

# **KAESER** report

A Magazine for the Production Industry

Spring 2018

## **The Lap of Luxury**

**KAESER compressed air makes all the comforts of home possible**





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## The courage to embrace change

Change can be an unsettling experience for everyone – especially since it often comes when we least expect it. We may believe that we’re losing control, which is rarely a welcome feeling. The mind begins to spin webs of doubt as soon as we come to the realization that our success depends on our ability to change:

What will happen if I make a mistake?  
What if I’m not up to the challenge of change?  
What lies ahead if I can’t successfully adapt?

Most changes in life bring about stress and uncertainty. Any path that leads us away from familiar territory and into the unknown is fraught with difficulty and often, we’re simply not used to it. Yet what is life, but change? Nothing remains the way it is forever. Those who do not embrace change are left behind and miss-out on the opportunities that the future has to offer.

Therefore, to be able to achieve change successfully, we need to move out of our comfort zone. We have to understand and accept our vulnerability and even the possibility that we may not initially be able to adapt to the new circumstances.



Mr. Frank Mueller, President of Kaeser Compressors, Inc.

Yet, as humans, we are remarkable: we are resilient and continuously strive to master the process of change. When we believe in the outcome and ourselves, we will attain the goal of adapting more quickly and more successfully than those who never dare to make the attempt at all.

Our new reality, Industrie 4.0, demands intense and rapid change from us all; change that many today cannot even imagine. Nevertheless, we must succeed in order to reap the rewards that the future holds, namely: increased flexibility, greater efficiency, new business models and, last, but not least, a significantly enhanced competitive edge. We wish everyone who chooses to take up the challenge of walking this necessary and exciting path much courage, inspired enthusiasm – and all the success in the world.

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An innovative IT service provider, QITS, provides output management, real-time tracking and electronic forwarding with great speed, reliability and above all, data security.



Guardians of digital data management and security

# QITS - Document processing 4.0

After registering and passing through a security check, visitors to QITS are led to the inner sanctum, located in the middle of an expansive, modern, temperature-controlled conference room: an imposing, square monolith identified as the “QITS DataSafe” in large letters against the “QITS grey” surface. This is the company’s beating heart and its true working capital – safeguarded by countless backups and redundancies, to ensure maximum security. This powerful data center stores and processes customer and accounting data from a huge number of customers, ranging from major banks to energy utility companies to wine shops and consignors.

What they have in common is years and decades of reliance on QITS for dependably forwarding correspondence to the re-

spective addressees – especially sensitive correspondence requiring a high level of data security and strict adherence to delivery times.

QITS manages the printing and distribution processes for complex mailings. From bank statements to loan agreements, utility bills to special offers from vineyards in Burgundy and Champagne, the QITS DataSafe processes 40 million deliveries each year to individual addresses with customized content. The specialists at QITS also provide custom-designed mailings and marketing materials. Experienced pre-press and IT specialists develop custom solutions geared to specific target audiences – even those with different rates and offers. These offers are created thanks to customer databases compiled from online shopping

records, CRM and customer loyalty cards. Plus, individual discounts and response elements redeemed at the POS increase repeat business.

The mailings are produced using either single-sheet digital printing or continuous roll, highspeed inkjet systems. The mailings can be bound either mechanically or by hand, and can include individual enclosures and response materials. The company’s decision to use more modern printing techniques, rather than just offset printing templates and forms, not only reduces storage and upfront costs, but also enables exceptional responsiveness whenever up-to-the minute offers need to be sent out.

*The compressed air station adjacent to the exterior wall of the high-rack warehouse*





Color management and...

**Everything networked – even the compressed air**

The output management at QITS is truly a vibrant example of Industrie 4.0 at its best. Having the customer and service provider databases seamlessly networked during frequent updates is essential to maintaining the company's trademark speed and ability to customize such huge volumes of postal material.

In particular, the processes tasked with putting the data onto paper and then, into the appropriate envelope, require compressed air to be supplied with maximum precision and with the necessary quality and volume. Most of the company's existing printing, binding/sorting machines and systems came with "onboard compressed air systems." However they only performed adequately right after their installation – eventually they couldn't keep up with the demand. These onboard systems were the weak link that brought the "system" of decentralized and non-redundant compressors to its knees. The decision to update to a state-of-the-art centralized compressed air system, complete with integration capabilities and demand-based expansion options for both process as well as control air, was clear.

