The Magazine for Quality & Reliability in Energy-Efficient Blower & Vacuum Systems

BLOWER & VACUUM BEST PRACTICES

blowervacuumbestpractices.com

October 2023

Vacuum Automation

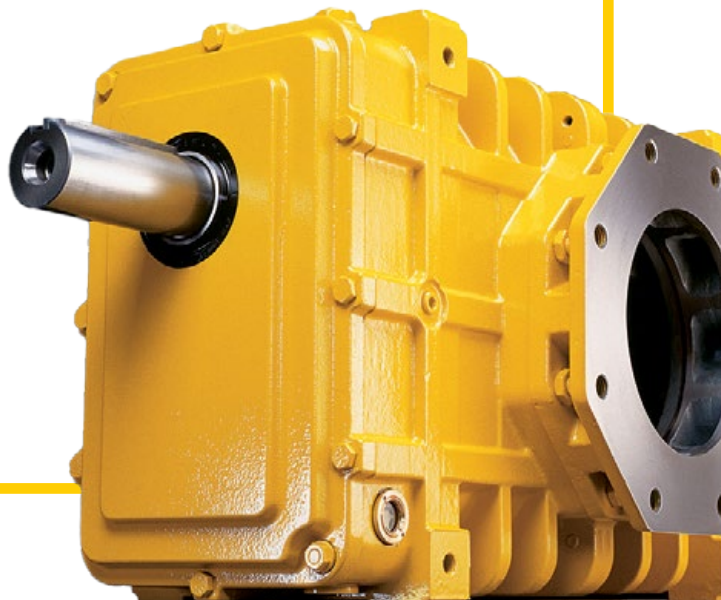
What are you feeding your pneumatic conveying equipment?

Whether you're looking for a bare blower block to integrate with existing equipment, or a complete blower package, KAESER equipment surpasses the standards with high quality air, reliability, and low noise levels.

TALK TO US.

KAESER COMPRESSORS®

us.kaeser.com/bvbp • 866-516-6888



AERATION BLOWER SYSTEMS

INDUSTRIAL VACUUM & BLOWER SYSTEMS

EVERY ISSUE

From the Editor

We invite our readers to register for the Best Practices 2023 EXPO & Conference, co-locating with Process Expo and taking place at McCormick Place in Chicago on October 23-25, 2023. Register at www.cabpexpo.com, one pass provides entry into both shows!

Industrial Vacuum & Blower Systems

We'd like to thank Max Ketcham and Markus Schmider, from Schmalz, for sending us their interesting article titled, "The Future of Vacuum Automation for AMRs and AGVs." Autonomous Mobile Robots (AMRs) and Automated Guided Vehicles (AGVs) are becoming more and more common as automated warehouse operations gain traction.

Aeration Blower Systems

Steve Wilburn, from Sulzer, has sent us an excellent article titled, "U.K. Wastewater Treatment Plant Blows Away Inefficiency." The Derby Sewage Treatment Works processes an average of 1,000 liters and a maximum of 2,300 liters of effluent every second. After two blowers catastrophically failed, they looked for new aeration blowers to save energy while providing reliable service.

Reliability is always the number one criteria when evaluating a blower. Tom Jenkins from JenTech, and Clive Hudson from Lontra, have sent us an article titled, "PD Blower Package Reliability." The article reviews many fundamentals of good package design and introduces some concepts evident in Lontra's new PD blower product line.

Thank you for investing your time and efforts into ***Blower & Vacuum Best Practices.***

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

Upcoming Webinars and Recent Webinar Recordings in the Archive

Receive 1.0 PDH Credit by attending our Expert Webinars or visit our Webinar Archives if you can't attend live. Complimentary registration at https://www.blowervacuumbestpractices.com/magazine/webinars

- **July 23, 2023:** Engineering Rooms for Aeration Blowers – *Presenter Tom Jenkins, P.E., President, JenTech Inc.*
  Sponsored by APG-Neuros
- **August 4, 2023:** ASME PTC 13: Efficient Blowers, Sustainable Systems – *Presenters Tom Jenkins, P.E., President, JenTech Inc., and John Conover, Business Development Manager, Air Clean USA*
  Sponsored by Lontra
- **November 30, 2023:** Vacuum System Efficiency – *Presenter Andy Smiltneek, President, Growth Solutions Consultants*
  Sponsored by Rogers Machinery

2023 MEDIA PARTNERS

Blower & Vacuum Industry News

CAGI Releases ANSI Approved Performance Standard for Blowers

CAGI's performance standard for blowers, ANSI/CAGI BL 300, *Performance Test Code for Electric Driven Low Pressure Air Compressor Packages* has been approved as an American National Standard. The publication of this standard is in response to the growing industry's need to understand, and in a consistent manner, compare the relative wire to air performance of different blower technologies. This type of comparative testing will provide a basis for assessing blower technologies in order to best satisfy the performance and energy consumption requirements of the user. The standard enables the fair comparison of package performance on a level playing field. The development of ANSI/CAGI BL 300 was initiated at the request of the wastewater treatment industry; however, the standard has been expanded to make it suitable for use in general industry and other applications.

Access ANSI/CAGI BL 300 here: https://uploads.prod01.oregon.platform-os.com/instances/2032/assets/documents/pdfs/publications/ANSI-CAGIBL300-FinalStandard120622.pdf?updated=1679322475

About Compressed Air and Gas Institute

For more than 100 years, the Compressed Air and Gas Institute has been the leading source on all matters related to compressed air. As the united voice of the industry, CAGI's activities include the development and organization of educational material, including compressed air system training programs to benefit the users of compressed air systems. For more information, visit www.cagi.org.

F.J. Nugent signed as Distributor for Lontra

Lontra, the manufacturer and global exporter of low-pressure blowers to wastewater and pneumatic conveying industries, is pleased to announce its partnership with F.J. Nugent as an authorized distributor.

F.J. Nugent is a highly respected sewage and wastewater treatment specialist with a solid reputation in the state of Florida. As one of the largest distributors and service providers in the region, F.J. Nugent offers a comprehensive range of products and services, including submersible sewage and positive displacement pumps, lime slaking equipment, odor control equipment, remote monitoring, and level control equipment to municipal and industrial wastewater clients.

As part of the partnership, F.J. Nugent will distribute Lontra's LP2 Blade Blower, a new positive displacement technology that is inherently more reliable and efficient than comparable blowers on the market. The LP2 Blade Blower features Lontra's award-winning Blade Compressor® technology: a patent-protected, compact, rotary compressor providing significant improvements in efficiency and reliability for applications in energy-intensive industries including wastewater treatment.

Fred Nugent, President at F.J. Nugent, expressing his enthusiasm for the partnership, said "We are excited to be working with Lontra. After witnessing Lontra's air-end at a recent water show, I was immediately captivated by the technology, representing the most significant advancement in blower technology I've seen in my 30 years in the industry."

Lontra is pleased to announce its partnership with F.J. Nugent as an authorized distributor.

Blower & Vacuum Industry News

"Our customers' feedback is that they are particularly impressed with the LP2 Blade Blower's capability to dial into the Dissolved Oxygen Sensor (DO Sensor) and its large turn-down ratio of 10:1. The LP2 is smart and will ramp up or down to meet the plant's actual requirement, only consuming as much energy is needed. It was an easy decision to introduce the new PD blower to our valued client base."

"We strive to stay at the forefront of technological advancements. The LP2 Blade Blower gives us a significant advantage in the market. We eagerly anticipate seeing our clients benefit from up to 34% energy savings and a substantial reduction in lifecycle costs in terms of reliability and maintenance, as well as electricity costs."

Chris Hyde, Head of Commercial at Lontra, said on the partnership, "F.J. Nugent is an excellent partner for Lontra and a testament to the quality of our technology. This esteemed sewage and wastewater treatment specialist recognized the need to enhance their PD blower range with a cutting-edge solution and chose to collaborate with Lontra. The commercial and customer interest we have received worldwide is evidence of the global attention Lontra is garnering."

Lontra and F.J. Nugent's partnership combines expertise and innovation to deliver state-of-the-art solutions to the wastewater industry. Both companies are committed to advancing technological boundaries and providing unmatched value to their clients. With the LP2 Blade Blower, customers can expect improved operational efficiency, enhanced reliability, and significant energy savings, marking a new era in wastewater treatment.

About Lontra

Lontra is a developer, manufacturer and exporter of a revolutionary blower and compressor technology, with application to the wastewater treatment and

pneumatic conveying industries. Lontra Blade Blower™ technology is the first clean-sheet blower and compressor design in over 85 years, and one of the components in packaged, plug-and-play blower package: LP2 Blade Blower. It has proven energy savings of up to 34 percent against comparable machines of this type thanks to the game-changing technology. Lontra is on the cusp of global scale-up growth. Production at their new smart factory in Doncaster, UK, is ready to take an increased number of orders, as they continue to build a strategic supply chain that it can partner with into the future. For more information, visit www.lontra.co.uk.

NAVAC Hires Director of Sales for Industrial Vacuum Business

NAVAC, one of the world's largest suppliers of vacuum pumps in addition to a wide array of tools, gauges, charging machines, recovery units and industry-specific items, has hired industry veteran Mike DeLisi as Director of Sales for its Industrial Vacuum Business unit. In this role, Mr. DeLisi will collaborate with Brian Cox, Director of the Industrial Business Unit; Mr. DeLisi will predominantly focus on sales channel development and marketing efforts, while Mr. Cox oversees overall business planning and execution.

Mike DeLisi, Director of Sales, Industrial Vacuum Business for NAVAC.

Blower & Vacuum Industry News

Mr. DeLisi has over 15 years of sales experience in the industrial vacuum sector and has established high-value relationships with a variety of companies in NAVAC's target sales set. He brings a proven growth-oriented track record, helping two other vacuum technology companies emerge from smaller entities into well-regarded industry mainstays.

Over its first five years operating in North America, NAVAC has quickly established itself as a major supplier to the HVAC/R sector. This is evidenced not only by upwardly-trending sales, but also a growing workforce and inroads into a variety of high-leverage markets. The addition of Mr. DeLisi exemplifies NAVAC's intentions to exponentially expand its industrial vacuum market share in North America over the near-term.

"Mike has a reputation of not only sales success and innovation, but also helping elevate companies to next-level market presence," said Brian Cox. "Mike's sector immersion and leadership will help us further grow our Industrial Vacuum Business as we build upon our existing portfolio with new and enhanced industrial solutions."

Mr. DeLisi, who has a B.S. in Mechanical Engineering, will be based in Fort Myers, Florida.

