIERS**

**NEW MODELS WITH DIGITAL CONTROLS**




Download the Android App

**CALL FOR FAST FRIENDLY FREE ADVICE !**

**Ebac Industrial Products Inc**

**East Coast Office**

700 Thimble Shoals Blvd, Suite 109,  
Newport News, VA 23606-2575

**Toll Free 1-855-873-6800**

**West Coast Office**

2060 Chicago Ave, Suite C7,  
Riverside, CA 92507

**www.ebacusa.com**

## BPK FIELD PACK

All-in-one shaft grounding system that combines the superior protection of Helwig's **Bearing Protection Kits** and the versatile **MultiFit Brackets**.

- Compatible with 80% of all motor shaft sizes**
- Less than \$1,000 for (8) kit + bracket combinations**








www.helwigcarbon.com





# PUMP UP PRODUCTIVITY

## FP605 INDUSTRIAL FAN & PUMP AC DRIVE

### MAKE THE COMPLICATED SIMPLE

You will get pumped up when you take a look at Yaskawa's FP605 industrial fan & pump drive.

The FP605 is a versatile drive that saves time and resources on installation and programming, while maximizing efficiency for peak energy savings and the return on your investment.

- Enclosure options: IP20/UL Type 1 or IP55/UL Type 12
- Available in Electronic Bypass or Configured Packages: (UL Type 1, UL Type 12, or UL Type 3R enclosures)
- Narrow footprint for side-by-side mounting
- Induction, PM and synchronous reluctance motor control
- Supports all major industrial network communications
- Pump control features that maximize drive and pump life
- Mobile-friendly setup with optional Bluetooth keypad
- Programmable without main power supply connected

Need to optimize your industrial fan and pump operations?  
Call Yaskawa today at 1-800-927-5292.

*#FP605 drives*



For more information, visit:  
<https://www.yaskawa.com/fp605>

**YASKAWA**



Yaskawa America, Inc. 1-800-YASKAWA  
Email: [info@yaskawa.com](mailto:info@yaskawa.com) | [yaskawa.com](http://yaskawa.com)





**Another Vanton AdVantage**

## Great Hands-On Support Behind Every Pump



Over the past 70 years, VANTON has always been about more than just the pump. We work hard to build strong customer relations with every pump we manufacture. In good years and bad we stand behind our pumps with a global network of dealer/distributors dedicated to providing sales and service expertise for all of our thermoplastic products.

Wherever you're located you'll find experienced VANTON representatives have got you covered. Whether you need guidance on pump selection, or aftermarket in-the-field service, you can be confident that a VANTON tech team member is close by.

If you're already in a relationship with VANTON, allow us take this opportunity to thank you. If not, why not find out how reassuring it can be having your pumping needs covered with VANTON in your corner.

### **VANTON PUMP...**

*building lasting relationships one pump at a time.*



**PUMP & EQUIPMENT CORPORATION**

**vanton.com**



**Sump-Gard®**  
Vertical Centrifugal  
Pumps



**Chem-Gard®**  
Horizontal Centrifugal  
Pumps



**Pump/Tank  
Systems**



**Flex-I-Liner®**  
Rotary Peristaltic  
Pumps



# WEFTEC 2023 FEATURED EXHIBITORS

# MPT

## Visit MPT at WEFTEC

**BÖRGER**  
EXCELLENCE - MADE TO LAST

**BOERGER**  
**BOOTH #2018**

Boerger designs, manufactures, and sells rotary lobe pumps, macerating technology, separation technology, and feeding technology to convey low to high viscous and abrasive media. Key applications can be found in wastewater applications including sludge (primary, WAS, RAS, digested, thickened, etc.), biosolids, grease, sewage, scum, lime slurry, alum sludge, permeate, polymers, etc. Boerger products are designed with maintenance-in-place, which allows for all wetted parts to be easily replaced through the front cover without the removal of pipe or drive systems.

[WWW.BOERGER.COM](http://WWW.BOERGER.COM)



**e|one**  
SEWER SYSTEMS

**ENVIRONMENT ONE CORPORATION**  
**BOOTH #1617**

Are you dealing with failing septic tanks? Is I&I from your existing sewer system eating up your budget? Do you have a sewer project with challenging terrain looming ahead? Get after it. ALL-TERRAIN SEWER™ low pressure systems from E/One give you the freedom to sewer anywhere. Environmentally sensitive, economically sensible™: ALL-TERRAIN SEWER low pressure systems are significantly more affordable than conventional gravity sewers, safer than septic systems, and they're a light touch on the land. Plus, ALL-TERRAIN SEWER low pressure systems carry a proven track record of reliability with the lowest life-cycle costs in the industry. Whether it's dead or dying septic tanks or expensive inflow and infiltration, E/One can help. [WWW.EONE.COM](http://WWW.EONE.COM)



**weftec**  
the water quality event™

*Where the water community comes to connect.*



## GORMAN-RUPP PUMPS

**BOOTH #1231**

Gorman-Rupp sets the industry standard for packaged wastewater-handling pumping systems. Our ReliaSource® lift stations are 100 percent custom-engineered, manufactured, assembled, and tested by the experts at Gorman-Rupp. That means when you choose ReliaSource, you choose the ultimate in reliability, long-lasting operation, and value. We precision-match the pumps, motors, controls, valves, pipes, and accessories in every ReliaSource system for maximum compatibility and maximum performance—guaranteed.

**[WWW.GRPUMPS.COM](http://WWW.GRPUMPS.COM)**



## BLACOH FLUID CONTROL

**BOOTH #954**

Blacoh offers engineered fluid control products manufactured to exacting standards in a wide variety of sizes, materials, and pressure ratings to suit virtually every application. Blacoh has been improving process system performance, reliability, safety, and productivity for over forty-five years, so find Blacoh products wherever fluid is being pumped. Blacoh products are made in the USA for a reason—nothing gets in the way of providing Blacoh products to customers. **[WWW.BLACOH.COM](http://WWW.BLACOH.COM)**



## CLA-VAL COMPANY

**BOOTH #3302**

Since 1936, Cla-Val has produced the world's highest quality automatic control valves for diverse industries. Cla-Val has strengthened operations and customer service by enhancing product lines and building state-of-the-art production facilities around the world. With major locations having dedicated training centers, the team provides exceptional industry expertise. Aggressive R&D programs have resulted in advanced electronic and hydraulic control systems that meet the challenges of complex and diverse applications. **[WWW.CLA-VAL.COM](http://WWW.CLA-VAL.COM)**



## MELTRIC

**BOOTH #8332**

MELTRIC® Switch-Rated and UL-listed plugs and receptacles are the perfect solution for safe and reliable pump connections where watertightness is required. MELTRIC DS and DSN series are designed to make and break connections safely under full load, and they offer arc flash protection. MELTRIC Switch-Rated products are easy to use while providing users with safety, ensuring code compliance, and supporting operating cost benefits. With MELTRIC Switch-Rated plugs and receptacles, cumbersome changeout processes are streamlined, reducing downtime by up to 50 percent. Visit MELTRIC at WEFTEC or our website to learn more about our Switch-Rated products and how they can help you keep your pumps running safely and reliably.

**[WWW.MELTRIC.COM](http://WWW.MELTRIC.COM)**



*Where the water community comes to connect.*





## PEDROLLO USA

### BOOTH #2263

Pedrollo USA is the American and Canadian office for Pedrollo S.p.A. and since 1974, a manufacturer of high-quality and high-efficiency pump and related products. These include jet, centrifugal and self-priming surface pumps, submersible pumps and motors, sump/sewage/effluent and grinder pumps, electronic controls, package systems, and accessories. Pedrollo is a family-owned and operated company with sales into over 160 countries. Pedrollo invests significantly in R&D to bring the most innovative products to the many markets we serve.

**[WWW.PEDROLLO.COM](http://WWW.PEDROLLO.COM)**



## GREASEZILLA

### BOOTH #4813

Greasezilla<sup>SM</sup> solves fats, oils, and grease (FOG) processing and disposal challenges for water recovery facilities, grease haulers, industrial food processors, and managed waste sites. Greasezilla's separation process repurposes the FOG waste stream into water and clean energy resources, including a low carbon intensity bio feedstock commodity. Without the need for polymers, flocculants, or chemical additives, Greasezilla helps operators meet sustainability goals and lowers costs associated with FOG treatment and disposal. **[WWW.GREASEZILLA.COM](http://WWW.GREASEZILLA.COM)**



## HOMA PUMP TECHNOLOGY

### BOOTH #643

HOMA stands behind every product with a generous warranty, extensive spare parts inventory, regional authorized service centers, factory engineers and technicians who are all dedicated to the support of the entire HOMA product line. Whether your application requires a residential grinder or effluent pump, or you are handling an industrial process stream or municipal wastewater, HOMA will engineer a pumping solution for you. **[WWW.HOMAPUMP.COM](http://WWW.HOMAPUMP.COM)**



## TSURUMI PUMP

### BOOTH #8100

Tsurumi Pump is a world-renowned submersible pump manufacturer. The company supplies equipment for a variety of applications including wastewater treatment, mining, construction, water features, sewage bypass and more. Beyond leading pump technology, Tsurumi is recognized for its robust distribution network and one of the largest on-hand inventories in North America. At this year's WEFTEC, the company features the MY line from the Avant family of wastewater products. Avant is the ideal solution for municipal sewage and wastewater with wet and dry pit options and multiple impeller choices. Tsurumi's wastewater process equipment includes FM-approved mixers, dehydrators, aerators and bar screens. As a top exhibitor at the 2023 WEFTEC Exhibition, you can find out more about its Avant line of products by visiting Tsurumi's booth and asking for Chris Bristol.

**[WWW.TSURUMIPUMP.COM](http://WWW.TSURUMIPUMP.COM)**



*Where the water community comes to connect.*



## VAUGHAN COMPANY

**BOOTH #1412 AND #6831**

When you are making plans for this year's WEFTEC, don't miss the Vaughan Conditioning Pump™ on full display during this year's Operations Challenge. As a proud sponsor of the Vaughan Maintenance Event, we invite you to come support over fifty teams from around the globe working specific scenarios that include one of our most popular pumps. American-made and built to last, the Conditioning Pump is designed to be used in several different applications to save you from costly clean out cycles and maintenance. With more than sixty-two years of experience, Vaughan Company remains committed to giving customers around the world outstanding service and the most dependable pumping solutions. Stop by and let's talk pumps! **[WWW.CHOPPERPUMPS.COM](http://WWW.CHOPPERPUMPS.COM)**



**IWAKI**

**BOOTH #4757**

Iwaki America Inc. is one of over twenty-five global centers for the manufacturing and support of Iwaki pumps. Our sixty-plus years of pump design engineering has made us a worldwide leader of the best chemical handling equipment used in OEM, industrial, chemical process, and semiconductor applications—providing innovative, efficient solutions to a vast range of fluid handling and dispensing challenges.

**[WWW.IWAKIAMERICA.COM](http://WWW.IWAKIAMERICA.COM)**

**SULZER**

**SULZER**

**BOOTH #3625**

Sulzer is a global leader in the design and manufacture of fluid systems with over 200 years' experience in developing innovative products and services that support greater sustainability of our world's resources. With specialist knowledge in pumps, agitators, mixers, separators, blowers, and purification technologies, Sulzer offers high-performance products with excellent reliability and efficiency.

**[WWW.SULZER.COM](http://WWW.SULZER.COM)**



## WEG ELECTRIC CORP.

**BOOTH #1025**

WEG is committed to creating quality products and efficient solutions. To achieve this, there is continuous investment in innovation and team work. Helping people reach their goals by living the values of the company is WEG's passion. At WEG, the customer is



also part of the team. Working together we can develop the best solutions. There are many approaches to efficiency at WEG. Whether it be energy saving, to reduce costs, or increase productivity, we work to fulfill the needs of our customers. We never stop because a product works well. We always look for a way to make it work even better. This constant search for improvement has led to the creation of some of the most efficient products in energy saving available on the market. **[WWW.WEG.NET](http://WWW.WEG.NET)**



*Where the water community comes to connect.*



# Pumps 2000

## Innovation & Excellence

**The Lightweight Dual-Diaphragm Pumps that Outperform and Outlast the Competition**

- *Less downtime and maintenance – Pays for itself*
- *Low noise levels*
- *Lower air consumption – Saves on energy costs*
- *Lightweight*

3" Ball Valve



Designed for abrasive, solid-laden and corrosive fluids and to create an alternative to heavy, maintenance-intensive diaphragm pumps.



**ATEX**  
Certified

[pumps2000.com](http://pumps2000.com)



**ASK ABOUT OUR  
TRIAL PROGRAM**



# BOOMING ALABAMA CITIES GET A BOOST

*Xylem solutions help pump up the pressure*

BY JAMES DELOACH, XYLEM

At the Decatur utility, four Xylem e-XC Double Suction Centrifugal pumps run on efficient drives, operating as demand requires to maintain a baseline, minimum target water pressure of 60 pounds, and a full flow rate of 6,000 gallons per minute.

From hosting a spacecraft launch service to catering for steel and chemical giants, the cities of Decatur and Hartselle in Alabama, are booming. As the industrial and local populations grow, so does the demand on local water services—something that was beginning to show as pressure levels dropped.

## ASSESSING THE CHALLENGE

With a population of approximately 60,000, Decatur is a well-established manufacturing hub that is experiencing exceptional business growth due to its proximity to the Tennessee River and state policy encouraging manufacturing development in the town. Industrial giants including space launch company United Launch Alliance, Nucor Steel, chemical development

company Daikin America, and chemical pharmaceutical business 3M are reference clients at the city's industrial park. The local water utility operators needed a clean water-boosting upgrade to increase pressure during peak water usage.

With a growing population of 15,000, the nearby city of Hartselle also recognized the need for increased water pressure based on future population projections. The utility operates five tanks covering two districts in a single-loop water line and aims to always provide a minimum of 30 pounds of water pressure through its 16-inch supply lines. Utility operators decided to build a booster station to keep up with current and future demand.