**The output management at QITS is a perfect example of Industrie 4.0 at its best**

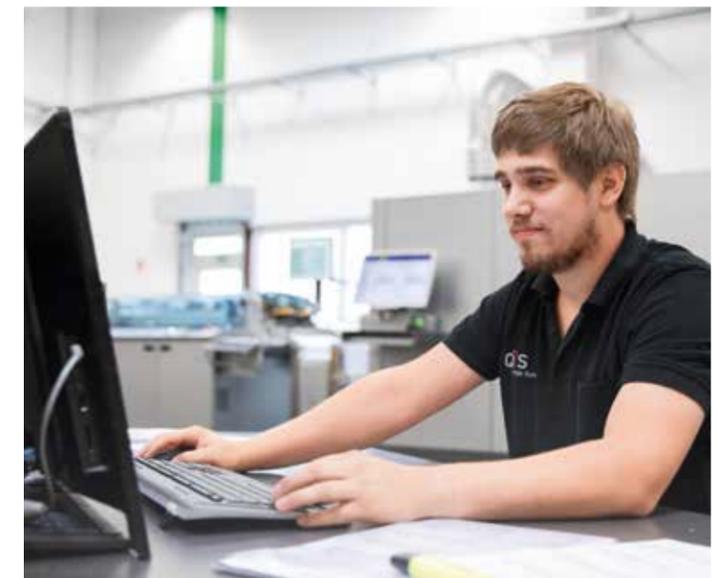
Once QITS had decided in favor of KAESER, the next step was to determine the most suitable installation location for the centralized compressed air system. In the end, the decision was made to install it adjacent to the exterior side of the rear wall of a high-rack warehouse between two production halls. Three KAESER SK 22T rotary screw compressors with integrated refrigerated dryers now supply both halls with compressed air. Each application receives air appropriately treated by three F22KE units from the KAESER filter range and an air receiver. The entire system is efficiently managed by the SIGMA AIR MANAGER (SAM) 4.0 and fully integrated into the production control system.

QITS also opted for a KAESER air-main charging system (AMCS). The AMCS reliably prevents the surge of compressed air rushing through the dryers, filters and distribution network, which can occur when the system is started up. It additionally ensures compressed air of the required quality and pressure is available immediate-

ly following the air system restart. Once the system was up and running, Niclas Almstadt, Head of Sales, reported that the decision to go with KAESER was a very good one, particularly from the perspective of compressed air system efficiency and availability, not to mention the excellent KAESER Service.



...paper handling...



...IT-controlled...



...by an advanced master controller

No reason to leave all the comforts of home behind

# The Lap of Luxury



Back in the 80's and 90's, host Robin Leach treated viewers to a glimpse of the exclusive "Lifestyles of the Rich and Famous!" Each episode featured an endless stream of the opulent mansions, secluded swimming pools, collectible sports cars and custom yachts of celebrities and billionaires. Around that same time, the first luxury motor coach – essentially a Prevost bus frame outfitted with a custom "Yacht" interior – made its debut at the Orlando International Boat Show and a new industry was born.

By the late 1990's, Featherlite Coaches had already established a reputation in the NASCAR circuit for top of the line motorhomes. Featherlite would later join forces with yacht builder Vantaré to become a leading manufacturer of custom luxury motorhomes. Consolidating production in their 50,000 sq. ft. Suffolk, Virginia facility, the company also received an injection of OEM engineering and manufacturing expertise from the Adams family in 2008. "A tough economy in 2008 inspired Featherlite Coaches, one of the most prolific luxury Prevost converters, to join our young and innovative team at Amadas to ensure the stability and continued development of the highly regarded Featherlite Luxury Coach product line," remembers Jimmy Adams, president of Featherlite Coaches.

Today, Featherlite produces 10-12 custom motor coaches per year, including luxury motor homes, luxury seated and executive coaches for the transportation and marketing industries. Though marketing manager Mark Eisenhart is quick to point out, "It's really more about customer preference than just customization. Rather than lay out a menu of choices, we listen to what the individual wants and incorporate those specific, high end features." Each coach reflects the style, taste and personality of its owner.

"We really do develop a close relationship with our customers," he continued. "They expect and deserve the best possible product, and we are obsessed with providing them first class quality."

