

KAESER report

A Magazine for the Production Industry

1/22

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Save energy with KAESER.
Conserve resources, protect the
environment.



Preserving cultural heritage with
modern craft compressors

Large laboratory in the
fight against COVID-19

Automotive supplier
reduces energy costs

The world's fastest
production car



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Intelligent solutions
optimise overall efficiency

The demand for energy and the specific energy costs will continue to rise. To reduce this increasing demand and keep the associated costs under control, it is necessary for energy-consuming machines (e.g., compressors, refrigeration dryers, etc.) to continuously evolve in tune with innovative technology to become evermore efficient. However, more is required. Machines rarely operate in isolation and are more commonly used in complex environments with numerous interconnecting factors that influence compressed air station efficiency as a whole: examples include compressed air drying systems with cold accumulators and low pressure losses (ΔP), appropriately designed pressure vessels that not only smooth-out generation and demand, but also minimise detrimental switching losses and increase compressed air supply reliability, advanced internal compressor controllers that – together with master compressed air management systems – utilise the most efficient machines and switch off those that are not required, appropriate and thermostatically controlled air- and water-cooling, condensate management with minimal pressure loss, the detection and elimination of compressed air leaks and, last but not least, optimally designed heat recovery systems that have a significant influence on the efficiency of the entire system.

To combine these interconnecting influencing factors into an integrated and efficient holistic solution, it is first necessary to understand the exact compressed air demand requirements: what does the actual compressed air demand profile look like as a function over time (ADA)? What is the minimum required operating pressure, which must be kept as low as possible, yet as high as necessary? Reducing operating pressure by just one bar increases overall efficiency of the total installed station power by six percent. These influencing factors can only work in synchrony to achieve optimal overall efficiency if the exact application require-



Jason Morgan
Managing Director
HPC Compressed Air Systems

ments are identified through precise measurement. Since compressed air requirements can change over time due to restructuring, additional shifts and changes in production processes, it is necessary to perform these analyses on an ongoing basis while the compressed air station is in operation. This achieves the necessary compressed air availability and helps to continuously improve overall system efficiency.

Energy efficiency is therefore not a question of a single machine or technology, but the synergistic result of multiple interconnecting intelligent solutions to achieve ever-better total efficiency. Powerful software-based optimisation tools, such as KESS, and subsequent data analysis, help determine required system characteristics and optimum solution selection.

Continuous energy efficiency improvement is an essential and active process in the field of compressed air engineering in order to reduce CO₂ emissions, lower costs, meet the challenge of climate protection and to preserve the environment. Although purposeful analysis of an entire system is certainly more complex than consideration of a single specific aspect, it is not only made possible, but is also highly effective, thanks to advanced measurement systems and intelligent simulation-based algorithms. It is therefore in the interest of each and every company to take this demanding and impactful path for us to achieve our environmental and climate goals together.

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Preserving cultural heritage with modern craft compressors

Industrious artisans in their element...

The neo-Gothic summer palace in Coburg, Schloss Ketschendorf, was built in 1868 and looks back on a long and eventful past. The owner back then was the celebrated French opera singer Victorine Noël, later Baroness von Ketschendorf, whose most ardent admirer was none other than Duke Ernst II of Saxe-Coburg and Gotha. The residence changed hands several times in the intervening years and was even used as a youth hostel from 1956 to 2010. It has been owned by KAESER KOMPRESSOREN since 2012 and is once again resplendent in its former glory after years of dedicated renovation and repair work with the help of modern technology.

The neo-Gothic summer palace in Coburg was built in 1868 and has been in KAESER's ownership since 2012.

The residence, constructed in the neo-Gothic style and situated in a beautiful park setting in the Coburg district of Ketschendorf, has changed hands nine times in the 153 years since it was built in 1868. From 1956 to 2010 it operated as a youth hostel, owned at the time by the city of Coburg, but this use had to be discontinued due to the need for extensive renovation work. When the residence subsequently came up for sale in 2012, KAESER KOMPRESSOREN took immediate interest and the idea to create an extraordinary training centre quickly gathered momentum. Lectures, seminars, workshops and training courses for employees and customers will soon take place in the historic rooms following completion of the extensive renovation work. From the very outset, the core aim of the restoration project was to preserve the historical fabric of the building. This involved various craft businesses, predominantly from the surrounding region, who could demonstrate their impressive workmanship and expertise, whilst compressors from KAESER provided dependable onsite compressed air support.