## FINDING THE SOLUTION

Morrow Water Technologies, Xylem's partner based in Birmingham, Alabama, managed both water-boosting upgrades with Sales Engineer Trey Blizzard leading the project. The Morrow team worked closely with Decatur Utilities and Garver Engineering, the firm responsible for designing plans for the upgrade in Decatur. They also worked closely with Hartselle Utilities and CDG Engineers and Associates for the upgrade in Hartselle.

## PROJECT HIGHLIGHTS

- Increased water pressure for end users in both cities.
- Standard use of Xylem pumps in the utilities facilitates ease of use, standardization, and efficiency.



Three Xylem e-XC Double Suction Centrifugal pumps run on efficient drives at the Hartselle project. They operate as demand requires under several conditions, such as a baseline, minimum target water pressure of 60 pounds, and a full flow rate of 1,200 gallons per minute.

In Decatur, four Xylem e-XC Double Suction Centrifugal pumps run on efficient drives. These operate as demand requires under conditions including a baseline, minimum target water pressure of 60 pounds, and a full flow rate of 6,000 gallons per minute.

Three Xylem e-XC Double Suction Centrifugal pumps run on efficient drives at the Hartselle project. They operate as demand requires under several conditions, such as a baseline, minimum target water pressure of 60 pounds, and a full flow rate of 1,200 gallons per minute.

Both pump systems can bypass the tanks and serve water demand directly when necessary and operate



with generators for backup and custom-designed SCADA systems to maximize efficiency.

Decatur Utilities already operated Goulds Water Technology turbines at their water treatment plant – developing a solution using the same brand facilitated standardization, efficiency, and ease of use. Many different models and material options are available to configure Xylem's e-XC pumps to a variety of system requirements.

At both locations, each of the pumps is paired with a high-efficiency variable frequency drive (VFD) which optimizes power usage. This helps the facilities meet sustainability targets and prepares the utilities for future carbon-reduction regulations by maximizing pump efficiency.

## REAPING THE BENEFITS

The clean water boosting pumps delivered increased pressure to the water systems for all users in both



*At both locations, sophisticated electrical systems support efficacy with each of the pumps paired with a high-efficiency variable frequency drive (VFD) which optimizes power usage and pump productivity.*

cities. In operation since December 2021, the project successfully boosted pressure for current and future population growth, as well as manufacturing expansion.

"Thanks to the utility operators' cogent planning, the cities can comfortably cater for projected increases in demand. This is a great example of smart utility managers looking to the future and ensuring that

local communities have the enhanced water pressure they need to thrive," Blizzard says. ■

Xylem is a global water technology provider helping our customers solve the world's toughest water challenges across utility, industrial, commercial, and residential markets worldwide. Over the last 100-plus years, Xylem's unique combination of innovative products and services, proven expertise, and unmatched customer support have been helping to create a more water-secure and resilient world. Across the water cycle, Xylem's innovative solutions use less energy, reduce operating expenses, and support sustainability efforts. By working together, Xylem ensures water is accessible, affordable, and safe for all. For more information, visit [www.xylem.com](http://www.xylem.com).

**Problem:** Diaphragm seal is so impacted that gauge is stuck at 10 psi even after it is removed from the pipeline.

**Application:** Sewerage Lift Station

**Solution:** Onyx Isolator Ring - accurate pressure readings and immune to plugging. Shown with 3-in-1 combination gauge + pressure switch + analogue transmitter.



## ONYX VALVE

### ARMADILLO TOUGH

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

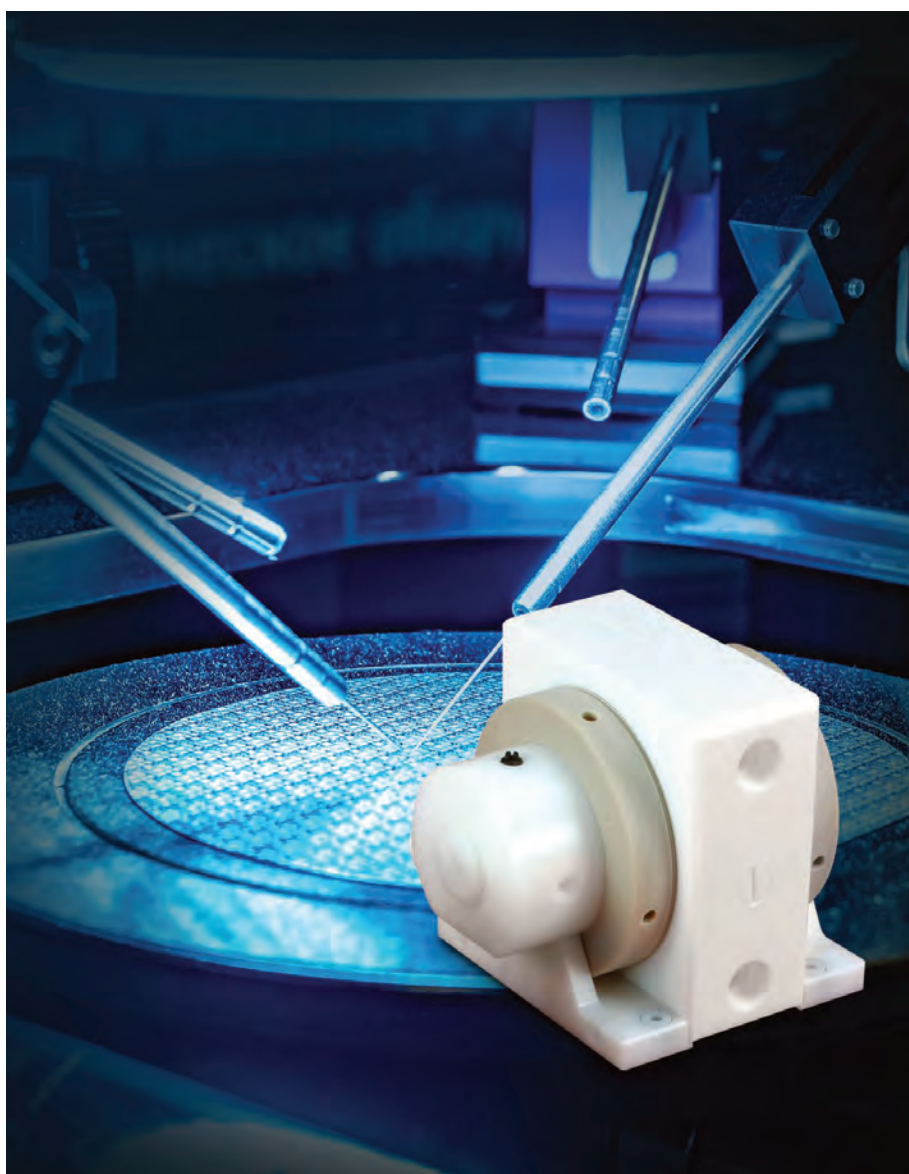
tel: 856-829-2888



# EMAXX-IMIZING SEMICONDUCTOR PRODUCTION RELIABILITY

*Industry consultant improves client performance through Almatec AODD pumps*

BY KAI RÖHRIG, ALAMATEC



The driving force for the founding of eMAXX GmbH can be said to have been found in the saying that “Great minds think alike.” Namely, in 2017, several people who had developed a friendship while working together in the 1990s in the German semiconductor industry had the idea that they should start their own consulting, engineering, design and programming company for the industry.

That seed of an idea has grown, five years later, into a company, which is based in Dresden, Germany, that, in addition to semiconductors, now offers services that are designed to help operators in additional industries optimize the performance of their companies. These other industries include pharmaceutical, food and beverage, chemical, oil and gas, and solar.

“Our portfolio has grown to the point where we now offer design and consulting, plant engineering, plant construction, equipment commissioning and startup services, inspection and maintenance services for an expanding network of clients,” says Alexander Keßler, managing director of eMAXX and one of its founders. “Our slogan, ‘simple. solutions,’ really expresses our corporate philosophy in a single sentence and adhering to it has



allowed us to currently have fifty employees and proudly enabled us to work with almost every semiconductor manufacturer in the east and south of Germany."

### KNOW YOUR ROOTS

Indeed, while eMAXX has expanded its reach into other industries, aiding its clients in optimizing operations in the manufacture of semiconductors, which are also known as integrated circuits (ICs), remains the foundation of its business—and one that it knows intimately. The semiconductor industry—and information technology itself—is also constantly evolving, with the pursuit of the enhanced automation and digitization of machines driving this constant state of evolution. At this point in time, reducing the semiconductor's physical size is the focus of the product's evolving geometry.

"Over the past five years, semiconductor chip technology has continued to change, with transistors

getting smaller and smaller," explains Keßler. "This makes it challenging to produce products that are both high in purity and quality and have long mean time before failure (MTBF)."

Because of these critical and constantly changing demands, it is incredibly important that semiconductor manufacturers identify and deploy the proper equipment at every stage of wafer production, chip design and production, and product testing.

### PUMPS IN SEMICONDUCTOR PRODUCTION

Industrial pumps are vital pieces of equipment that are required in the various stages of semiconductor production. However, wherever the handling and transfer of liquids of varying viscosities, particulate sizes and abrasion levels is required, air-operated double-diaphragm pumps (AODD) have proven to be a first-choice technology.

"AODD pumps are mostly used to pump chemicals, slurry in the



chemical mechanical planarization (CMP) process that smooths the IC's surface with chemical and mechanical forces, solvents, and in the transfer of deionized water and treatment of wastewater," says Keßler. "The pumps can be used in a range of activities, from the transfer, circulation and distribution of chemicals to the mixing of different liquid compounds."

Knowing that its clients needed not only AODD pumps for its semiconductor-manufacturing processes, but highly reliable ones,



## PERFORMANCE, ENGINEERED.

**We understand the critical importance of safety standards and regular maintenance.**

Leverage our experience as an OEM with services designed to exceed industry standards regardless of brand, ensuring your operations run smoothly and safely.

- Mechanical Equipment Management
- Operational Parts Management
- Workshop & Field Service
- Reliability & Availability
- Engineered Solutions



[trilliumflow.com/pumpservices](http://trilliumflow.com/pumpservices)

the team at eMAXX initiated a search for an AODD-pump technology that could meet the needs of its clients in the areas of reliability, efficiency, durability and safety. That search led to one company: Almatec®, Duisburg, Germany, a product brand of PSG®, a Dover company.

"When researching Almatec AODD pumps, we found that they possessed the capability to meet our clients' demand for reliable pumps that offer high-purity performance with long MTBF," says Kessler.

### WHY ALMATEC AODD PUMPS?

Since 1984, Almatec has been developing AODD-pumps that have proven to be ideal for the handling of high-purity chemicals, abrasive slurries, acids and solvents, even at high temperatures. Possessing these capabilities is paramount in semiconductor manufacture, which is why eMAXX has chosen to recommend the following Almatec AODD-pump models to its customers for use in critical and sensitive semiconductor-production applications for many years.

#### FUTUR Series AODD Pumps

eMAXX recommends Almatec's FUTUR Series pumps for use in high-purity liquid-handling applications because they excel in this area. They feature a design that allows liquids to flow straight through the product chambers within the center housing. This design ensures that only one side of housing comes in contact with the liquid, which reduces the number of flow bends to only two, resulting in minimized surface area while

eliminating the need for sliding parts in the product chambers, along with O-rings in the wetted area.

FUTUR pumps also feature no fastening elements, such as tie rods or lamps, with contactless cascade sealing between the product chambers improving the pump's structural integrity. All of these design enhancements work to minimize the generation of particulate matter as the pump operates.

The FUTUR Series pumps are available in four models that have been designed for use in different types of applications:

- **FUTUR T:** Corrosion resistance and higher tensile strength for handling acids and caustics
- **FUTUR H:** For high-temperature applications involving acids and caustics
- **FUTUR E:** Abrasion-resistant for handling semiconductor polishing slurries and CMP
- **FUTUR S/SH:** Constructed of solid-block 316L stainless steel for use with solvent mixtures and strippers, as well as being ATEX-certified

All models feature a compact, simple design with few parts and small footprint, and solid-block construction for long-life operation with the all-plastic FUTUR T, H, and E models containing no metal. Also standard on all models is the PERSWING P® air-control system that requires no lubrication or maintenance. Additionally, separate

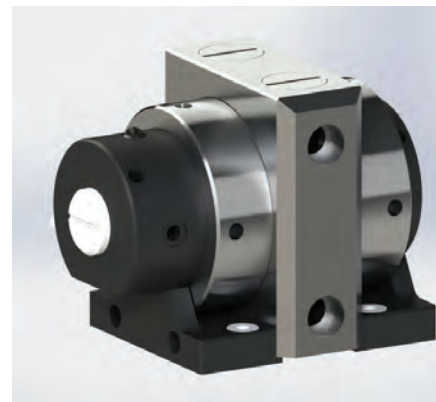
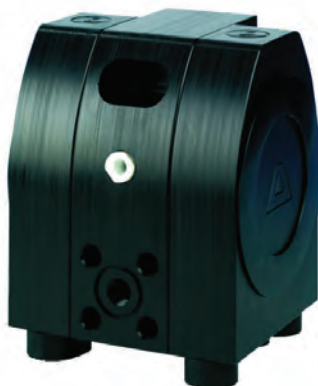
pulsation dampeners are available for all models and sizes and they can be retrofitted onto existing installations with no disassembly of the pump and piping needed. Operationally, all models are self-priming with low-shear liquid handling and produce low noise levels when running. The FUTUR H model has a temperature range up to 392 degrees Fahrenheit (200 degrees Celsius).

### E-SERIES AODD PUMPS

For more utilitarian liquid-handling duties, eMAXX suggests E-Series AODD pumps. The advancements within the E-Series' design include an innovative ring-tightening structure that works against a diaphragm-sized ring, which spreads bolt force out and allows higher bolt torques, increased flow capacity via an optimized flow pattern, decreased air consumption, reduced noise levels, and a pulsation dampener suitable for flanged connections.

All of these capabilities combine to make E-Series pumps ideal for use as a drain pump in supply applications and a chemical-handling pump in water/wastewater treatment.