The process begins with a stainless steel Prevost integral structure and aluminum shell. Prevost is part of the Volvo Group and its integrated chassis and body structure provides the strongest and safest foundation in the industry. Full height slide windows and a Volvo D13 Engine are included. "We can add just about anything from there – tilework, high end appliances, 60" HD TVs, gaming stations, and Wi-Fi – whatever the owner wants." And of course, there will also be easy driving and safety features such as Electronic Stability Program and Aware Adaptive Cruise Control. So whether the coach is motoring or parked at a venue, the comfort and safety is the same.

Getting all of the work done in a constrained timeline, takes a great deal of effort. Featherlite has invested in its employees and their respective skill sets. Integrity first in





Featherlite's luxury interiors are customized to each customer's tastes and comfort.

all facets of the business is the company's guiding principle with both customers and employees. "The Adams and our management team is truly committed to creating a safe, supportive environment where employees are motivated and take pride in their work. That sense of satisfaction and pride shows in the end – and our product quality is a direct result," said Eisenhart.

select a KAESER compressed air system. They currently have an AS 25T with integral dryer and a SmartPipe™ compressed air piping system. All of the air tools for sand-

Featherlite Coaches is proud to count among its distinguished clientele members of multiple Royal Families, top drivers and team owners in NASCAR racing, and

reputation for product excellence grows, Featherlite continues to plan for a manufacturing facility and product line expansion to meet future demand.

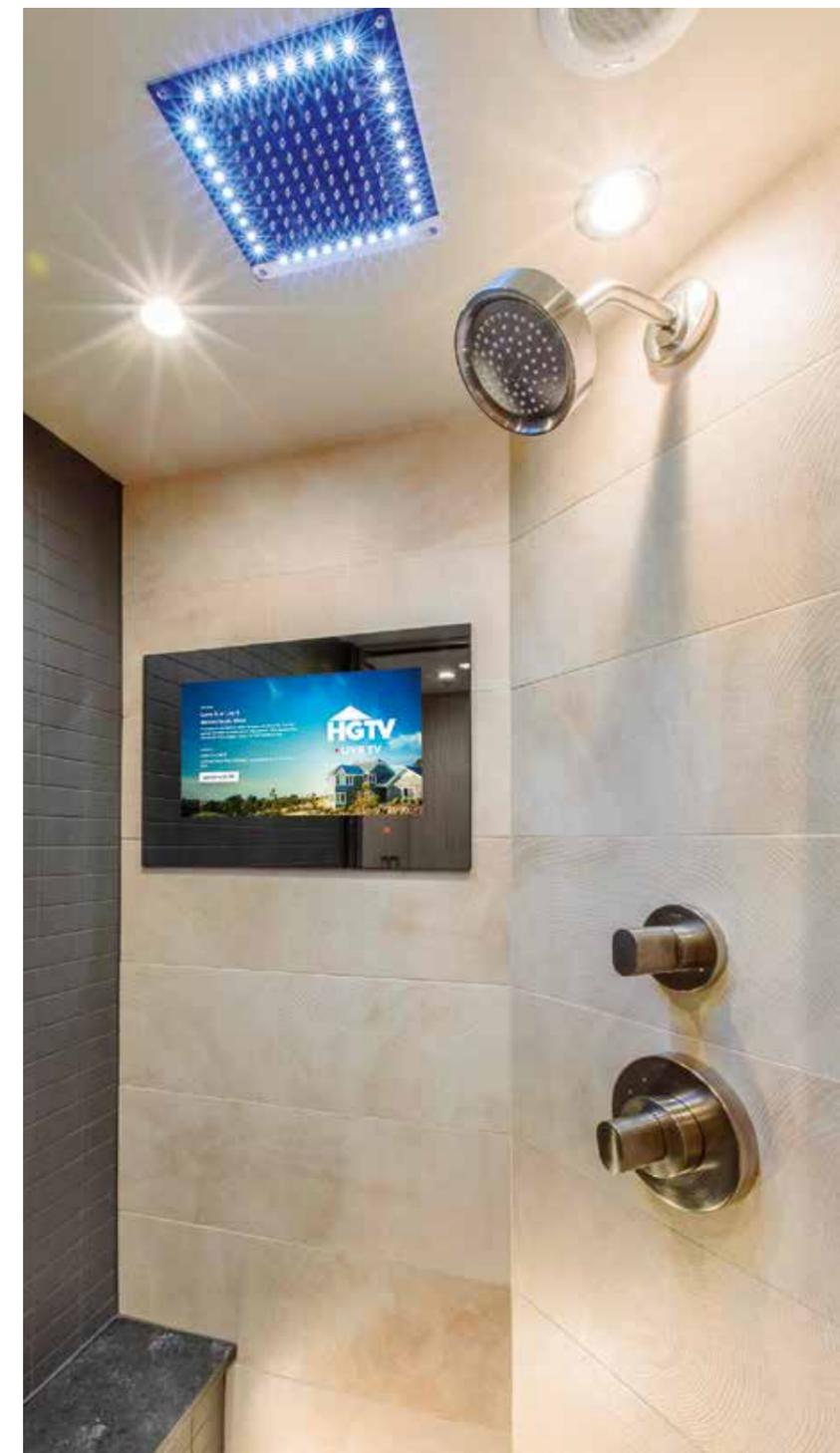
Everything that goes into the building is reflective of the high quality product and services we provide