The right help makes all the difference

The precious, historical wooden and tiled floors throughout the residence were in very poor condition, but were brought back to life during the course of extensive renovation work. This was no easy task however, since tiles that were too badly damaged needed to be replaced with new ones, but these were not allowed to differ in shape or colour from the existing ones. The wooden floor was therefore renovated and partially renewed by a company that specialises in such delicate and detailed work. All craft compressors from the PREMIUM CAR series are the ideal choice for a wide



During the renovation, great care was taken to ensure that the historical fabric of the building was preserved.



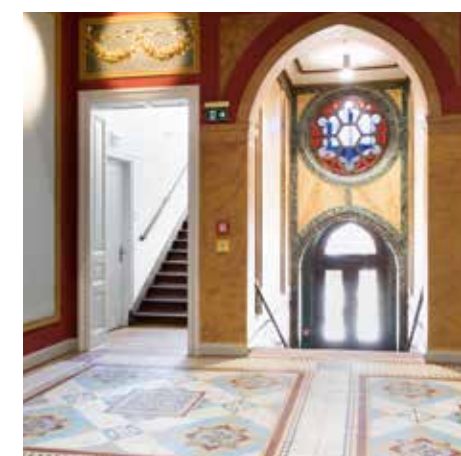
The stucco ceilings, as well as the wall and ceiling murals, had to be exposed and restored throughout the residence.

range of indoor work. The PREMIUM CAR 450/30 W (see page 6) can be perfectly adapted to meet the needs of various craft applications through the selection of appropriate accessories. For example, it can be used in combination with a compressed air lance to remove old floor coverings, or with a compressed air chisel to loosen defective tiles. In conjunction with a small CO₂ blasting unit, it is the perfect partner for the removal of encrustation from sandstone – a particularly gentle technique when it comes to preserving the existing fabric of a building. Its somewhat smaller brother, the PREMIUM COMPACT S 450/30 W, also provides significant benefits with its compact design, which makes it especially interesting for the construction industry. The floors,

the stucco ceilings, as well as the wall and ceiling murals, were all in very poor condition throughout the building. Some stucco elements were even missing and had to be reconstructed by hand. The wall and ceiling murals, some of which had been painted over several times over the decades, were no longer visible, but were uncovered and restored to their former glory. The MOBILAIR 13 E portable compressor with electric drive has proven to be an invaluable assistant for major indoor renovation work, especially when a higher working pressure is required. In combination with a small CO₂ blasting unit, old varnish and paints can be reliably removed from carrier materials such as wood and metal without damaging the sensitive surfaces beneath. The slightly



The wooden floor was renovated and partially renewed by a specialist craft company.



Irreparably damaged tiles were removed and replaced with new ones.

The craft specialists can remove defective floor coverings using the PREMIUM CAR 450/30 W in combination with a compressed air lance.



The i.Comp 3 reciprocating compressor is a popular choice when carrying out fine work on the roof structure.



Extensive renovation work was carried out on the sandstone and clinker brick façade with the MOBILAIR 27 portable compressor (also see image below).



larger MOBILAIR 17 portable compressor with combustion engine was used outdoors for fine chiselling work, since no electricity supply was available. The historic windows and doors were reconstructed, renovated, colour-matched and subsequently reinstalled by a craft business specialising in cultural heritage protection, so that they could shine again as they did when originally new. With their compact footprint of only 0.62 m² and combining all of the components necessary for quality compressed air supply (namely a SIGMA Profile rotary screw compressor, a refrigeration dryer and a compressed air receiver), turnkey all-in-one SXC compressed air stations were the ideal choice for this work, which was carried out in a special onsite workshop. The compressed air quality is matched to the pneumatic control devices of modern machine tools, such as those used in wood window production.

Created for craftwork

The greatest challenge was the repair of the roof structure, which had to be completely renewed and today spans a spacious interior for larger workshops and events. KAESER's PREMIUM CAR series craft compressors are perfect for all types of carpentry work. The craft specialists particularly like to reach for the i.Comp 3 (pressure variable up to 11 bar, flow rate up to 160 l/min) reciprocating compressor when carrying out fine work on the roof structure, since it does not

use a compressed air receiver. This makes the compact compressor exceptionally lightweight and means that it can be taken anywhere. In combination with a small spray gun (airless gun), the i.Comp 3 is a great construction site helper.