About NAVAC

NAVAC is a global manufacturer that has dedicated over 20 years to the R&D and manufacturing of industrial vacuum solutions and HVAC/R tools. NAVAC draws upon its commitment to technical innovation, strong customer service and robust R&D allocation to deliver solutions offering unsurpassed efficiency, accuracy and ease of use. Comprising a full lineup of vacuum pumps, tools, gauges, and detectors, among other solutions, NAVAC's product portfolio is designed with one overarching concept in mind: user-friendliness. The company seeks to meet a need for simpler, lighter, faster solutions that expedite service without sacrificing accuracy. For more information, visit www.navacglobal.com.

Schenck Process Food and Performance Materials Joins Coperion

Hillenbrand, Inc. announced that it has entered into a definitive agreement to acquire Schenck Process Food and Performance Materials (FPM) business, a portfolio company of Blackstone. FPM specializes in the design, manufacturing, and service of, among other technologies, feeding, filtration, baking, depositing, milling, and material handling equipment, and systems for the food, plastics, chemicals, and construction material industries. At closing, FPM will become a part of Coperion's Food, Health & Nutrition Division, joining previous acquisitions Linxis Group, Peerless, and Gabler. In addition, their Performance Materials business brings additional products and an expansion of existing product lines to Coperion's polymer portfolio, as well as applications know-how in the construction materials and chemicals space.

Coperion's Food, Health & Nutrition Division is composed of industry leading brands – including Bakon, Coperion K-Tron, Diosna, Gabler Engineering, Peerless, Shaffer, Shick Esteve, Unifiller, and VMI – that serve customers in more than 100 countries. Key brands of FPM such as Baker Perkins, Kemutec, and Raymond Bartlett Snow (RBS) will join the Coperion brands in providing technologies and solutions across a variety of end markets.

The FPM business is highly complementary to the equipment and solutions currently offered by Coperion. Coperion will benefit from scale in attractive food categories, including pet food and alternative proteins, as well as plastics and chemicals, and will be able to offer more value to global customers through FPM's highly engineered processing solutions and proprietary technology portfolio.

"FPM's strong brands and deep expertise directly align with the growth strategy of Coperion's Food, Health & Nutrition Division. This acquisition builds on the momentum generated over the last twelve months as Coperion has built up its strategic strength

Blower & Vacuum Industry News

in the food end market and expanded its footprint, enabling our team to provide more solutions to customers around the world. For our polymer, chemicals, and minerals business, this acquisition means an expansion of our existing product portfolio, and we will be able to offer our customers even better solutions," said Ulrich Bartel, President of Coperion.

"We are excited to have a partner in Coperion that shares our commitment to providing leading solutions and service to customers that exceed their needs," said Jay Brown, President of FPM. "This acquisition provides global growth opportunities this transaction presents and I am confident that by combining our complementary strengths, we will be able to offer enhanced comprehensive processing solutions to customers around the world."

About Coperion

Coperion is a global industry and technology leader in compounding and extrusion systems, sorting, size reduction and washing systems, feeding systems, bulk material handling and services. Coperion develops, produces, and services plants, machinery, and components for the plastics and plastics recycling industry as well as the chemical, batteries, food, pharmaceutical and minerals industries. Coperion employs 4,000 people in its three divisions, Polymer, Food, Health & Nutrition, and Aftermarket Sales & Service, and in its 40 sales and service companies worldwide. Coperion is an Operating Company of Hillenbrand, a global industrial company that provides highly-engineered, mission-critical processing equipment and solutions to customers serving a wide variety of industries around the world. For more information, visit www.coperion.com.

Pfeiffer Vacuum and Busch Vacuum Solutions Together at Company Cup

At the annual Company Cup in Annecy (France), employees from large European companies compete in various sporting events. The biggest team this year was from Pfeiffer Vacuum and Busch Vacuum Solutions.

During the 10th edition of the Company Cup, a total of 3,300 athletes from 90 companies participated. Pfeiffer Vacuum and Busch Vacuum Solutions had more than 200 employees from a total of 10 countries: from France, Germany and Switzerland, of course, but also from the USA, China and South Korea. Under the motto "One Team. One Goal," they competed in various sports and won the silver medal in football, handball and the city trail. The biathlon and dragon boating teams each took home bronze.

"I was particularly pleased that you could no longer see who belonged to which company. Everyone wore the same jersey; the individual teams were mixed. We were one," said Sami Busch, Co-CEO and co-owner of Busch Vacuum Solutions, enthusiastically as he cheered on the dragon boat in front of the wonderful Alpine scenery on Lake Annecy with employees.

And so the two corporate colors, red and orange mixed when cheering on the teams, celebrating a scored goal, during the victory

dance, and again and again, the chant "Pfeiffer, Busch, Pfeiffer, Busch" was heard. Dr. Britta Giesen, CEO of Pfeiffer Vacuum, also traveled to Annecy to support the joint team: "Just like in sports, we complement each other perfectly in business. Competing together as a team brings us even closer together. Across national and language borders."

In this way, the Busch Pfeiffer Vacuum team is the best example of the motto of this year's Company Cup: "Stronger Together."

From the shore, colleagues from Pfeiffer Vacuum and Busch Vacuum Solutions cheer on the joint dragon boat on Lake Annecy.

About Pfeiffer Vacuum

Pfeiffer Vacuum is one of the world's leading providers of vacuum solutions. In addition to a full range of hybrid and magnetically levitated turbopumps, the product portfolio comprises backing pumps, leak detectors, measurement and analysis devices, components as well as vacuum chambers and systems. Ever since the invention of the turbopump by Pfeiffer Vacuum, the company has stood for innovative solutions and high-tech

Blower & Vacuum Industry News

products in the analytical, industrial, research & development, semiconductor and future technologies markets. Founded in 1890, Pfeiffer Vacuum is active throughout the world today. The company employs a workforce of some 4,000 people and has more than 20 sales and service companies as well as 10 manufacturing sites worldwide. For more information, please visit www.pfeiffer-vacuum.com.

Leybold Sponsors Dutch Racing Team

Leybold sponsors the Formula Student Team Delft in their biggest challenge to date, to win Formula Student Germany (FSG) with their latest car, the DUT23. Racing against around 100 other teams from around the world, where their self-built racing cars are judged against several performance tests and must have a viable business plan. It's a test of endurance, teamwork, and project management which Leybold is excited to support.

To be first over the line, Formula Student Team Delft needed to design and build the fastest and most consistent car, and one of the biggest challenges is weight. The car needs to be as lightweight as possible, so a large portion of the chassis and aerodynamics are made from composites, usually carbon fiber. These parts are cured under a vacuum environment, and vacuum pumps are an essential part of this process. It's paramount that the vacuum pumps can create and maintain a very low pressure in the vacuum bags. This allows the carbon fibers to compress better, achieve good strength and stiffness, and significantly decreases the possibility of defects in the final product.

"As part of the sponsorship, Leybold has kindly donated two SOGEVAC 16B rotary vane pumps to the team," said Moritz Rokitta, Chief Chassis Formula Student Team Delft. "We produce most of our carbon parts in-house, so we need our tools and materials, including vacuum pumps, to be reliable and easy to maintain."

The Leybold SOGEVAC B single-stage oil sealed rotary vane pumps are ideal for this application, offering low cost of ownership with consistent reliable performance. Achieving an ultimate pressure of ≤ 8 x 10-2 mbar, the pumps are equipped with an anti-suck back valve at the inlet flange to prevent oil coming back into the inlet line when the pump is stopped and a gas ballast for pumping condensable vapors.

"Leybold is excited to back Formula Student Team Delft in their race to electric, providing them with the vacuum know-how and technology to help them get on the top step of the podium and be the winning team in 2023," said Ian Dorman, General Manager Leybold. "Our vacuum technology enables many aspects of car production, from the materials for improved performance and strength to the manufacture of lithium-ion batteries, Leybold is there at every stage."

FSG23 will take place from August 14th to 20th 2023 in Hockenheim, Germany, and Team Leybold will be waving the flag for Formula Student Team Delft.

About Leybold

Established in 1850, Leybold is a pioneer in vacuum innovation. Our inventions have paved the way for many modern-day vacuum technologies, including our range of next-generation vacuum products. We are recognized globally as a leader in the manufacture of vacuum pumps and systems for industrial and scientific vacuum applications, that are supported by our specialized and globally accessible Service solutions. We are proud to live up to our brand promise - Pioneering products. Passionately applied. Founded in Cologne, Germany with sales and service locations around the globe. We are a part of the Atlas Copco Group. For more information, visit www.leybold.com.

Leybold sponsored Dutch racing team reaches the top podium position.

BEST PRACTICES

2023 EXPO OCTOBER 23-25 CHICAGO

COMPRESSED AIR / VACUUM / COOLING

Sustainable, Safe & Reliable
ON-SITE UTILITIES
Powering Automation

Compressed Air Challenge

Level 1: Fundamentals of Compressed Air Systems*

TRAINING · EDUCATION · EFFICIENCY
COMPRESSED AIR CHALLENGE

Tuesday, 10/24 – (Part 1) 10:15AM–12:15PM (Part 2) 2:00PM–4:00PM
Wednesday, 10/25 – (Part 3) 8:00AM–12:00PM

This is a two-day introductory course designed to teach facility engineers, operators and maintenance staff how to achieve 15-25% cost savings through more effective production and use of compressed air.

*Compressed Air Challenge workshop only open to distributors, engineering firms/consultants and manufacturing personnel who are paid registrants of the full conference package. Not available to single-day registrants.

https://cabpexpo.com/cac-fundamentals-of-compressed-air-systems/

Ron Marshall
Chief Auditor, Marshall Compressed Air Consulting

Frank Moskowitz
Consultant, Draw Professional Services

Compressed Air & Gas Institute (CAGI)

Certified Compressed Air System Specialist (CCASS) Exam

Monday, 11/23 & Tuesday, 11/24 – 2:00PM **Wednesday, 10/25 –** 8:30AM & 2:00PM

CAGI's personnel certification program for compressed air system specialists provides a means of verifying the capabilities of professionals in the compressed air systems industry. The program will allow customers, utilities, employers, and others to have confidence in the skills and abilities of the professionals in the industry who design, service, sell, and install compressed air systems and compressed air systems equipment. The program has been designed to comply with the ISO 17024 standard, Conformity Assessment – General Requirements for Bodies Operating Certification of Persons.

https://cabpexpo.com/cagi-ccass/

REGISTER NOW!