The E-Series pumps feature solid plastic-block construction in PE/PE conductive or PTFE/PTFE conductive with diaphragms constructed of EPDM, PTFE/EPDM compound, PTFE Modified, NBR, or ATEX variations, and ball valves constructed of EPDM, PTFE, NBR, or stainless steel. The standard PERSWING P® air-control system requires no lubrication or maintenance and the pump has no





drives, rotating parts, or shaft seals while providing self-priming and low-shear operation. The pumps are compatible for use in temperatures up to 248 degrees Fahrenheit (120 degrees Celsius) and offer expansion compensation so they can be used in applications with fluctuating temperatures.

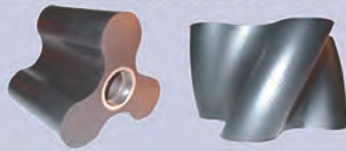
## CONCLUSION

On average, eMAXX has been delivering twenty-five to fifty new FUTUR or E-Series AODD Pumps to its clients per year since 2019, along with more than 600 parts kits annually. To Keßler, the reasons for this impressive volume are obvious.

"We like that all of the models deliver reliable and solid performance even when handling high-purity chemicals in which no product contamination is allowed," he said. "Almatec pumps are also easy to maintain. There really is no reason for our semiconductor clients not to use Almatec AODD pumps." ■

**KAI RÖHRIG** is the product manager for Almatec®, Duisburg, Germany, a premier brand of air-operated double-diaphragm (AODD) pumps. He can be reached at [kai.roehrig@psgdover.com](mailto:kai.roehrig@psgdover.com). Almatec is a brand of PSG®, a Dover company, Oakbrook Terrace, IL, USA. PSG is comprised of several leading pump brands, including Abaque™, All-Flo™, Almatec®, Blackmer®, Ebsray®, em-tec®, Griswold®, Hydro™, Malema™, Mouvox®, Neptune®, Quantex™, Quattroflow®, RedScrew™, and Wilden®. For more information, visit [www.psgdover.com/almatec](http://www.psgdover.com/almatec).

## REPLACEMENT • REPAIR • RECOVERING



- **Manufacturer of the Muniflo Rotary Lobe Pump** (originally manufactured by Wemco since 1985)
- We also manufacture aftermarket pump parts for most models of Borger®, Vogelsang®, Lobeline®, Lobeflo® and Muniflo® Pumps
- Specialize in Rotary Lobe Pump Repair



**PUMP**

[www.equipump.com](http://www.equipump.com) | [www.muniflopump.com](http://www.muniflopump.com)

800-783-5623 | fax 800-693-5623 | [info@equipump.com](mailto:info@equipump.com)

Are you looking for obsolete LobeFlo® (SSP/MGI) pump parts?  
We are the answer!

## Check All your valve needs at **Check-All®**

### ✓ SILENT OPERATION!

Our check valves close quickly and smoothly to avoid water hammer noise and vibration.

### ✓ SPRING-LOADED!

Multiple spring settings as well as seat and body materials available to meet your application needs.

### ✓ UPSTREAM TRIM!

The upstream trim is protected from corrosive media mixing; thereby, extending valve service life.

And most lead times are less than one week. That's what makes our check valves Check-All®.



Order online at : [www.checkall.com](http://www.checkall.com)

email us at: [sales@checkall.com](mailto:sales@checkall.com)

Call us at: 515-224-2301 or



Proudly manufactured  
in the USA



# REDUCING YOUR CARBON FOOTPRINT

*Combining multiple heat exchanges provides enormous energy benefits*

BY MATT HALE, HRS HEAT EXCHANGERS

*Heat exchangers can play a key role in reducing greenhouse gas emissions.*

Around the world, private companies and government agencies are looking to reduce the greenhouse gas (GHG) emissions associated with their activities, including increasing their use of renewable and low-carbon energy sources and improving the energy efficiency of their processes.

Energy efficiency represents more than 40 percent of the emissions abatement needed by 2040, according to the International Energy Agency (IEA) Sustainable Development Scenario. The IEA says, "Energy efficiency is the 'first fuel': reining in the scale of this unprecedented challenge, supporting net zero energy goals at lower costs, and delivering a wide array of benefits for society."

Furthermore, "According to the IEA Efficient World Scenario, currently existing cost-effective

technologies are sufficient to double global energy efficiency by 2040." Heat exchangers are just such an existing, cost-effective technology. Technologically proven for over a century, developments in materials and design mean that many types of heat exchanger, such as those utilizing corrugated tubes and energy recovery, are now more energy efficient than ever before.

## SEEKING BIGGER BENEFITS

The biggest efficiency benefits of heat exchangers come about when they facilitate the reuse of as much of the thermal energy generated or used during a process (such as heating, cooling, pasteurization, evaporation, etc.) as possible. Distributing heat more efficiently throughout production facilities has been recognized a key factor in improving efficiency and reducing greenhouse gas (GHG)

emissions in industries including as chemical refining, water treatment and manufacturing.

Many processes require heat, but not all of them utilize all of it. For example, a process using steam at 212 degrees Fahrenheit (100 degrees Celsius) or more may result in a hot water stream with a temperature of 176 to 194 degrees Fahrenheit (80 to 90 degrees Celsius). In some cases, this will be reheated in a continuous cycle, but in the least efficient situations it may simply be dumped, perhaps requiring cooling before it can be discharged. Water with this temperature profile has a range of potential uses, including pasteurization and low temperature evaporation. Rather than continually heat and then dump process hot water, it makes far more sense to reuse it where possible, by transporting it to where else it is needed in the facility.



## EXAMPLES OF HEAT RECOVERY WITH HEAT EXCHANGERS

The first typical example can be seen in food production, if we imagine a product that needs to be pasteurized. The product needs to be heated to the necessary temperature to achieve pasteurization, then rapidly cooled to maintain shelf life and quality. This is achieved through the use of two heat exchangers. The first uses hot water to raise the temperature, while the second uses chilled water to cool the product down again. In the second process, the temperature of the cooling water is increased significantly. There are three options for dealing with this heated water: discard or discharge it elsewhere; cool it again for re-use; or cool it again for re-use but use some of the heat it contains towards the heat required for the pasteurization phase. This third option utilizes heat recovery or heat regeneration, reducing the amount of new energy required for the subsequent first heating phases.

A second example shows how heat left over from one process can be recaptured to be used elsewhere. Many anaerobic digestion (AD) plants use heat exchangers to pasteurize the digestate produced during the AD process, so that it can be sold as an agricultural fertilizer. The “surplus” heat which is generated after the

system has been running for two hours is used to preheat the digestate, reducing total heat load and improving overall plant efficiency by increasing the amount of generated energy, which is available for export or other uses, as opposed to being required for pasteurization.

Finally, combining multiple heat exchanges can often provide the greatest energy benefits, for example, in a multi-effect evaporation system such as the HRS DCS Digestate Concentration System. This uses heat exchangers and evaporation to reduce the volume and increase the concentration of sludges and digestate. The first evaporation stage heats liquid digestate and uses a cyclone separator; the steam produced from this first cycle—usually available at 158 degrees Fahrenheit (70 degrees Celsius)—is then used as the heating media for the second effect, whereby the process is repeated.

The subsequent steam—usually available at 140 degrees Fahrenheit (60 degrees Celsius)—is then used as the heating media for the third cycle. The number of effects is determined by the level of dry solids required and the amount of surplus heat available, up to a maximum of four cycles. After the final stage the steam is condensed back to water and this heat is used to pre-heat the incoming product before the first stage of evaporation.

## THE FUTURE IS HEATING UP FOR RECOVERY

Heat recovery is not limited to systems dealing with liquids. HRS recently supplied a large G Series gas-to-gas heat exchanger to recapture heat from the high temperature exhaust gases leaving a large chemical reactor. This recovered heat is then used to help pre-heat the chemicals entering the reactor to around 932 degrees Fahrenheit (500 degrees Celsius). As well as helping to improve energy efficiency at the plant, the new unit has been designed to cope with challenging operating conditions in order to provide a suitable working life.

These examples show that where the situation allows, HRS corrugated heat exchangers have significant potential to reduce the energy consumption (and therefore GHG emissions) of thermal processes in a wide range of industries. The capital costs of including energy recovery in a heat exchanger system is likely to be higher than similar systems without heat recovery, but these will be recovered over the working life of the unit, particularly at today's high energy prices. ■



*Heat recovery can be applied to gases as well as liquids.*

**MATT HALE** is the international sales and marketing director with HRS Heat Exchangers. Located in Atlanta, Georgia, HRS Heat Exchangers is part of the HRS Group, which operates at the forefront of thermal technology, offering innovative heat transfer solutions worldwide across a diverse range of industries. With forty years' experience in the food and beverage sector, specializing in the design and manufacture of an extensive range of turnkey systems and components, incorporating corrugated tubular, and scraped surface heat exchanger technology, HRS units are compliant with global design and industry standards. For more information, visit [www.hrs-heatexchangers.com](http://www.hrs-heatexchangers.com).



# THE IMPORTANCE OF ADOPTING NEW AUTOMATION AND AI TECHNOLOGY

## *Key trends and solutions in the food and beverage industry*

BY IAN HART, ADI PROJECTS

In an increasingly automated world, the importance of digital transformation, IoT, AI, and Industry 4.0 has been recognized within a range of industries, and though the food and beverage sector has been slow to adapt in comparison to others, it's now catching up at a relatively quick pace.

The food automation market was valued at \$11.29 billion in 2022, and is projected to register substantial growth over the coming years, reaching \$18.60 billion by 2030. Automation provides a robust, future-proof solution to the many issues common in the food and beverage industry, such as lack of visibility and traceability, as well as the increasing

need to generate cost/energy savings, reduce waste, and improve food safety.

Streamlining and optimizing production is equally as important as the above factors if manufacturers are to meet growing quality standards and consumer demand to ultimately boost profit, making automation a vital part of building long-term resilience.

So, what are the right ways to automate food and beverage facilities to effectively maximize benefits?

### **VISUALIZATION AS A PRIORITY**

Visualization systems are quite simply becoming indispensable for food and beverage manufacturers

due to their impressive capabilities, which cannot be rivalled by human labor or manual processes. These systems make it possible to analyze products coming down the production line, ensure that these have the right pieces and components, measure products in real time, as well as detect colors, foreign materials, and contamination.

This means that machine vision systems are capable of elevating quality control standards to a considerable extent, an issue of utmost importance for food manufacturers.

When it comes to food production, reducing the risk of errors and improving consistency is vital to



ensure customer satisfaction, and crucially, to avoid product recalls. In the worst cases, misprinted or inconsistent labelling and packaging can be deadly or harmful for consumers, and lead to loss of revenue and brand credibility in the best of circumstances.

## UNDERSTANDING THE POWER OF DATA

Automated vision systems ultimately provide access to data that allows manufacturers to be responsive and adaptable to better manage production on a holistic level. With access to historical data and trends, as well as custom reports, everything becomes easier, making optimizing operations within facilities a much more straightforward process. Manufacturers should seek to implement a network of systems and equipment that is all digitally interconnected, providing visibility across every aspect of a facility.

This would enable them to discover and address potential issues promptly and efficiently, making ongoing maintenance more effortless, too—having data at your fingertips means you don't have to guess what the status of machines and pieces of equipment is.

Discussions regarding the power of so-called digital twins, that is, virtual copies of a food factory that utilize the Internet of Things (IoT), have focused on how these make it possible to experiment with how individual systems can work better in practice, therefore helping predict future performance and offering improved traceability, yet another way to generate cost savings.

## THE LINK BETWEEN AUTOMATION, SECURITY, AND CONTROL

Data collection is crucial in the context of security, too—the ability of control systems to allow manufacturers to have a clear view of their facility and control it from a remote location is nothing short of invaluable.

Automated food factories could have sensors with alerts across all equipment present, so if any of these pieces are not running at the right velocity, or are malfunctioning, owners will be able to quickly address the issue at hand. And from a security point of view, this becomes incredibly

useful, ensuring neither external nor internal factors can compromise operations.

Automation can help ensure a facility is safe from both internal and external threats, including protecting it from human error. However, automated tracking also allows for

## VFD-Induced Shaft Voltages Destroy Bearings!



### Electrical bearing damage causes unplanned downtime

Variable frequency drives (VFDs) are used to control pumping systems. But VFDs create a motor shaft voltage that discharges through the bearings, blasting millions of pits in bearing surfaces. Both motor and pump bearings are at risk. These discharges oxidize the bearing grease and cause bearing fluting, premature failure, and costly downtime.

### Protect motor bearings with AEGIS® Shaft Grounding Rings

By channeling VFD-induced discharges safely to ground, AEGIS® Shaft Grounding Rings prevent electrical bearing damage. Proven in millions of installations worldwide, AEGIS® Rings provide unmatched protection of motors against electrical bearing damage, motor failure, and unplanned downtime.