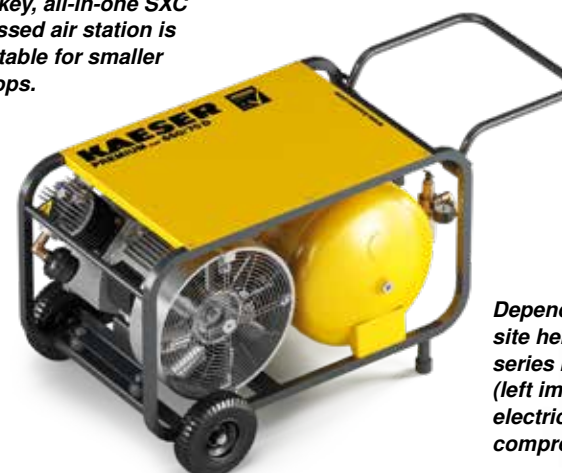
Last but not least, the MOBILAIR 27 portable compressor with aftercooler and centrifugal separator, in combination with a breaker, proved its mettle in performing extensive renovation work in the outside area, on the sandstone and on the clinker brick façade. The renovation and repair work on the Schloss Ketschendorf summer palace in Coburg spanned five years (2015 - 2020) and the results are clear to see. There is no question that the original goal of transforming the once dilapidated residence into a sparkling jewel has been achieved, and today the historical backdrop offers a more than befitting stage for a wide variety of events for KAESER customers and employees alike.



Various craft businesses from the region could demonstrate their impressive workmanship and expertise.



With its compact footprint, the turnkey, all-in-one SXC compressed air station is also suitable for smaller workshops.



Dependable construction site helpers: PREMIUM CAR series reciprocating compressors (left image) and the M 13E electric drive portable compressor (right image).



Large laboratory in the fight against COVID-19

The collaborative superlab

Behind the name of Bioscientia Healthcare stands a network of medical laboratories from various regions in Germany, whose administration and knowledge-sharing are centrally organised and coordinated. Bioscientia offers single-source laboratory diagnostics services, including genetics and infection prevention. Due to its excellence in the field of coronavirus diagnostics, Bioscientia has repeatedly been in the press and television spotlight over the past year.

department at the Ingelheim Bioscientia laboratory. During his visit to Ingelheim, the former Federal Minister of Health Jens Spahn also paid tribute to the laboratory's exceptional services.

approximately 8 bar. Due to the sensitivity of the applications, the compressed air must meet Class 1.4.1 requirements as per ISO 8573-1: 2010. The previous compressed air station did not meet the oil-free

One of the weaknesses of the old system was that it was too large, which resulted in unnecessary energy costs.

(Christopher Kaul, Installation and Heating Engineer at Bioscientia, Ingelheim)

Bioscientia was founded in 1970 as a spin-off from the Boehringer Ingelheim pharmaceutical company and was taken over by the Australian laboratory service provider Sonic Healthcare in August 2007. In the large Ingelheim laboratory, a total of around 25,000 samples are analysed per day and processing is exceptionally fast – 80 percent of the samples are completed on the same day. At the height of the pandemic, the proportion of coronavirus tests was up to 15,000 per day. In order to discover the emergence of new virus mutations and to document their spread, 5 to 10 percent of the SARS-CoV-2-positive qPCR results in Germany have been examined using whole genome sequencing since the beginning of 2021. A good third of the sequences delivered to the Robert Koch Institute – Germany's centre for disease control and prevention – by mid-April came from the genetics

Compressed air in the service of science

Many of the highly sensitive laboratory applications require compressed air. For example, the sample tubes are opened with the help of compressed air, which is obtained from the various distribution columns located throughout the large laboratory. The so-called mass spectrometer, which quantifies substances at the molecular level in blood and urine samples, also requires compressed air. In the microbiology department, where a high level of automation is used to provide infection protection, the omnipresent hissing sound reveals that pneumatic applications are responsible for moving, turning and rotating the Petri dishes here.

The compressed air demand for all of these applications is approximately 1 m³/min and the required pressure level is

requirement and there were also issues with excessively high pressure dew point performance. This led to water accumulation in the compressed air lines that then had to be removed at the point of consumption, which was both labour-intensive and costly. Therefore, a new compressed air station was needed that would not only meet the oil-free requirement, but which would also be able to maintain the pressure dew point within precisely defined limits. Moreover, the limited space available in the compressor room had to be taken into account: "We obtained quotes from several providers, but only KAESER was able to offer us a suitable solution," explains Christopher Kaul, Installation and Heating Engineer at Bioscientia, Ingelheim, and responsible for the compressed air station.

