Sustainable, Safe & Reliable On-Site Utilities Powering Automation

COMPRESSED AIR BEST PRACTICES

airbestpractices.com

December 2023

Measurement

A Window of Opportunity

Take Advantage of Energy Recovery Solutions

Atlas Copco's energy recovery solutions capture compression heat that can be reused, allowing you to cut energy bills, reduce fossil fuel usage, and minimize your carbon footprint. If your compressed air system is not driving your sustainable future—now's the perfect time to get started!

866-472-1013 | www.atlascopco.com/ER

SUSTAINABILITY & ENERGY/WATER CONSERVATION

SAFETY & RELIABILITY

EVERY ISSUE

Compressed Air Best Practices® (USPS# 17130) is published monthly except January-February combined by Smith Onandia Communications LLC, 37 McMurray Rd., Suite 104, Pittsburgh, PA 15241. Periodicals postage paid at Pittsburgh, PA and additional mailing offices. POSTMASTER: Send address changes to: Compressed Air Best Practices®, 37 McMurray Rd, Suite 104, Pittsburgh, PA 15241.

FROM THE EDITOR

The Best Practices 2023 EXPO & Conference Smashes Records

We just returned from Chicago tired but happy after a record-breaking Best Practices 2023 EXPO & Conference. We'd like to thank the record number of attendees who attended, including an all-time high of buyers of compressed air, cooling, nitrogen-generation and vacuum systems. A sincere thanks also goes to all sponsors and exhibitors for the record number of booths featuring global launches of new products.

Sponsored by the Compressed Air & Gas Institute and the Cooling Technology Institute, the Conference made its strongest step towards educating engineering firms, manufacturing plants and sales engineers in both compressed air, vacuum and centralized cooling systems. In many plants, these systems represent 25-40% of total kW consumption and are critical for optimized production levels.

Safety and quality was a major theme as for the first time, microbiologists, food safety consultants and quality/safety managers from food manufacturing plants, spent four (4) straight hours of conference time discussing "compressed air as a food additive." I attended all four hours and must say had my eyes opened. The speakers focused on pathogens and risk assessments to ensure hygienic compressed air systems.

The first Women in Compressed Air, Vacuum and Cooling Systems (WCVC) Luncheon attracted 65 professionals in our industry and was a smashing success. The Daily EXPO $1,000 Energy Treasure Hunt Raffle awarded prizes to attendees from Nissan, Saudi Aramco, Compressed Air & Equipment, Universal Creative, Teknor Apex and Solaire Compresores! Lastly, the Networking Event was a roof-top reunion for our industry.

You will find Bill Smith's detailed and picture-rich show report in this issue and many more at https://cabpexpo.com/. Thank you again and please mark your calendars for next year in Atlanta, October 29-31, 2024 as we return to the elegant Cobb Centre Galleria.

Thank you for investing your time and efforts into ***Compressed Air Best Practices.***

RODERICK M. SMITH
Editor
tel: 412-980-9901
rod@airbestpractices.com

Thank you to all attendees, from the Best Practices EXPO & Conference Staff! Pictured are Patty Mackey, Clare Heinl, Kimberly Hill, Patricia Smith, Roderick Smith and Bill Smith (left to right).

mikropor
Manufacturing Forward

High Efficiency, High Energy Savings in Compressed Air Systems!

MK-US-HP SERIES HIGH PRESSURE REFRIGERATED AIR DRYERS

Max. Operating Pressure is 650 psi

Mikropor MK-US-HP Series High-Pressure Refrigerated Air Dryers can produce compressed dry air with a dew point of 38°F, utilizing state-of-the-art stainless steel and brazed plate heat exchangers.

HG SERIES HIGH PRESSURE COMPRESSED AIR FILTERS

Max. Operating Pressure is 725 psi

Mikropor HG Series Air Filters provide high-quality air in applications requiring high-pressure resistance without the need for welding.

High Energy Savings

Brazed Plate Stainless Steel Heat Exchanger

38°F Dew Point

4921 Ohio Street, Michigan City, IN 46360

www.mikroporamerica.com

Compressed Air Industry News

Kaeser Now Factory-Direct in Utah

Kaeser Compressors announced the opening of a new branch office in Salt Lake City, Utah. The new factory store will cover Utah and portions of Idaho, Wyoming and Nevada. As always, Kaeser's trained and certified sales and service professionals are ready to meet all its customers' compressed air, blower, and vacuum needs.

"We are very excited to directly support our existing customers in the region," said Julian Shelton, Salt Lake City Branch Manager. "Plus, we look forward to expanding our customer base and providing reliable, energy-efficient air systems to a broad range of industrial, commercial and institutional users. Whether you need new equipment, routine maintenance, or troubleshooting, Kaeser is here to help."

Factory-certified sales and service experts are now locally available to help assess each end user's specific needs and tailor solutions, whether as a complete compressed air system installation or a contractual solution.

About Kaeser Compressors

Kaeser Compressors is a leader in reliable, energy efficient compressed air equipment and system design. We offer a complete line of superior quality industrial air compressors as well as dryers, filters, SmartPipe™, master controls, and other system accessories. Kaeser also offers blowers, vacuum pumps, and portable gasoline and diesel screw compressors. Our national service network provides installation, rentals, maintenance, repair, and system audits. Kaeser is an ENERGY STAR Partner. For more information, visit us.kaeser.com.

Hitachi Global Air Power and AEM Host Indiana Gov. Holcomb

Hitachi Global Air Power US, LLC, an industry leader in innovative compressed air solutions, in partnership with the Association of Equipment Manufacturers (AEM), hosted Indiana Governor Eric Holcomb at the company's Michigan City facility. Through its I Make America national grassroots program, AEM works with equipment manufacturers to host elected officials on shop floors across the country, highlighting our policy priorities and advocating for the industry's 2.3 million men and women.

Hitachi Global Air Power, a global leader in the compressed air solutions, employs over 500 people in Indiana. Tracing its roots back to 1965, Sullair was acquired by Hitachi, Ltd. in 2017 and renamed Hitachi Global Air Power in 2023. The company continues to manufacture products under the Sullair brand in the familiar "Sullair Green." The acquisition by Hitachi allowed the company to offer more products and services and more effectively leverage Hitachi's innovation pipeline. Hitachi Global Air Power offers portable and industrial air compressors (oil-free and oil-flooded), aftermarket OEM parts, fluids and more.

"We are honored to welcome Governor Holcomb to our Michigan City facility," said John Randall, President and CEO of Hitachi Global Air Power. "Governor Holcomb's visit underscores the importance of a strong partnership between industry and government in advancing manufacturing in Indiana. We are proud to showcase our world-class manufacturing facility where we have been building Sullair air compressors for more than five decades and we look forward to many more years of shared prosperity for both our business and the thriving Michigan City community."

During the visit, Governor Holcomb met with facility leadership, toured its manufacturing operations, engaged with employees on the shop floor, and discussed issues that

Kaeser Compressors' new factory-direct facility in Salt Lake City will serve Utah and portions of Idaho, Wyoming, and Nevada.

impact the industry, including infrastructure investment, workforce development, and U.S. competitiveness.

"Hitachi Global Air Power has a long history of manufacturing state-of-the-art air compressors right here in Indiana. Because of Indiana's relentless efforts to lessen tax burdens, streamline government bureaucracy, and support Indiana's business community, companies like Hitachi Global Air Power can continue innovating, manufacturing, and investing in the Hoosier State," said Governor Holcomb. "I am so pleased by the work that Hitachi Global Air Power and the Association

John Randall, President & CEO Hitachi Global Air Power, Indiana Governor, Eric Holcomb, Keiichi Shimada, General Manager Hitachi, Ltd Washington Office, Michigan City Mayor, Duane Parry, Kate Fox Wood, Vice President Association of Equipment Manufacturers (left to right).

Compressed Air Industry News

of Equipment Manufacturers are doing to strengthen U.S. manufacturing and create American jobs."

"Equipment manufacturers are proud to support over 138,000 jobs in Indiana and contribute more than $18.2 billion annually to the state economy. Governor Holcomb's efforts to create a business-friendly environment that helps – not hurts – job creators are critically important to the future success of this industry in the state," said Kate Fox Wood, vice president at the Association of Equipment Manufacturers. "We are grateful for his leadership and look forward to continue working with him to revitalize American manufacturing."

About Hitachi Global Air Power US, LLC

We build the machines that power industry. We are Hitachi Global Air Power, a leading global industrial compressed air manufacturer. Headquartered in Michigan City, Indiana, our compressed air solutions power manufacturing operations all around the globe; from food and beverage, to pharmaceuticals and computer chips. Our portable compressors provide the air power to build roads and bridges, lay pipelines and aid in oil and gas mining and production. As part of Hitachi Industrial Equipment Systems Co., Ltd., Hitachi Global Air Power operates ISO 9001 certified factories in Michigan City, Indiana and Suzhou, China, and sales offices strategically located in Europe, Australia, Southeast Asia, and South and Latin America. Through brands Hitachi, Sullair, and Champion (Australia), our machines have provided legendary reliability, durability, and performance for more than 57 years. Our global network of engineering and quality experts are building next generation, highly efficient and environment-forward compressed air solutions in direct response to customer need. For more information, visit www.sullair.com.

Ingersoll Rand Completes Two Acquisitions to Enhance Capabilities

Ingersoll Rand Inc., a global provider of mission-critical flow creation and industrial solutions, has completed the acquisitions of Oxywise s.r.o. ("Oxywise") and Fraserwoods Fabrication and Machining Ltd. ("Fraserwoods") for a combined all-cash purchase price of approximately $26 million.

Oxywise, based in Slovakia, increases Ingersoll Rand's broader air treatment capabilities with onsite oxygen and nitrogen generating-systems based on pressure swing adsorption technology, cylinder filling systems, containerized systems and gas control solutions. Oxywise has established itself as a leader in attractive end-markets including medical, laser cutting, industrial and aquaculture with its gas distribution systems. The 41-person company has an annual revenue of approximately $10 million.

Fraserwoods provides services, repair and return, and remanufacturing of blowers and pumps to key original equipment manufacturers in the vacuum truck market. A majority of the company's annual revenue of approximately $4 million comes from

Ingersoll Rand Completes Two Acquisitions to Enhance Capabilities in High-Growth Sustainable End Markets.

aftermarket services, which is supported by its installed base. The addition of Fraserwoods and its 13 employees expands Ingersoll Rand's technical expertise and service capabilities in western Canada.

Both Oxywise and Fraserwoods will join Ingersoll Rand's Industrial Technologies and Services (IT&S) segment.

"These acquisitions strengthen our company's core capabilities and provide opportunities to grow our exposure in high-growth, sustainable end markets," said Vicente Reynal, chairman and chief executive officer of Ingersoll Rand. "We are excited to welcome the expertise and quality that Oxywise and Fraserwoods are known for in their respective markets."

About Ingersoll Rand

Ingersoll Rand Inc., driven by an entrepreneurial spirit and ownership mindset, is dedicated to helping make life better for our employees, customers and communities. Customers lean on us for our technology-driven excellence in mission-critical flow creation and industrial solutions across 40+ respected brands where our products and services excel in the most complex and harsh conditions. Our employees develop customers for life through their daily commitment to expertise, productivity and efficiency. For more information, visit www.IRCO.com.

Atlas Copco Group Acquires Distributor in Slovakia

Atlas Copco Group has acquired ACJ, s.r.o., a compressor distributor in Samorin, near Bratislava in western Slovakia. The company has 14 employees and offers sales and service of compressors, dryers, and other compressed air equipment to general industry.

"The acquisition will extend our service and sales offering in Slovakia, which is a market where we see a potential for growth," said Vagner Rego, Business Area President Compressor Technique. The purchase price is not disclosed. The acquired business becomes part of the Service Division within the Compressor Technique Business Area.

About Atlas Copco Group

Great ideas accelerate innovation. At Atlas Copco we have been turning industrial ideas into business-critical benefits since 1873. By listening to our customers and knowing their needs, we deliver value and innovate with the future in mind. In 2022, Atlas Copco Group had revenues of BSEK 141 and at year end about 49,000 employees. For more information, visit: www.atlascopcogroup.com.

Compressed Air Industry News

Brehob Corporation Celebrates 70th Anniversary

Brehob Corporation is a leading provider of air compressor, electric, and crane and hoist solutions for the manufacturing and heavy equipment industry. For 70 years, Brehob has been the behind-the-scenes force that powers everything from factories to shops across four Midwest states. In 2023, Brehob is celebrating its 70th anniversary with the growth and innovation that's gotten it this far over the years.