MCCORMICK PLACE, CHICAGO
CABPEXPO.COM

U.K. Wastewater Treatment Plant Blows Away Inefficiency

By Steve Wilburn, Business Development Manager, Sulzer

Aeration is a critical process in any water treatment plant, so operators must ensure that blowers operate efficiently and reliably. Consequently, when Severn Trent decided to replace eight units at Derby Sewage Treatment Works to reduce the risk of downtime, six HST 20 turbocompressors from Sulzer were chosen.

Airing the Water Treatment Process

Derby Sewage Treatment Works handles wastewater for a population of 440,000, processing an average of 1,000 liters and a maximum 2,300 liters of effluent every second. After water has passed the inlet and mechanical screens, it gravitates into the primary settlement tanks, where solids settle as sludge at the bottom. The sludge is drawn off and anaerobically digested to produce renewable fuel, but liquid flows onto the activated sludge plant (ASP).

Here, ammonia is extracted using biological processes and bacteria. Two key treatments take place. The first is anoxic, where the bacteria are starved of oxygen. The second is aerated, where bacteria utilize air and the contents of the water to fuel the treatment process. This final stage is possible thanks to blowers delivering pressurized air to the ASP.

Solving Blower Downtime

The blowers at Derby had reached the end of their 20-year service life. Therefore, Severn Trent decided to assess them to see if replacement with more efficient units was feasible. During this process, two blowers catastrophically failed, leaving the site with no spare blower capacity.

Air Technology Ltd conducted a performance comparison of the existing blowers with modern machines from different manufacturers. Sulzer's HST 20 turbocompressors were preferred, based on the results and six were specified to replace the old units.

"Sulzer air blowers were the best fit for the load and air demand of the site", confirms David Wood, Senior Energy Project Manager at Severn Trent.

Six HST 20 turbocompressors from Sulzer were chosen to replace eight units at Derby Sewage Treatment Works to reduce the risk of downtime.

The new install was planned just in time, as when work commenced, a third blower failed, which without the replacement project, would have necessitated hiring additional blowers to avoid downtime.

A Challenging Project Delivered Successfully

Work began in November 2020 with the delivery of the HSTs. The old equipment was removed through holes in the basement roof and the Sulzer units lowered into the blower house. New thin wall stainless steel connecting pipework was installed, replacing the aged, heavy steel originals. Aesthetic metal plinths ensure the blowers are all in line and level with each other, simplifying the design of pipework, pipe and cable supports.

The project faced several challenges. First of all, work had to be completed without causing any downtime at the facility and staff still needed access to the blowers to control ongoing ASP processes. This was achieved by commissioning a critical number of blowers to ensure the plant could still run effectively. Concurrently, the old control system was switched over to a fully automated one. The second was due to timing. The project took place during the global pandemic, requiring Sulzer experts to adhere to social distancing, staggered breaks and daily temperature checks.

Benefits Beyond Efficiency

Full transition to the new blowers was achieved on January 14 2021. The initial period saw the suggested 1.2 GW energy saving per year achieved. This equated to a 34% reduction in blower power consumption. The master control unit (MCU) further optimizes blower operation by calculating the best efficiency. Each offers performance of 7,000 m^3/h at 590 mBar, while spinning at 20'000 rpm with no vibrations.

U.K. Wastewater Treatment Plant Blows Away Inefficiency

Severn Trent's Health and Safety team confirmed that historical noise restrictions could be removed, so operatives working in the blower house basement no longer needed to wear ear protection.

"In the water industry, energy savings are a primary consideration and this enabled the funding of this important project", explains David. "But there are many other benefits. We now have strategic backup blowers and do not just operate on a critical number available. Installing new Sulzer blowers positively impacted the works as the obsoleted blowers would have definitely affected treatment levels. Reduced maintenance is obviously a great advantage – no oil or water maintenance required, only air filters and no wearing parts."

Following the project, a noise assessment was carried out. Severn Trent's Health and Safety team confirmed that historical noise restrictions could be removed, so operatives working in the blower house basement no longer needed to wear ear protection. "We value very much the reduced noise in Sulzer air compressors and their compact size gives us more open, spacious environment", David adds.

Public utilities can't afford to suffer with unreliable or inefficient equipment, or it can impact quality of service. With six new HST 20 turbocompressors running at Derby Sewage Treatment Works, Severn Trent has breathed new life into this aeration process. BP

About Sulzer

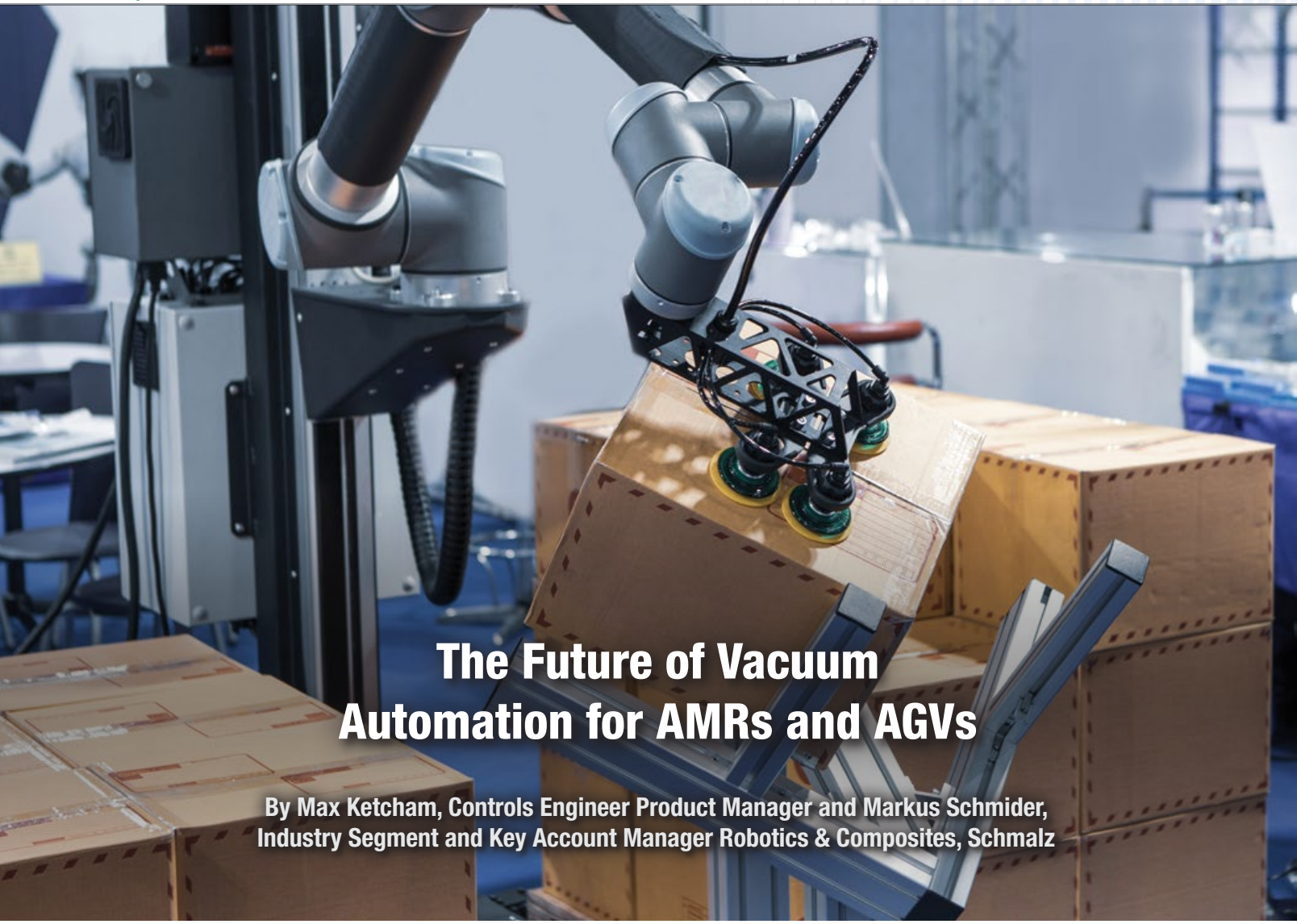
Sulzer is a global leader in fluid engineering and chemical processing applications. We specialize in energy-efficient pumping, agitation, mixing, separation, purification, crystallization and polymerization technologies for fluids of all types. Our solutions enable carbon emission reductions, development of polymers from biological sources, recycling of plastic waste and textiles, and efficient power storage. Our customers benefit from our commitment to innovation, performance and quality through our responsive network of 180 world-class manufacturing facilities and service centers across the globe. Sulzer has been headquartered in Winterthur, Switzerland, since 1834. In 2022, our 12'900 employees delivered revenues of CHF 3.2 billion. Our shares are traded on the SIX Swiss Exchange (SIX: SUN). www.sulzer.com

The Flow Equipment division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments. www.sulzer.com

Through a network of over 100 service sites around the world, Sulzer provides cutting-edge parts as well as maintenance and repair solutions for pumps, turbines, compressors, motors and generators. We service our own original equipment, but also all associated third-party rotating equipment run by our customers, maximizing its sustainability and life cycle cost-effectiveness. Our technology-based solutions, fast execution and expertise in complex maintenance projects are available at our customers' doorsteps. www.sulzer.com

To read similar articles on ***Aeration Blower Technology,*** please visit https://blowervacuumbestpractices.com/technology/aeration-blowers

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



The Future of Vacuum Automation for AMRs and AGVs

By Max Ketcham, Controls Engineer Product Manager and Markus Schmider, Industry Segment and Key Account Manager Robotics & Composites, Schmalz

➤ Introduction

Autonomous Mobile Robots (AMRs) and Automated Guided Vehicles (AGVs) are becoming more common in warehouse logistics and material handling industries. With the growth of e-commerce spurred by the pandemic, the need to further automate warehouse operations becomes even more apparent.

AMRs and AGVs can automate receiving and unloading, picking, stacking, storing and even inventory management. They can also move autonomously without causing harm to people working in the same area. And especially when paired with vacuum lifting systems, these vehicles can completely streamline material handling processes.

Overcoming Challenges

However, there are challenges to powering these vehicles and their attachments. Because they are smaller and lighter, the size of components and the power they need to operate matters. Most AMRs and AGVs are battery operated, so it's important to balance the need for high efficiency with also providing high levels of torque.

Enter the GCPi, a new electrical compact pump from Schmalz. This vacuum generator was designed to provide maximum performance with minimum energy consumption. Older versions of similar vacuum pumps were too big and heavy to work for AMRs and AGVs, so Schmalz set out to create an innovative new take on vacuum generation.

Weighing in at just 3 kilograms, the GCPi in combination with a battery (only needing a 24-volt supply) is ready for mobile applications and is significantly cheaper to operate than a comparable ejector.