The ability to meet the necessary oil-free specification with minimal space



Three KAESER i.Comp 9 Tower packages ensure that the large laboratory never goes without compressed air.

requirement is a true speciality of KAESER's i.Comp-Tower series reciprocating compressors. Featuring a variable speed motor, these oil-free reciprocating compressors are exceptionally compact and deliver the precise amount of compressed air that is actually needed at all times. The compressor block, air receiver, refrigeration dryer and the integrated SIGMA CONTROL 2 controller are all housed within a single turnkey unit. In addition, activated carbon adsorbers, various prefilters, pollen filters and a host of other available filters ensure compliance with the strictest of quality requirements.

Technical speciality

Consistently low pressure dew point also plays a key role in assuring compressed air quality. In order to achieve this, a special control system was developed for the

Bioscientia compressor room, whereby the temperature of the ambient air in the compressor room is permanently monitored and regulated. This is performed by cooling equipment in the ceiling, controlled via the Intelliweb operating system, and by the exhaust and intake air fans that are also installed there, which can be actuated as required using data provided by the SIGMA AIR MANAGER. The resulting interplay of these components ensures that the temperature in the compressor room is kept at a constant 23 °C.

A dependable supply of quality compressed air is absolutely essential for the large laboratory: "If the compressed air station were to fail, 80 to 90 percent of the sample processing would come to a complete standstill," says Dr. Hendrik Borucki, Head of Marketing and Communication. In order to prevent any such risk and to

guarantee the necessary redundancy, three i.Comp-9-Tower-T packages were procured, two of which always operate at the same time and whose interaction is monitored and controlled by a SIGMA AIR MANAGER 4.0 master controller, whilst the 3rd i.Comp-9-Tower-T provides redundancy. Furthermore, the compressors operate alternately so that they all have the same operating hours, meaning that maintenance work can be planned for the same time and be performed in one go. To be on the safe side with regard to the power supply, the compressors are connected to two separate electrical circuits (normal power and emergency power). Therefore, everything has been done from a technical perspective to ensure smooth and uninterrupted sample processing not only for today, but also for the future.



The compressed air performs a wide range of tasks in the large laboratory. Here with automatic handling of the Petri dishes...



...and here with the sample tubes.



At Bioscientia Ingelheim, a total of around 25,000 samples are processed every day, 80% of which are completed the same day.

Automotive supplier, Walter Söhner, reduces energy costs

Complete control for maximum efficiency

Walter Söhner GmbH & Co. KG, Germany, is a developer and manufacturer of highly complex plastic and metal assemblies for the automotive, electrical, household appliance and medical technology sectors. The company employs 700 people at its headquarters in Schwaigern, and the Soehnergroup has a total of 1,200 employees in Germany and abroad. This innovative technology leader is countering ubiquitous cost pressures through significant savings provided by a SIGMA AIR MANAGER 4.0 master compressor controller from KAESER.



The SIGMA AIR MANAGER 4.0 is one of the cornerstones of the energy saving concept.

Walter Söhner GmbH & Co. KG, headquartered in Schwaigern (Baden-Württemberg, Germany), has grown to become an internationally renowned production service provider and development partner. With its own production facilities, the company specialises in the manufacture of customer-

specific, high-quality, high-precision stamped, multi-component and composite parts (plastic-metal connections), as well as complex hybrid parts and assemblies that are manufactured with the help of highly automated production processes. Since June 2021, the Soehnergroup has been

though it may look like it, it's not the hands of ghosts moving the cylinders, clamps, grippers and turners, but rather – as you may have already guessed – compressed air. A compressed air flow rate of 40 to 45 m³/min is required to serve the various

The master controller and compressed air system networking have provided us with a considerable cost advantage.

(Marc Gahse, Technical Energy Management Officer)

part of the iwis group, which specialises in control drive systems based on precision chains and electrical, high-precision connection and contact technology. By integrating the Soehnergroup, iwis aims to acquire further manufacturing skills and engineering expertise in the area of complex hybrid components and assemblies and hopes to expand this key business area nationally and internationally into the field of mechatronics systems.