Adams has also made investments in their facility a priority.

"Everything that goes into the building is reflective of the high quality product and services we provide," acknowledged Adams. So it made perfect sense for Featherlite to

ing, grinding, fabrication as well as the paint booth require a reliable source of clean, dry compressed air.

leaders in the fields of academia, aviation, financial services, hospitality, manufacturing, healthcare, music, real estate, transportation, and more. As their popularity and



120,000 shipments per day:

# Witt is the place for compressed air!

“Witt is the place for linens”. Back in the 1950s and 1960s, that was one of the best-known slogans in the mail order business, and “Witt Weiden” was truly a household name. Today, the company has rejoined the ranks of the leading European mail order fashion and textile companies for its target group.



Conveyor belt ballet – choreographed by compressed air

In 1907, Josef Witt (1884-1954), a carpenter by trade, took over his sister’s colonial goods shop and began a textile mail order business. In 1913, he relocated his expanding company to Weiden, then and now the business center of the northern Upper Palatine region. The move gave rise to the term “Witt Weiden”, which has remained synonymous with high-quality apparel, home textiles and bed linens offering excellent value for money.

Economic and demographic transformations resulted in the takeover of the company in 1987 by Schwab AG, a member of the Otto Group. This led to a resurgence in Witt’s core business – women’s outerwear, underwear and home textiles – that continues day.

In 2005, an automated container center for processing returns went into operation in nearby Ullersricht. Since 2008, the logis-

tics center in Weiden-Brandweiher, on the outskirts of town, has been shipping up to 350,000 articles a day at peak periods. At the beginning of 2015, Josef Witt GmbH expanded the logistics center with the opening of Distribution Centre III. It features an automated high-rack warehouse and an integrated goods-in facility.

The fully IT-integrated facility is the core of Witt’s shipping logistics. Calling it an “all-



round” facility is an understatement as the goods go back and forth, up and down, and sideways. The conveyors – set up with rollers or belts (with barriers in curved locations) – extend for many yards. All movements are monitored and controlled by computer, and are subject to visual monitoring via two large control consoles. The system uses state-of-the-art conveyor technology and is so advanced that containers can be individually stopped on downslopes using multiple rollers, which then use their hub motors as generators, converting the

braking energy into electric power that is fed back into the grid.

Naturally, to protect the control elements and actuators, this air must meet high and consistent quality and purity standards. For this reason, the Witt logistics experts managing the warehouse construction decided it was the perfect time to replace the entire compressed air system.

## A company with tradition and advanced logistics

This perfectly organized chaos, the setting of the many switches, and the repositioning of entire conveyor sections is almost entirely performed using compressed air.

The result is a streamlined, modern compressed air system in which three CSD 85



Helping hands are also needed



Ceiling-suspended conveyor



Collation of orders



*All paths lead to the customer*

*The logistics center in Weiden-Brandweiher*



series rotary screw compressors deliver air at 125 psig. Each is matched with an energy-saving TF 174 SECOTEC refrigerated dryer and an FF221 filter combination that dries and purifies the air at the required standard. The air then flows to a 790 gallon compressed air receiver, ready to be released into the compressed air network, designed as a loop supplying the entire logistics center. Furthermore, a SIGMA AIR MANAGER 4/4 master control system is installed to ensure optimized compressed air system efficiency and reliability and also provides seamless connection to the logistics process controller. The SIGMA AIR MANAGER's planned upgrade to Version 4.0 will bring about even closer integration of all operational processes as envisioned