Here are five ways that the GCPi is uniquely positioned to provide vacuum solutions for a mobile format:

Purely Electrical

The GCPi was developed for compressed air free production and assembly and the 24V technology allows for complete mobile use.

High Speed

With a 46 l/min suction rate, this compact vacuum pump doesn't hold back when it comes to speed. And the quick ventilation function also allows for fast depositing.

Highly Energy Efficient

The GCPi is characterized by its outstanding energy efficiency, which is important for not draining the battery of AMRs and AGVs. The electric 3/2-way compact valve LQE is what provides a compressed air free vacuum system that performs at the same level as conventional pneumatic systems.

The FQE venting valve reduces the volume to be evacuated by preloading and enables rapid aeration. The diaphragm pump technology and intelligent vacuum control also support this efficiency. In certain applications it has been proven to be up to 75% more efficient than a classic rotary vane pump and up to 85% more efficient than an uncontrolled ejector.

Process Control

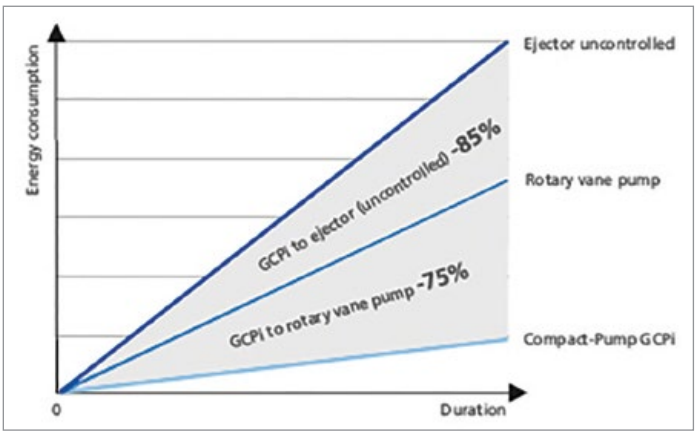
The compact pump GCPi can control up to two outputs with the X11 and X12 ports. This allows the option to connect either one actuator and one sensor or to use the GCPi to control two sensors and two actuators.

IoT ready

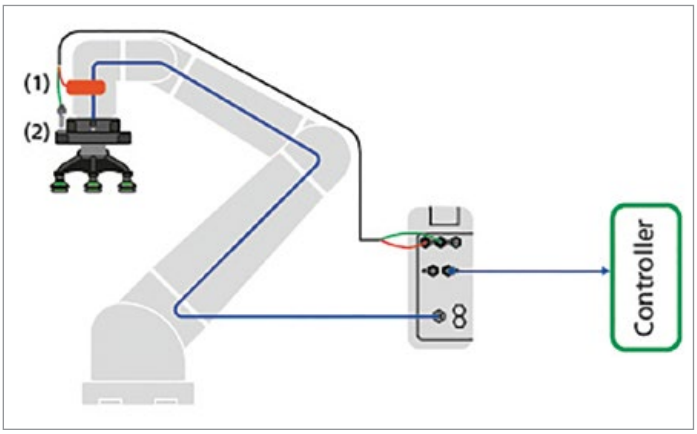
The GCPi has full connectivity through IO-Link and can set the parameters by scanning the NFC tac with the Schmalz ControlRoom app. This technology allows the device to transmit data about its status, energy consumption and vacuum process directly at the gripper for condition and energy monitoring. BP

About Schmalz

Schmalz is the global market leader in vacuum industrial automation and ergonomic material handling solutions. The wide range of products in the Vacuum Automation unit includes individual components such as suction cups and vacuum generators, as well as complete robotic gripping systems and clamping solutions for holding workpieces, for example in CNC machining centers. The Handling Systems unit offers innovative handling solutions with vacuum lifters, servo hoists and workstation crane systems for industrial material handling applications. The intelligent energy saving solutions make production and logistics processes more flexible, productive and efficient, while also preparing them for the increasing trend toward digitalization. For more information, visit our website at www.schmalz.com.



Energy savings potential



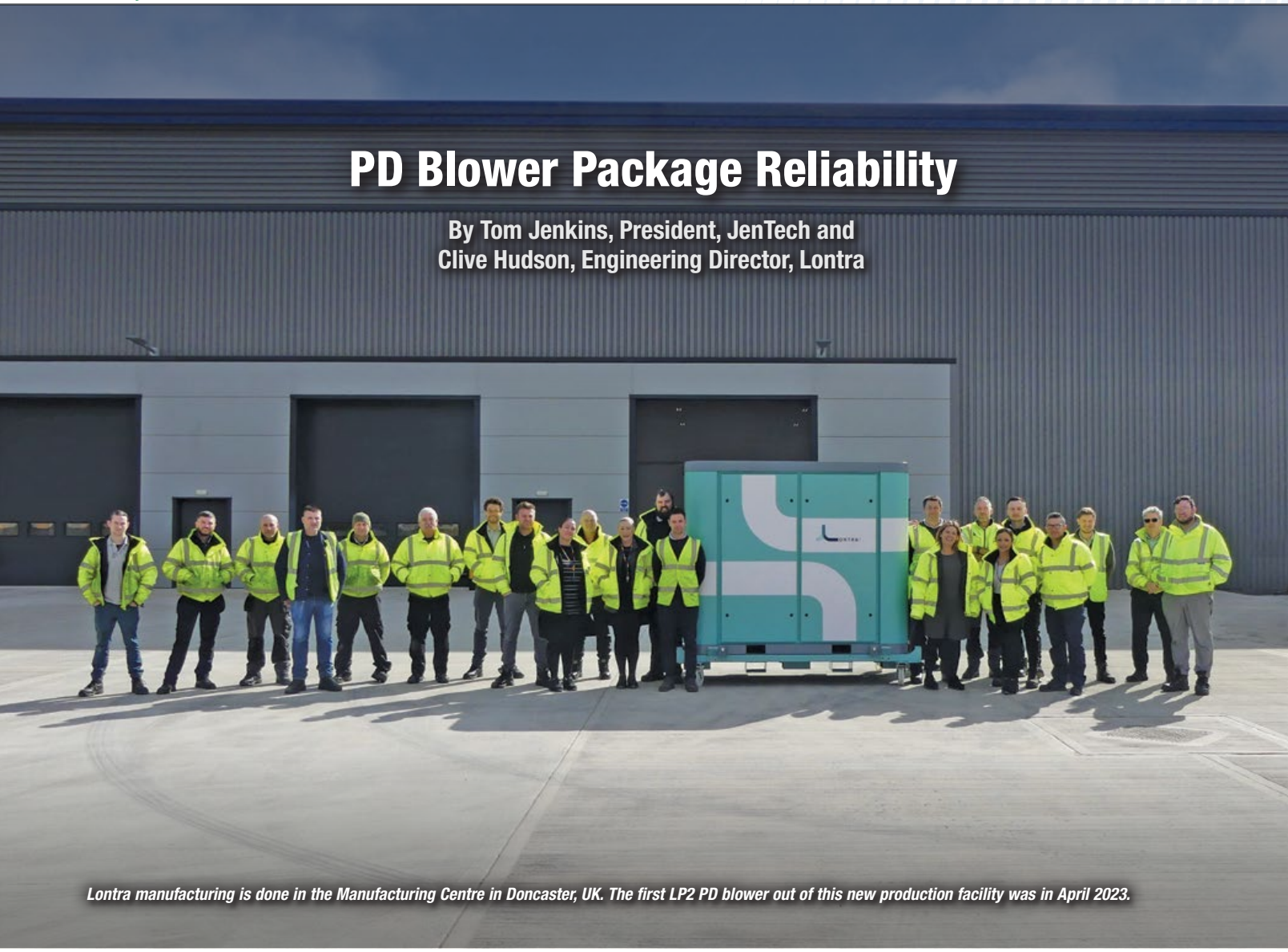
Control of external components

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

PD Blower Package Reliability

By Tom Jenkins, President, JenTech and
Clive Hudson, Engineering Director, Lontra



Lontra manufacturing is done in the Manufacturing Centre in Doncaster, UK. The first LP2 PD blower out of this new production facility was in April 2023.

Energy efficiency and reliability are two critical considerations in selecting a blower. However, for most WRRF (Water Resource Recovery Facility) operators, reliability is the most important objective. End users need a robust blower system – if the blower can't be operated, high efficiency doesn't matter.

High levels of reliability can be achieved in two ways. First, by design – employing quality materials, proven components, and simplified mechanisms. Second, by incorporating advanced monitoring techniques that identify abnormal operating conditions, provide notification to operators, and initiate equipment shutdown before catastrophic failure occurs. Modern positive displacement (PD) blower packages use both techniques to improve system reliability.

Fundamentals

PD blowers deliver a fixed volume of air with each revolution. The blower flow rate is controlled by changing speed, with a linear relationship between speed and volumetric flow. In a PD blower the discharge pressure will always rise and fall to match the system pressure.

Some PD blowers have a fixed volume ratio – the screw blower and blade blower are examples. This creates an optimum pressure ratio, and some over-compression or under-compression occurs at other pressure ratios. The over and under compression will cause a small decrease in efficiency but will not affect reliability.

Centrifugal blowers experience surge, a pulsating flow phenomenon that can cause failure when operated at low flows or high system pressure. PD blowers are not subject to surge, adding to their robustness.

Traditionally blower systems were built from components selected for each individual project.

Currently it is more common for PD blowers to be provided as a complete package. [See Figure 1] All accessories, mechanical and electrical, are included in a sound attenuating enclosure. The package components are matched to the blower by the manufacturer and are selected to optimize performance and reliability.

Heat Considerations

Excess heat will shorten a blower's life. Managing heat is one of the greatest challenges for any blower package. Excess temperature can damage elastomers such as seals and gaskets. Lubrication will fail if heat causes oil viscosity to drop. In extreme cases high temperature will cause warping of blower casings or impellers and lead to mechanical failure.

Efficiency and reliability are linked phenomenon. Efficiency is, of course, a concern for minimizing operating costs. Efficiency also affects reliability, since inefficiencies – mechanical or electrical losses – invariably appear as heat.

There are multiple sources of heat in every blower package. The largest source is the heat of compression. This is an unavoidable result of thermodynamics and is a function of the blower's pressure ratio.

It is important to note that the heat generated by compression is inversely proportional to the blower efficiency. A high efficiency blower minimizes heat generation. Most of the heat of compression is carried away in the discharge air. The remaining heat is rejected by the blower case to the air circulating through the enclosure.

Additional heat is generated by losses in electrical equipment – primarily the blower motor and VFD.