Production centres need compressed air

Covering 15,000 m², the production area at the Schwaigern location includes 146 injection moulding machines and 148 automation systems. During the company tour, a busy, hissing, whistling and stamping sound can be heard coming from every production centre. And even

production centres. To this end, Söhner's Schwaigern site operates ten KAESER rotary screw compressors, which, up until about a year ago, were divided into different stations and compressed air networks. "The situation is the result of many years of ongoing growth. Compressors were continuously bought in and placed near the respective production centres", explains Marc Gahse, Technical Energy Management Officer. He and his colleague Peter Schröter-Theiss (Head of Building Services) have been in close contact with the KAESER support partner for the Heilbronn area, as well as with KAESER field service, for many years. The last major improvement concept in 2019 aimed to merge the various compressed air stations without having to move them or perform extensive restructuring measures. In the first stage, the four stations were merged into a unified 400 m pipe network. The second stage involved procurement of a SIGMA AIR MANAGER 4.0 master

controller to enable all ten compressors, irrespective of their spatial separation, to operate in synergy with each other. This was made possible by connecting all of the systems to the powerful Ethernet-based SIGMA NETWORK. As a result, the controller has eliminated the previously frequent and unwanted idling periods, as well as the costly switching and control intervals. Another advantage is that the maintenance interval of every compressed air station element can be precisely predicted and planned, thereby avoiding unnecessary interruptions to production. Process reliability, pressure stability and system redundancy, all upon which the automotive supplier completely relies, are therefore guaranteed at all times.

A third improvement was achieved with the purchase of a KAESER DSD 175 SFC rotary screw compressor with variable speed control, which has since been covering peak consumption capacity, avoiding high speed operation and subsequently helping to save even more energy. The 3-step plan was implemented a little over a year ago and the numbers already show that the predictive calculations did not over promise: overall, energy savings of around 252,000 kWh were achieved in 2020, which is reflected in the cost savings of approximately 40,000 € per year. Moreover, this impressive result can even be bettered in the future: since the compressors and pipework are already designed for the use of heat recovery later on, this means

that up to 96 % of the drive energy supplied to the rotary screw compressors can be recovered and used for heating purposes, for example. Implementation of the heat recovery solution is currently being worked on, but the results will show that the excellent values of today will be further improved upon in the future.



The production area at the Schwaigern location covers 15,000 m².



Paving the way for even greater energy savings, the station is already designed for the use of heat recovery later on.

Reliable, powerful and user-friendly

M 255: The compact powerhouse

Versatile, easy to use, compact and equipped with an environmentally friendly drive system – these are just some of the highlights of KAESER's new MOBILAIR series titan. The key advantage of this 25 m³ class road-going portable compressor is that it weighs less than 3.5 tonnes, which means it can be towed with a pick-up truck rather than a lorry for maximum convenience.

Compact and easy to transport

When developing this compact powerhouse, KAESER's engineers once again focussed on providing exceptional versatility, which is why special emphasis was placed on small system size, relatively low weight,

simple operation, rapid maintenance and, needless to say, maximum operator safety. To enable the compressor to be towed as a car trailer, it weighs less than 3.5 tonnes even when fully equipped (e.g. with compressed air aftercooler and microfilter com-

bination for technically oil-free compressed air) and with a full 350 l fuel tank. Furthermore, a compressed air brake with ABS is not necessary and the overrun-braked tandem chassis ensures safety in road traffic when towing and when parking on the con-

struction site. As an alternative to the towable chassis model, a stationary skid-mounted version is also available. Thanks to the massive design of the skid, the system can be slid or pulled into position at the installation site and the skid overhang protects the body from damage.

Environmentally friendly drive motor

KAESER has long been a leader when it comes to environmental protection and launched the first European portable compressor with exhaust gas aftertreat-

ment onto the market in 2012. Since then, the following has applied to all KAESER MOBILAIR systems: More compressed air with fewer emissions. For the M 255, this is achieved by the advanced Cummins drive engine that delivers a powerful 210 kW and features a diesel particulate filter and SCR catalytic converter to enable effortless compliance with the requirements of European emissions stage V and American Tier 4 regulations.

The environmentally friendly compressed air king is equipped with the innovative SIGMA CONTROL MOBIL 2 controller, which makes operation child's play thanks to its intuitive touch screen menu navigation and provides the user with comprehensive operating data at all times. The SIGMA CONTROL MOBIL 2 optimises compressed air availability, fuel efficiency

and emission minimisation via state-of-the-art electronic engine management. As one would expect, the familiar 'pV Control' is also on board. Because the maximum pressure (p) can be variably adjusted in 0.1 bar steps, this directly influences the maximum possible flow rate (V) and therefore offers even greater flexibility in terms of pressure and compressed air delivery volume. The infinitely variable and immediately effective pressure adjustment is intuitive and easy to perform, even when wearing thick work gloves, using the touch screen buttons. This setting option is particularly welcome when using long hose lines. Furthermore, the new SIGMA CONTROL MOBIL 2 controller enables the M 255 to become a true team player and seamlessly work together with multiple stationary units in a compressed air station, for example.