for Industrie 4.0 production environments. An integrated compressed air supply is also important for Witt's Ullersricht facility. This is the location of the company's almost fully automated return management system, which also operates highly complex, compressed air-based conveyor technology. At this Witt site, the hall used for receiving returned goods stands opposite an imposing former factory now listed as a historical building. The compressed air system has two ASD 40 and BSD 65 KAESER rotary screw compressors (each delivering 125 psig) paired with two TE 121 refrigerated dryers. Before being fed into the network, the compressed air passes through two FF138 filter combinations. Here, too, a SIGMA AIR MANAGER 4/4 ensures excep-

tional compressed air efficiency and availability while maintaining communication between the compressed air system and the production management systems.

In both operational areas, the KAESER installations went above and beyond meeting all expectations of the project manager, Mattias Schnurrer, right from the start. He is also pleased to confirm that the new equipment has delivered substantial energy and maintenance cost savings compared to the previous system.

**The compressed air is fully integrated**



*Compressor room at the Ullersricht site...*



*...and the compressed air station in the high-rack warehouse in Distribution Center III, Weiden-Brandweiher*

# Good fortune and glass...

...soon break! Or so the saying goes! Glasprofi, a glass manufacturer in Luhe, begs to differ – at least when it comes to glass. Its products make a convincing argument – in no small part thanks to KAESER compressed air technology.

Toughened glass (single-pane safety glass) is produced by pre-stressing plate glass. The process generally starts with a flat pane. It is heated to its transformation point (approx. 90-1300 °F) and is then abruptly cooled with sharp blasts of compressed air. The glass is then in a state of internal stress,

planning stage, it is also important to bear in mind that the heat treatment will affect tolerances in drill holes and may result in slight buckling.

Upon breaking, the release of the stored energy in an internally stressed sheet of

lished in Wiesau in 1986. In the beginning, it operated purely as a glass wholesaler. Three years later the company expanded, acquired production halls in Weiden and began investing in the safety glass segment. In 1994, with the first "Tamglass" tempering oven, it began producing single-pane safety glass. Business soon took off. Glasprofi steadily expanded its range of equipment, investing in modern glass processing facilities and innovative software. This made it possible to manufacture customized and mass-produced sheets of glass of the very highest quality – and to deliver them just-in-time. Consequently, the company was soon supplying several renowned shower cubicle manufacturers.

The next step in the company's expansion came in 2000, when Glasprofi acquired the plate glass factory in Luhe, built in the 1950s by Schöniger, a Weiden-based manufacturer. The plant's production facilities were subsequently expanded and upgraded. In today's modern factory, equipped with computer-controlled glass manufacturing machines, the company can produce

with the body and surface under tensile and compressive stress, respectively.

This increases the tensile bending strength (to values over 200 Nm/mm<sup>2</sup>) of the glass without making it harder. At the same time, the pre-stressing raises its thermal shock resistance to around 200 K.

Following pre-stressing, the internal stresses in the glass and the resulting stored internal energy greatly limit the ability to perform work on it. For that reason, all drilling or edging work on glass intended for shower enclosures, etc. must be performed prior to the pre-stressing process. In the

## Tailor-made safety glass for just-in-time delivery to the customer

toughened glass causes it to shatter into small, rectangular fragments. This greatly reduces the risk of serious cuts. The typical blunt-edged fragments from toughened glass stick together and are smaller than 1 cm<sup>2</sup>. Toughened glass is found in all kinds of interior and exterior glass applications in residential and commercial architecture.

### Just-in-time shower cubicles from Luhe

The company Glashandels-gesellschaft Profi mbH – Glasprofi for short – was estab-



A large toughened glass component



There are still jobs...



...where skilled professionals are needed



*Drilling for hardware and other cutouts comes before the tempering process*

customized toughened glass components quickly and cost-effectively. Since 2005, Glasprofi has operated as an independent unit within the Flachglas-Wernberg Group.

**Lots of power and compressed air**

In addition to the large electrical (heat) energy input required for unworked glass sheets to reach the required aggregate state between solid and liquid, toughened glass manufacturing requires a sufficient supply of compressed air for the rapid cooling needed to produce the internal stresses. This means that, together with almost mile-long bundles of thick copper cables in the plant floor, the facility is fitted with large-diameter compressed air piping to carry the cooling medium to where it is needed – along with control and working air for the highly mechanised conveying and processing equipment.