At Brehob, the thing they value most is their team. The people who drive Brehob are the people who drive its success and its progress. Brehob was born in Indianapolis in 1904 from Meier Electric, a fan and motor company. In 1953, Al Brehob and Charlie Smither bought the motor division and expanded the business to also include air compressors and cranes. Generations of the Smither family have worked for Brehob, including Bryan Smither, who is now president of the organization. "Brehob is a family and will always remain that way," Bryan said.

As a family business from inception, Brehob knows what it means to build relationships with its customers and its employees. It starts every day with a commitment to make a positive impact on them. It knows that its employees' success is its success, and it makes every effort to help them thrive.

Brehob has done it all the Brehob way for 70 years: powering electrical needs, repairing air compressors, designing crane and hoist systems, and more. And it's sure to keep doing it the Brehob way for another seven decades… and beyond.

Brehob consists of three product groups across seven territories in Indiana, Michigan, Ohio, and Kentucky. It has expanded its regions over the last few years, with new locations in Grand Rapids, MI (2020) and Evansville, IN (2022). But it's far from done. It has big plans, and more growth in the works for the years to come. It's also focused on growing its biggest asset: its people.

It forms a united front both internally and externally, with a team that operates as one. This is the backbone of its company culture, and dictates that it acts as a unified and cohesive force in all of its territories and all of its specialties. It values every employee for their unique skills and their contribution to their product group and the company as a whole. It may take different roads, but it's all driving toward the same destination: providing excellent service to its customers that is always honest, knowledgeable, and accessible.

Brehob is celebrating its 70th anniversary.

With such a wide reach and a growing team of leading experts in its fields, it prides itself on being available for its customers when they need it, where they need it, to provide whatever they need from it. Its long history started in the heart of the Midwest, and it has been pleased to grow from there.

For more information, visit www.brehob.com.

When to Repair vs. Replace Your Vacuum Pump: A Guide

By Mary MacGregor Velhinho, Busch Vacuum Solutions

If your vacuum pump is malfunctioning, you are faced with a choice: repair or replacement. Our guide will take you through both options and provide recommendations on when it makes sense to repair vacuum pumps and when to replace them. We will also take a look at how to spot and diagnose common issues before they lead to system failure.

Whatever the path of action, the decision to repair or replace always begins with testing and diagnosis. A factory-trained service technician who specializes in vacuum pump services inspects the equipment and identifies the problem.

Repair

If your vacuum pump can be repaired, faulty components are removed and replaced, and the equipment is returned to manufacturer specifications.

Pros

- **Cost effective:** If the issue is minor, or the vacuum pump is relatively new, there may only be a few spare parts to replace.
- **Low environmental impact:** Fewer resources are used, and less waste is produced.

Cons

- **Potential for higher costs in the long term:** If the vacuum pump's issues are difficult to repair, they may crop up again.
- **Fixes only one specific problem:** Vacuum pump repair doesn't guarantee that other, different problems won't arise in the future.

Replacement

If you opt to replace your vacuum pump, the existing one will be removed and a brand new pump will be installed.

Pros

- **Higher reliability:** New vacuum pumps have entirely new components and may be more energy efficient.
- **New warranty:** A new unit comes with a new warranty, offering peace of mind, and potentially reducing future repair costs.

Cons

- **Higher upfront costs:** Purchasing a new vacuum pump means higher initial costs.
- **Longer installation time:** Installing and integrating a new vacuum pump usually takes longer than to carry out a small repair.

Key Considerations

Before you make a decision for vacuum pump repair or replacement, there are five criteria to assess.

Costs

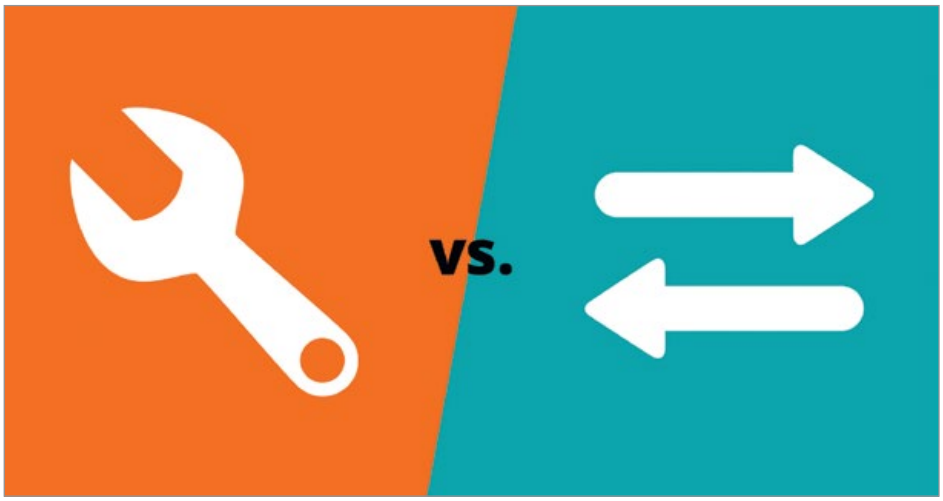
If your existing vacuum pump has only a minor issue, repair may be the more economical option. However, you should also consider longer-term maintenance and repair costs. As a vacuum pump gets older, for example, it may require more frequent servicing. This could add up to more than the price of a replacement over time, even though this will require a much larger immediate outlay.

Process Requirements

Evaluate whether your existing vacuum pump is still the best option for your process. If your vacuum pump is always running flat-out, or reserve pumps are regularly coming online to meet demand, the process may have outgrown the pump's current capabilities. Replacement could therefore be a sensible option. This will help avoid production delays and ensure you maintain optimal quality and performance.

Service History

Has this same problem occurred before? Examine the service history to be sure. Regular maintenance actions like replacing spare parts such as seals, gaskets, or vanes is usually nothing to be concerned about, but if larger issues keep cropping up, repairs may no longer be an option.



When to Repair vs. Replace Your Vacuum Pump: A Guide

Diagnosing and Troubleshooting Common Issues

Vacuum pumps rarely fail with no warning. However, it can be hard to catch the early symptoms of a problem. Regular maintenance is the first step: A problem spotted early is generally easier to repair. It is also helpful to familiarize yourself with common issues and the telltale signs of a failing vacuum pump:

- Excessive noise or vibrations
- Leaks
- Reduced pumping speed
- Overheating

Don't hesitate to ask for assistance from professional vacuum pump service providers and specialist factory-trained technicians to diagnose and troubleshoot these issues. Fixing them promptly is crucial to ensuring cost-effective vacuum pump repairs and minimizing the risk of downtime. It is also worth considering investing in an intelligent monitoring system. This will continuously

Energy Efficiency

Many new generations of vacuum pumps are more energy efficient than the one before. You should therefore consider the benefit of replacing your current vacuum pump with one that consumes less energy. Depending on the difference in consumption between your current vacuum pump and the newest technology, your energy bills could sink considerably. And your carbon footprint too.

Technical Features

Consider how state-of-the-art your current vacuum pump is. Do more modern vacuum pumps come with new technical features that could benefit your process? This could be the right time to invest. You could also look into retrofitting. Some features can be added to an existing vacuum pump – such as a variable speed drive or intelligent monitoring of your vacuum pump. This allows you to upgrade without investing in a full new system.

However, if your pump is getting older, it may no longer be compatible with these newer features that have become available since its purchase. As a result, your process could miss out on some optimization possibilities. You should therefore consider how important this option is to you and your process. This could sway your decision between repair or replacement.

monitor each vacuum pump's performance data and flag any anomalies.

Real-World Example: Weighing Repair Vs. Replacement

In a food packaging plant, the performance of the vacuum pump is critical for the quality and shelf-life of the foodstuffs. However, a vacuum pump was experiencing increased noise and reduced pumping speed, leading to production delays.

After careful inspection, the technician from the vacuum pump repair service provider determined that the problem was the result of a leak. The vacuum pump had been in operation for several years, but this was the first time the issue had occurred. And, although the initial symptoms looked troubling, it was a simple fix. Vacuum pump repair was therefore the most sensible option. The service technician replaced the worn seal, and the vacuum pump was back up and running.

Conclusion

When your vacuum pump isn't running as it should be, you should carefully weigh your options. Consult the experts from vacuum pump repair service providers and have them conduct a proper inspection and diagnosis. You should also assess efficiency, performance, and the cost of repairs – both now and in the future – versus the cost of a new vacuum pump. This will help you determine the best course of action. Ultimately, your decision should be based on what is most cost-effective and beneficial for your production process.

BEST PRACTICES

2024 EXPO OCTOBER 29-31 ATLANTA

COMPRESSED AIR / VACUUM / COOLING

The Largest North American Event for On-Site Utilities!

The Best Practices EXPO & Conference brings leading experts and users together of **On-Site Utilities (Compressed Air, Pneumatics, Vacuum, Blower, Nitrogen Generation, Chillers and Cooling Towers).** They will share "Best Practices" for positive impacts on Sustainability, Safety and Reliability manufacturing metrics.

Sustainable, Safe & Reliable **ON-SITE UTILITIES** Powering Automation

Sustainable
Energy/Water
Conservation Projects

Safe
Product Quality/Safety
System Compliance

Reliable
Uptime and
Scrap Reduction

SPONSORED BY

CAGI
Compressed Air & Gas Institute
www.cagi.org

JOIN US IN ATLANTA
OCTOBER 29-31, 2024

COBB GALLERIA CENTRE
CABPEXPO.COM

When to Repair vs. Replace Your Vacuum Pump: A Guide

These criteria can be tricky to assess by yourself, so Busch will be happy to assist. Our specialists will visit you on site, evaluate your current equipment and give you a recommendation on how to move forward. Whatever you decide, we will be there to carry out any necessary repairs, or provide you with a suitable replacement. For even more peace of mind, let us take care of your maintenance with service contracts, intelligent IoT solutions, and 24/7 remote condition monitoring. With 60 years of experience in the world of vacuum, you can be sure your vacuum supply is in good hands. Contact us to discuss the details and restore your vacuum equipment to its optimum performance. BP

About Busch Vacuum Pumps and Systems

Busch Vacuum Pumps and Systems is one of the largest manufacturers of vacuum pumps, blowers and compressors in the world. Our products are at the forefront of vacuum and low-pressure technology. For more information visit www.buschvacuum.com. All images courtesy of Busch Vacuum Pumps and Systems.

For similar articles on ***Industrial Vacuum System Assessments***, visit https://www.blowervacuumbestpractices.com/system-assessments/vacuum-systems

Visit our Webinar Archives to listen to expert presentations on ***Industrial Vacuum Technology*** at https://www.blowervacuumbestpractices.com/magazine/webinars

EVAPCO Celebrates Full Spectrum Evolution at 2023 Global Sales Conference

By Bill Smith, Associate Content Manager, Compressed Air Best Practices® Magazine

View of the Baltimore Inner Harbor from the Baltimore Marriott Waterfront, host of the EVAPCO 2023 Global Sales Conference.

In October of 2023, eight hundred sales professionals from forty-one countries attended the EVAPCO Global Sales Conference in Baltimore, MD. Under the theme "Full Spectrum Evolution," EVAPCO celebrated the talent of its global sales network, and the evolution of its full spectrum of heat transfer solutions. This article will recount the event functions and share new developments unveiled at the EVAPCO Global Sales Conference, the first since 2017.

During the Welcome Reception, attendees anticipated the days ahead filled with entertainment and training on new product lines, competitive analyses, thermal performance certification efforts and more.

"We will never miss this Conference. The production is unbelievable, and it's very motivational for our team. We brought fifteen of our team members here to experience this," said Rick Hollendieck, President, Sys-Kool.

"In terms of new product innovation and customer service, EVAPCO is premier. This is the technology to be aligned with for the future," said Jim Browe, Principal, R.F. Peck Company.

The "Full Spectrum Evolution" theme refers to its evolving range of factory-assembled

David Fernandez (Integrated Cooling Solutions), Jim Browe (R.F. Peck Company) and Troy Reineck (EVAPCO) catching up at the Welcome Reception (left to right).

and field-erected evaporative, hybrid, dry and adiabatic heat transfer solutions for HVAC, industrial process, and industrial refrigeration markets. SPECTRUM is also the name of EVAPCO's selection software.