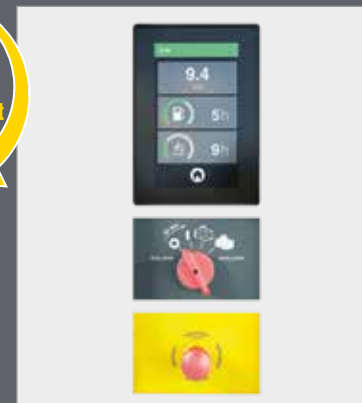
Standard equipment for optimum performance and operation

A look under the enclosure not only reveals familiar features, such as the energy-saving fan or the air filter with safety elements, but also new conveniences, like the oil separation system that uses spin-on cartridges, which significantly reduce

the time required for maintenance. The standard-equipped lashing eyes for securing during transportation and climbing aids to enable safe and easy access to the crane eye are particularly practical. The M 255 can also be equipped with a modem, free of charge, to enable remote monitoring of operating data and compressor location.



Thanks to the new operating concept, the M 255 can be easily switched on and off using the red rotary switch.



KAESER is an exclusive supplier for the Koenigsegg headquarters in Ängelholm, Sweden

The world's fastest production car



All images: KOENIGSEGG AUTOMOTIVE AB, Ängelholm

Christian von Koenigsegg, the company founder of Koenigsegg Automotive AB, showed a keen interest in everything motorsport from an early age. With exceptional drive and vision, he understood from the outset that design, technical expertise, close cooperation with suppliers and uncompromising quality are among the most important factors when building a premium hypercar brand.



Since its inception in 1994, the company has produced 18 different models, with the current line-up comprising 10 variants across the resonantly-named Gemera, Jesko and Regera models. Koenigsegg belongs to the elite tier of the fastest production car manufacturers in the world and, even though they may look like it, the cars are not designed exclusively for racing, but are also at home on the open road.

Many components of Koenigsegg engines are made of carbon fibre.

In the compressor room in front of an SK 25 rotary screw compressor (from the left): Christian Olsson (Koenigsegg) together with Roland Olsson (KAESER KOMPRESSORER, Sweden).

Koenigsegg has repeatedly broken various speed records, most recently in 2019, with the Regera setting a new world-beating time for full acceleration from zero to four hundred km/h and braking back down to zero, but it is no easy task to stay the fastest and to retain that crown time and again.

Unique production facilities

When visiting the Koenigsegg production facilities, it feels as if one is entering a super-high-tech laboratory. The environment seems almost sterile, state-of-the-art manufacturing equipment is all around, spaces are bright and spotless, order and cleanliness are evident wherever you look. Production is divided into various stations. A large proportion of every Koenigsegg car is made from exceptionally lightweight, yet incredibly strong, carbon fibre composite material, including parts of the engine, the body, the rims and the steering wheel. This creates ultra performance mega and hyper cars that are competitively light. The development and production of such high-performance cars present significant challenges. Quality throughout the entire supply chain is therefore essential, with compressed air being no exception, since it plays such a vital role in Koenigsegg's production processes: Applications range from compressed air supply to the open production areas and the paint shop, through to the autoclaves, which resemble large ovens, where the various carbon fibre components are heated to up to 120 °C for approximately 6 hours under a pressure of 6 bar. As a compressed air audit in 2018 revealed, there was considerable potential for improvement regarding the old compressed air station at the time: "One of the original compressors from a different brand had failed, but, in truth, it was time to bring the entire compressed air station up to date, so we asked for quotes from various providers", explains Christian Olsson, Facility Manager at Koenigsegg Ängelholm. "In the end, it came down to a choice between a Swedish compressor manu-

The interiors of Koenigseggs also impress with their outstanding design.



facturer and KAESER. It was KAESER's complete solution that impressed with the combination of excellent product quality and highly attractive service contract terms. That's what won the race for KAESER."

The first KAESER SK 25 rotary screw compressor (operating pressure 6 bar, flow rate 2.16 m³/min) was procured in 2018 and five more followed, the last of which at the beginning of this year. Plans are already afoot



The rims are made of carbon fibre and become both very strong and lightweight.

for investment in further KAESER rotary screw compressors.