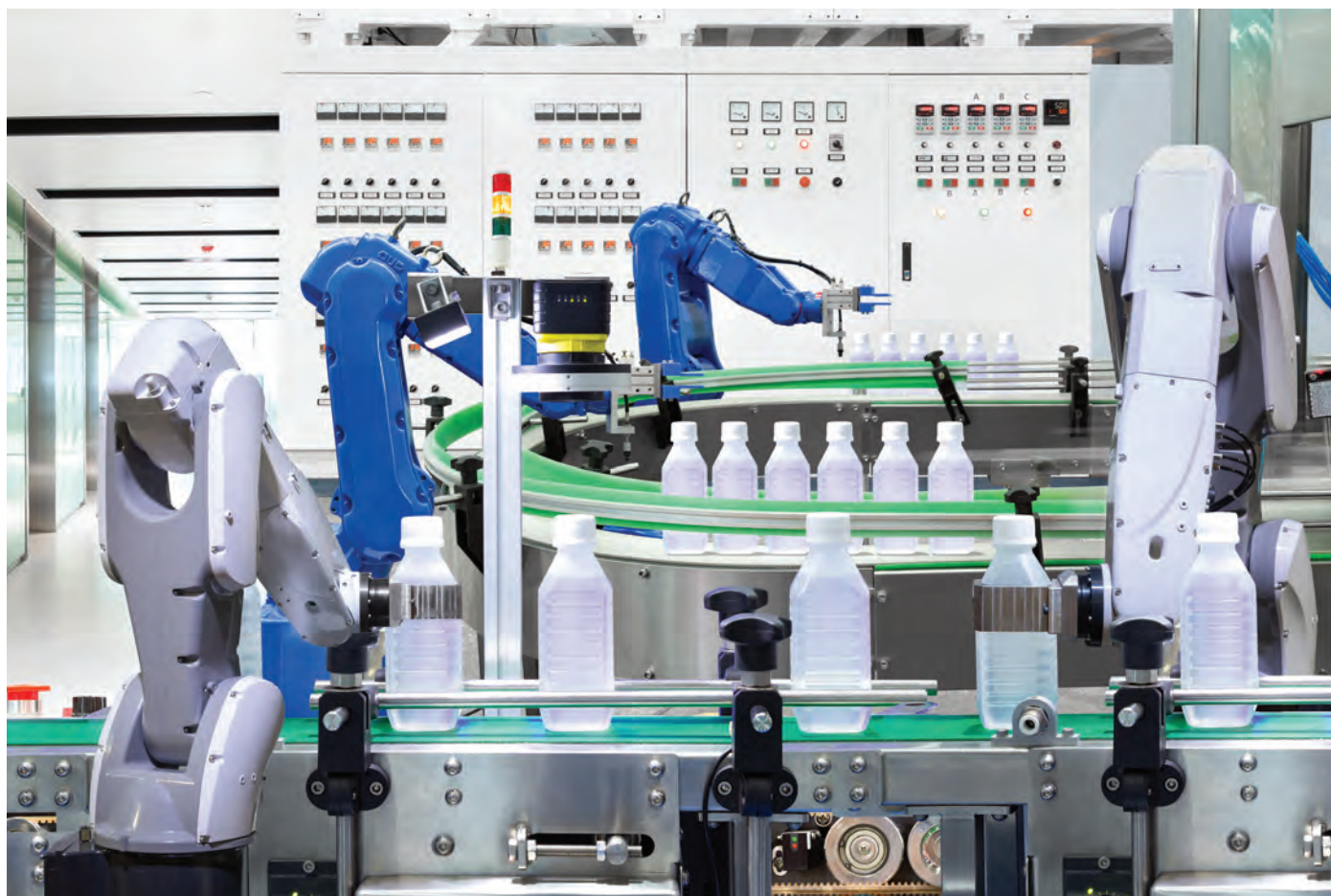
Fluting Damage

See our shaft grounding case studies and resources for pump users, contractors, and manufacturers at: [est-aegis.com/pump](http://est-aegis.com/pump)



1-866-738-1857 | [sales@est-aegis.com](mailto:sales@est-aegis.com)

**Electro Static Technology™**  
An ITW Company



the whole of the supply chain to be monitored and controlled, giving manufacturers the ability to track products from start to finish as they move through the supply chain. In turn, this enables them to resolve potential issues even after a product has left the production facility.

### THE BENEFITS OF REPLACING HUMAN LABOR

It goes without saying that having people work in food and beverage facilities is inherently a risk. Individuals are the source of contamination: the more the people, the greater the risk.

Accordingly, the pandemic gave growth in automation in food factories a significant boost, with pressures around workforce availability and hygiene concerns demanding a faster transition—this is evidenced by a rise in robotics orders that was 56 percent higher in 2020 than in 2019.

What's more, high rates of turnover can be particularly expensive for businesses. It's ultimately about economies of scale. Profitability naturally goes up when replacing human labor, it helps build a more consistent and therefore future-proof business model, which also makes it easier to cater to demand and comply with regulations.

With extraordinary accuracy and speed, industrial robots can automate monotonous, repetitive tasks such as slicing, mixing or sorting ingredients, grinding, agglomeration, and packaging help ensures there's no additional waste, which the food and beverage industry is knowingly particularly guilty of.

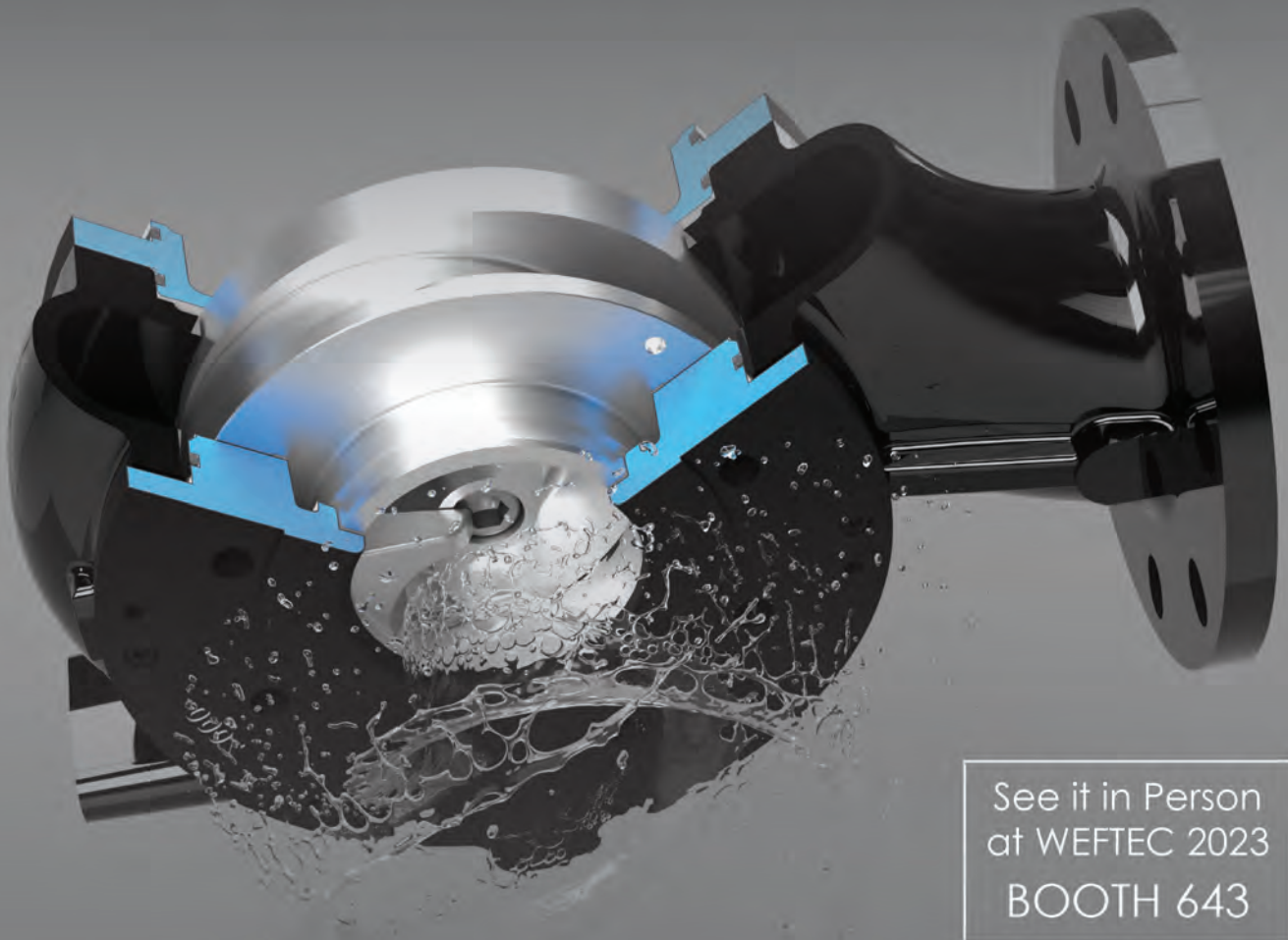
Automated facilities naturally increase in value, too. And when we discuss being future proof as a business, this is another element that should be considered. The cost of initial investment is always worth it in the long term. ■

**IAN HART** is business development director of adi Projects, a division of multidisciplinary engineering firm adi Group. As a director and chartered engineer, Hart has twenty-five years of executive board experience, successfully establishing and developing customer focused, engineering based business, and delivering high value investments in both private and public sector organizations throughout the world. Providing specialist services to the food and beverage industry, adi Group can help manufacturers automate facilities in entirely bespoke ways, taking into account the varying needs of individual businesses. For more information, visit [www.adilttd.co.uk](http://www.adilttd.co.uk).





# OC SERIES



See it in Person  
at WEFTEC 2023  
BOOTH 643

The HOMA OC Series Impeller provides super-high-head performance with an aggressive cutter system, built to handle even the toughest solids.

Wastewater has evolved. Has your pump?



See  
Part 1  
[www.mptmag.com](http://www.mptmag.com)

The asset owner faced extreme schedule pressures to restore four, 1,000-volt inverters destroyed by fire.

# COME HAIL OR HIGH WATER

## *Extreme weather's impact on utility production and revenue* *Part 2 of 2*

BY JAMIE ALEXANDER, DEPCOM POWER

In last month's introduction, we laid out how, in the face of recent record-breaking natural catastrophe claims and damage from extreme weather events, some insurance firms have stopped underwriting renewable projects, while others are increasing premiums to far higher levels. This is a serious problem for the sustainability of both the energy sector and its profitability. This guide offers a roadmap to natural disaster plant restoration, with actionable

strategies to keep plant revenue loss under control. To reiterate, although no one can control the weather, what operators and facility managers can control is their level of preparedness and how to plan for recovery.

### **CASE STUDY: SALVAGING SOLAR FROM FLOOD**

Whipping winds, torrential downpours, power outages, and floods—hurricane season can be punishing. And with 2020's Atlantic

hurricane season ranking as the most active on record, owners of utility solar plants are bracing themselves for costly damages in the future.

When two hurricanes swept through the Southeast in 2018, one asset owner faced torrential rainfall and massive flooding at its 92-MW PV plant. The damage was severe: Ten of forty power conversion stations were inundated with 12 to 18 inches of water and remained flooded for several days.



The operator took all of the plant's inverters offline before the hurricanes roared through, generating condensation inside all of them. Consequently, when the inverter manufacturer inspected for damage at the plant, it voided the warranty on all forty inverters—instead of the ten flooded units—abruptly denying responsibility for any of them.

Depcom's restoration teams looked at all aspects of the project to keep costs and revenue loss to a minimum. From damage assessment and salvage planning to rapid restoration, they quickly assessed the situation: Condensation in the inverters was the long-term result of poor design and not negligent maintenance, as the OEM reported.

Depcom equipment specialists determined that the doors on the damaged units were not sealed properly, allowing humid outside air to seep in, resulting in condensation. With this expert documentation in hand, Depcom provided the critical proof



*In 2020, extreme weather left ten of forty power conversion stations flooded for days at one facility.*

that the units had preexisting design issues, compelling the OEM to restore the warranty on the 30 inverters that had not flooded. Insurance covered the ten flooded inverters.

Facing significant production losses already, the plant owner and its insurance partner were on track to replace the flooded inverters. But Depcom's specialists offered a different solution: Salvage

and refurbish the units and save a whopping four million dollars in equipment replacement costs. The insurer approved the plan, but wanted to be sure the inverters were flood-proof. The most cost-effective solution? Elevate the concrete pads supporting the units by three feet for a fraction of the replacement cost.

One of Depcom's unique strengths is prioritizing workflow to minimize

## WE DELIVER A PATTERN OF EXCELLENCE



Get the latest information  
**HoosierPattern.com**  
See our virtual tour  
**HoosierPattern.com/tour**

Hoosier Pattern continues to be an industry leader by setting the bar high to exceed our customer's expectations. With our state-of-the-art technologies along with our highly-experienced team members, Hoosier Pattern continues to deliver the industry's best additive manufacturing molds and cores on time and every time.

### WE EXCEED EXPECTATIONS

- » On Time Delivery
- » Quality Products
- » Experienced Team



Call Us Today at 260.724.9430



80 MPH winds damaged 15 percent of one site's trackers.

revenue loss. In this case, it applied a strategic approach to move the restoration worksite to an area that would not hamper power production in other sections of the site.

As one of the country's leading EPCs with more than 1.5 GWs of operational solar projects, Depcom can mobilize quickly. It deployed its 24/7 operational crews to the site to lift the pads in just six weeks, far faster than the twenty-two-week lead time required to install new inverters. This efficient solution minimized business interruption and got the flooded portion of the plant back online.

Depcom's ability to rapidly return the plant to production resulted in \$400,000 to \$700,000 more revenue than waiting for delivery of new inverters. Combined with the \$1.8 million savings from salvaging the flooded units, Depcom's fast restoration plan resulted in total savings of more than \$2.5 million for the asset owner.

## CASE STUDY: SURVIVING THE STORM

When a rogue storm battered a PV power plant with winds up to 80 miles per hour, damaging 233 of the site's 1,600 trackers, it quickly became clear that consistent and thorough maintenance practices had not been observed prior to the damage. As a result, more than 15 percent of the plant's trackers weren't operational before the storm, making it impossible

to stow them into a protective position to minimize damage.

Despite that failure, the asset owner initially relied on O&M personnel to assess the damage and file insurance claims. But four months after the storm, with huge swaths of the plant still not operating and finances beginning to sink into the red, restoration work had yet to begin. That's when Depcom's Repowering+ team was asked to step in.

As one of the country's leading EPCs with more than 1.5 GWs of operational solar projects, Depcom can mobilize quickly. Within four weeks, our recovery experts had a plan in place and were powering through the work.

Specialists deconstructed the damaged areas and conducted testing to determine what components could be salvaged and repaired versus what needed to be replaced altogether. Because of its deep supply network, Depcom was able to establish reliable and fast delivery for the required replacement parts. Equipment also was readily available through Depcom's extensive inventory of spare parts on hand at regional warehouses.

Of equal importance was Depcom's early work with a key stakeholder too often brought in late in the process—the plant's insurance carrier. By establishing an ongoing dialogue with insurance adjusters, Depcom was able to keep the many moving

parts in alignment while streamlining critical insurance payouts.