"We filled the spectrum. Now it's evolving," said Mihir Kalyani, Global Product Manager, Dry & Adiabatic Coolers.

At the General Session, Pat Strine, Sr. Vice President, Industrial Refrigeration Sales & Marketing, welcomed all 800 attendees, including 44 new representative companies and a large contingent of international sales representatives. Strine also announced a new Versa-Split System product and EJET Ammonia DX product. Next, Bobby Becker, Global Product Manager – Cooling Towers, presented on the evolution of EVAPCO's crossflow solutions, led by an intensive fill development program. This R&D helped launch the new XPak™ Fill product.

The new PHW (parallel hybrid) Closed Circuit Cooler with enhanced rotated Sensi-Coil™ and CrossCool™ technologies were also introduced to complement the existing ESW4 evaporative fluid cooler line.

Jamie Facius, Vice President, North America Sales, advised sales representatives to "think outside of the evaporative box, to engage customers with a consultative selling approach, and become the customer's unbiased subject matter expert."

Since 2017, EVAPCO has made over 147 major investments worth a 9-digit total USD figure

Jasmin Zelaya, Tower Enterprises and J.S. Ratté, Johnson Barrow (left to right).

EVAPCO Celebrates Full Spectrum Evolution at 2023 Global Sales Conference

to continue its growth, according to Chad D. Nagle, Sr. Vice President – HVAC/IP Sales & Marketing. For example, a factory expansion in Madera, CA will be contributing to dry cooler manufacturing capabilities by Q2 2024. In addition, hundreds of new positions were added to EVAPCO's workforce since 2017.

"Out of all the lines we represent, EVAPCO is the best. They go above and beyond to take care of the customer and give us all the tools we need. They understand what customer service is about – something a lot of people have forgotten," said Vince Pilato, President, RWH Mechanical Sales.

Rich Merrill – Director of Advanced Engineering (retired 2004), Wilson Bradley – EVAPCO Chairman of the Board and Co-Founder, Greg Kahlert – EVAPCO Board of Directors, and Jay Calkins – Executive Vice President (left to right).

Bobby Becker, Chad D. Nagle, Jamie Facius and Troy Reineck during the World Headquarters and R&D Facility Tour/Unit Showcase in Taneytown, MD.

Nagle also introduced the Advanced Energy & Water Analysis Tool available to EVAPCO sales representatives. Design engineers are requiring more and more information – according to Matt Sniezek, Sr. Product Application & Marketing Engineer. The enhanced tool enables the salesperson to provide design engineers with power and water usage efficiencies, annual/monthly power and water consumption, chiller operation, and much more.

"Whether it's a 100 ton or 100 MW system, this tool enables you to help design engineers calculate these values to design efficient and reliable systems productively," said Sniezek during a dedicated business session.

"What I love about EVAPCO is the ease of doing business with them. They understand what it's like going to market as a representative, and they enable us to be successful in helping customers," said David Fernandez, CEO, Integrated Cooling Solutions.

EVAPCO reported significant growth in the industrial and data center markets. The eco-Air series of dry and adiabatic fluid coolers is meeting demands of these markets, sold with a 100% thermal performance guarantee by EVAPCO. According to Sarah Twigg, Marketing & Application Engineer – EVAPCO is still the only manufacturer with CTI-certified dry fluid coolers per CTI Standard 201. Adiabatic coolers aren't far behind from being included in CTI STD-201 since the adiabatic acceptance test code was recently completed.

"Design engineers should only specify CTI certified equipment. Owners should only purchase CTI certified equipment. Under-performing units will consume more energy and water, and will miss temperature set points. For dry coolers, we are seeing competitors overstate cooling capacity by 20% or more. CTI Certification give engineers and owners peace of mind that they are getting what they specified and paid for! It will perform as rated," said Troy Reineck, EVAPCO Professor.

"I'm eager to hear about enhancements to the dry and adiabatic fluid coolers," said Seth Bartkowski, Klima New Jersey. Bartkowski learned the adiabatic products now use a pressurized water distribution system (instead of gravity fed), introduced in 2023, to further reduce water consumption. Sarah Twigg also shared concerns and negative impacts of manufacturers overstating adiabatic pad saturation efficiency during a dedicated business session.

To further celebrate the talent of the EVAPCO sales force, the General Session was produced to the theme of a well-known televised talent show competition. Between each presentation, attendees enjoyed a balancing act, a PowerPoint comedian, and a magician/mind reader. Max Duarte, from SOLIREF, also an EVAPCO Eagle (a member of its representative advisory board), was the crowd volunteer for the mind reader act.

An eco-Air Double Stack Dry Cooler with 14,816 MBH heat rejection capacity.


Bill McQuaide, Greg Stoughton and Clay Boggs from Energy Transfer Solutions in Philadelphia, PA (left to right).

Members of EVAPCO's leadership team and marketing engineering team contributed to the entertainment with a professionally filmed comedic skit, plus a cooling tower remix and lip-sync music video to a popular '90s boy band song. However, EVAPCO's very own Devon Nickoles stole the show when she performed a new original company theme song.

BLOWER & VACUUM BEST PRACTICES
blowervacuumbestpractices.com

COMPRESSED AIR BEST PRACTICES
airbestpractices.com

CHILLER & COOLING BEST PRACTICES
coolingbestpractices.com

PROUDLY PRESENTING THE 2024 EXPERT WEBINAR SERIES

Don Van Ormer
Auditor, APEnergy

Julie Gass
Lead Mechanical Process Engineer, Black & Veatch

Andy Smiltneek
President, Growth Solutions Consultants

Tim Dugan, P.E.
President and Principal Engineer, Compression Engineering Corp.

Hiran de Mel
Senior Project Manager and Principal Technologist, Jacobs

Tom Taranto
Owner, Data Power Services

Clayton Penhallegon, Jr., P.E.
Integrated Services Group

JAN 11
How to Boost the Energy Efficiency of Rotary Screw Air Compressors
Presenter Andrew Smith, P.E., Co-Founder, SMARTCAir
Thursday, January 11, 2024 – 2:00PM EST

JAN 25
Using ASME PTC 13 to Evaluate the Energy Efficiency and Performance of Different Blower Technologies
Presenter Julie Gass, Lead Mechanical Process Engineer, Black & Veatch and Hiran de Mel, Senior Project Manager and Principal Technologist, Jacobs
Thursday, Jan 25, 2024 – 2:00PM EST

FEB 08
Centrifugal vs Rotary Screw Air Compressor Performance: Full Load and Part Load Efficiency
Presenter Mike Lenti, Senior Auditor, Compressed Air Consultants
Thursday, February 8, 2024 – 2:00PM EST

FEB 22
Storage Tank and Pipe Sizing for Large Plants: How to Meet CFM Needs
Presenter Ron Marshall, Chief Auditor, Marshall Compressed Air Consulting
Thursday, February 22, 2024 – 2:00PM EST

MAR 07
Sizing Vacuum Pumps and Piping for Various Applications
Presenter Andy Smiltneek, President, Growth Solutions Consultants
Thursday, March 7, 2024 – 2:00PM EST

MAR 21
Control of Distributed Systems with Multiple Air Compressor Rooms
Presenter Tim Dugan, P.E., President, Compression Engineering Corporation
Thursday, March 21, 2024 – 2:00PM EST

APR 04
Refrigerated vs Desiccant Dryers and Choosing the Right One
Presenter Don Van Ormer, Auditor, APEnergy
Thursday, April 4, 2024 – 2:00PM EST

APR 18
CTI STD-201RS Thermal Certification for Cooling System Heat Rejection Equipment Part 2
Presenter Cooling Technology Institute
Thursday, April 18, 2024 – 2:00PM EST

MAY 09
How to Identify and Eliminate Artificial Demands
Presenter Tom Taranto, Owner, Data Power Services
Thursday, May 9, 2024 – 2:00PM EST

MAY 23
Sensors for Compressed Air Systems: Data Management and Analysis
Presenter Andrew Smith, P.E., Co-Founder, SMARTCAir
Thursday, May 23, 2024 – 2:00PM EST

JUN 13
Advanced Aeration Control for Blowers
Presenter Tom Jenkins P.E., President, JenTech Inc.
Thursday, June 13, 2024 – 2:00PM EST

JUN 27
Heat Recovery from Chillers: How to Capture and Use Waste Heat
Presenter TBD
Thursday, June 27, 2024 – 2:00PM EST

JUL 18
How to Determine the Optimal Size of a Nitrogen Generator
Presenter Mike Flowe, President, Flowe Nitrogen Systems
Thursday, July 18, 2024 – 2:00PM EST

JUL 25
Instrumentation and Monitoring for Vacuum Systems
Presenter TBD
Thursday, July 25, 2024 – 2:00PM EST

AUG 08
How to Diagnose and Fix Common Issues in Rotary Screw Air Compressors
Presenter TBD
Thursday, August 8, 2024 – 2:00PM EST

AUG 22
Thermal Performance of Evaporative and Dry Cooling Systems
Presenter Clayton Penhallegon, Jr., P.E., Integrated Services Group
Thursday, August 22, 2024 – 2:00PM EST

SEP 12
Aeration Blower Sizing and Selection
Presenter Tom Jenkins P.E., President, JenTech Inc.
Thursday, September 12, 2024 – 2:00PM EST

SEP 26
Heat Recovery from Compressed Air Systems
Presenter Don Van Ormer, Auditor, APEnergy
Thursday, September 26, 2024 – 2:00PM EST

OCT 10
How to Interpret Audit Data and Improve Your Compressed Air System
Presenter Mauricio Uribe, Auditor, Compressed Air Consultants
Thursday, October 10, 2024 – 2:00PM EST

NOV 21
Power Consumption Curves for Vacuum Pumps: Fixed-Speed vs Variable-Speed
Presenter Andy Smiltneek, President, Growth Solutions Consultants
Thursday, November 21, 2024 – 2:00PM EST

DEC 12
Compressed Air Leak Detection: Techniques, Methods, Tips, and Tools
Presenter Ron Marshall, Chief Auditor, Marshall Compressed Air Consulting
Thursday, December 12, 2024 – 2:00PM EST

DEC 19
Selection Criteria for Oil-Free Air Compressors
Presenter TBD
Thursday, December 19, 2024 – 2:00PM EST

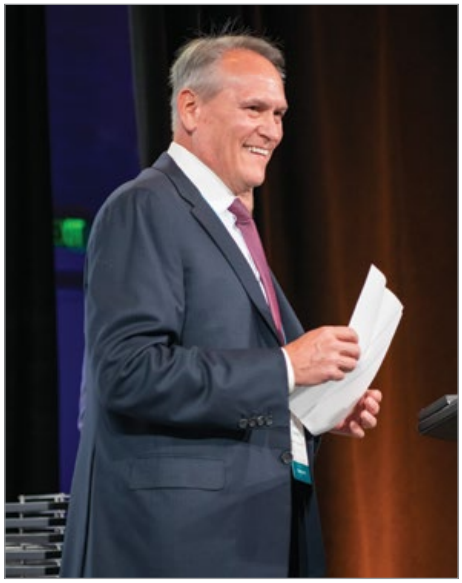
Ron Marshall
Chief Auditor, Marshall Compressed Air Consulting

Tom Jenkins, P.E.
President, JenTech Inc.

Register for Free Today at airbestpractices.com/webinars

Missed a Webinar? Register to View from our Archives at https://www.airbestpractices.com/webinars

EVAPCO Celebrates Full Spectrum Evolution at 2023 Global Sales Conference



Bill Bartley, EVAPCO President & CEO.

Representatives from Heat Transfer Systems of Georgia, R.F. Peck Company Albany and Mechanical Products Nevada at the Sales Awards Banquet.

At the Sales Awards Banquet, Stephen and Fanny Lee of Newark Engineering (Singapore and Malaysia) were presented with the Lifetime Achievement Award. Newark Engineering is the third recipient of this award in EVAPCO's history.

"Newark Engineering is one of our best representatives in the entire world," said Bill Bartley, President & CEO, EVAPCO.

The event concluded with a grand prize giveaway, and tour of the World Headquarters and Research Facility in Taneytown, MD, where a fortuitous sales representative won a 2023 Tesla Model S 75. Guests were also treated to a dinner cruise around Baltimore's Inner Harbor.