The VFD is typically air cooled, with the heat exhausted through the blower enclosure and into the blower room. Typical VFD protective functions include monitoring component temperature, loss of phase, low and high voltage, phase imbalance, and high current. As soon as any of these parameters fall outside the allowable operating range the blower system shuts down to prevent a failure cascade.

The motor in newer designs may be a permanent magnet synchronous unit, but

Lontra LLC

Lontra LLC is a UK based engineering and technology company concentrating on the development and manufacturing of innovative compressors. Lontra recognizes that reduced energy usage is important for the environment and society. Their dedication to efficiency and reliability is demonstrated by their flagship product, the Lontra LP2 Blade Compressor, and by their state of the art sustainable manufacturing center. For more information, visit www.lontra.co.uk.

PD Blower Package Reliability

standard induction motors are more common. Electrical and mechanical losses are low and heat from motor inefficiency is typically rejected inside the enclosure. The heat from the motor and VFD are then rejected to the blower room.

Lubrication And Mechanical Systems

All bearings in both the motor and the blower are typically rolling element (antifriction) bearings. Many PD blowers use splash lubrication for both the bearings and timing gears. It is important to maintain proper oil levels in the sump to insure proper lubrication.

Some large PD blowers use a pressure lubrication system to increase reliability. A lube pump ensures all bearings receive proper lubrication with clean, filtered oil.

It is common to use V-belts to connect the blower to the motor. V-belts are potential failure points. They rely on proper tension to minimize slip and wear. Excess tension can damage motor or blower bearings. Most package systems include automatic belt tensioning systems, improving both efficiency and reliability.

Blowers rely on receiving clean air at their inlet to avoid mechanical wear of rotating parts. Whether louvered or piped inlets are employed, the package should include internal filters. As the filter removes contaminants from the inlet air pressure loss across it increases. Reliable operation requires proper preventive maintenance of filters.

PD blowers should always have pressure relief valves on the discharge to prevent mechanical damage to the blower or piping from high pressure excursions. Excess pressure may also result in motor overload. The relief pressure should be factory preset to the proper value. The relief valve may vent either inside or outside the enclosure.

Noise

Packaged blower system can be very quiet – less than 80 dBA at rated flow and pressure in some cases. Noise itself isn't a failure mechanism, but it is an indicator of mechanical vibration. Vibration in turn can lead to fatigue failure. Of course, operator comfort is always a consideration, and low noise levels promote proper operator attention to monitoring and preventive maintenance.

Electrical "noise" is a significant concern for the municipal water and wastewater industry. Of particular concern is the impact of harmonics produced by VFDs on both the blower motor and the other electrical components connected to the line side of the VFD. A modern blower package's VFD may include line side harmonic mitigation and will meet IEEE-519 voltage distortion requirements. Additional harmonic mitigation equipment is available for special applications.

Monitoring

Continuous blower health monitoring is recognized as essential in modern blower

packages. It can reduce the severity of failures, alert operating staff of issues before they become critical, and provide guidance for troubleshooting and repair.

Proper lubrication is, of course, essential to reliable continuous operation, and therefore comprehensive lube system monitoring is typically provided. Beneficial sensors and safety shutdown for the lubrication system includes:

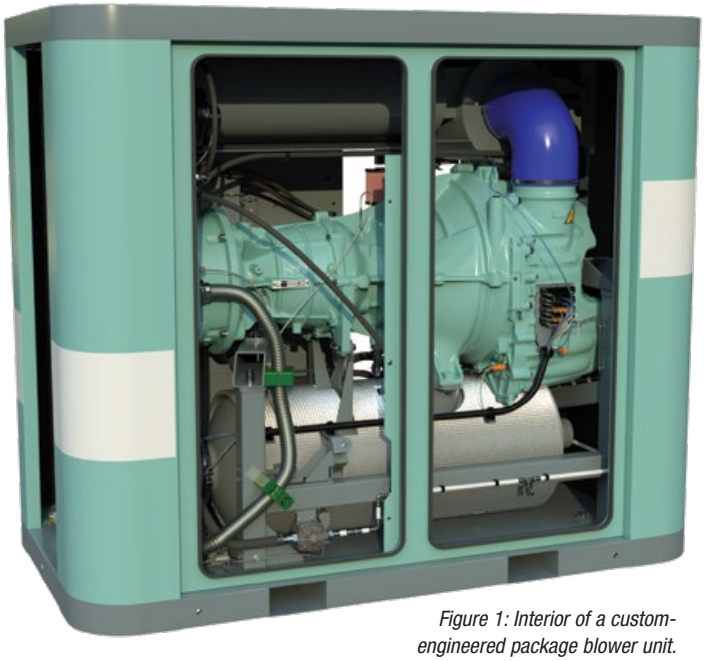


Figure 1: Interior of a custom-engineered package blower unit.

- Bearing temperature
- Oil temperature
- Oil level
- Oil pressure for pressure lubricated systems

Excess vibration can be an early indication of bearing problems or imbalance issues. Large blowers often employ a case-mounted or bearing mounted vibration transmitter to provide early warning of potential problems.

PD Blower Package Reliability

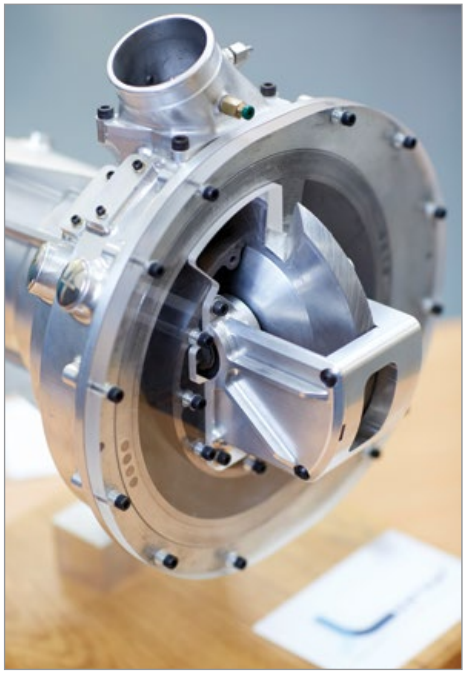


Figure 2: Internals of the LP2 blade blower from Lontra, a novel type of PD.

The inlet air to the blower must be clean and free from dust and debris. Therefore, necessary preventive maintenance includes changing the inlet filter. As the filter collects particles from the air stream its restriction and resulting pressure drop increases. Most packages include a gauge or a sensor that detects the increase in pressure differential across the air filter and indicates that replacement is needed.

Other common sensors and system performance indicators include:

- Discharge pressure transmitter
- Discharge air temperature
- Inlet air temperature
- Inlet suction pressure

Communications

Current practice for blower installations almost always includes linking the blower local controller to a Supervisory Control and Data Acquisition (SCADA) or other computer-based Human Machine Interface (HMI) system. This allows operators to monitor critical process and equipment performance data. This in turn increases blower life by providing early warning of unusual operating conditions that may lead to equipment malfunction. Many SCADA systems also incorporate preventive maintenance scheduling. It is universally recognized that proper preventive maintenance will increase blower life. A variety of serial and ethernet protocols are available for linking the blower system to communications networks.

For further operator convenience a local touchscreen HMI is usually provided with the blower enclosure. The HMI shows blower status and performance, allows setpoint changes, and enables local operation of the blower.

Many blower packages implement "cloud" based solutions for optimizing performance and improving reliability. The Industrial Internet of Things (IIoT) has been shown to reduce downtime and improve efficiency through advanced monitoring and big data analytics. IIoT connectivity is standard with many systems.

Summary

Most operators identify reliability as their number one concern with blower systems. Robust systems with high availability are essential for maintaining process performance and permit compliance.

Reliability begins with the basic blower design. Simplicity and ruggedness are key factors. The manufacturing of the blower must be consistent and precise. Finally, advanced monitoring systems must be used to ensure that critical operating criteria are within proper ranges. Early detection of problems can alert operators and stop the blower before catastrophic failure occurs.

Blower package suppliers have considered these factors in their package designs. Great effort is put into meeting or exceeding operator expectations. BP

About the Authors

Tom Jenkins has over forty years' experience in blowers and blower applications. As an inventor and entrepreneur, he has pioneered many innovations in aeration and blower control. He is an Adjunct Professor at the University of Wisconsin, Madison and a WEF Fellow. Tom is the current Chair of the ASME PTC 13 Committee. For more information, visit www.jentechinc.com.

Clive Hudson is the Engineering Director of Lontra. He has a degree in Mechanical Engineering from Imperial College. He has a broad background in manufacturing and design. His experience includes working in multi-disciplinary teams, with extensive use and understanding of engineering methods and their applications. For More information, visit www.lontra.co.uk

To read similar articles on ***Aeration Blower Technology,*** please visit https://blowervacuumbestpractices.com/technology/aeration-blowers

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

BEST PRACTICES
2023 EXPO OCTOBER 23-25 CHICAGO
COMPRESSED AIR / VACUUM / COOLING

Sustainable, Safe & Reliable
ON-SITE UTILITIES
Powering Automation

Largest-Ever Best Practices 2023 EXPO

The 5th annual and largest-ever Best Practices 2023 EXPO & Conference is taking place October 23-25, 2023 at McCormick Place in Chicago, IL and will co-locate with Process Expo. Manufacturing, engineering firm and equipment sales personnel will meet, on the EXPO Floor, with the leading global manufacturers of compressed air, vacuum and cooling/chilled water technologies. Early-Bird EXPO Registration rates are $50 and grant access to both Expos.

Co-Sponsored by the Compressed Air & Gas Institute, who is offering on-site their Certified Compressed Air System Specialist (CCASS) Exam, the Best Practices EXPO will display the latest compressed air innovations in air compressors, compressed air purification, aluminum piping, pneumatics, leak detection and compressed air measurement instruments.