Ultimately, Repowering+ experts seamlessly married original, salvaged parts with new, modern equipment to bring the site completely back online without a significant (and costly) redesign. Such a complex accomplishment would not have been possible without our extensive restoration experience, which has allowed Depcom to consistently uphold every energy production guarantee after an extreme weather event. The flexible restoration plan minimized revenue loss while keeping much of the plant operational to maximize production throughout the repair process.

The final upshot: Savings of \$3.3 million over the initial forecasted budget. While the plant's owner had anticipated replacing roughly \$1.75 million worth of damaged components, Depcom was able to develop a salvage plan for the bulk of the modules that resulted in \$1.3 million in savings, recovering 70 percent more modules than anticipated in the original budget.

Recovery following an extreme weather event is complex, often even more so than initial plant construction. Unlike in new builds, recovery and restoration involve an intricate balancing act between current production needs and restoration demands. Depcom has found that balance time and again. In this case, additional savings came from reduced business interruption claims, a more efficient timeline than was originally forecasted, and a staggered workflow to prioritize production.

Depcom's restoration efforts resulted in additional savings from reduced business interruption claims, a more efficient timeline, and a staggered workflow to prioritize production.

## CASE STUDY: REPOWERING INVERTERS AFTER SEVERE FIRE

When a catastrophic inverter fire took down all production at a five-megawatt PV plant in Durham, North



Carolina, there was no way to know how or why the fire ignited. Although it was clear that the flames had started inside the inverter cabinets, damage to both power conversion stations was so severe that it was impossible to determine the root cause.

Because the plant was commissioned in 2014, much of the original equipment is no longer made. The site was designed around now-obsolete 1000-volt DC inverters, while today's plants are developed using 1500-volt DC systems.

Forced to work with a lump-sum payout from their insurers, the asset's owners needed a plan—and fast. Under the power purchase agreement with the local utility, there was a limited grace period allowed before production had to be restored. If that deadline was missed, the PPA could be voided entirely.

Unlike other contractors that quote a price at the outset and then modify it with change orders as issues stack up, Depcom's plant repowering expertise allows the EPC leader to cover the full scope of the project for a guaranteed price up front.

As the project started, Depcom's Repowering+ team determined that the four destroyed one-megawatt central inverters were no longer manufactured. Instead, they devised a plan to reuse the existing skid base and consolidate the four old units into two new inverters with a higher power density—reducing the project's timeline and avoiding considerable construction costs.

Depcom's strategy simplified the overall system design, minimizing the balance-of-system materials required and reducing the AC bus work and components needed, to create overall savings in installation costs. These savings offset the higher cost of manufacturing new 1000-volt inverters, which are now much more difficult to source and require components and materials no longer readily available.

Because the plant had to be partially redesigned, both local regulators and the contracting utility



required that the facility meet all current standards and codes. This meant registering entirely new permits, updated testing, and a repeat approval process as if the plant were being commissioned for the first time.

Depcom Power brought in its repowering experts to mitigate the damage fast. Leveraging its EPC and O&M capabilities allowed Depcom to complete the permitting process efficiently, engineer and design the restoration rapidly, source new equipment, and remove damaged equipment. Timing was of the essence to complete the installation and fully test the new operation.

Ultimately, Depcom was able to bring the plant back online before the PPA grace period expired, preserving the contract. Because work was completed within the budget set by the insurance company, the asset owner had no out-of-pocket expense beyond paying the deductible.

### **DON'T WAIT FOR NATURAL DISASTERS TO STRIKE**

Site recovery takes more than cobbling pieces back together again after a disaster; it involves complex processes that demand unique skills and expertise beyond simple construction. Planning ahead can make the difference between struggling to get back online and coming back at full strength. To

weather whatever storms may come, plant owners should screen potential partners today and enlist their help to develop contingency plans for critical equipment and parts, safeguarding future profitability.

As a market leader in natural disaster management, Depcom's repowering team helps asset owners restore damaged solar assets for maximum profitability. ■

**JAMIE ALEXANDER** is senior vice-president of services at Depcom Power, which serves the solar and energy storage market by providing traditional O&M services, restoration of sites impacted by natural disasters, repowering of sites underperforming or experiencing catastrophic failures, and specialized services focused on inverter commissioning and repair. Alexander's twenty-five years of industry experience includes OEM equipment design and manufacture, project development, construction, and operations and maintenance. Having worked exclusively in the solar and energy storage sector for the past twelve years, Alexander has been involved in the deployment of almost 3 GWs of assets. For more information, visit [www.depcompower.com](http://www.depcompower.com).

*With a comprehensive global network, the independent distributor can make purchases in local markets that currently offer the lowest prices and pass the savings to their customers.*

# SOURCING ELECTRONIC COMPONENTS POST-PANDEMIC

*Independent distributors are stepping in to assist manufacturers and reduce electronic component costs*

BY DEL WILLIAMS



With the unprecedented, once-in-a-lifetime disruption of the supply chain for electronic components in the rear-view mirror, the market is finally beginning to stabilize. For the past three years, manufacturers found many critical electronic components hard to come by, watched as prices skyrocketed and lead times extend to almost a year in traditional distribution channels.

Thankfully, much of the dust has settled, but the work has only begun. With hard-earned lessons from the pandemic, many manufacturers are looking to secure their supply chain and prepare for what will be inevitable disruptions in the future. At the same time, they want to do so at reduced cost and capital outlay after paying a premium for electronic parts over the past several years.

"We just went through one of the biggest supply chain disruptions in history outside of a world war," says Mike Thomas, who is vice president

and global general manager at Classic Components, a premier independent distributor based in Torrance, California. "Now, things are starting to settle down. Interest rates have risen sharply, which is having the expected result of slowing the economy and so demand is down. However, the supply chain is still highly vulnerable to present and future disruptions."

In fact, change may be the only constant in the industry. Even though it was an unparalleled event, Covid related supply chain shortages are not the only disruption to affect global manufacturers in recent years. In 2018, there was a worldwide shortage of multi-layer ceramic capacitors (MLCC) when demand outpaced supply. At the time, 60 percent of the world's production of MLCCs was controlled by three suppliers. Even now, there are components in short supply due to the limited number of suppliers, geopolitical trade tensions, and ever-changing technology.

As a result, manufacturers are taking steps to secure the supply chain over the long run. One of the key strategies is to be less dependent on China and more diversified in sourcing the electronic components they will need to manufacture their products, says Thomas.

## GROWING THE ROLE FOR INDEPENDENT DISTRIBUTORS

There will also be a continued role for independent distributors. When franchised/authorized distributors were not able to supply the required parts, independent distributors stepped in during the pandemic and played a critical role in helping keep many manufacturers' production lines running. Independent distributors can leverage their extensive expertise and decades of strategic relationship building to find alternate sources through regional authorized/franchised distribution, manufacturer direct, or surplus/excess inventories.

We've been designing, building, and perfecting dampeners

# SINCE 1976.



Find us at  
**WEFTEC!**

September 30 - October 4  
Booth 954

We've come a long way since we created the first pulsation dampener for an AODD pump in 1976. Since then, we've had a lot of firsts. Case in point: our AODDampener, the first fully automatic pulsation dampener exclusively for AODD pumps.

Engineered by Blacoh in 2015, the AODDampener is just part of our extensive line of pulsation and surge dampeners for all types of reciprocating pumps across multiple industries and applications.

From common pumping system problems to complex issues involving fluid dynamics, we've been solving pumping system problems for more than 46 years. Scan the code or contact our sales team today.



**BLACOH**  
INDUSTRIES

Blacoh.com  
Sales@Blacoh.com  
951.342.3100



*Independent distributors can even make speculative purchases for a customer and/or provide financing to purchase inventory when a qualified client has capital constraints.*

According to Thomas, many manufacturers are sitting on excess inventory due to stockpiling parts and ordering from multiple sources to ensure delivery. After having to pay exorbitant prices over the past three years to secure parts, many manufacturers are also looking for ways to reduce costs further, even

as prices drop. Some are looking to take advantage of financial services that some independent distributors provide to minimize cash outlay while ensuring access to inventory.

Fortunately, Thomas says these are traditional services that independent distributors like Classic Components have been offering for almost four decades.

### REDUCING EXCESS INVENTORY

When manufacturers faced tremendous lead times on parts, many double, triple, or quadruple ordered since they did not know who was going to deliver first, according to Thomas. "Now that all these parts were delivered, some manufacturers have excess inventory and aren't sure what to do with it," he says.

If it is true dead stock, an independent distributor like Classic

Components can help liquidate the electronic components and get them off the books through various types of arrangements. The company has provided this type of service since 1985, and it can be initiated with a simple email list of surplus items with the original price paid.

Classic Components then searches its extensive database to see if any other customers use those parts and can broker a deal between the parties.

"We have a global customer base and lots of information about the materials they use," says Thomas. "So, if a manufacturer has excess inventory, we hopefully can find an opportunity to sell it to one of our other customers."

Classic Components can also list and sell surplus inventory on consignment with, or without, taking physical possession of the inventory.

**SWITCH TO TEMPERATURE RESISTANT HITEMP 160 PUMP WEAR RINGS & BEARINGS**



**VESCONITE**  
www.vesconite.com  
vesconite@vesconite.com

**WRAS**  
APPROVED PRODUCT



"Essentially, after coming to a consignment agreement, the list of items is uploaded to our website. We offer complete transparency throughout the consignment process. As we receive inquiries, we share the information so you can decide whether to sell [your surplus] at the offered rate," says Thomas.

According to Thomas, Classic Components may even opt to purchase the inventory outright to resell it later. "We buy excess inventory every day and can make purchases on a line-item basis," he says.

## REDUCING COSTS

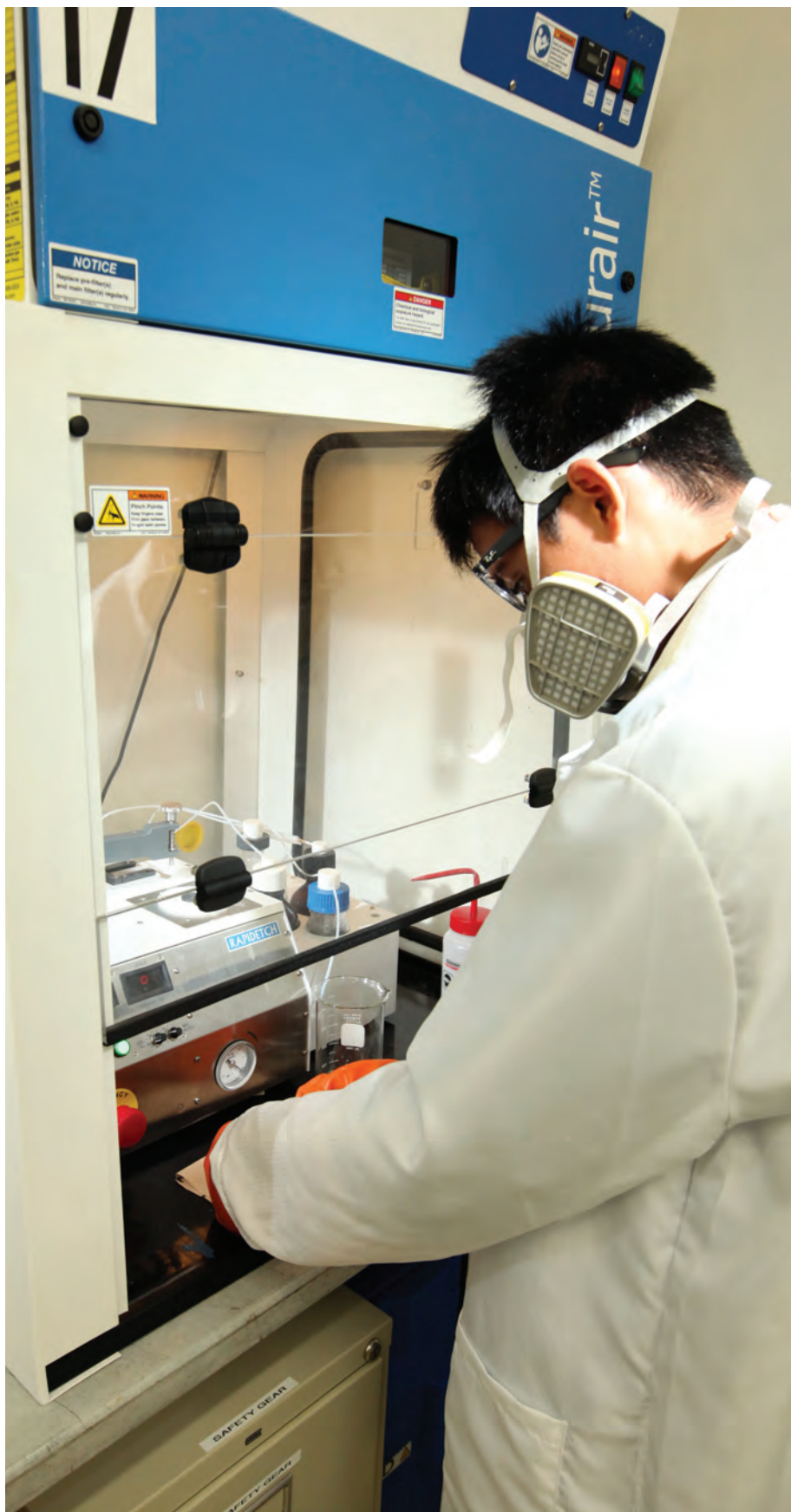
With costs rising and inflation still not under control, manufacturers are also looking to reduce the expense of procuring parts. Some independent distributors have found ways to lower the cost of parts by leveraging their global relationships.

For example, Classic Components procures material in all the local markets where they do business and has offices all over the world so is not bound by regional price constraints. With a comprehensive global network, the independent distributor can make purchases in local markets that currently offer the lowest prices and pass the savings to their customers.