"Thank you all for coming to this very special event. It has been wonderful to see old acquaintances and meet many new people. I hope this event has stirred your passions and enthusiasm for selling EVAPCO. Additionally, I'd like to give Joe Mandato (Executive Vice President, retired 2019) and the whole EVAPCO team a special thank you for their efforts in organizing this event," said Wilson Bradley, Chairman of the Board & Co-Founder of EVAPCO. BP

About EVAPCO

Founded in 1976, EVAPCO, Inc. is an industry leading manufacturing company with global resources and solutions for worldwide heat transfer applications. EVAPCO is dedicated to designing and manufacturing the highest quality products for the evaporative cooling and industrial refrigeration markets around the globe. Headquartered in Taneytown, MD, EVAPCO products are engineered and manufactured in 33 locations across 14 countries and supplied through a sales network of more than 250 offices. For more information, visit www.evapco.com.

For similar articles on ***Cooling Technology,*** visit https://coolingbestpractices.com/technology

Visit our Webinar Archives to listen to expert presentations on ***Cooling Technology*** at www.coolingbestpractices.com/magazine/webinars

Crimping Pipe Nozzles for Improved Efficiency

By Murray Nottle, Working Air System Engineer, The Carnot Group

Blowing a jet of compressed air at an object is a common but "poor" use of compressed air. Often the blowing nozzle is a piece of pipe on a hose with a manual valve for control. This quickly solves a production problem when a more efficient factory made nozzle is either physically too big, too expensive, or not on site when needed. Retrofitting with factory made nozzles is often ruled out by for the same reasons, and the time needed by managers and fitters to change a nozzle for often little gain in production.

A pipe nozzle can be made both more effective and more efficient by crimping the pipe 5 diameters back from its outlet. This can be done in a workshop, or to installed nozzles, without affecting the general shape of nozzle. Maintaining nozzle shape is important so that the carefully bent tubes keep blowing at "just the right spot".

Crimping small copper tube nozzles can be done in a few minutes. Nozzles from stronger materials or that are bigger may take longer depending upon the crimp shape and the tools used.

Crimping a pipe nozzle is a quick, zero capital, technique to save compressed air.

Using crimped pipe nozzles, one site saved >90% of the compressed air used by one process and >63% by another.

Why it Works

Crimping a pipe nozzle changes the jet it creates from being low speed (sub sonic) to high speed (supersonic). The crimp creating the nozzle throat, reduces pipe area and so the fluid flow rate.

In a convergent nozzle, the pressure energy of the fluid is converted to velocity but only where the fluid is affected by a lower downstream pressure. Pressure changes move upstream in the fluid at the speed of sound (Mach 1). When the fluid speed reaches Mach 1 at the nozzle throat, no change in pressure ratio will increase the fluid speed. This is called the critical pressure ratio and for air is 1.89:1.

For the air speed to increase above Mach 1, it needs to be able to expand sideways. To allow this the nozzle walls after the throat diverge so a supersonic nozzle is also called a convergent – divergent nozzle.

Figure 1 shows the air flow patterns in and from different nozzle shapes. For:

- The flattened pipe nozzle the throat is at the pipe outlet. For any upstream air pressure > 13.1 psig (91 kPag) the outlet speed is Mach 1. For pressures >13.1 psig, outside the pipe the air expands sideways. The jet speed is ≤ Mach 1 and the jet has a wide angle.
- A straight pipe, the throat is an upstream restriction e.g. the fitting connecting the pipe to a hose, valve, or an elbow. The jet will have a speed of ≤ Mach 1. If the air is:
  - Fully expanded before it enters the pipe, the jet angle will typically be 15 – 18°.
  - Under expanded, the jet angle will be wider like the flattened pipe.
- A sonic nozzle, the throat is the small section in the middle of the nozzle:
  - At its design pressure ratio. The pressure inside the pipe end is 0 psig. The jet speed is >Mach 1 with the typical angle of 15 – 18°.

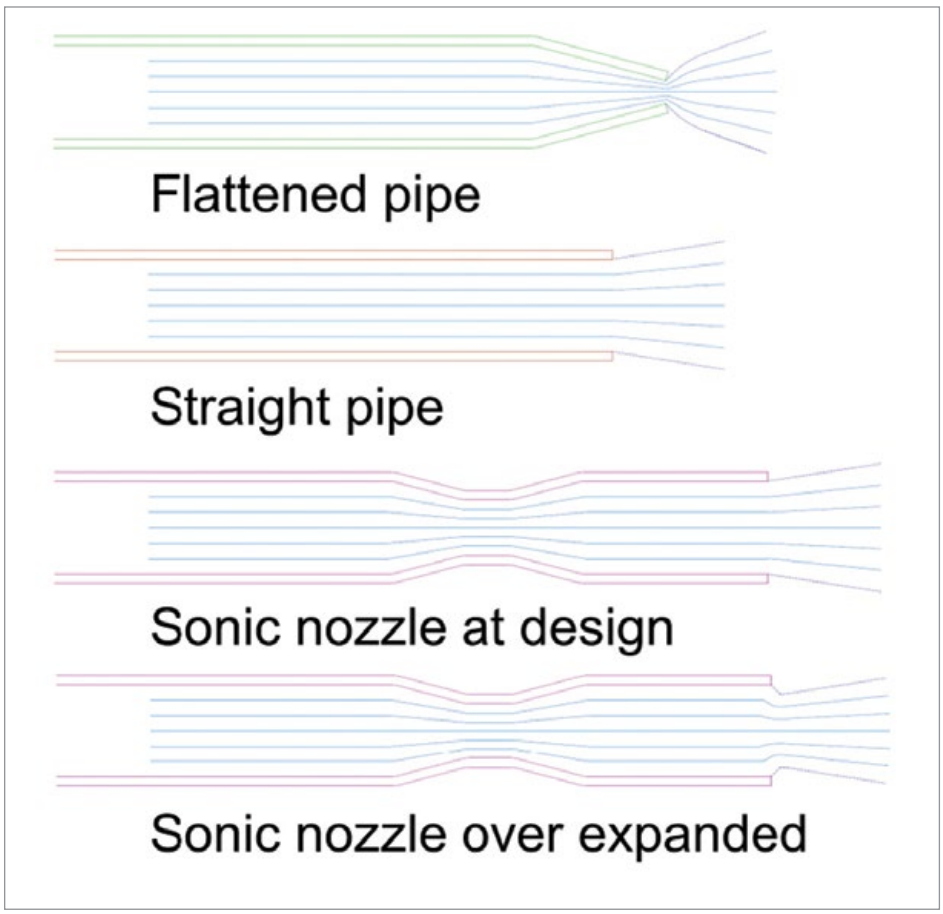


Figure 1: Flow through different nozzles.

Crimping Pipe Nozzles for Improved Efficiency

Figure 2: West air slide with close up of one of the air blows.

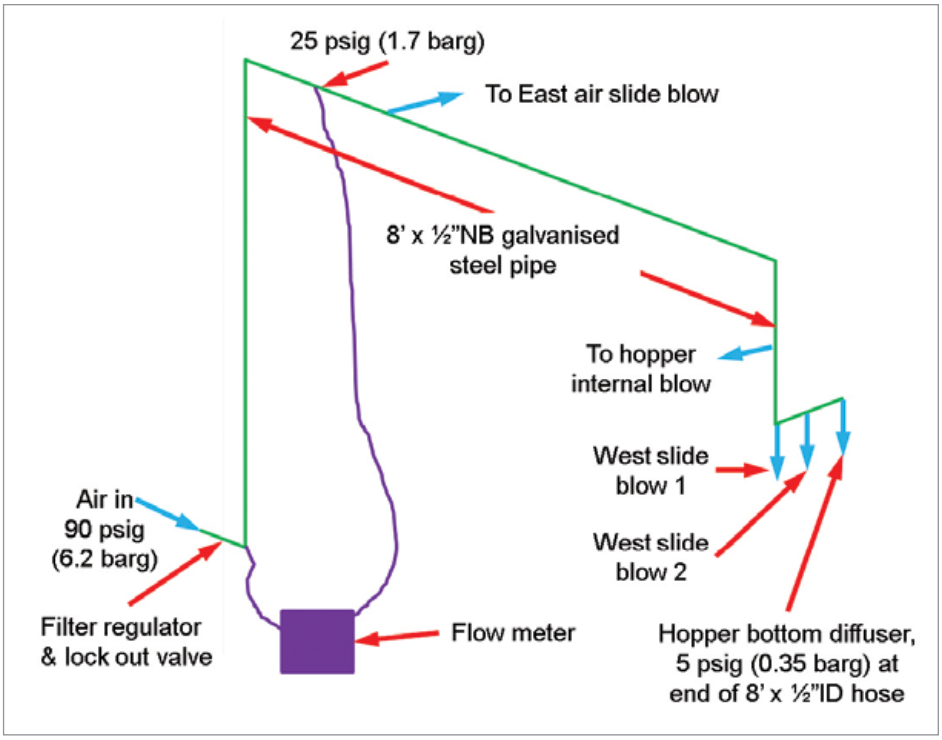


Figure 3: Hopper compressed air blows supply piping.

- Above its design pressure ratio (no image), inside the pipe end is >0 psig. The jet speed is >Mach 1 but like the flattened pipe the air will expand sideways outside the pipe giving a bigger than typical jet angle.

- Below its design pressure ratio, the pressure inside the pipe end is <0 psig. The jet speed is >Mach 1 but narrowed by the surrounding air pressure.

These sonic nozzle jet shape descriptions are simplified. Use the Internet to read more detailed ones.

What Crimp Shape to Use?

The throat shape is ideally round but creating it requires a rotary swaging tool. The throat can also be a shape with straight sides (triangle, square etc) which are easier to crimp. The number of throat sides affects the nozzle area ratio and performance, but for >3 sides this is predictable as the sum length of the nozzle sides must equal the pipe circumference.

A two sided crimp (squeezing the side of the pipe together with pliers or in a vice) can have any area ratio, but the error between "design" and "manufactured" area ratios can be large and unpredictable. A two side crimp can also lower the strength of the nozzle so should only be considered if reworking flattened end nozzle.

Table 1 shows the theoretical performance of different shaped crimp pipe nozzles. The

"Relative Jet momentum" is the jets force compared to an open pipe at the same supply pressure.

A Case Study

The Carnot Group has a customer with a large, conical hopper feeding powder into two air slides (East and West). The flow of the powder along each air slide is controlled by a knife valve.

To prevent the powder jamming the valves, compressed air is blown against the back of each valve blade. The air nozzles are OD½" tube welded to the sides of the air slides. ID ½" air hoses connect the nozzles to a manifold. Figure 2 shows the West air slide which has a nozzle on each side of the slide (blue air hoses). The East slide only has 1 nozzle.

The hopper is fluidised above the air slides by blower supplied air. To fluidise the hopper below the air slides, there is a porous "tile" at its base supplied with compressed air. There is also an OD ½" tube lance entering from the side of the hopper that bends down internally to blow the top of the tile. In total there are 5 compressed air blow points around the hopper.

Figure 3 shows the compressed air piping supplying the blow points. For testing purposes, a flow and pressure logger was temporarily installed using valves to bypass and isolate section of the pipe.

Initial testing showed:

- A flow of 72 CFM (2.04 m^3/min).
- After passing through a filter regulator, lock out valve and 2 elbows, there was only 25 psig (1.7 barg) in the pipe before any take off. The regulator was set to a much higher pressure. This pressure was measured before air was diverted through the flow meter.

This loss of pressure should be no surprise. There were 5 x ½" hoses being supplied by a single ½" pipe. There was sonic expansion (pressure ratio >1.8:1) in either the regulator or isolation valve to the extent that both were tagged as leaks due to the amount of ultrasound noise being emitted.

Table 1: Performance vs number of throat sides

No throat sides	3	4	5	6
Pipe/throat area ratio	1.65	1.27	1.16	1.10
Pressure ratio	6.46	4.00	2.89	2.33
Supply psig	80	44	28	20
Supply barg	5.5	3.0	1.9	1.4
Mach no out	1.97	1.65	1.48	1.37
Relative Jet momentum	1.19	1.29	1.28	1.24
Approximate air saving, %	49	39.3	32.4	26.8

Crimping Pipe Nozzles for Improved Efficiency

From the logged data, the nozzle jet momentums were estimated. Engineered nozzles could not be fitted to these points, so crimp pipe nozzles were used. These were OD 3/16" copper tube with a 3 sided crimped throat as shown in Figure 4. Figure 5 shows the modified electrical lug crimp tool used to crimp the tube throats.