Expansion and strong increase in production

The demand for Koenigsegg cars is steadily growing and looks only to become stronger in the future, not least thanks to the four-seater electric hybrid model currently being developed, which fits perfectly with today's trend towards sustainability in the automotive industry. In parallel with business development, the need for production space will also increase. Planning over the next two years will see expansion of the total production area to approximately 30,000 m². Moreover, construction of a new production hall, paint shop and warehouse (1,000 m²) is already underway. KAESER rotary screw compressors will then take care of the compressed air supply in the new buildings as well. "Since we are very satisfied with KAESER's expertise

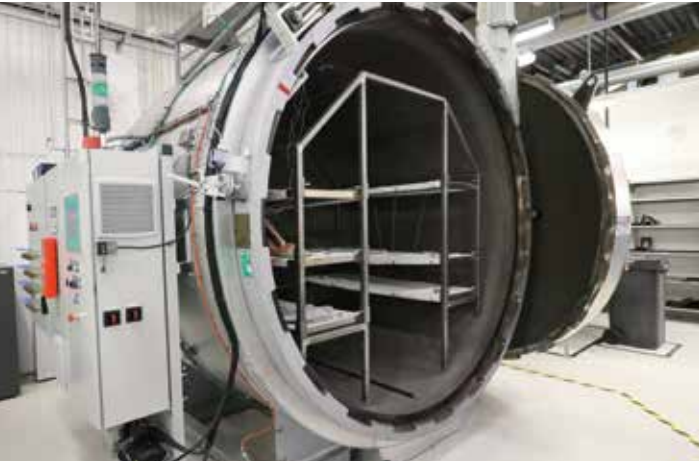


It was KAESER's complete solution that impressed with the combination of excellent product quality and highly attractive service contract terms.

(Christian Olsson, Facility Manager, Koenigsegg, Ängelholm)

and service, we will only work in collaboration with KAESER in the future" announced Christian Olsson.

The carbon fibre components are heated in the autoclave and subjected to 6 bar pressure provided by compressors from KAESER.



Paper innovation takes flight

Düren (North Rhine-Westphalia, Germany) has a long history of papermaking that dates back to the 16th century, with the associated know-how being passed down from generation to generation. Rooted in this tradition, the paper manufacturer Reflex has been investing in the future of its products for many years. The demand for paper products with plastic-like properties, such as wet strength, weather resistance and barrier properties, is constantly growing and so too, accordingly, is the paper expert's product portfolio.



Two KAESER CSD 105 and BSD 75 rotary screw compressors respectively deliver the compressed air for the entire plant.



The Reflex company was founded in Düren by Felix Heinrich Schoeller in 1857. High-quality raw materials, traditional papermaking expertise and innovative technologies: these are the ingredients from which premium quality products such as Trevi label paper and the renowned Zeta brand have been made at the Düren site for over 160 years. But how can a company, whose product portfolio is so deeply rooted in an era that predates the digitalisation of every economic sector, successfully look to the future? Well, Reflex proved that this is possible, even in the crisis year of 2020. The fact that sales figures did not

special processing. It is therefore ideal as a packaging material for food and is used, for example, in the production of compostable coffee capsules.

Modern products – modern machines

In parallel to development of new products, Reflex consistently invests in modernisa-

tion of its plant and machinery. "It goes without saying that this also applies to our compressors", explains Christian Parreidt, Deputy Technical Manager at Reflex. The previous compressed air station dated back to the 1980s and corresponded to the technical standard of the time. Unsurprisingly, the system incurred high maintenance and energy costs and required significant personnel resources to get individual components running again following malfunction. Modernisation was therefore urgently needed. Thanks to a loaner unit, Reflex had a long-established relationship with KAESER field staff and already had a good idea of the quality and reliability of KAESER products. KAESER's proposed modernisation solution scored points across the board with its sum of measures for maximum cost control and component efficiency: "Quite simply, it was the overall package that won us over," recalls Christian Parreidt. One of the key convincing elements was simple integration of the new equipment into the existing system, since the main challenge was posed by the historical building structure, which had to be taken into account. KAESER even took care of the planning for the exhaust air system and also provided support

with official matters. KAESER accommodated the customer's request for the compressed air station to be readily adaptable to future business developments through the modular structure of the new system. Should higher compressed air demand be needed later on, smaller components can be easily swapped out for replacement with larger ones. When it came to providing the desired 100 percent cost control, KAESER also delivered with its SIGMA AIR UTILITY operator model. Instead of having to invest in a complete compressed air station, the customer simply pays for the compressed