Besides its 60,000 square foot facility in Torrance, California, Classic Components has established twelve regional offices in strategic locations throughout the world to support its global distribution business. The company has nearly 200 employees who specialize in various aspects of the business including supply chain, quality, technology, and logistics.

The buyers can develop an intimate knowledge of regional supply chains with the expertise to find and manage quality component suppliers. These experts then leverage these relationships to bring the best price and delivery to their customers.

"By using regional quality centers and logistic hubs, we have the flexibility to purchase components from any country, in any currency, and



*Classic Components can list and sell surplus inventory on consignment with, or without, taking physical possession of the inventory.*



Independent distributors are stepping in to assist manufacturers offering creative financial solutions to preserve cash outlay and identifying ways to reduce electronic component costs.

then ship them to anywhere they are needed," explains Thomas.

## CUSTOMIZING FINANCIAL SERVICES

Manufacturers may also seek financial or logistical services when their cashflow is constrained or they want to optimize their working capital. In some cases, they can even make speculative purchases for a customer and/or provide financing to purchase inventory when a qualified client has capital constraints.

To improve manufacturers' cashflow, independent distributors like Classic Components offer tailored programs of vendor managed inventory, which can simplify logistics, reduce the total cost of ownership, and enable the redirection of capital to other spending categories. In some cases, they can even make speculative

purchases for a customer and/or provide financing to purchase inventory when a qualified client has capital constraints.

While the specifics of any financial services arrangement will depend on many factors, the framework is always to facilitate a mutual benefit.

"Financial and logistical services can be customized to the manufacturer's particular needs and situation, which may evolve over time. The goal is a win-win partnership that mitigates their capital and logistical concerns," concludes Thomas.

## PROTECTING AGAINST FUTURE DISRUPTIONS

Thomas asserts that the up-and-down nature of the market means manufacturers need to prepare today, for whatever will come next.

"What happens in a year when the Federal Reserve decides to lower interest rates?" says Thomas. "There is still an incredible amount of pent-up demand. When the economy begins to return to normal it may not be like it was during covid, but a spike in demand will cause [electronic component] shortages again."

Another factor that could affect the supply chain in the reshoring effort spurred by the passing of the Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022 (CHIPS Act). "They may not be saying it, but parts built in the United

States are going to cost more than the parts from Taiwan. It will start to affect pricing structures at some point."

To combat this and any other future market volatility, Thomas advises partnering with a flexible independent distributor that can provide services authorized distributors cannot.

"You want to have that relationship with a partner that is flexible enough to shift gears in a moment's notice," explains Thomas. "You may be in shortage mode on Monday, and then Tuesday, you have excess and want help selling it. Then on Wednesday, you decide you don't want to sell any more and prefer we loan you money against it."

Flexibility also involves a level of customization because no two deals are the same. "An independent distributor has to be flexible enough to adjust to whatever the manufacturer's specific requirements are," says Thomas.

With the market seemingly in continual flux, the only constant may be change. When manufacturers seek to successfully adapt to whatever comes their way in the market, partnering with a flexible independent distributor that can cater to their specific needs may be the best bet to survive the next supply chain disruption. ■

**DEL WILLIAMS** is a technical writer based in Torrance, California. Classic Components, an independent distributor based in Torrance, California. Classic offers unrivaled flexibility and reliable material management solutions to many of the world's largest engineering companies and electronics manufacturers. Classic continues to set the industry standard through our tireless commitment to customer service, high quality standards, and industry-leading counterfeit detection methods. For more information, call 310.539.5500, email [info@class-ic.com](mailto:info@class-ic.com), or visit [www.class-ic.com](http://www.class-ic.com).





INDUSTRIAL  
FLOW  
SOLUTIONS™

WEFTEC 2023  
Booth # 3600

Changing the world  
one wet well at a time.



**BJMPumps®**  
Submersible Pumps



**DERAGGER®**  
Intelligent Control Systems



**OverWatch®**  
Direct In-Line Pump System



SCAN

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



# POWER TO THE PEOPLE

*Briggs and Stratton's Vanguard engines bring oomph to dewatering pumps*

BY ELSA BUENO, TSURUMI AMERICA, INC.

Navigating the balance between consumer demand and regulatory requirements means manufacturers must bring innovation to the market, even for well-established and widely used equipment like dewatering pumps. Tsurumi Pump has partnered with Briggs and Stratton to offer North American users its engine-driven trash and dewatering pumps another choice and continuous high level of after-sales support. This enables popular models in Tsurumi's EPT and TE series to achieve compliance with the latest regulations of California's Air Resources Board (CARB) and allow them to be sold in the state.

## MORE OPTIONS FOR THE MARKET

The new CARB-compliant option will allow Californian users to enjoy the advantages of Tsurumi's 2- and 3-inch TE3 dewatering pumps and 2- and 4-inch EPT3 trash pumps. Furthermore, the Vanguard Series offers many benefits in terms of operation and servicing. After carrying

made several innovative, yet common-sense, modifications to improve its engines' suitability even further.

As an example, Briggs and Stratton ensured the fuel shut-off system is automatically engaged when the engine is switched off, thereby reducing the risk of a fuel/oil mix and removing the need for a separate button that is subject to damage. This makes the new Vanguard option an attractive proposition for rental companies in particular.

## THINKING AHEAD

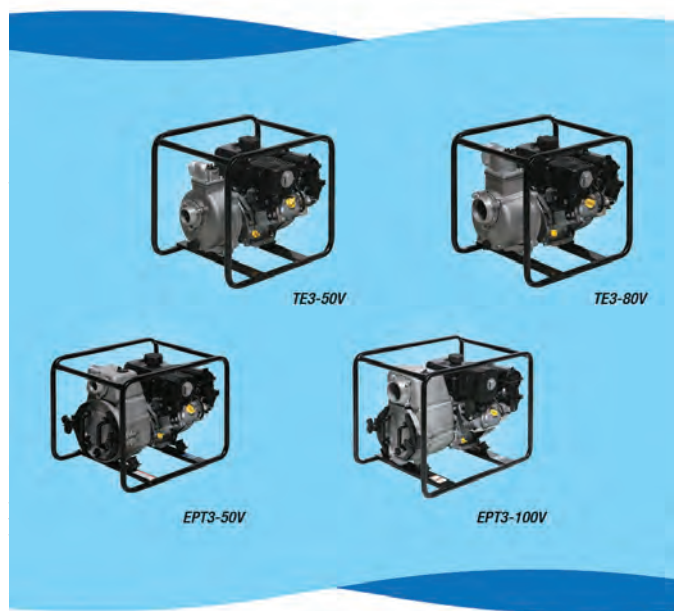
The decision to add a new engine option was initially inspired by supply chain problems in recent years. While these issues have almost been entirely resolved, Mike Grant, Tsurumi's portable products and rental market manager, says that this product offering still offers many advantages to his company and customers alike.

"We're already very well caught up with the recent increase in demand for these pumps, so adding the Vanguard option is another way to better serve our customers," Grant adds. "We see this as an opportunity to expand our product line by offering an engine option that is of equivalent quality. Briggs and Stratton have been building engines for well over a century, so our goal is to attract a significant customer base that prefers Vanguard power. In fact, we already have one national account that is considering standardizing its small equipment to run on these engines because of the vast service and support network.

"We've turned a potential disadvantage into an opportunity and are now able to sell our engine-driven pumps in every one of the fifty states, which further boosts our sustainability credentials. And, in the unlikely event of another supply chain issue in the future, we'll be in a much better position to tackle it."

## BENEATH THE SERVICE

The new Vanguard option will also provide Tsurumi customers with a superb level of reliability and widely available maintenance support. For example, upon registering their purchase on the Briggs and Stratton





website, an additional year's coverage is automatically added to the standard three-year commercial warranty. And, with over 40,000 authorized dealers globally—almost all of them incorporating a service department—finding an experienced and convenient repair shop is an easy task.

Brad Hanna, vice president of marketing and product management at Briggs and Stratton, says that customers who prefer to handle work themselves can also benefit from the engine manufacturer's extensive parts offering and online support material.

"Our parts and service offering is unmatched in the industry," Hanna explains. "We manufacture our own parts, maintain a comprehensive inventory of them and have one of the largest parts distribution networks in the industry. We're also working on a system that will allow customers to directly order parts using a QR code on the engine, or from a page on our website that shows only the suitable spares for their model so they can reduce ordering time as well as the possibility of mistakes.

"We even make it easy for customers to successfully carry out their own repairs, by producing service videos for many common tasks, which is a huge advantage for users or operations who wish to tackle their own servicing."

## PACKING A PUNCH

Tsurumi's compact and lightweight engine-driven pumps are a long-time

favorite with contractors due to their efficient performance. Users can rest assured that the Vanguard option will allow the same impressive capacities to remain.

The superb durability of both series has been another key factor in their success. Mounted safely on rubber vibration dampers within a rolled-steel frame, the EPT- and TE-series pumps and engines allow for maximum protection during both transport

and operation, while simplifying handling—TE3 models are even light enough to allow for UPS shipping.

Additionally, pump features such as high-chrome or cast-iron impellers, cast-iron casings, stainless steel wear plates, galvanized steel hose couplings, and a silicon carbide mechanical seal combine to significantly extend the pump's working life while decreasing maintenance requirements. ■

Tsurumi America, Inc., a division of Tsurumi Manufacturing, was founded in 1979. Headquartered in Glendale Heights, Illinois, Tsurumi (America), Inc. has bases in Quebec, Canada; El Paso, Texas; and Salt Lake City, Utah. Globally, Tsurumi is active in forty-five countries and has been an innovator in the pump industry since 1924. Tsurumi America is a provider of leading pumping technology in construction, civil engineering, mining, industrial wastewater, domestic wastewater, sewage treatment, flood control and scenery creation fields. All Tsurumi products are backed by independent, third-party verification. Beyond leading pump technology, Tsurumi America is recognized for its robust distribution network and one of the largest on-hand inventories in North America. For more information, visit [www.tsurumipump.com](http://www.tsurumipump.com).

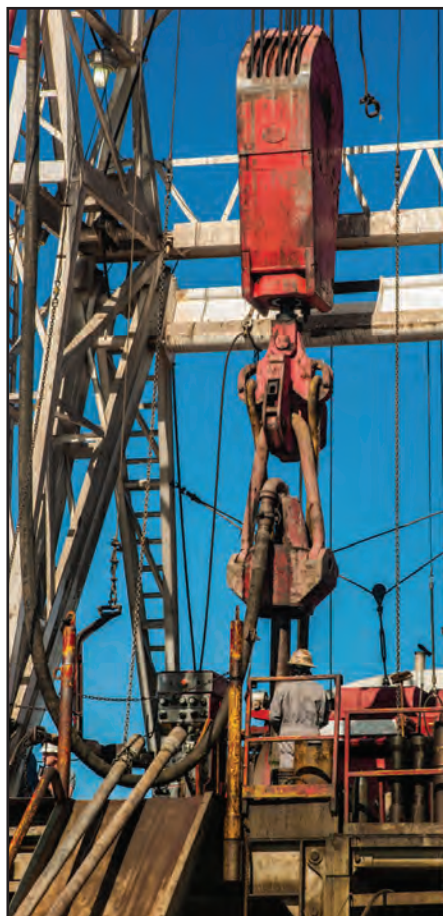


**TUF-LOK®**  
PIPE & TUBE COUPLINGS

- Self-aligning
- Self-grounding
- Stainless or mild steel
- Low cost
- Reusable
- Externally leakproof
- High pressure rated
- Full vacuum rated



**Tuf-Lok International**  
Phone: +1 608.270.9478  
Email: [info@tuflok.com](mailto:info@tuflok.com) • [www.tuflok.com](http://www.tuflok.com)





## RELIABLE POWER

When your engine package powers your business, you need a reliable source of power that you can depend on under the harshest of conditions. That's why we use John Deere PowerTech™ engines which are durable, fuel efficient, and easy to maintain. They are also backed by one of the strongest engine and equipment companies in the World.

At engines, inc., we engineer solutions for pump packagers for a variety of industries, including: water/wastewater; chemical; oil/gas; and mining. We stand behind our packages with the most reliable support structure in the business. Our skilled staff is always available to you on our 24-Hour Service Line to give you the support you need, when you need it, wherever you are. We are your power source.



**24-HOUR SERVICE LINE**  
870-268-3799

Jonesboro, AR | 800-562-8049 | [www.enginespower.com](http://www.enginespower.com)

# EROSION, CORROSION, AND CAVITATION—OH MY!

## *Common causes of surface damage in pump impellers*

BY EUGENE VOGEL, EASA

**I**t's common to find pump impellers with significant surface damage. The three most common causes of surface damage are erosion, corrosion, and cavitation. For each of these there are characteristics that will help indicate the primary cause of the damage. A brief description of each of the three phenomena will be helpful. Erosion is the simplest; it is simply the wear to the impeller surfaces from abrasive materials suspended in the pumpage. Corrosion is also straightforward; corrosion is a chemical reaction between ionized molecules in the pumpage and metallic elements of the impeller. Oxidation is the most common corrosion on pump impellers.

### THE MANY CAUSES OF CAVITATION

Cavitation is a more complex phenomenon. Cavitation is all about bubbles forming and imploding in the pumpage due to the pressure changes that occur as the pumpage flows through the impeller. Low pressure at the suction allows vapor bubbles to form and then these bubbles implode as the pressure increases through the impeller. The appearance of the damage to the impeller surfaces reflects the characteristics of the each of these three phenomena.

Since erosion damage results from the abrasive action of solids suspended in the pumpage, wear will be greatest where the flow velocity

is high. Damage may be greatest at the leading edges of the impeller vanes, but the damage will continue through the flow path to the impeller discharge. Even outside surfaces of the shrouds will have some evidence of the abrasive wear. Due to the turbulence of the flow, especially at the suction, furrows will be common with erosion damage (see figure 1).

### CLOSE INSPECTION NEEDED

There are similarities between the appearance of erosion and corrosion damage. But corrosion is somewhat less affected by the flow velocity. So, corrosion damage will be more evenly distributed across the impeller surfaces and all surfaces exposed to the pumpage will be affected. The evenness of the damage may be most apparent on the outside of the shrouds. While erosion may cause some damage to those outside surfaces, corrosion damage will be very evident (see figure 2). A key tip-off to corrosion is to inspect the face that butts against the shaft shoulder; it will be unaffected by corrosion.