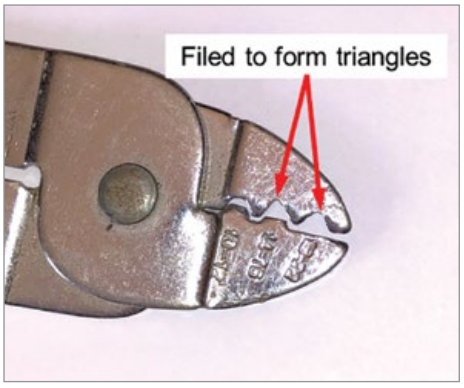


Figure 4: Tool used to crimp 3 sided throat.

The tube nozzles were placed inside the existing ½" tube nozzles using ¼ BSP x 1/4" tube compression and other fittings. The new internal blow nozzle was 18" long but being annealed copper tube, it was able to pass through the bend in the original ½" steel tube one.

Pressure regulators were fitted to the supply to each blow point and after consultation with the plant operators were set in the range of 20-30 psig. The bottom tile had a regulator and restricting orifice fitted to control its air flow.

Figure 5: Crimped pipe nozzle from OD3/16" tube.

Follow up testing showed:

- A compressed air flow of 3.2 CFM (0.09 m^3/min) a >90 % saving.
- A pipe pressure of 75 psig (5.2 barg) instead of 25 psig (1.7 barg).

On another process, 3 x 5/16" pipe nozzles were changed to 3 x 3/16" crimp pipe nozzles dropping the compressed air flow from 35 to 13 CFM (1 to 0.37 m^3/min) a 63% saving.

Conclusion

Compressed air nozzles made from pipe are a quick solution to production problems. Engineered, factory made nozzles have better performance, but are often too costly and not at hand when needed. Crimping the pipe nozzle so that it becomes a sonic (convergent divergent) nozzle, can quickly provide most of the benefits of a factory made nozzle when the latter, is not practical or cost effective. BP

For more information please contact Murray Nottle, The Carnot Group. mnottle@carnot.com.au, www.carnot.com.au.

To read similar ***System Assessment*** articles visit
https://www.airbestpractices.com/system-assessments

For expert presentations, visit our Webinar Archive Section dedicated to ***Piping & Storage*** at https://www.airbestpractices.com/magazine/webinars

Compressed Air Efficiency & Reliability Showcased at the Best Practices 2023 EXPO & Conference

By Bill Smith, Compressed Air Best Practices® Magazine

A record number of exhibitors and attendees came to the Best Practices 2023 EXPO & Conference.

In late October 2023, professionals from around the world gathered at the Best Practices 2023 EXPO & Conference at McCormick Place in Chicago, Illinois to source and learn about *Sustainable, Safe and Reliable On-Site Utilities Powering Automation* including compressed air, blowers, vacuum, pneumatics, motors and cooling water systems.

"Recent energy price instabilities and our sustainability targets have accelerated our needs to improve energy efficiencies and better utilize our existing utility assets," said Bing Cheng, Director of Global Utilities, Givaudan – a global fragrance and ingredients company, during his keynote presentation.

This report will recount the compressed air-related functions offered at the Best Practices EXPO & Conference, and recount press visits to the largest exhibitor displays (by sponsorship level, then alphabetically). This event was

Opening Session Speaker, Frank Mueller, CAGI President, and President of Kaeser Compressors USA.

also co-located with a large food and beverage processing trade show.

The Compressed Air & Gas Institute (CAGI), an Event Co-Sponsor, held its Certified Compressed Air System Specialist examinations on site. CAGI President Frank Mueller gave the opening keynote presentation titled *Maximizing Energy Efficiency and Productivity with Compressed Air & Gas Institute's Resources.*

The Women in Compressed Air, Vacuum & Cooling (WCVC) Networking Group held its inaugural luncheon sponsored by Ingersoll Rand and Quincy Compressor on Day 1 of the event. At the end of Day 1, attendees enjoyed rooftop views of Chicago during the Networking Event, sponsored by BEKO Technologies, Sullair, Mikropor and Aggreko. In addition, Compressed Air Challenge held its Level 1 Fundamentals of Compressed Air Systems training on site.

BEKO Technologies had an operating compressed air system at their booth to display their compressed air treatment solutions for manufacturers with stringent air quality requirements. The operating system featured an oil-free air compressor, then BEKO water separators, in-line filtration, a membrane dryer, BEKOKAT catalytic converter, a QWIK-PURE oil-water separator, refrigeration dryer, METPOINT instrumentation and sensor technology for dew point, pressure, flow and ambient oil vapor content. On the other side of the BEKO booth, were multiple desiccant and refrigerated air dryer models, including a 2,300 scfm BEKO XFe Series heated blower purge desiccant dryer with 3% average purge air consumption. "Over $3.2 billion

Rob Haseley, Technical Consultant for the Compressed Air & Gas Institute.

The inaugural Women in Compressed Air, Vacuum & Cooling (WCVC) Networking Group luncheon was a success!

John Hays, Tilo Fruth, Sarah Porterfield Tippens, Sascha Niederhagen, and Luciano de Oliveira at the BEKO TECHNOLOGIES booth (left to right).

Compressed Air Efficiency & Reliability Showcased at the Best Practices 2023 EXPO & Conference

Adam Bitner, Chris Fredell, Benjamin Danielson and Joe Beyer at the Sullair booth (left to right).

John Senay, Leslie Marshall, Jack Gusciora, Chris Dominick and Paul Humphreys at the Atlas Copco Compressors booth (left to right).

Neal Stephan, Cody Blythe, Jeremy Bailey, Patty Moffitt, Nick Redfearn, Patrick Jakeway and Kyle Schafer at the Bobcat booth (left to right).

in energy costs are wasted annually by compressed air systems in the U.S. alone," said Tilo Fruth, President, BEKO Technologies.

"BEKO Technologies continues to innovate our products built in the States, for the States," said Sascha D. Niederhagen, Co-CEO & Chief Sales Officer, BEKO Technologies.

Sullair displayed a new DS_{45} oil-free rotary screw air compressor with a two-stage Hitachi airend and enhanced Sullair Touchscreen Controller. The DS range comes in 45kW, 55kW and 75 kW footprints. Sullair is also launching a new range of heatless, externally heated, heated blower purge and modular desiccant dryers. Seen at the Sullair booth was a SA 500 cfm heatless desiccant dryer, plus an LS Series lubricated rotary screw air compressor, and tank-mounted ShopTek ST11 air compressor with an integrated refrigerated dryer. Brian Mann, Product Manager for Hitachi Global Air Power/ Sullair presented *Compressed Air Energy Savings at a Commercial Bakery* during the Plenary Session. "We found the plant spends most of its time between 1,300 and 1,600 scfm – but peak capacity is about 2,100 scfm," said Mann as he explained audit data analyses.

Atlas Copco Compressors displayed a new ZT 50VSD+ full-feature rotary tooth air compressor, a GA11VSD^s rotary screw air compressor, and NGP10+ nitrogen generator. Both air compressors are equipped with Atlas Copco's Neos Next inverter. "The efficiency of the ZT increased by about 15% compared to the previous version. Most drives are bought off the shelf and are typically designed for fans and pumps, not for an air compressor. Our proprietary Neos Next is designed for air

compressors, can start up under pressure and meet all the demands we have for it," said John Senay, Product Marketing Manager. The Neos Next is housed in a IP66 enclosure, protecting it from dust, debris and humidity. The GA11VSD is configured with a vertically mounted airend and motor. "There isn't a bolt you can't access, yet it has one of, if not the smallest physical footprints in this market," said Paul Humphreys, Vice President of Marketing. Atlas Copco Compressors also displayed its enhanced process filtration portfolio. Michael Lewis, Atlas Copco's process filtration specialist, presented *Process and Sterile Filtration – Key to Minimizing Contamination and Protecting Brand Reputation* during the Conference.

Bobcat displayed six of its oil-flooded rotary screw air compressors, including 100hp and 50hp variable speed and fixed speed units, and belt-driven 10hp and 15hp units. "We've chosen to be very disciplined about introducing new air compressor models to the market. We ensure all models are integrated in our engineering systems, part manuals and operator manuals are made, and every single aftermarket part is on the shelf and ready to ship before we launch the first model," said Patrick Jakeway, General Manager, Doosan Bobcat North America. "Uptime is the most important thing to industrial customers. At Bobcat, your productivity is our priority," Jakeway told the audience during his presentation. For its channel partners, Bobcat guarantees great products, great support and long-term distributor relations – according to Jakeway.

CS Instruments USA displayed its new OILCHECK 500 monitoring system for permanent, precise measurement of vaporous residual oil content, dew

Wolfgang Blessing, Enrico Capetanis and Martin Zeller at the CS Instruments USA booth (left to right).

Greg Ashe, Michael Camber, Chris Erickson and Frank Mueller at the Kaeser Compressors USA booth (left to right).

Neil Mehltretter, Technical Director for Kaeser Compressors spoke in the standing-room-only CAGI Seminar during the Best Practices Conference.

Compressed Air Efficiency & Reliability Showcased at the Best Practices 2023 EXPO & Conference

John Schmitt, Brandon Dial, Andy Bell, Paul Blake and Dave George at the Kaishan Compressor USA booth (left to right).

Mert Alpagut, Stephanie Hall and Clark Beal at the Hertz Kompressoren USA booth (left to right).

Jim DiMaiolo, Gregg Lesniewski, Joe Rodenbucher and Robert Ruskaup at the Altec AIR booth (left to right).

point and particulates in compressed air. Air quality is measured, and corresponding ISO 8573 classes are displayed on the OILCHECK 500 monitor in real time. Also displayed were their latest differential pressure wet and dry flow meters with options for controlled and harsh environments, UltraCam 500/510 ultrasonic leak detectors, and many other compressed air and gas monitoring solutions.

Hertz Kompressoren USA now serves over 100 channel partners in its seventh year in the United States. "Our IMPETUS two-stage oil-injected rotary screw air compressors from 125-430 hp have made a good impact on the market since their launch. At the beginning of 2024, we will introduce 30-100hp VSD two-stage rotary screw air compressors," said Mert Alpagut, Country Manager. Hertz also displayed an HS Series 30hp oil-free belt driven scroll air compressor. The HS Series is available in single, double, triple and quadruple-stacked units ranging from 2-40hp (1.5-30kW), 115-145 psi (8-10 bar) and 5-120 cfm.

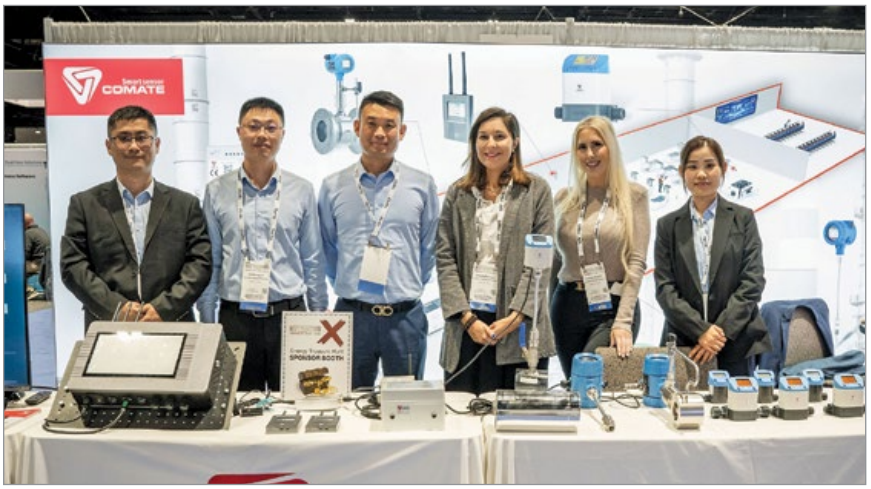
Kaeser Compressors USA introduced Kaeser Measurement Technology (KMT), a suite of sensors for continuous monitoring of KPIs throughout the entire compressed air system, monitored and visualized through the SIMGA AIR MANAGER compressed air management system. The suite includes an advanced ambient analyzer; basic and advanced process analyzers (pressure, PDP, temperature, humidity); flow analyzers for readings (flow rate, velocity, cumulative flow, pressure, temperature) before and after air treatment; and an advanced energy analyzer monitoring voltage, current, frequency power and harmonic waves. The KMT was seen installed throughout the Kaeser Air System Enclosure on display. Also

displayed was a 10hp Kaeser AIRCENTER rotary screw air compressor for 9-90 cfm flow rates in a quiet, space-saving package. Visitors also saw a 10hp Kaeser Air Center, and a 25-hp AS Series rotary screw air compressor with an integrated refrigerated dryer equipped with energy saving control and aluminum plate heat exchanger.