*Cool air for tensile strength*

The compressed air supply at the Luhe plant is designed for the especially demanding applications there, posed by a product portfolio that includes safety glass with a thickness of just 3 mm: this requires massive amounts of compressed air to be delivered “all at once”, which in turn demands total storage capacity of 42 cubic yards, distributed across several compressed air tanks. To keep pace with the manufacturing process, these have to be recharged at a pressure of 145 psi every two and a half minutes. This task is performed by six compressors from various model series (1 x ESD 441, 1 x DSD 202, 2 x BSD 81, 1 x ASD 57 and a tried-and-true veteran: the CS 91), two large refrigerated dryers (TE 121, TF 173) and, to protect the sensitive surface of the glass, the appropriate combinations and configurations of KAESER filters.



*Three of six – the Glasprofi compressed air station*

A SIGMA AIR MANAGER master controller ensures optimum compressed air supply efficiency and availability at all times and also ensures seamless integration into the manufacturing process, where the defining features of Industrie 4.0 are already evident.

professionals – like the dedicated “Glas-Profi” specialists in Luhe.

In the shower cubicle business – a key segment for Profiglas – this a very welcome development, given the ever-increasing focus on just-in-time delivery of customized glass components. The innovative and comprehensive IT integration of the Glasprofi manufacturing operations makes it possible to ship installation-ready glass within two days of receiving the order. That is today’s performance benchmark for true glass pro-



*Going into the tempering oven*



*Shower cubicle elements...*



*...ready for shipping*



**FBS screw blower**



**Dependable blower air for supplying oxygen to two aeration tanks**



**The result: pure Mosel water**

The wastewater treatment plant in Treis-Karden is a sequencing batch reactor – a variant of the activated sludge process. This process uses two basins, which handle batches in a cycle (filling, mixing, filling, aerating, settlement, decanting) that takes around five hours to complete. The water levels are approximately 18 feet, with physical pressure of about 8 psi during operations. There is also considerable seasonal variation in the wastewater throughput. The many day-trippers and long-term visitors in the summer months result in substantially higher volumes than in the winter. Accordingly, the water pressure in the tanks against which the aeration equipment has to operate also fluctuates and is typically between 7-8 psi, depending on the water level.

The water is pure

KAESER screw blowers are supplied as turnkey systems. They are equipped with an integrated, network-enabled SIGMA CONTROL 2 controller along with all of the necessary power electronics, such as the frequency converter. The pre-programmed frequency converter and the fact that the entire system undergoes a trial run in the plant makes installation far easier and more economical.

The KAESER SIGMA CONTROL 2 blower controller monitors all operating parameters within the blower system, keeps them within the optimal ranges, and can be integrated easily and cost-ef-

fectively into existing process management systems. Networking is carried out via conventional or floating contacts, or by Profibus/Ethernet.

Although designed as a turnkey system, the FBS screw blower had to be delivered and installed as individual components at the Treis-Karden site as the retrofitted sludge press, which cannot be deactivated while the plant is operating, restricts access to the “blower cellar”. Here, the KAESER screw blower’s standard modular design came to the rescue. It was a quick and easy process to dismantle the blower, reassemble it in the cellar and flip the switch to start it up. The new blower was soon proving its worth with up to 25 percent energy savings.

The system operators were happy with the existing rotary blowers. However, they were also interested in the prospect of additional significant energy savings for the aeration process, and agreed to install a KAESER FBS screw blower with a flow rate of 2370 cfm on a trial basis to replace the existing equipment. The blower is equipped with highly efficient SIGMA PROFILE rotors developed from the proprietary technology used in KAESER’s rotary screw compressors, which are world-renowned for their efficiency.

Depending on operating conditions, KAESER screw blowers are up to 35 percent more efficient than conventional rotary blowers. They also provide significantly greater energy efficiency compared with commonly available screw and turbo blowers on the market, since they dispense with auxiliary equipment such as oil and vacuum pumps.



**The Treis-Karden wastewater treatment facility (at left; above: Karden district with the St. Castor collegiate church) installed a new KAESER screw blower with excellent results**

**KAESER screw blowers in wastewater treatment**

# Good for the Mosel

The regional municipality of Cochem in Germany operates a highly innovative network of wastewater treatment plants and is always looking for new ways to improve efficiency and reduce costs while also respecting the environment. One example is at the wastewater treatment plant in the district of Treis-Karden, where, with help from a new KAESER screw blower, purified water flows into the Mosel River at a rate of approximately 90 gallons per second.