Suction cavitation damage has unique characteristics that make it easy to identify. Since it is the implosion of vapor bubbles in the pumpage that causes the damage, the damage will be limited to only a portion of the flow path through the impeller, usually initiating right near the leading edge of the impeller vanes. This is where the initial pressure increase occurs causing the bubbles to implode. Once the bubbles have imploded, the rest of the flow path will show little or no damage.



Figure 1: Furrowing that is typical of erosion.



The actual surface damage from cavitation will appear as erosion damage since the implosion of the bubble does erode the surface. But the limited area of damage in the flow path that begins near the leading edge of the vane is the tip-off to suction cavitation as the source (see figure 3). The outer surfaces of the shrouds will be unaffected.

The term "suction cavitation" is used here since that is the most common location for cavitation damage to impellers. The low pressure as the pumpage enters the impeller precipitates the bubbles that subsequently implode as pressure rises through the impeller. But cavitation is a phenomenon that can occur wherever there are pressure gradients in the flow stream.

Pressure gradients occur in the turbulent flow at the impeller discharge from recirculation when flow through the impeller is restricted. This phenomenon known as discharge cavitation is less



Figure 2: Corrosion damage is indicated when all exposed surfaces are affected.

## ITALIAN PREMIUM QUALITY WATER PUMPS SINCE 1974



### PEDROLLO USA

45 Maryland Avenue East | St. Paul, MN 55117

Email: [info@Pedrollo-USA.com](mailto:info@Pedrollo-USA.com) | Phone: 877-PEDROLLO/877-733-7655 | Website: [www.Pedrollo-USA.com](http://www.Pedrollo-USA.com)



common than suction cavitation. The trailing edge of the impeller vanes at the discharge will be eaten away, or the impeller discharge may be badly distorted. The rest of the impeller will be unaffected by discharge cavitation.

### SPECIAL CASES

There are some special cases and combinations of causes which should be mentioned. One peculiar type of corrosion damage is de-zincification. Zinc is an element with "low nobility" and easily corrodes. On common bronze alloys containing zinc, ionized molecules in the pumpage will dissolve the zinc in the alloy leaving deep furrows and plug holes in the remaining copper elements of the alloy. A clear tip-off of de-zincification is the reddish color of what remains of the impeller (see figure 4).

Another common occurrence is the combination of multiple causes of impeller damage. Various combinations of erosion, corrosion, and cavitation can occur. While the individual causes can be distinguished, when combined the characteristics are blurred



Figure 3: Cavitation damage that is limited to the suction area.

and it won't be clear that a single phenomenon is at work. Sewage is an example of pumpage that can be corrosive and carry abrasive matter causing erosion. All surfaces will be affected (corrosion), but deep furrowing will be present in high-flow velocity areas (erosion). And of course, cavitation could also

be present adding to the erosion damage at the impeller suction. In these cases, an accurate diagnosis of the damage would have to include an analysis of the pumpage for the presence of corrosive elements and erosive materials.

In some applications, particularly in the petro-chemical industry, the sophistication of impeller damage analysis rises almost to an artform as analysis of rubs at close tolerance locations indicates operational problems with the pump. But for garden variety municipal water, wastewater, and circulation pump application, the tips provided here for identifying erosion, corrosion, and cavitation will help repair technicians classify the likely cause of impeller surface damage. ■



Figure 4: Cavitation where leached zinc leaves reddish-colored copper from bronze alloy.

**EUGENE VOGEL** is a pump and vibration specialist at EASA, Inc., the Electrical Apparatus Service Association. EASA is an international trade association of more than 1,800 firms in nearly seventy countries that sell and service electromechanical apparatus. For more information, call 314.993.2220, fax 314.993.1269, or visit [www.easa.com](http://www.easa.com).



# **MOD-TRONIC**

Stocking distributor of **MINCO**  
Sensors, Heaters and Controls

## **MOTOR TEMPERATURE SENSORS**

**RTDs Thermocouples Thermistors Thermostats**

**FOR STATORS**



**FOR BEARINGS**



**ANTI-CONDENSATION  
SPACE HEATERS**

**TEMPERATURE  
MONITORS**



# **MOD-TRONIC**

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

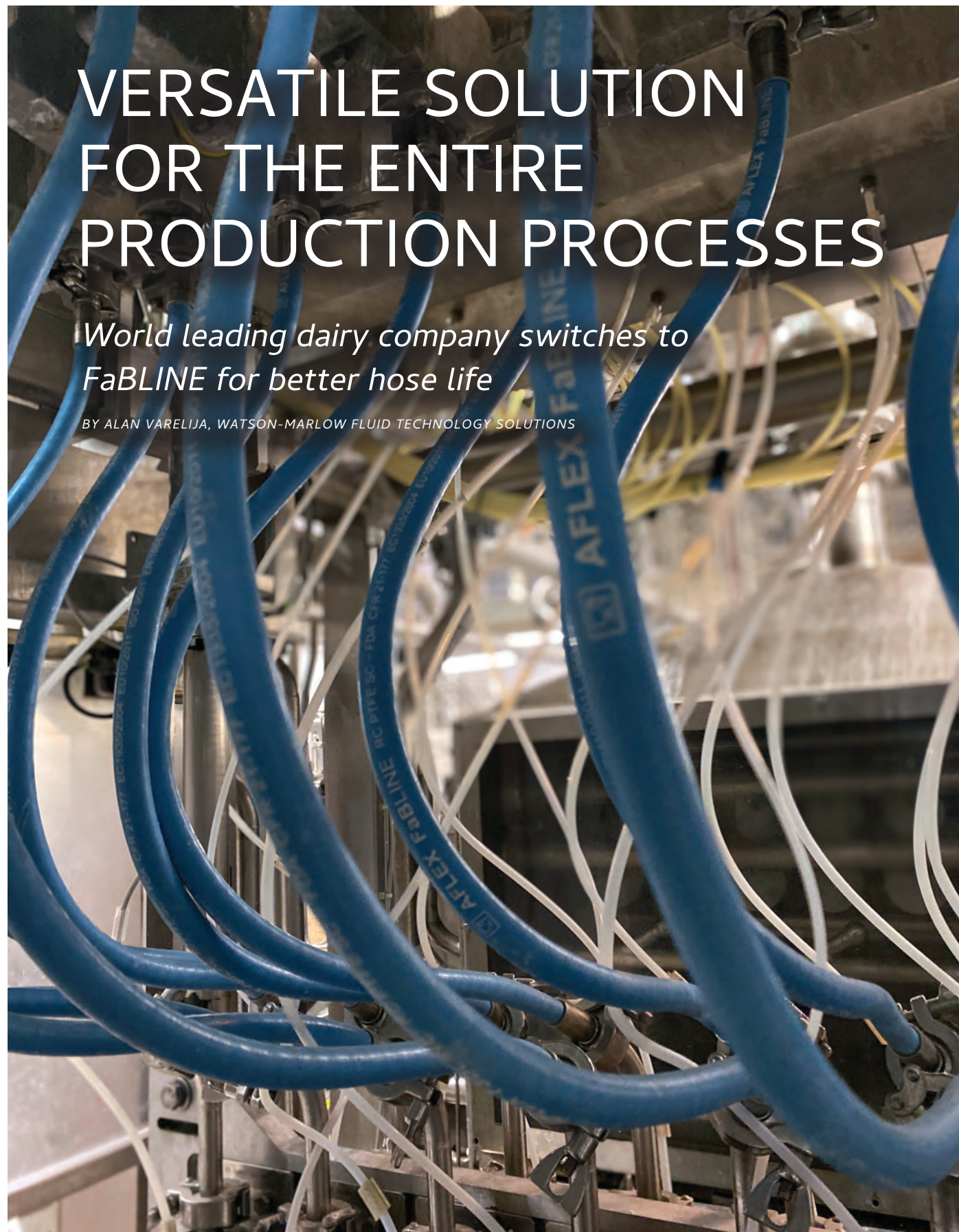
**1-800-794-5883**



# VERSATILE SOLUTION FOR THE ENTIRE PRODUCTION PROCESSES

*World leading dairy company switches to  
FaBLINE for better hose life*

BY ALAN VARELIJA, WATSON-MARLOW FLUID TECHNOLOGY SOLUTIONS





The largest dairy products group in the world, Lactalis, has switched to using FaBLINE™, a food grade PTFE-lined hose from Aflex. The hoses produced by Aflex Hose, part of Watson-Marlow Fluid Technology Solutions (WMFTS), are being used to transfer milk, yogurt, and fruit filling at production facilities in Serbia and Croatia.

Lactalis, which has 270 production sites in fifty-two countries, is using two long-life FaBLINE hoses that are six and a half feet in length and have a bore size of two inches after replacing a competitor's rubber hose at its factory in Sombor, Serbia.

Engineering experts at Aflex have developed FaBLINE to meet the latest hygiene standards. The patented PTFE-lined hose, with standard 316 stainless-steel braid EPDM cover, will ensure efficient product transfer and handling with extended life over any rubber hose alternative on the market.

With excellent flexibility and kink-free design requiring less force to

bend than competitor smooth bore products, FaBLINE offers Lactalis a versatile hose solution throughout production processes.

### SEEKING A BETTER OPTION

Aleksandar Rnjak, maintenance manager at Somboled, part of the Lactalis Group, says, "The hoses are exposed to CIP cleaning before production. After hanging the hoses on the fruit paste container, the hoses are rinsed and sterilized with steam at 280 degrees Fahrenheit (138 degrees Celsius) at 50 PSI in the line.

"The FaBLINE hoses have shown exceptional durability and flexibility, and the safety of the operators connecting the tank with fruit paste and the system on the yogurt line has increased."

Lactalis was not satisfied with the hose life of the previous rubber hose it was using, because the cover wore out every few months. The hose is dragged along the floor, so WMFTS offered a Safeguard option.

## PARTNER PROFILE: LACTALIS GROUP

Lactalis Group is a leading dairy products supplier and a French family business founded in 1933 with operations around the world. At its dairy and cheese production plants, Lactalis' family of companies converts milk into cheese, consumer milk, yogurt, butter, cream, dairy ingredients, and nutrition.

### TOP PERFORMANCE IN TOUGH CONDITIONS

The FaBLINE hose now transfers milk and yogurt and it is regularly cleaned with CIP chemicals without any change almost a year after Lactalis began using it. Even if the outer



Johnston  
Pump

A Sulzer Brand



## Think Vertical Think Johnston

A leader in the municipal water industry, irrigation, and flood control.

Products built with quality, not only as a core design feature but a brand identity. With NSF certification, an array of standard features, and the ability to be extensively customized, no wonder it's been the vertical pump brand of choice for over 100 years.

**SULZER**

[www.sulzer.com](http://www.sulzer.com)  
[www.johnstonpump.com](http://www.johnstonpump.com)

## KEY BENEFITS

- FaBLINE's key benefits include:
- Increased service life
- Reduced maintenance and CIP downtime
- Reduced cost savings, no chemicals



protection comes away or gets damaged when the hose is dragged along the floor, the hose doesn't lose its integrity, which eliminates the potential of premature failure.

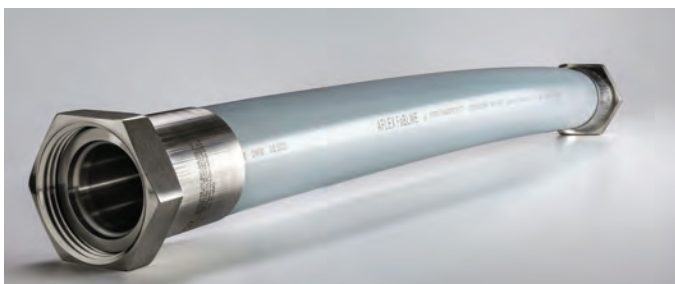
At another Lactalis' production facility in Zagreb, Croatia, it has switched to using FaBLINE hoses on a filling machine which handles yogurt and yogurt fruit filling. Lactalis is using sixteen long-life FaBLINE hoses that are 2.6 feet in length and have a bore size of 0.375 inches after replacing a competitor's silicone rubber hose.

FaBLINE hoses provide up to twice the flow of similar sized convoluted delivery hoses, for a faster, more efficient processing solution.

### UPDATED TO A NEW STANDARD

Marin Cosic, deputy head of maintenance at Dukat Dairy Industry Inc, part of the Lactalis Group, adds, "On the yogurt and fruit filling machine, the working conditions are demanding in terms of high sterilization temperatures, 100 degrees Fahrenheit (38 degrees Celsius), and exposure to acids and alkalis for washing the hoses through which the product passes. With the aim of avoiding the possibility of contamination of the product, we decided to install the FaBLINE hose on the machine for filling yogurt and fruit yogurts. The hoses turned out to be very good and long-lasting."

The existing silicone rubber hoses from another company on a filling machine were outdated, and the risk of contamination was very high. When the maintenance team saw our hose samples, they were convinced of the FaBLINE quality. FaBLINE is kink-free, and constant dynamic movement is not a problem for our hose. The customer measured its existing connectors, so WMFTS was able to offer an exact match. ■



**ALAN VARELIJA** is sales engineer for the Balkans region at Watson-Marlow Fluid Technology Solutions. Watson-Marlow Fluid Technology Solutions (WMFTS) is a world leader in manufacturing niche peristaltic pumps and associated fluid path technologies for the life sciences and process industries. WMFTS is a wholly owned subsidiary of Spirax-Sarco Engineering plc, with operations in forty-three countries. For more information, visit [www.wmfts.com](http://www.wmfts.com).





# Full-Load Testing for Synchronous, Induction and DC Motors.



**Why load test your motor or generator? Bradleys recommends load testing to ensure reliability, to validate repairs, to verify performance, to ensure system compatibility between motors and drives, and prior to storage of your critical motors.**

Bradleys' large motor load testing capabilities are well-known in the industry. Precision torque measurements and power input measurements assess your electric motor's performance. Our state of the art, in-house load testing control room offers remote monitoring of live data collection and live video stream. Your load test is managed by Metallurgical, Electrical and Mechanical engineers and experienced load testing staff experts.