Kaishan Compressor USA displayed its new two-stage oil-free rotary screw air compressor at the show. "This is the only oil-free rotary screw air compressor that has been designed, engineered and manufactured completely in the USA," said Dave George, President, Kaishan Compressor USA. In early 2023, Kaishan began manufacturing two-stage oil-free units in Loxley, AL and exporting them overseas. Now, units are available in 125-200hp sizes in the Americas. Development for 60-100hp sizes is underway, then development for units above 200hp will follow. "Kaishan continues to grow, expanding our products and workforce. Next month, we're breaking ground on a plant expansion to double the size of our manufacturing, assembly and warehousing capabilities of our Loxley, Alabama facility, which we've outgrown in just four years," said George.

Aerzen Rental remains specialized in temporary blower and air compressor solutions below 50 psi. Its rental fleet includes new high-speed turbo units, positive displacement and rotary lobe blowers, single-stage rotary screw air compressors and ancillary products. "In response to our recent growth in the wastewater market, we've developed aeration grid platforms meant to be mobilized and de-mobilized quickly for operating wastewater tanks on an emergency and 24/7 basis," said Scott Werner, Business Development Manager.

Scott Werner and Meghan Babineaux at the Aerzen Rental booth (left to right).

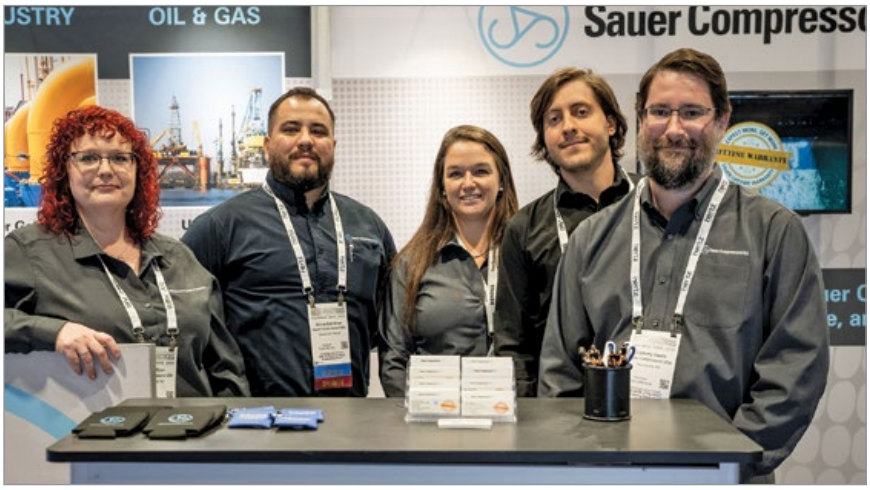


Ray Fang, Hansheng Ye, Yu Gu, Brenda Mercado, Amanda Madison and Zhimei Li at the Comate Intelligent Sensor booth (left to right).

Russel Warner, Mark McCarthy, JD Schroeder, Shawn Drwal, Matt Smith, Danielle Denton and Jimmy Tang at the FS-Curtis/FS-Elliot booth (left to right).

Compressed Air Efficiency & Reliability Showcased at the Best Practices 2023 EXPO & Conference

Dave Lange, Volkan Ayhan, Jeff Crutchfield, Aaron Duke, Ryan Loeffler, Stephanie Glassman and Chris Wells at the Mikropor America booth (left to right).



Dawn Ryan, Adrian Espinoza, Crystal Wilson, Daniel Garcia and Anthony Harris at the Sauer Compressors USA booth (left to right).

Sahith Sanike and Parker Beck at the SMC Corporation of America booth (left to right).

Altec AIR displayed its refrigerated and desiccant dryer products and filtration solutions. "We've integrated the Engineered Air Products team into our sales force following the acquisition, and we've expanded our manufacturing capacity by building some of their products at Altec AIR headquarters in Colorado," said Jim DiMaiolo, Sales Manager, Altec AIR. Joe Rodenbucher and Greg Lesniewski found time in between speaking with prospective and existing distributors to enjoy snacks made at another exhibitor's food processing line.

Comate Intelligent Sensor made its debut at the Best Practices 2023 EXPO. Comate offers CAE compressed air auditing tools and an air compressor efficiency analysis system. Feeding these solutions with data are Comate's thermal mass, differential pressure and vortex flow meters.

FS-Curtis/FS-Elliot displayed its R2000 Control Panel, and an airend for the new FS-Curtis ECO-Turbo centrifugal product range (185-250kW). "With FS-Elliot's centrifugal product line spanning 300hp and above, the FS-Curtis ECO-Turbo is expanding our group's centrifugal offerings down to 125hp," said Matt Smith, VP of Sales & Marketing, FS-Curtis. The ECO-Turbo can also be air-cooled, preventing the need for purchase of a cooling tower if a customer is adding or converting to centrifugal technology – or provide a solution for customers with local water consumption regulations.

Mikropor America displayed an MTD-US Series High Capacity Turbo Dryer, a water/glycol- or air-cooled refrigerated air dryer (5,000-17,500 cfm) with a screw refrigeration compressor capable of operating in four different speeds, preventing

excessive start/stops, optimizing efficiency. Mikropor also displayed the new MMD-VP-US modular vacuum regenerated desiccant dryer with 2% purge rate. "This is the most energy efficient solution below 1,000 cfm. In general, for a system above 1,100 cfm, blower purge becomes more efficient," said Volkan Ayhan, Mikropor.

Sauer Compressors USA added 40,000 square-feet of manufacturing space in its facilities this year, doubling warehouse space in the process. Sauer displayed a WP221LM Breeze Series 100-hp air compressor with new remote monitoring capabilities they pulled right from Sauer's rental fleet. "For our rental business, we're constantly reinvesting back into our North American fleets with new compressors, dryers, stand-alone filtration skids, and ancillary components to provide a complete solution," said Jim Riley, Rental Sales Manager.

Jon Jensen, SMC Corporation of America's Energy Conservation Group Manager presented about SMC's new Air Management System (AMS) in the New Technology EXPO Classroom. The AMS performs energy saving functions such as automatic regulation and isolation of compressed air provided to a machine to improve efficiencies during periods of inactivity. SMC's booth had live-pressurized demos of its latest innovations in IoT connected pneumatic system precision, reliability and energy efficiency.

Sullivan-Palatek's enhanced its SP13 (40-60hp) oil-flooded rotary screw air compressors to enhance energy efficiency, durability and simplicity. They are also developing a new SP11 model. "We're undergoing a lot of product development,

Horace Douglas, Bruce McFee, Grant Hebert, James Freligh, Josh Ward, Austin Wilkins and Dave Guth at the Sullivan-Palatek booth (left to right).

Nitin Shanbhag, Emre Tujumet and Aydin Dereci at the Alkin & Aykom Compressor booth (left to right).

Brandee Taylor, Brad Taylor, Derrick Taylor, Joshua Ayres, Daniel Schopf, Giovanni Calabrese, Fred Garcia, Lance Frederick, Joe Burke, James Bowers, Tim Martin and Ed Diener at the Fluid-Aire Dynamics/PneuTech USA/Unipipe booth.

Compressed Air Efficiency & Reliability Showcased at the Best Practices 2023 EXPO & Conference

Todd Zarins, Josh Price and Bill Duffel at the Applied System Technologies booth (left to right).

Eric Phelps, Jason Pruss and Tony Corletto at the Bauer Compressors booth (left to right).

Scott Ripatrazone and Ally Baker at the GlobalVac & Air booth (left to right).

and we've made a tremendous improvement in market share with our portable products. The Kohler engines, low vibration and ease of towing, and dual pressure capabilities (100-150psi) are features of most portable models," said Bruce McFee, CEO. The Sullivan-Palatek plant is installing a new rotor grinder, expected to double capacity. Also, the Saylor Beall plant is adding a new crankshaft grinder. In addition, Bruce McFee presented *Upcoming Department of Energy 2025 Regulation of Rotary Air Compressor Isentropic Efficiency* in the New Technology EXPO Classroom.

Alkin Compressor & Aykom Compressor showcased its Alkin medium- and high-pressure boosters, and Aykom nominal pressure reciprocating air pump, motor and belt packages.

"Alkin & Aykom Compressor, active in 130 countries worldwide, is fully planted and prepared to support channel partners in North America," said Nitin Shanbhag, President, Alkin Compressors. Alkin specializes in breathing air for military and first responders, nitrogen boosting, and other specialty medium- and high-pressure air and gas applications.

Fluid-Aire Dynamics introduced UnipipeEZ – featuring pipe lengths with factory-formed male and female ends. Pipe lengths join together, then are secured with a stainless-steel double-bite clamp ring and all-aluminum hinged coupling, then locked together with one bolt. Size and material required of the all-aluminum hinged couplings have been reduced.

Applied System Technologies displayed its TruLink aluminum compressed air piping system. Bauer Compressors shared its mid-pressure reciprocating, direct-driven compressor range achieving 20-70 bar (435 – 1,450 psi). BOGE displayed its air compressor products and presented *Oil-free Air* in the Technology Classroom. Scott Ripatrazone, Vice President of Global Vac & Air discussed their Mobile Engineered Solutions for custom-packaged skid and container vacuum and compressed air systems. UE Systems displayed its latest Ultraprobe 15,000 ultrasonic leak detector.

On Day 1 and 2, attendees from manufacturing plants, distributors and engineering firms participated in the Daily $1,000 Energy Treasure Hunt Raffle. Lucky winners included:

- Julio Marquez, Solaire Compresores
- William Qualls, Teknor Apex
- Sean Ferris, Universal Creative
- Jacob Key, Nissan
- Abdulaziz Dulaijan, Saudi Aramco
- Bridgette Graham, Compressed Air & Equipment

Over 1,000 attendees attended the Best Practices 2023 EXPO & Conference. Stay tuned for technology-segmented article sequels highlighting more exhibitors and event recaps. The Best Practices 2024 EXPO & Conference occurs October 29-31, 2024 at the Cobb Galleria Centre in Atlanta, GA. For more information about participating, contact us or visit www.cabpexpo.com. BP

Jeremy Bey and Dean Wolever at the UE Systems booth (left to right).

Roderick Smith (Best Practices EXPO) congratulates Jacob Key (Energy Engineer, Nissan) for winning $500 at the Daily EXPO $1,000 Energy Treasure Hunt Raffle!

To learn more about the ***Best Practices 2024 EXPO & Conference*** please visit https://cabpexpo.com/

Visit our Webinar Archives to listen to expert presentations on ***Compressed Air Best Practices*** at https://www.airbestpractices.com/magazine/webinars

Aeration Blowers at Weftec 2023

By Roderick M. Smith, Editor, Blower & Vacuum Best Practices Magazine

Weftec 2023 took place October 2-5, 2023 in Chicago at McCormick Place.

Weftec 2023, a leading event for industrial and municipal wastewater treatment facilities took place October 2-5, 2023 at Chicago's McCormick Place. The objective of this article is to provide readers with a sampling of aeration blower technologies on display at the show. We regret not being able to include all exhibitors or visits made due to article length considerations.

Aeration Blower Technology

There's a lot going on with Aerzen. I was first shown their completely newly redesigned rotary screw blower package called the Delta Hybrid 2.0. The four new models are optimized for performance at 8-15 psig for flows from 59 to 5,300 cfm. The product line has cylindrical roller bearings good for 70,000 hours at any operation point, an updated casing, 12-20% brake horsepower improvement in energy efficiency, improved thermal stability achieved by modified process air flows and air intake within the new sound enclosures. Lastly the units feature an advanced AERtronic control system as a standard feature. Aerzen Rental was also present and said there's a healthy demand for renting their blowers and even diffuser grids in industrial and municipal wastewater applications.