EXPO HOURS

Monday, October 23 10:00AM-5:00PM
Tuesday, October 24 10:00AM-5:00PM
Wednesday, October 25 10:00AM-5:00PM

Air Compressors

ACE Compressor Services
Air Production & Service
Alkin Compressors
Anest Iwata
Atlas Copco
Bauer Compressors
Blue Storm Air
Bobcat Company
BOGE America
Coltri Compressors
CompressAir
Delta Industries
EL-AV Compressors
ELGi North America
Fluid-Aire Dynamics
FS-Curtis/FS-Elliott
Hanwha Power Systems America
Hertz Kompressoren
Kaeser Compressors
Kaishan Compressor
Kellogg American Air Compressors
Lone Star Blower & Compressor
Lupamat Compressor
Masia Group
Nardi Americas
National Compressor Services
Powerex
Sauer Compressors
Schulz of America
Sullair
Sullivan Palatek
Tamsan-USA Compressors
Tamturbo
Termomeccanica Industrial Compressors
Turbowin
VMC USA

Air Compressor & Vacuum Pump: Other

All Weather Air
Bay Controls
CALMS-PLANTSCAN
CaselZ
Edmac Compressor Parts
EnergAir Solutions
Enerpan Building Systems
Eura Drives
Pranav Engineering
Shanghai Airpull Industrial
Solberg Manufacturing
SOTRAS
WEG

Air Compressor & Vacuum Pump Lubricants

Edmac Compressor Parts
ISEL/Dubois Chemicals
SA Performance
Summit
Ultrachem

Blowers

Aerzen Rental
Atlas Copco
Delta Industries
Eurus Blower
Kaeser Compressors
Lone Star Blower & Compressor
RAETTS
Turbowin

Chillers & Cooling Towers

Atlas Copco
Brentwood Industries
Delta Cooling Towers
Delta Industries
Hydrothrift
Industrial Water Chiller
Mikropor
nano-purification solutions
Parker Hannifin
SMC

Compressed Air Purification

Air Production & Service
Air System Products
Air Treatment Solutions
Altec Air
Atlas Copco
Clean Resources
Control Devices
Delta Industries
Dryline Technologies
Edmac Compressor Parts
Fluid-Aire Dynamics
Generon
Great Lakes Air Products
JORC Industrial
Kaeser Compressors
KSI Technologies
Mikropor
nano-purification solutions
Parker Hannifin
Peak Gas Generation
Sahara Air Products
SMC
Tsunami Compressed Air Solutions
Van Air Systems
Walker Filtration

Leak Detection

CS Instruments USA
Fluke
HIKMICRO
Prosaris
SONOTEC
SUTO iTEC
UE Systems

Measurement & Pneumatics

Aignep USA
CDI Meters
Comate Intelligent Sensor
CS Instruments
OMAL USA
Parker Hannifin
Revindus
SMC
SUTO iTEC
Trace Analytics
VPInstruments

Piping & Storage

Aignep USA
AIRpipe USA
Applied System Technologies
Atlas Copco
Fluid-Aire Dynamics
Kaeser Compressors
Parker Hannifin
Prevost
Sicomat

Vacuum Systems

Atlas Copco
Anest Iwata
Delta Industries
Kaishan Compressor
NAVAC
Powerex

Associations, Training & Software

Best Practices EXPO and Magazines
CAGI
ComEd Energy Efficiency Program
Compressed Air Challenge
Cooling Technology Institute
FieldServio/Standpoint Technologies
Peakview Solutions

https://cabpexpo.com/exhibit/expo/exhibitor-directory/

REGISTER NOW!

CABPEXPO.COM

Blower & Vacuum Technology News

Atlas Copco Develops DVS Dry Rotary Vane Vacuum Pump Series

Modern vacuum technology must convince users in their everyday operations with features such as sustainability, performance and ergonomics. Atlas Copco has developed its new DVS vacuum pump series with a focus on this requirement profile. The DVS models are oil-free, dry rotary vane pumps that guarantee emission-free, quiet operation and do not contaminate the processes.

"This makes them ideally suited for a wide range of applications, and they are used in packaging and pneumatic conveying processes, medical systems and analytical equipment, as well as in pick and place for several automated industries," said Atlas Copco's product manager Carol Pignatelli. The dry rotary vane pumps offer their users specific advantages. The DVS models are quiet, low-wear and energy-saving and take up very little space. They are predestined for applications in which high efficiency must be achieved at competitive costs.

This is achieved by the proven functional principle of the rotary vane pump and using robust materials. For example, a rotor with graphite blades rotates inside the DVS pumps. The centrifugal forces press the vanes against the inside of the housing wall and hermetically seal the chamber for a safe, uninterrupted operating vacuum. "Thanks to the high-quality graphite alloy, the vacuum can be generated with minimal friction losses," said Atlas Copco's product manager Carol Pignatelli.

The efficient pump mechanism and the design ensure minimal wear and this in turn leads to long maintenance intervals and easy servicing of the DVS. In addition, the vacuum pumps are thus designed for maximum operating times. The temperature management also contributes to this. To reduce the temperature of the discharged air, the exhaust air is passed through an air cooler.

The DVS series is also equipped with an inlet filter, non-return valve, exhaust silencer, a noise-containing canopy and an energy-efficient IE3 electric motor. The interaction of these components forms the technological basis for a reliable pump with maximum vacuum performance and lower life cycle costs. The dry rotary vane vacuum pumps of the DVS series are available with a nominal suction volume flow of 5 m^3/h to 140 m^3/h and an ultimate vacuum of up to 120-150 mbar(a). "For higher flow rates, we recommend our dry claw vacuum pumps and systems of the DZS series," said product manager Carol Pignatelli.

The new DVS dry rotary vane vacuum pump series from Atlas Copco.

About Atlas Copco Industrial Vacuum

At Atlas Copco Industrial Vacuum, we have revolutionized vacuum technology. Our state-of-the-art vacuum pumps and systems exemplify today's connected and digitalized industry. Our teams of exceptional and passionate people engineer customer-centric vacuum solutions that offer better energy efficiency, consumer safety, improved productivity and a sustainable future. Our products are the invisible force that drive all industrial applications and manufacturing and our division includes the Atlas Copco, Edwards and Leybold brands. We are headquartered in Cologne, Germany with production centers in Germany, France, Belgium, Czech Republic, the United States and China. For more information, visit www.atlascopco.com.

Busch Launches COBRA DX Dry Screw Vacuum Pump

Busch Vacuum Solutions has launched the first vacuum pump of the new DX series on the market, the COBRA DX 0950 A. It is a dry vacuum pump with state-of-the-art screw vacuum technology for excellent running characteristics, high vapor and particle tolerance, and extremely energy-efficient operation.

The high-performance COBRA DX 0950 A is suited for many rough and medium vacuum applications, such as the solar industry, lithium battery production, drying, food packaging, coating, vacuum furnaces, or as the heart of a central vacuum system.

With variable speed drive technology, the new COBRA DX 0950 A covers the pumping speed range up to 950 m^3/h and achieves an ultimate pressure of up to 0.01hPa (mbar). All operating data is constantly recorded and saved.

Thanks to its plug-and-pump concept, COBRA DX 0950 A is user-friendly and easy to handle. No further installation is required before start-up. A touchscreen with intuitive menu navigation allows the control of the most important functions. An optimal vacuum level can be achieved at all times thanks to the intelligent driving unit with variable speed control and various operating modes. This reduces energy consumption and ensures that the vacuum pumps always run under optimum conditions, thus keeping operating costs to a minimum.

Busch launched the COBRA DX 0950 A.

With the main benefits of the well-proven COBRA NX PLUS, COBRA DX 0950 A takes up less space due to its optimized footprint. Therefore, it is the perfect compromise between the standard COBRA NX and the advanced COBRA NX PLUS versions. In addition, the patented self-balancing screw design of COBRA DX 0950 A ensures the lowest vibration levels and quiet operation. The screws are made of one single casting and have no gaps. This prevents the ingress of process fluids or particles, as well as corrosion and deposits. COBRA DX 0950 A uses efficient water cooling, which ensures uniform temperature distribution throughout the pump body and thermal stability throughout the process.

The COBRA DX 0950 A is based on proven Busch screw vacuum technology. The clean

Blower & Vacuum Technology News

operating principle means neither oil nor other operating fluids are necessary during vacuum generation. For this reason, it is particularly suitable for applications where contact between the operating fluid and pumped medium is to be avoided, or clean room conditions must be met.

Further sizes of the COBRA DX are expected shortly. For more information on the COBRA DX, visit https://www.buschvacuum.com/us/en/news-media/sustainable-vacuum-solutions-with-cobradx.html.

About Busch Vacuum Solutions

Busch Vacuum Solutions offers vacuum and pressure solutions from individual vacuum pumps, blowers, and compressors to tailor-made vacuum systems. In addition to vacuum equipment, Busch is also a global service provider. Busch USA headquarters is in Virginia Beach, VA, and part of the global Busch family-owned company with over 3,800 employees in 45 countries. For more information, please contact Busch at info@buschusa.com or visit the Busch US website at www.buschusa.com.

Midwest Air Technologies Introduces AirStrike Airknives

AirStrike Airknives, manufactured by Midwest Air Technologies, are developed based on 35 years of blower-drive airknife application and design experience. They have incorporated their systems into countless applications over the past 23 years, including aqueous parts washing, vegetable and fruit blow off, microbrewing, wine bottling, egg, meat and cheese preparation, packaging and industrial ovens.

Midwest Air Technologies manufactures and stocks airknives, utilizing 304 stainless steel material and currently offer 3 standard size profiles covering most industrial, low-pressure, blow-off applications utilizing blowers operating at 2-3 PSI. These airknives feature an adjustable gap to best match the required performance for blow-off requirements. On the extreme side, they have produced airknives for steel mill environments where the mill gained

AirStrike Airknife by Midwest Air Technologies.

improved drying at a much lower energy cost than compressed air.

About Midwest Air Technologies

Along with the airknives we offer a complete array of components to support the installation of the airknives, which includes: airknife mounting bracket kits, nozzles, flexible ducting, manifold, rubber couplers, clamps, and stainless steel blower stands. We also manufacture an Air-Wipe used to dry wire and cable along with extrusion profiles in industrial applications. They are designed to be incorporated into an existing manufacturing line without stopping production. We understand airknives are not always a one-size-fits-all solution, so we offer custom designs through our complete engineering services line. Our engineers work with you to integrate the ideal low-pressure airknife solution and remain committed to reducing the use of compressed air. With deep Midwestern values, we strive to offer a high-quality product at a competitive price. We are looking to grow our dealer network and welcome dealer inquiries. Reach out to us at https://midairtech.com or call 920-757-1168.