Our dynamometer has a torque measurement device capable of measuring 52,083 lbf-ft at 3600 rpm with a .1% accuracy on a motor load test. The dynamometer set up has several available combinations of speed and horsepower.

Tests performed include IEEE Method 112 & 115 Standard Testing. Large AC Motors up to 7000HP or DC Motors up to 4500 AMP, 750V. Data collection includes 12 temperatures, power, HP, efficiency, power factor, torque, speed, currents, and voltages.

## Benefits of Load Testing:

- Performance Reliability
- Redesign Performance Verification
- Repair Validation
- Motor & Drive Compatibility
- Total Harmonic Distortion



600 TX- 35 | Gregory, TX 78359  
T: (361) 643-0100 | Toll Free: 800-880-1213  
[www.electricmotorloadtesting.com](http://www.electricmotorloadtesting.com)



**Choose Bradleys to load test your horizontal motor.**



## FEATURED PRODUCT

## PLASTICS MOLDING CONSULTING

## OBTANIUM WEAR COMPONENTS

**D**o you want zero wear to pump shafts? At Plastic Molding Consulting, we are a group of engineers and chemists with long experience and expertise in plastics and pride ourselves on providing near perfect

components for the elimination of wear. Long in use in the field with our clients, our Obtanium wear components will be introduced and available to the public at this year's Turbomachinery & Pump Symposia in Houston, Texas.

**PRLC, LLC**[www.plasticmoldingconsulting.com](http://www.plasticmoldingconsulting.com)**NEAR-PERFECT COMPONENTS FOR  
THE ELIMINATION OF WEAR****Molded and Machined Wear Components**

*Our client Carver Pump has been testing Obtanium wear components for fifteen years with no wear to pump shafts.*

**FEATURES OF THIS NEW COMPONENT MATERIAL INCLUDE:**

- Obtanium uses a unique method to reduce the contact area between bushing and shaft.
- Obtanium is filled with perfectly round ceramic spheres.
- Obtanium bearings have been in the field for fifteen years, running dry and wet, with no wear on the shaft or wear components.
- Obtanium, in a side-by-side test, has out-performed every other product in the market. ■

For more information, visit

**[WWW.PLASTICSMOLDINGCONSULTING.COM](http://WWW.PLASTICSMOLDINGCONSULTING.COM)**



## WEIDMULLER

### KLIPPON TB ENCLOSURES

The Klippon TB Enclosure series has been expanded with thirty-one sizes and three depths, providing the highest quality and most versatile enclosures that are ideally suited for the challenging environments found in industries such as oil and gas, petrochemical processing, power generation, wastewater, pharmaceutical, and food and beverage, among others. The enclosures all feature 316L stainless construction. For more information, visit [www.weidmuller.com](http://www.weidmuller.com).



## BISON

### GEN 2 SANIMOTOR

While retaining its primary features, the enhanced, next-generation SANIMotor maximizes throughput and reduces lead times while maintaining the robust features that have established SANIMotor as a leading product in the market. In Bison's newly enhanced SANIMotor, all the original exterior dimensions, performance specifications, certifications, mounting holes, and power cable connections remain the same. In addition to the IP69K rating, all exterior components are manufactured from 304 stainless steel. For more information, visit [www.bisongear.com](http://www.bisongear.com).

## SIEMENS

### SINAMICS S210 SERVO-DRIVE SYSTEM

This next generation servo-drive system introduces a new level of safety and security to discontinuous motion control in the mid-range segment, as well as moving, processing and positioning functions on a wide assortment of packaging, printing, labeling, pick-and-place, stacking, assembly, chip sorting, and filling machines, with a special emphasis on food-and-beverage and pharmaceutical applications, owing to the availability of stainless-steel motor and planetary gearbox options. For more information, visit [www.siemens.com](http://www.siemens.com).

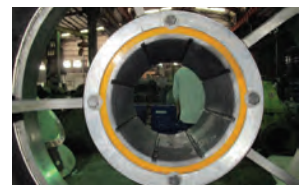


## AUTOMATIONDIRECT

### E-T-A REX MODULAR CIRCUIT PROTECTORS

These protectors safeguard electrical circuits from overcurrent, short circuits, and other faults. Featuring a modular design, individual protection modules can be combined to meet specific circuit protection requirements, allowing for flexible configurations and easy installation. A single system consists of a supply module, which connects to the 24VDC power supply, and up to 16 circuit protection modules (40A max) that are electrically connected by the backplane. For more information, visit [www.automationdirect.com](http://www.automationdirect.com).

# RUNNING SMOOTH EVEN IN SEAWATER



## *Taiwanese power plant keeps cool with Thordon Bearings*

**T**hordon Bearings recently provided water-lubricated elastomeric polymer bearings for installation to cooling water pumps commissioned for a major power plant expansion project by the state-owned Taiwan Power Company. Eiger Engineering, Thordon's authorized distributor in Taiwan, delivered Thordon SXL and Composite bearings for the cooling water pumps. Below, Sam Williams, Thordon's regional manager, APAC, and Ronnie Chen, director at Eiger Engineering, discuss this project and what it means for the region.

**MPT: How did Thordon and Taiwan Power Company come together for this project?**

**SAM WILLIAMS:** Thordon's SXL and Composite non-metallic bearings were specified by San Tai Pumps, which is providing cooling water pumps to Taiwan Power Company, which is significantly expanding its generating capacity at the Hsin Ta power plant in Kaohsiung and the Taichung power plant in Longjing, Taichung.

At Hsin Ta, the power plant is currently being expanded from three turbines to a six-turbine operation. Each of the three new turbines requires three cooling water pumps, which will extract seawater adjacent to the power plant for cooling. Seawater will also be used for lubricating the Thordon bearings. Each pump shaft is more than 32.8 feet in length and for each pump, six Thordon bearings are required—adding up to a total of fifty-four bearings for the Hsin Ta project.

**MPT: What made Thordon the right fit for this application?**

**RONNIE CHEN:** The Thordon Composite material is ideal for more aggressive environments and therefore for use at the bottom of the pumps where they are extracting the water from the seabed—the Composite material is very resistant to abrasive media such as sand and other particles. The SXL bearings are used higher up the pump shaft; this material is ideal here because of its dry start up capability and long wear life.

**SAM WILLIAMS:** The long lifetime of the Thordon pump bearings, with less wear shown during overhauls, is a clear advantage. Typically, the bearings do not require replacement even at the two-year interval overhaul. Once the bearing used on the cooling water pumps' original

design has been monitored in action and shown to be running smoothly, the end user is expected to specify Thordon bearings for future projects.

**MPT: How has this partnership worked so far?**

**SAM WILLIAMS:** The first cooling water pump was installed at Hsin Ta power plant in mid-April 2023 and delivery of the project is due for completion in 2024. The first pump for the Taichung power plant expansion is in production, and delivery to Taiwan Power Company for this project is expected in the first quarter of 2024. In total, San Tai will deliver fifteen cooling water pumps to Taiwan Power Company over three years, all of which will feature Thordon bearing solutions.

**RONNIE CHEN:** Eiger Engineering worked closely with San Tai Pumps on the TPC project, to select the suitable bearing material, analyze water flow, make calculations, issue drawings for approval by Taiwan Power Company, and provide support—collaborating in the best interests of all stakeholders.

**MPT: How does this project fit within Thordon's overall plans in the region?**

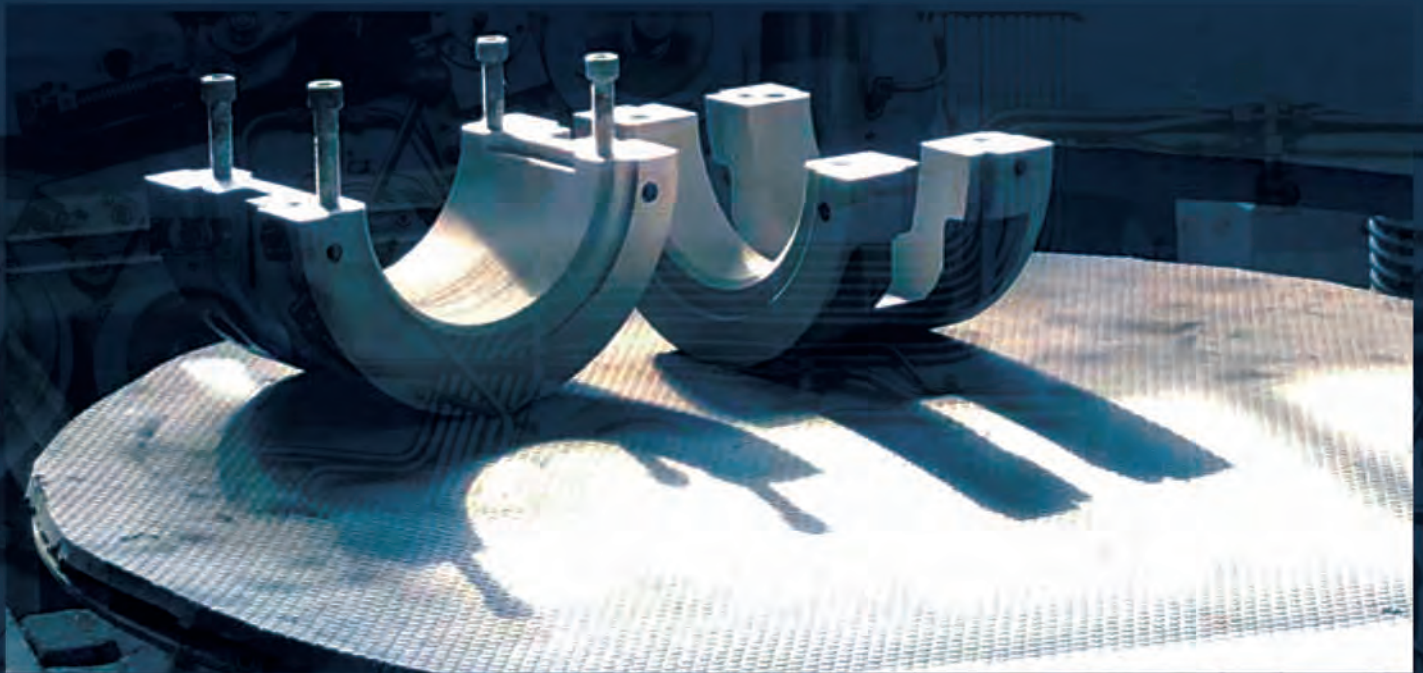
**RONNIE CHEN:** San Tai Pumps has specified Thordon Bearings in its pumps for the past twenty years, mostly for application in power plants. This has been based on factors including reliability, low maintenance costs, and the clear environmental benefits of using seawater for lubrication. The manufacturer wants to have high-quality components, so it has chosen the Thordon brand.

As Taiwan Power Company has embarked on its major power plant expansion program, Eiger Engineering and Thordon Bearings have the opportunity to supply on an even larger scale. San Tai Pumps is also working on a bid to supply cooling water pumps for further power plant expansions ■



To listen to an extended version of this interview, be sure to subscribe to MPT's podcast, The Efficiency Point.





# Babbitt Bearing Repair, Refurbishment & Manufacturing

## **BABBITT BEARING REPAIR**

We can help you with babbitt bearing repair, rebabbiting, and rebuilds. When you choose Fusion for babbitt bearing repair, your parts will be returned to their original condition or better.

## **ARC FLAME SPRAY**

Arc flame spray builds up metal on worn bearings and components; they are then machined to OEM specifications. This application also allows us to apply other arc spray metals like bronze, steel & cast iron as well.

## **REVERSE ENGINEERING**

Our reverse engineering team possesses the expertise and tools to duplicate bearings that are no longer available from the original OEM supplier. We can help you with spare parts and when bearings are beyond repair.

## **CENTRIFUGAL CASTING**

Centrifugal casting offers a stronger bond and the best bearing integrity; extending the life of your bearings. On top of that, we assure quality with dye penetrant testing and an ultrasonic bond certification.

## **NEW MANUFACTURE**

Our facility is equipped to manufacture bearings to exact OEM specifications. On top of drawing documentation and support components, we offer quick turnaround times and high-quality end products.

## **ACCESSORIES**

We have bearing parts and products available for sale; including hydrogen seals, oil rings, oil seals, resistance temperature detectors, thermocouples, and thrust plates. Give us a call for a quote on bearing accessories.

## **ASTM VIRGIN TIN BABBITT**

**98-100% MOLECULAR BOND GUARANTEE • IN-HOUSE ULTRASONIC LEVEL II TESTING**

***FUSION***  
**BABBITTING CO., INC.**

Since 1989

**CALL (414) 645-5800 OR EMAIL [SALES@FUSIONBABBITTING.COM](mailto:SALES@FUSIONBABBITTING.COM)**

**Milwaukee, WI**





# SAVE UP TO \$2,500 ON SELECT OEM PARTS

Get your Pentair® Aurora® or Pentair® Fairbanks Nijhuis® pumps back online with high-quality genuine OEM parts. Let us help if you've lost contact with your Pentair Authorized Distributor.

**For a limited time, save up to \$2,500 on your Aurora or Fairbanks Nijhuis OEM Parts order through an Authorized Distributor.**

▶ Connect with our robust Authorized Distributor network today at [pentair.com/5](https://pentair.com/5) to secure your discount.\*

\*Terms and conditions apply. Please see [pentair.com/5](https://pentair.com/5) for full details.



800 Airport Road  
North Aurora, IL 60542

3601 Fairbanks Ave.  
Kansas City, KS 66106

[pentair.com/5](https://pentair.com/5)

All indicated Pentair trademarks and logos are property of Pentair. Third party registered and unregistered trademarks and logos are the property of their respective owners. Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice. Pentair is an equal opportunity employer.

©2023 Pentair. All Rights Reserved.

P14635 (06-14-23)