I was very interested to learn a bit more about two firms, with adjacent technologies, which Aerzen has acquired over the past couple of years. They are Specialty Treatment Solutions (STS) and Aquarius Technologies. STS Systems are, in layman's terms, a containerized entire wastewater treatment plant for industrial applications. These pre-engineered systems have had primary success as wastewater treatment systems for high strength influents seen at wineries, breweries and other food industry applications. Aquarius Technologies is a manufacturer and designer of fine and coarse bubble diffused aeration systems. They also produce Nebula® MultiStage Biofilm Systems.

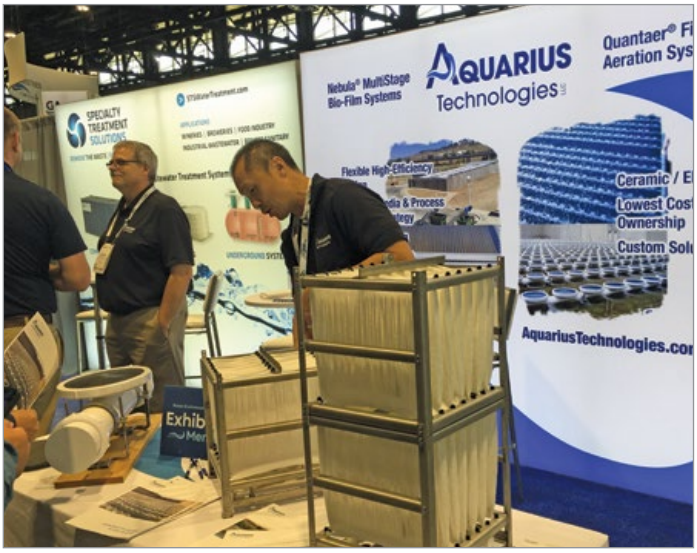
Inovair continues to grow both their business and their integrally-geared centrifugal blower product line. Their manufacturing and engineering campus is located just outside Kansas City, Kansas. CEO Ken Jones and VP Sales & Marketing David Sperber told me it has expanded significantly with a new PTC-13 test booth which has already performed it's first witness test with engineering firms. This will be featured in an upcoming PTC-13 Webinar we are hosting. The plant expansion also accommodates the growth of their core technology process, the 5-axis machining of their 7075-T6 aluminum impellers. They introduced two new models, the IM30/IM-40 (40-400 horsepower) and the IM-40/IM-50 (200-600 horsepower), which will be launched in 2024.

The Atlas Copco booth featured many blower technologies but my visit focused on their ZS Series gear-box driven, rotary screw blowers designed

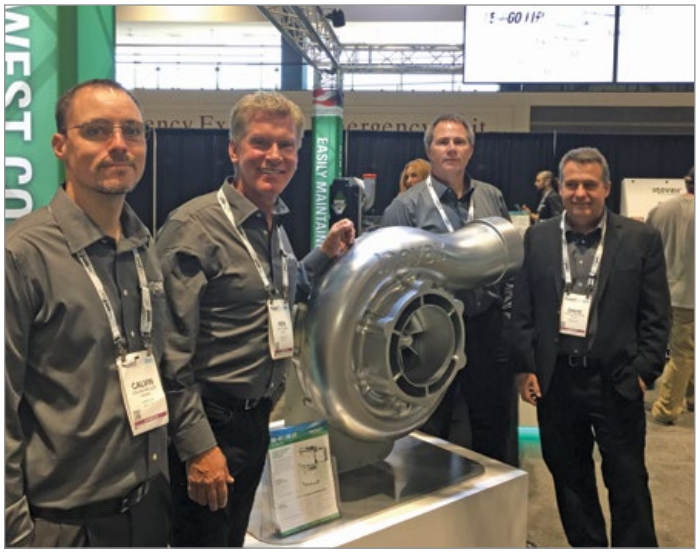
for industrial and aeration blower applications. Flow ranges are from 160 to 5,300 cfm at pressures from 4.4 to 22 psig. Blower Business Line VP, Travis McGarrah, explained the gear-box drive is an important feature as it improves energy efficiency and eliminates maintenance. Another important feature is a pressurized oil circuit with a filter and oil cooler. He also pointed out a new OGP+ Series oxygen generator, which when combined with a blower, provides almost double the flow of oxygen compared to a traditional compressed air supply.

APG-Neuros displayed large 500 hp, 1000 hp and 1500 hp models of their high-speed turbo blowers. The 500 hp and 1,000 hp (dual core) units deploy air bearings while the 1500 hp (single core) unit uses magnetic bearings. I was surprised to see such large units and Adam Hammoud confirmed the firm has successfully entered, over the past five years, the "very large" (that's my technical term) turbo/centrifugal blower market. He also said a purchase order has been received from a Toronto area municipal wastewater facility for a complete retrofit of what they believe

Adam Clarke and Justin Haag next to the Delta Hybrid 2.0. at the Aerzen booth (left to right).



There was a lot of activity at the booths of Aerzen's recently acquired firms, Specialty Treatment Solutions and Aquarius Technologies.



Calvin Miller, Ken Jones, Nate Neufeld and David Sperber, displaying their new 600 hp geared centrifugal blower, at the Inovair booth (left to right).

Travis McGarrah next to a ZS 4 VSD rotary screw blower at the Atlas Copco booth.

Aeration Blowers at Weftec 2023

to be one of the largest aeration blower installations in North America. They plan to fulfill this order in 2024. He also showed me what they call a "medium voltage design" where they have integrated a transformer into a blower package.

Kaeser Compressors' booth featured their CompaK lobed blower package but the real highlight was the Second Generation design of their rotary screw blower product line. The CBS-HBS product lines cover a flow range of 190 to 5,650 cfm at pressures from 4 to 15 psi. Peter Werhahn and Stephen Horne showed me a new FBS unit in the booth. This new generation of machines feature gear drives and SYNRM (synchronous reluctance) motors offering 7% higher efficiencies and an integrated VFD installed with front access where the control panel is located. This space saving integration of the VFD allows for side-by-side installation of VFD blowers. They also had a 200 horsepower rental package of their magnetic bearing turbo blower in the booth.

Craig Phelps and Adam Hammoud at the APG-Neuros booth (left to right).

Peter Werhahn and Stephen Horne next to the new generation FBS rotary screw blower at the Kaeser booth (left to right).

Jim Trace and Ricardo Alzate next to a 200 kW magnetic bearing turbo blower at the Howden booth (left to right).

Cody Shultz, Katherine Garratt, Ronan Cox, Chris Hyde, and Edgar Arreaza at the Lontra booth (left to right).

Lontra had a large booth with their new LP2 Blade Blower technology. Their Commercial Director is Chris Hyde, who it turns out is a veteran like me of the European compressed air market in the '90's. Their sales manager in the U.S. is also very experienced, Edgar Arreaza. They told me they are actively seeking "sponsored installation sites" in the U.S. and encourage our readers to contact them. They had a 110 horsepower VFD blower in the booth which uses a permanent magnet motor. They say their new technology (they describe it as a cross between a vertical recip and a rotary vane) is 22 to 34% more efficient than a traditional lobe blower and that it has an 80% turndown while holding high efficiency levels.

There have been some significant changes at Howden. First, they were acquired by Chart Industries in March 2023. The Chart website says it's "a global manufacturer of highly engineered cryogenic equipment servicing multiple applications in the clean energy and industrial gas

George Hubbard, Robert Sexton and Andre Narbonne at the Hoffman and Lamson booth (left to right).

Charles Davis and Amber Roberts at the Lone Star Blower and Compressor booth (left to right).

Scott Matthews at the Next Turbo booth.

Roger Blanton at the Eurus Blower booth.

Aeration Blowers at Weftec 2023

Luis Enrique Beltran at the TNE booth.

Jon Jensen next to the Air Management System at the SMC booth.

market." Second, Ingersoll Rand completed the acquisition of Roots from Chart Industries in August, 2023. What hasn't changed is that Howden is the owner of the powerful Turblex™ brand name and at their booth they were showing a 200 kW Howden turbo blower using a Turblex™ airend with a permanent magnet motor with active magnetic bearings. Jim Trace and Ricardo Alzate explained there are four models in the 100 to 300 kW range and that the design eliminates the need for lubrication oils. They also said their customers like their fully integrated multi blower control system able to manage up to eight blowers.

Hoffman & Lamson is part of the Nash Division and manufactured by Gardner Denver Inc., which is part of Ingersoll Rand. I think I'm expressing that correctly. Interestingly, their booth only featured the Hoffman & Lamson brand name. The booth team showed me the Hoffman Defender PD lobe or rotary screw product line, featuring "Robuschi inside", with models up to 500 horsepower. They also displayed a Hoffman Revolution Plus turbo blower, using air foil bearings, with models up to 700 horsepower. They also continue to manufacture a full range of traditional multistage centrifugal blowers from 10 to 2,000 horsepower.

Lone Star Blower and Compressor displayed their wide range of blowers including a high speed turbo which uses air bearings. Based in Houston, Lone Star manufactures centrifugal, geared, gearless and multistage blowers and air compressors.

Roger Blanton at the Eurus Blower booth said they've experienced significant growth over the past few years. Eurus manufactures rotary lobe PD blowers and said their strength is their reliability plus the fact they have five warehouses in North America with good lead times. Mentioning industry consolidation and acquisitions as a factor, Roger said OEMs have turned to them as reliable partner for on-time deliveries and reliable performance. I was surprised to hear him say they've also been making headway with multistage centrifugal blower sales.

Next Turbo Americas is based in Kansas City, MO, where it has manufacturing, assembly and service capabilities for their line of integrally geared turbocompressors manufactured in Italy. General Manager Scott Matthews kindly took some time to give me a crash course on some key features of their integrally geared turbocompressors (pressures to 23 psi) available in six frame families to above 3,000 horsepower. He started with saying their design is a favorite with service technicians and maintenance people. For example, the easy access to the impeller allows them to train their customers to clean the diffuser vanes every three years. After saying their designs are for 3600 rpm machines, he went into the two types of bearings they use (1) ceramic

anti-friction bearings and (2) hydrodynamic multi-pad bearings. One item stuck with me regarding the ceramic bearings when he said they only require a fill of 10 gallons of oil vs. journal bearings which can require fills of 80 to 130 gallons.

TNE is a Korean manufacturer of air bearing, gear-less, high-speed turbo blowers. Their literature states they have a business in Oakland, California. It goes on to list four product lines ranging from 10 to 900 horsepower. I spoke briefly with their manager for business in Mexico, Latin and South America, Luis Enrique Beltran, who said he's been working for them for many years with good results.

SMC had a booth with all their pneumatic solutions. Jon Jensen showed me, once again, their Air Management System. The AMS, in my opinion, is an excellent next-step for anybody wondering how to continue demand-side improvements after getting their compressed air leak load under control. The system can automatically close valves and shut off compressed air supply to idle work stations. It can also incorporate a simple dew point measurement device to warn of poor compressed air quality.

WEFTEC 2024

Weftec 2024 is scheduled for October 7-9, 2024, in New Orleans at the Ernest N. Morial Convention Center. For more information visit https://www.weftec.org/ BP

For similar articles on ***Aeration Blowers*** please visit
https://www.blowervacuumbestpractices.com/technology/aeration-blowers

Visit our Webinar Archives to listen to expert presentations on ***Aeration Blower Technology*** at https://www.blowervacuumbestpractices.com/magazine/webinars

Compressed Air Technology News

ELGi Launches AB Series Oil-Free Air Compressor

ELGi North America (ELGi) launched the "Always Better" AB Series oil-free screw air compressor earlier this year. The AB Series represents breakthrough technology improvements in terms of quality of compressed air, consistent performance over the product life cycle, lower operating temperature, reliability of compressor and operating cost, translating to a lower cost of ownership in industries such as packaging, pharmaceuticals and food and beverage processing.

Compressed air is essential in industries like packaging, food processing, and pharmaceuticals as it powers pneumatic systems and enables sealing and packaging processes. Moreover, air quality is critical when selecting a compressor for packaging operations. While many facilities use oil-lubricated compressors with a risk of oil contamination, the ELGi's AB Series compressors consistently deliver 100% oil-free air, in compliance with the stringent norms of ISO 8573 – 1 Class 0 and ISO 8573 – 7, eliminating contamination risks in packaging applications.

The AB Series oil-free compressor can also be equipped with an optional variable-speed drive, allowing for significant energy savings as it smoothly adjusts to fluctuating air demand. AB Series compressor's compact footprint, lower operating noise, proprietary coating of the rotor and airend housing, and simplified design approach make it unique within oil-free compressed air offerings.