Pfeiffer Vacuum Offers a New Vacuum Calculator

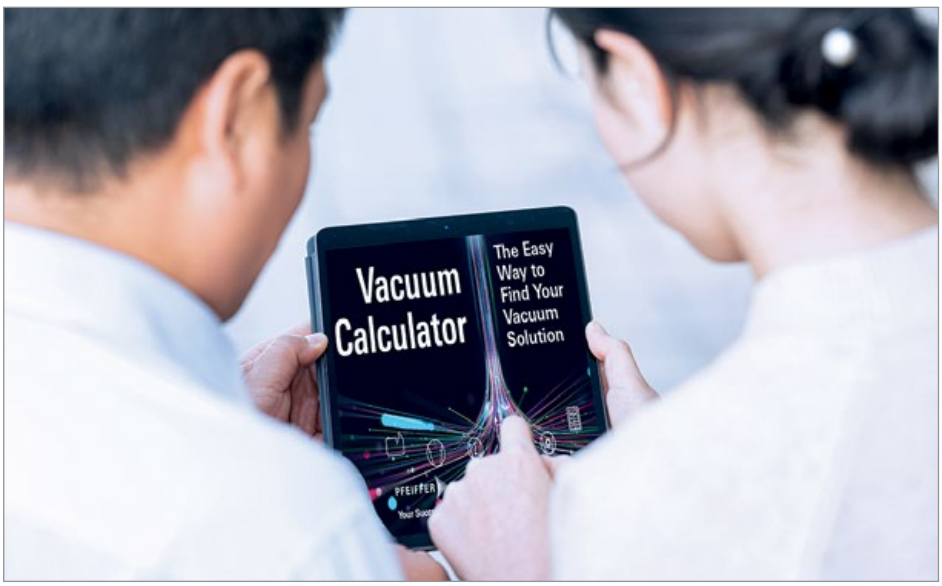
Pfeiffer Vacuum offers their customers a vacuum calculation tool to identify specific vacuum products for their application, examine evacuation as well as pump down curves and perform different calculations for self-configurated pumping solutions.

"With our new vacuum calculator, we aim to make the lives of our customers easier. When looking for the right vacuum solution, the technical parameters can be inserted into the tool and the matching products are displayed. Moreover, customers can perform different calculations for existing pump solutions," said Daniela Kunzig, Head of Digital Business. This enables the customers to compare different vacuum solutions with each other.

The vacuum calculator is available via the webportal "Select & Request." A contact form is linked to each search or calculation via which the customers can directly contact the sales engineer in charge to request a quote.

About Pfeiffer Vacuum

Pfeiffer Vacuum is one of the world's leading providers of vacuum solutions. In addition to a full range of hybrid and magnetically levitated turbopumps, the product portfolio comprises backing. chambers and systems. Ever since the invention of the turbopump by Pfeiffer Vacuum, the company has stood for innovative solutions and high-tech products in the analytical, industrial, research & development, semiconductor and future technologies markets. Founded in 1890, Pfeiffer Vacuum is active throughout the world today. The company employs a workforce of some 4,000 people and has more than 20 sales and service companies as well as 10 manufacturing sites worldwide. For more information, please visit www.pfeiffer-vacuum.com.



Pfeiffer Vacuum offers a new vacuum calculator to find the right vacuum solution.

Blower & Vacuum Technology News

Rogers Machinery Now Distributes MD-Kinney Vacuum & MD-Pneumatic Blowers

Rogers Machinery Company is pleased to announce they are now a factory authorized sales, parts, and service source for MD-Kinney® vacuum pumps and boosters and MD-Pneumatics® blower lines. MD-Kinney is a leader in manufacturing high performance, reliable positive displacement blowers, mechanical vacuum pumps, and vacuum boosters.

Rogers Machinery Company is now distributing MD-Kinney vacuum & MD-Pneumatic blowers.

About Rogers Machinery Company

Rogers Machinery Company has been serving customers since 1949, manufacturing oil-free and oil-lubricated air systems as well as custom Engineered System Solutions which are built to meet individual industry and performance requirements. We are also a distributor of some of the most

recognized brand names in the compressed air, pump, and vacuum pump industries.

Distributed worldwide, across all industries, our specialized production locations are in Portland, Oregon, where our Oil-Free KNW Series air compressors are produced as well as the location of our corporate headquarters, and Centralia, Washington where our Oil-Lubricated K-Series air compressors and vacuum pumps, as well as our Engineered System Solution packages are produced. While we are completely self-sufficient, we buy raw components from our partners and other suppliers. Engineering and fabricating our own assemblies, we ultimately provide custom products to meet our clients' specific needs. If you have any questions or would like additional information, we are happy to discuss our capabilities in detail with you. For more information, visit www.rogers-machinery.com.

Howden Supplies Aeration Solution to Athlone WWTP

Howden, a leading global provider of mission critical air and gas handling products, technologies and services, has been awarded a contract to supply four high speed single stage integrally geared blowers and a control system for the new Athlone Wastewater Treatment Works (WWTW) located in Cape Town, South Africa.

The City of Cape Town is growing rapidly due to population growth and migrations, which triggered the need for the WWTW to upgrade to ensure it can meet increasing demand to clean the water and make it safe before discharging it into the environment. The city has identified upgrades to the Athlone WWTW, which has been treating wastewater since the early 1920s. This critical investment into key infrastructure improves environmental health where the effluent from the WWTW must meet stringent health and safety standards to ensure that there is no harm to biodiversity of the established water stream.

Howden's high efficiency SG Blowers and proprietary Bio-Active Response System (BARS), scheduled for installation in 2024, will support the WWTW by efficiently delivering the correct amount of dissolved oxygen, reducing the electrical demand and generating energy savings. Howden's Combined Vane Control systems, which integrates the Inlet Guide Vane and Variable Vane Diffuser, will work in conjunction with a Howden algorithm to deliver the most efficient air required over a large turndown range (100-45%).

Eric Vemer, President and General Manager of Africa & Middle East at Howden said, "Howden has supported the City of Cape Town over the past ten years. We have worked together to optimize its Fine Bubble Diffuser Aeration systems, which consume around 30-50% of the energy requirements for a Wastewater Treatment Plant. The Howden team designed a customized solution that met the client's stringent specifications to optimize energy consumption. This goes over and beyond the requirements of an OEM. We work hand in hand with our clients to solve real world problems."

Howden supplies high-efficiency blowers and compressors, and advanced digital solutions for smart aeration systems. With Howden's aeration system design, overall energy is minimized, and high reliability is guaranteed, which saves time and improves operating cost. Howden supports its equipment through an aftermarket workshop in Cape Town to ensure reliability and minimum downtime through 24/7 availability of the service team.

About Howden

Howden, a Chart Industries Inc. Company, is a leading global provider of mission critical air and

Howden supplies energy efficient aeration solution to Athlone Wastewater Treatment Works.

Blower & Vacuum Technology News

gas handling products. We enable our customers' vital processes which advance a more sustainable world. Based in Glasgow, Scotland, Howden has over 160 years of heritage as a world-class application engineering and manufacturing company with a presence in 35 countries. Howden manufactures highly engineered fans, compressors, heat exchangers, steam turbines, and other air and gas handling equipment, and provides service and support to customers around the world in highly diversified end-markets and geographies. For more information, visit www.howden.com.

Leybold Announces DRYVAC DV 650 and DV 800 FP-r Vacuum Pumps

Vacuum systems used in food and packaging processes must contribute to safe and efficient food supply. With the new wash-down vacuum pumps DV 650 and DV 800 FP-r of the established, dry-running DRYVAC series, Leybold has developed two models for these industrial processes. Their use facilitates production, increases food safety and extends the shelf life of foodstuffs.

The new DRYVAC DV 650 and DV 800 FP-r screw vacuum pumps are characterized not only by their proven functional principle but also by their compact design. In demanding, harsh food applications, they require only a small footprint and little installation space. In addition, they can be washed down inside and outside in any installation position.

In addition, their compact size and low noise level enable uncomplicated, near-machine installation in the immediate vicinity of the production line. The advantage for users: during daily cleaning of the system, the DV 650/800 FP-r pumps can be washed down with the production equipment in one process. This results in fewer system downtimes, better cycle times, less maintenance, a higher standard of hygiene and higher filling and packaging outputs. This is a real advantage in packaging applications requiring good vacuum level (i.e. low pressure) such as skin pack for example.

Due to their rotor design, Leybold's robust DRYVAC models operate very energy-efficiently and at low lifetime costs. In line with the requirement profile in most applications, their use also guarantees a high pumping speed from atmospheric pressure to low pressure ranges. Thanks to modern, oil-free pump technology, the risk of contamination of pumped media with lubricants is minimal. "This requirement is of great importance across all applications in the food industry," said Olaf Stahlschmidt, the DRYVAC product manager at Leybold.

The DV 650 and DV 800 FP-r models are equipped with a frequency converter for easy monitoring and control. It enables a variety of functionalities: For example, it provides only the energy required at a time, which leads to lower energy consumption overall. Furthermore, it offers the possibility of a definable ramp-up of the rotation frequency with which a vacuum chamber can be gently evacuated. This is particularly advantageous when processing foodstuffs that would change their shape if the pressure in the chamber were lowered too quickly, such as bakery products.

About Leybold

Established in 1850, Leybold is a pioneer in vacuum innovation. Our inventions have paved the way for many modern-day vacuum technologies, including our range of next-generation vacuum products. We are recognized globally as a leader in the manufacture of vacuum pumps and systems for industrial and scientific vacuum applications, that are supported by our specialized and globally accessible Service solutions. We are proud to live up to our brand promise - Pioneering products. Passionately applied. Founded in Cologne, Germany with sales and service locations around the globe. We are a part of the Atlas Copco Group. For more information, visit www.leybold.com.

With hygienic design ready for daily cleaning, DV 650 and DV 800 FP-r from Leybold is compact, hygienic and robust.

BLOWER & VACUUM BEST PRACTICES blowervacuumbestpractices.com

COMPRESSED AIR BEST PRACTICES airbestpractices.com

CHILLER & COOLING BEST PRACTICES coolingbestpractices.com

PROUDLY PRESENTING THE 2023 EXPERT WEBINAR SERIES

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

Frank Melch
Vice President, Zorn Compressor & Equipment

Tie Duan
Solutions Engineer, E.W. Klein & Co.