More oil-free compressed air for less energy

# Oil-free Compressors

KAESER COMPRESSORS has launched a new line of oil-free rotary screw compressors. The new CSG-2, DSG-2, and FSG-2 series are engineered for the lowest life cycle costs possible.

The core of these versatile models' top performance is their premium, two-stage compressor airend. The rotors' special coating can handle temperatures up to 575 °F. This highly abrasion-proof coating will not wear and provides reliable sealing and protection. Compressed air delivery and energy consumption remain consistent, even after years of operation. Stainless steel rotors in the second compression stage help guarantee compressed air quality and significantly increase service life.

The CSG-2, DSG-2, and FSG-2 models cover flows from 192 to 1774 cfm, pressures from 45 to 145 psig, and are available in horsepower from 50 to 450 hp. Available air-cooled or water-cooled, these new two-stage oil-free air compressors have

been designed with energy efficiency, easy maintenance, and low noise levels in mind. Models are up to 9% more efficient than comparable systems. Units come standard with SIGMA CONTROL 2. This intelligent controller offers unsurpassed compressor control and monitoring with enhanced communications capabilities for seamless integration into plant control/monitoring systems and the Industrial Internet of Things (IIoT).

Additional features include IE3 premium efficiency motors with PT 100 sensors to measure and monitor winding temperatures for maximized motor switching frequency and minimized idling. The hydraulic inlet valve eliminates replacing pneumatic diaphragms, resulting in reduced service costs

and downtime. Fiber-free pulsation dampeners keep pressure losses to an absolute minimum, maintain consistent air quality, and prevent compressed air contamination. Built-in heat recovery options give sustainable energy savings and contribute to lowering a plant's carbon footprint.



DBS series screw blowers

# Quiet and efficient

For applications requiring maximum energy efficiency in continuous operation – such as aerating wastewater treatment tanks – a KAESER screw blower is a really good choice. The new DBS series completes the lower output range of our screw blower portfolio.

Like their big brothers, the EBS and FBS, the new KAESER DBS screw blowers deliver unparalleled efficiency. They are up to 35 percent more efficient than conventional rotary blowers and also provide energy savings in the double digit range compared with many commonly available screw and turbo blowers.

These benefits are made possible by the proven SIGMA PROFILE rotor technology used in the rotary screw compressor sector. Another key factor is the durable, non-slip direct drive with almost 100% transmission efficiency.

KAESER DBS series screw blowers are available in four versions with drive motor rated capacity of 30-50 hp. They come in

two pressure ranges (9.5-15 psig) and with flow rates of 635 to 810 scfm.

Because of their low energy consumption, KAESER screw blowers are the perfect choice for water treatment plants where the continuous operation environment allows their outstanding energy efficiency to be fully recognized. They require little maintenance, allow side-by-side installation, and come fully equipped with either an integrated frequency convertor or wye-delta start. The screw blowers are delivered as turnkey systems (including power electronics and the SIGMA CONTROL 2 controller) that are ready for commissioning straight "out of the box". The SIGMA CONTROL 2, based on an industrial PC, delivers more than just energy-efficient system control. It also pro-

vides a wide range of interfaces to integrate the blowers into IT networks. Moreover, since the SIGMA AIR MANAGER 4.0 (SAM 4.0) master controller – which has proven its worth in the compressor sector – is also available for blowers, entire blower stations can be integrated easily into Industrie 4.0 production environments.



**Forge a new path to sustainability**



**Improved Energy Management • Reduced Carbon Footprint • Heat Recovery**

## **The Air Systems Specialist**

*Providing custom design, consulting, and energy management services*

No one understands system optimization like KAESER. From our complete line of compressed air products with unbeatable efficiency, to our industry-leading Air Demand Analysis (ADA), to our fully customized system design services, we've got what it takes to set you on a path for sustainable energy savings.

» **Contact us today to get started:**

[www.us.kaeser.com/sustainability](http://www.us.kaeser.com/sustainability)



Our SIGMA PROFILE airends, true direct drive and thermal management add up to a 30% efficiency advantage. On top of that, many units offer built-in heat recovery options.

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