The AB Series is backed with an industry-leading 5-year air end warranty and a 5-year warranty on the compressor package including the motor and cooler.

Visit https://www.elgi.com/us/ab-series-oil-free-screw-air-compressor-15-150hp/ to learn more about ELGi AB Series oil-free compressor range.

About ELGi North America

ELGi North America, headquartered in Charlotte, NC, is a subsidiary of ELGi Equipments Limited, a leader in compressed air solutions for over 60 years. Established in 2012, ELGi North America, in conjunction with its subsidiaries, Pattons, Pattons Medical, and Michigan Air Solutions, offers a comprehensive range of compressed air products and services. Our product offering includes oil-lubricated and oil-free rotary screw and reciprocating compressors, dryers, filters, and ancillary accessories. ELGi and its subsidiaries serve multiple industry verticals spanning medical applications, pharmaceuticals, food & beverage, construction, manufacturing, and infrastructure. For further information, please visit https://www.elgi.com/us/.

Equipped with pioneering technology, the AB Series meets industry needs by offering enhanced reliability and reduced ownership cost.

Festo Introduces MS-Basic Air Preparation Units

Festo launches MS-Basic, a family of pneumatic service units in polymer housings that offer attractively priced components covering most application needs. MS-Basic air preparation components have the functionality to perform the most important technical tasks necessary for proper compressed air preparation and consist of pressure regulators, filter regulators, electric on/off and soft start valves, as well as manual on/off valves with filter/regulator combinations.

MS-Basic components are fully compatible with the existing Festo MS line of premium service units. Machine builders and end-use customers can combine inexpensive MS-Basic pressure regulators, filter regulators, on/off and soft start valves with MS series safety valves, lubricators, distributors, filters, and dryers to assemble the best mix of low-cost basic functions with high-end functionality.

The MS-Basic pressure regulators and filter regulators are powerful, yet lightweight. These units have a high flow rate of up to 6000 l/min. The polymer materials reduce unit weight by up to 30% compared with the metal housing units. For the filter regulator, Festo integrated the filter in the bowl. This makes changing the filters easy and saves installation space. The transparent bowl provides clear indication whether dirt needs to be removed.

A manual or normally closed, fully automatic condensate drain provides process reliability and protection against contamination. The new electric on/off valve is also available as a soft start/quick exhaust valve. Soft start units

The MS-Basic series is light weight, compact and incredibly powerful. Advanced polymer materials make these compressed air components up to 50% lighter than competitive products and equally robust.

safely and slowly build working pressure at an adjustable rate until it reaches 50% of set pressure before switching to full set pressure. Festo provides a free online configurator to quickly and easily configure the optimum air preparation system.

MS-Basic service units are featured in the new Festo Pneumatic Essentials program – an ambitious global undertaking to streamline ordering and ensure fast delivery of guaranteed in-stock pneumatic components nearly anywhere in the world.

Festo Essentials, which fit most pneumatic applications, include service units, high wear polyurethane tubing, one-way flow control valves, high flow valves for normal and harsh environments, self-teaching proximity switches, mini slides, guided drives, repairable pneumatic cylinders conforming to NFPA interchange dimensions, and metric and imperial round and compact cylinders. Customers are assured of world-renowned Festo quality components that boost machine performance, lower waste, and reduce the risk of downtime. Festo Essentials are also compact for today's smaller footprint, energy efficient machines.

About Festo U.S.

Festo is a leading manufacturer of pneumatic and electromechanical systems, components, and controls for process and industrial automation. Celebrating 50 years in the U.S., Festo Corporation has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Through advanced technical and industrial education, Festo Didactic Learning Systems and its partners prepare workers for current and future manufacturing technologies. For more information, visit www.festo.com.

Teledyne FLIR Expands Ex Pro-Series Thermography Cameras

Teledyne FLIR, part of Teledyne Technologies Incorporated, announced the focus-free FLIR E5 Pro and FLIR E6 Pro cameras, providing a larger 3.5-inch touchscreen display along with access to FLIR Ignite Cloud connectivity within the same point-and-shoot, pistol-grip form factor as legacy Ex-Series thermal cameras. The versatile cameras are designed primarily for close-up, professional-grade mechanical, building, and electrical thermal inspection scenarios. These include detecting water intrusion, air leaks, electrical connections, temperature differentials between equipment, and impending equipment failure.

Through a built-in touchscreen, FLIR Ex Pro users can share captured images with colleagues, partners, and clients over Wi-Fi via the FLIR Ignite Cloud software. FLIR provides 1GB of free storage, with the option to purchase additional annual storage subscriptions for heavy users. The FLIR Ignite Cloud can be accessed anywhere from a wide variety of mobile devices, web browsers, or PC desktops, eliminating the need to carry extra USB flash drives, card storage, or cables. Images can be reviewed, edited, analyzed, and shared as files or within quick reports. Files can be synchronized with FLIR Thermal Studio software for situations requiring more advanced editing and reporting capabilities.

"Effective condition monitoring programs today require connected, cloud-enabled thermal imaging devices, such as the Ex Pro-Series, that empower inspectors to share and analyze data in real-time quickly and efficiently," said Rob Milner, global business development director, Teledyne FLIR. "Not only does this help inspectors gain a better understanding of and provide a more comprehensive view of potential equipment failure, but it also enables organizations to more accurately predict maintenance requirements grounded in easily accessible data and analysis through FLIR Ignite Cloud and FLIR Thermal Studio."

New FLIR E5 Pro and E6 Pro join the E8 Pro providing point-and-shoot, focus-free thermal imaging capture with FLIR Ignite™ cloud connectivity.

Compressed Air Technology News

The FLIR Ex Pro-Series features improved 640 × 480 screen resolution, providing greater visual detail when paired with the respective 240 × 180 thermal resolution of the FLIR E6 Pro and the 180 × 120 thermal resolution of the FLIR E5 Pro. The Ex Pro-Series cameras also feature built-in 5MP digital cameras and LED lamps to help users better understand their inspection area and capture visual details in low light. With FLIR-patented Multi-Spectral Dynamic Imaging (MSX®) capability, which overlays the edge detail of the visible camera upon the thermal image, users experience greater detail and contextual awareness, even in low light, without sacrificing any thermal data. Users can also leverage new on-screen annotations to highlight key findings.

To handle the rigors of outdoor and industrial environments, the entire line of Ex Pro cameras are drop-tested up to two meters (6.6 ft). The ruggedized form factor also includes an IP54 rating, 25G-shock, and 2G vibration test ratings along with a built-in lens cap for added protection.

The Ex Pro-Series cameras also feature four hours of continuous operation on one battery, which can be quickly swapped out and recharged for all-day use.

Along with the previously announced FLIR E8 Pro, the FLIR E5 Pro and E6 Pro are available for purchase worldwide from Teledyne FLIR and its authorized dealers. Each purchase includes a removable and rechargeable battery, a hard-carrying case, a power supply, FLIR Thermal Studio starter software, and printed documentation. To learn more or to purchase, visit www.flir.com/ex-pro.

About Teledyne FLIR

Teledyne FLIR, a Teledyne Technologies company, is a world leader in intelligent sensing solutions for defense and industrial applications with approximately 4,000 employees worldwide. Founded in 1978, the company creates advanced technologies to help professionals make better, faster decisions that save lives and livelihoods. For more information, please visit www.teledyneflir.com.

ABB Survey Reveals Unplanned Downtime Costs $103,000 per Hour

According to the new "Value of Reliability" survey from ABB, 69% of industrial businesses experience unplanned outages at least once a month, compared to 69% globally. This costs the typical US business close to $103,000 per hour, compared to $125,000 globally. Despite this, 22% of US businesses surveyed still rely on run-to-failure maintenance.

The survey, conducted by Sapio Research in July 2023, gathered responses from 3,215 plant maintenance decision-makers globally across the energy generation, plastics and rubber, oil and gas, wind, chemicals, rail, utilities, marine, food and beverage, water and wastewater, and metals sectors. It is part of a report that provides insights into how businesses currently manage maintenance and how they can reduce unplanned downtime.

The findings demonstrate the importance of equipment reliability and maintenance. Globally, 92% reported that maintenance has increased their uptime in the last year, with 38% reporting an improvement of at least a quarter. Also, three-quarters of respondents said that reliability positively impacts their business reputation and financial performance, and helps them meet contractual obligations, prevent waste and secure repeat business. Reliability was rated by respondents as the top priority when purchasing new equipment.

Looking forward, 60% plan to increase their investment in reliability and maintenance in the next three years, with a third planning to boost spending by more than 10%. Nine in ten respondents expressed interest in outcome-based maintenance agreements. Under these,

According to the new "Value of Reliability" survey from ABB, 69% of industrial businesses experience unplanned outages at least once a month.

operators pay service partners based on achieved outcomes, such as increased uptime or energy efficiency. This results in efficient and effective service delivery with predictable cash flow.

Speaking about the results of the survey, Rob Snyder, Local Division Manager, Motion Services, said, "Proactive planned maintenance is essential for preventing costly downtime. Without it, organizations are at higher risk for substantive financial losses and the challenge of relying on increasingly difficult-to-source labor. With this in mind, industrial businesses should aim to progress from a high-risk run-to-failure maintenance approach to a long-term outcome-based strategy. This will improve reliability, business reputation, competitivity, cut costs, and provide peace of mind, empowering businesses to focus on their core competence."

This new, outcome-based model of maintenance will help industrial businesses meet incoming emissions targets and regulations as the world fights against climate change. In addition, it will help overcome the industry skills gap as experienced technicians reach retirement age.

For more information, read the full survey report.

About ABB

ABB is a technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. The company's solutions connect engineering know-how and software to optimize how things are manufactured, moved, powered and operated. Building on more than 130 years of excellence, ABB's 105,000 employees are committed to driving innovations that accelerate industrial transformation. For more information, visit www.abb.com.

COMPRESSED AIR BEST PRACTICES®
www.airbestpractices.com

ADVERTISER INDEX

Advertising/Editorial Rod Smith • rod@airbestpractices.com • Tel: 412-980-9901
Subscriptions Administration Patricia Smith • patricia@airbestpractices.com • Tel: 412-980-9902
A Publication of Smith Onandia Communications LLC
37 McMurray Rd., Suite 104, Pittsburgh, PA 15241

THE MARKETPLACE

TECHNOLOGY & JOBS

Job & Product Marketplace Advertising Information

Reach 16,200+ readers of Compressed Air Best Practices® Magazine with Marketplace Ads every month! Job Marketplace ads are also placed for one month on www.airbestpractices.com and promoted in our three monthly e-newsletters.

Ad dimensions are 2.36" wide x 3.91" tall. We can help you design the ads. Send us your logo, product photo, and text to rod@airbestpractices.com. We recommend 20-50 total words of text.

Prices are $625 per Job or Product Marketplace Ad ($440 if 6 or more ads are placed). Contact Rod Smith at rod@airbestpractices.com to schedule your Marketplace Ads.

Discover Unparalleled Safety

METPOINT® OCV

Your Ultimate Solution for Accurate Oil Vapor Content Measurement!

OCV Patented Solution

OCV features a patented catalytic Converter utilizing incoming compressed air to create the reference gas. The heated catalyst surface, effectively breaks down hydrocarbons into water (H2O) and carbon dioxide (CO2).

Reliable

- Reproducible accuracy of the oil vapor values by utilizing reference gas generation.
- Automatic monitoring for the reference gas and sensor electronics
- Issuing and transferring of alarm signal messages.

Measurable

- Pressure range from 43 ... 232 psig (725 psig with pressure reducer).
- Online-monitoring for the oil vapor concentration.
- Data transfer to display as standard feature and customary communication methods.

User- Friendly

- Unambiguous visualization of all measurement values.
- Flexible installation.
- Robust industrial housing.

+1 (800) 235-6797

www.bekousa.com

Truth in Compressed Air

Reliable | Efficient | Innovative

This is what worry-free compressed air looks like.

Why own and operate a compressed air system if you don't have to? Consider compressed air as a service. Instead of a large capital expense, you pay a monthly fee for guaranteed clean, dry air at the pressure you need – 24/7.

KAESER will plan, install, operate, maintain and even monitor the complete system so you'll have one less thing on your plate.

KAESER COMPRESSORS®

us.kaeser.com/cabp • 866-516-6888