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

Francisco Lara
Manager, Airtec Global LLC

Paul Edwards
Principal, Compressed Air Consultants

Ron Marshall
Chief Auditor, Marshall Compressed Air Consulting

JAN 19 — **The Minimum 24/7 Compressed Air Performance Metrics to Have**
Presenter Tim Dugan, P.E., President and Principal Engineer, Compression Engineering Corporation – *Sponsored by VPInstruments and FS-Curtis/FS-Elliott*
Thursday, January 19, 2023 – 2:00PM EST

FEB 23 — **Low Pressure (15-60 psi) Air Applications: Blower or Air Compressor?**
Presenter Ron Marshall, Chief Auditor, Marshall Compressed Air Consulting – *Sponsored by Kaishan*
Thursday, February 23, 2023 – 2:00PM EST

APR 13 — **Oil-Free vs Lubricated Rotary Screw Air Compressors: Pros and Cons**
Presenter Paul Edwards, Principal, Compressed Air Consultants – *Sponsored by Kaeser Compressors*
Thursday, April 13, 2023 – 2:00PM EST

APR 27 — **Compressed Air as a Quality/Safety Manufacturing Process Variable**
Presenter Tom Taranto, Owner, Data Power Services – *Sponsored by Kaishan*
Thursday, April 27, 2023 – 2:00PM EST

MAY 11 — **Vacuum System Fundamentals: Depth of Vacuum vs. Absolute Pressure**
Presenter Andy Smiltneek, President, Growth Solutions Consultants – *Sponsored by Rogers Machinery*
Thursday, May 11, 2023 – 2:00PM EST

MAY 18 — **CTI STD-201RS Thermal Certification for Cooling System Heat Rejection Equipment Part 1: Performance Ratings**
Presenter Mike Womack, Thermal Certification Administrator, Cooling Technology Institute – *Sponsored by EVAPCO*
Thursday, May 18, 2023 – 2:00PM EST

JUN 08 — **Vacuum Pump Maintenance**
Presenter Tie Duan, Solutions Engineer, E.W. Klein & Co. – *Sponsored by Kaishan*
Thursday, June 8, 2023 – 2:00PM EST

JUN 22 — **Greener Compressed Air Systems-Reducing the Environmental Impact**
Presenter Paul Edwards, Principal, Compressed Air Consultants – *Sponsored by VPInstruments and Kaeser Compressors*
Thursday, June 22, 2023 – 2:00PM EST

JUL 13 — **Design Considerations When Transitioning to Oil-Free Compressed Air Systems**
Presenter Tim Dugan, P.E., President and Principal Engineer, Compression Engineering Corporation – *Sponsored by Rogers Machinery and FS-Curtis/FS-Elliott*
Thursday, July 13, 2023 – 2:00PM EST

JUL 23 — **Engineering Rooms for Aeration Blowers**
Presenter Tom Jenkins, P.E., President, JenTech Inc. – *Sponsored by APG-Neuros*
Thursday, July 23, 2023 – 2:00PM EST

JUL 27 — **From Fresh to Soggy – Quality Monitoring: How Compressed Air Condensate Affects Food Quality**
Presenter Francisco Lara, Manager, Airtec Global LLC – *Sponsored by SUTO iTEC*
Thursday, July 27, 2023 – 2:00PM EST

AUG 10 — **Air Compressor Size: The Struggle of Getting it Right**
Presenter, Ron Marshall, Chief Auditor, Marshall Compressed Air Consulting – *Sponsored by Kaishan.*
Thursday, August 10, 2023 – 2:00PM EST

AUG 17 — **Compressed Air as a Food Ingredient**
Presenter Roderick Smith, Publisher, Compressed Air Best Practices Magazine – *Sponsored by Trace Analytics and BEKO Technologies*
Thursday, August 17, 2023 – 2:00PM EST

AUG 24 — **ASME PTC 13: Efficient Blower, Sustainable Systems**
Presenter Tom Jenkins, P.E., President, JenTech Inc. and John Conover, Business Development Manager, Air Clean USA – *Sponsored by Lontra*
Thursday, August 24, 2023 – 2:00PM EST

SEP 21 — **Information Required to Specify an Air Compressor**
Presenter Loran Circle, Senior Consultant, Circle Training & Consulting – *Sponsored by Vaisala*
Thursday, September 21, 2023 – 2:00PM EST

OCT 05 — **Compressed Air Systems for Cheese Manufacturing**
Presenter Frank Melch, Vice President, Zorn Compressor & Equipment – *Sponsored by Quincy Compressor*
Thursday, October 5, 2023 – 2:00PM EST

NOV 09 — **Chiller Selections for Central Plants: Lowest Overall Costs for Process Cooling**
Presenter Clayton Penhallegon, Jr., P.E., Integrated Services Group – *Sponsored by Carrier*
Thursday, November 9, 2023 – 2:00PM EST

NOV 30 — **Vacuum System Efficiency**
Presenter Andy Smiltneek, President, Growth Solutions Consultants – *Sponsored by Rogers Machinery*
Thursday, November 30, 2023 – 2:00PM EST

DEC 07 — **Compressed Air Dryer Maintenance and Monitoring**
Presenter Loran Circle, Senior Consultant, Circle Training & Consulting – *Sponsored by BEKO Technologies and CALMS*
Thursday, December 7, 2023 – 2:00PM EST

Register for Free Today at airbestpractices.com/webinars

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

SPONSORED BY

VP INSTRUMENTS · FS-CURTIS · FS-ELLIOTT · KAISHAN · evapco for LIFE · VAISALA · LONTRA · KAESER COMPRESSORS Built for a lifetime. · APG neuros · TRACE Analytics · Quincy · ROGERS MACHINERY COMPANY, INC. · BEKO · Carrier · SUTO · CALMS

THE MARKETPLACE

BLOWER & VACUUM BEST PRACTICES
www.blowervacuumbestpractices.com

ADVERTISER INDEX

Company	Page	Web Site
Atlas Copco	Outside Back Cover	www.atlascopco.com/blowers-usa
Kaeser Compressors	Inside Front Cover	https://us.kaeser.com/bvbp
Best Practices 2023 Expo	Inside Back Cover, 6, 8, 10, 13, 22, 25, 28, 30	www.cabpexpo.com
Busch Vacuum Solutions	7	www.buschusa.com
Howden	9	www.howden.com
Best Practices Webinars	11, 16, 27, 33	www.airbestpractices.com/webinars
Inovair	15	www.inovair.com
Aerzen USA	17	www.aerzen.com
Eurus Blower	21	www.eurusblower.com
IPPE	23	www.ippexpo.org

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.

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

Blower & Vacuum Best Practices is published quarterly and mailed together with Compressed Air Best Practices®. 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.

BEST PRACTICES

2023 EXPO OCTOBER 23-25 CHICAGO

COMPRESSED AIR / VACUUM / COOLING

Sustainable, Safe & Reliable

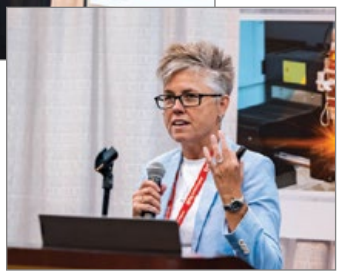
ON-SITE UTILITIES

Powering Automation

In the Market For a Compressed Air System?

Meet the Technical Leaders of the Manufacturers

Discover Innovations at the New Technology EXPO Classroom!



Located on the EXPO Floor, the New Technology EXPO Classroom presents new technologies from around the world directly to EXPO floor visitors.

While the Best Practices Conference program upholds brand neutrality guidelines, this separate classroom on the EXPO Floor is reserved for exhibitors to present their latest technologies for compressed air, pneumatics, vacuum, chiller and cooling tower systems.

New technology presentations will feature oil-free and lubricated, fixed drive and VSD rotary screw, centrifugal, high-pressure and low-pressure rental air compressors, air compressor heat recovery modules, desiccant and refrigerated air dryers, compressed air filters, nitrogen gas generators, aluminum piping systems, ultrasonic leak detectors, compressed air measurement instruments and pneumatics.

MONDAY, OCTOBER 23 1:00PM – 4:00PM

1:00-1:25	**Aluminum Compressed Air Pipe Sizing & Installation** Chad Hills, Director, AIRpipe USA
1:30-1:55	**We are Bobcat... Now in Industrial Air** Patrick Jakeway, General Manager, Doosan Bobcat North America
2:00-2:25	**Air Management System** Jon Jensen, Energy Efficiency Manager, SMC Corporation of America
2:30-2:55	**From Compressed Air to Power Generation: Kaishan's Vision for Building a Better, More Efficient Future** Dave George, President, Kaishan USA
3:00-3:25	**Deoxo Nitrogen/Hydrogen Purifier and MDX Gas Dryer** Mike Kinnucane, Nitrogen Business Development Manager, Mikropor
3:30-3:55	**Kaeser Measurement Technology (KMT), a New Suite of Compressed Air Sensors** Neil Mehltretter, Technical Director, Kaeser Compressors

TUESDAY, OCTOBER 24 1:00PM – 4:00PM

1:00-1:25	**Oil Carryover: Prevention is Better Than the Cure** Cody Leatherman, Product Manager – Consumable Products, Hitachi Global Air Power US/Sullair
1:30-1:55	**The Future of Compressed Air Instrumentation** Martin Zeller, General Manager, CS Instruments USA
2:00-2:25	**Application of Rental Blowers in Industrial Wastewater and Pneumatic Conveying** Meghan Babineaux, Regional Sales Manager, Aerzen Rental
2:30-2:55	**Clean Energy. Clean Air. Clean Food.** Tilo Fruth, President, BEKO Technologies
3:00-3:25	**Applications Vary by Pressure; Selecting the Right Technology** Mert Alpagut, Country Manager, Hertz Kompressoren
3:30-3:55	**Seeing the Unseen: Illuminating Energy Conservation & Electrical Safety with Ultrasonic Imaging** Dean Wolever, Regional Manager, UE Systems

WEDNESDAY, OCTOBER 25 1:00PM – 4:00PM

1:00-1:25	**Upcoming Department of Energy 2025 Regulation of Rotary Air Compressor Isentropic Efficiency** Bruce McFee, President, Sullivan-Palatek
1:30-1:55	**Remote Monitoring on Rental Compressors** Jim Riley, Business Development Rental Manager Sauer Compressors USA
2:00-2:25	**Energy Recovery Solutions to Lower Your Carbon Footprint** Luc Linart, Global Product Manager Energy Recovery & Measurements, Atlas Copco Compressors
2:30-2:55	**Why Compressor Direct Output Flow Rate is Important, and How to Measure** Ray Fang, International Sales Director, Comate Intelligent Sensor
3:00-3:25	**Centrifugal Air Compressor Sizing & Fundamentals** JD Schroeder, Applications Engineering Manager, FS-Elliot
3:30-3:55	**Oil Free Air** Wolfgang Strobelt, Sales Manager Plant Engineering – CEP, Boge America Inc.

REGISTER NOW!

MCCORMICK PLACE, CHICAGO

CABPEXPO.COM

Unlock Your Plant's Potential

We know how important aeration is to wastewater treatment. It plays a critical role in protecting both your processes and your reputation. No matter which of our seven technologies you choose, we design our blowers with you in mind. Boasting long service intervals, 24/7 remote monitoring, leading energy efficiency, and a design focused on ease of service.

866-472-1013 | www.atlascopco.com/blowers-usa