air used, so fixed costs are converted into variable costs. There are not even any costs for maintenance and repairs. Moreover, price increases are ruled out, because all prices apply for the entire term of the contract. Now that is unbeatable cost control! Taking necessary redundancy into account, two KAESER CSD 105 and BSD 75 rotary screw compressors respectively, featuring Super Premium Efficiency IE4 motors and flow-optimised SIGMA profile airends, work together within a centralised compressed air station to deliver the required compressed air for the entire plant, whilst three energy-saving SECOTEC TF 174 refrigeration dryers provide quality compressed

air treatment. In line with Industrie 4.0, everything is monitored and controlled by a SIGMA AIR MANAGER 4.0 master controller, which ensures efficient compressor operation and maximum cost control.

Expectations met

The new compressed air system entered operation in 2019. "Commissioning was quick, clean and professional," praised Christian Parreidt. The current consumption figures clearly show that all expectations with regards to cost efficiency have been met: with consistent production output, energy consumption fell from approximately 1 million kWh in 2019 by 20% to approxi-

mately 800,000 kWh. Christian Parreidt is pleased that costly production downtimes are a thing of the past and that the compressed air required for the plant's various processes is available in the expected quality and with maximum reliability.

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(Christian Parreidt, Deputy Technical Manager, Reflex GmbH & Co. KG)

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Paper machine 4: Where many of the high-quality Reflex products are made.



Watermarked paper is produced with the help of so-called dandy rolls.

Long-term customer satisfaction at the Marburg wastewater association

Dependable air for clean water

Marburg still owes its current economic importance to the Phillips University, the University Hospital of Giessen and Marburg, which belong to the Rhön Clinic, and several other well-known companies in the pharmaceutical and medical technology sector, such as CSL Behring, Siemens Healthcare Diagnostics, GSK Vaccines and Biontech (formerly Novartis Germany).

57 years of wastewater expertise

The Marburg wastewater association was founded in 1964. At that time it was the communities of Cappel, Cölbe, Gisselberg, Niederweimar and Wehrda, together with Marburg, that established the agglomeration. Today, in these times of energy transition and climate protection however, completely new perspectives for cooperation are opening up, especially in the energy sector, where sewage sludge and biogas are as equally sought-after raw materials for energy generation as high-calorie biowaste from green bins. This is where the 'Methanothermobacter marburgensis'

Marburg was already well-known beyond its borders in the Middle Ages thanks to Elizabeth of Thuringia. The landgravine, who was canonised only a few years after her death, had a hospital built in Marburg at the beginning of the 13th century, where she took care of the sick and infirm. But above all, Marburg is renowned for the Philipps University, founded in 1527, which today is the oldest existing Protestant university in the world. Marburg is predominantly a university town with 77,129 inhabitants and is the eighth largest city in the Hesse region of Germany.

bacterium plays a key role. Discovered by Marburg scientists in the sewage sludge of the Marburg digestion towers, this microscopic wonder has been helping generate the fuel for electricity and heat generation for the region's combined heating and power station since 1989, covering approximately 80% of the electricity costs and 100% of the heating costs.

Biological purification

In biological wastewater purification, the metabolic activity of billions of microorganisms is used to help convert the dissolved substances in the wastewater into solid, settleable material (biomass). The biological purification takes place in a total of 6 aeration tanks. Tanks 1 and 2 are operated with upstream denitrification and tanks 3-6



Above: A PillAerator LP 8000 provides the air for the aeration tanks.

Below: The biological cleaning process takes place in a total of 6 aeration tanks.



operate as circulation tanks with intermittent denitrification. Prior to modernisation, the six aeration tanks were served by several older systems from various manufacturers. Jürgen Schindler, Electrical and Wastewater Technician at the Marburg wastewater association, sums up the situation as follows: "This operating approach at the time led to persistent problems, since the old systems reacted very sensitively when the pressure limit was reached and would also easily overheat. As a result, we were always busy making sure that everything was operating as it should".

Less work, greater reliability

An engineering firm was commissioned to carry out an energy efficiency study back in 2010 and it was already evident that system

modernisation would not only lead to significant energy savings, but would also solve the existing problems. In 2014 the time to

I was convinced by the intuitive operation, reliability and low maintenance requirement of the system.

(Jürgen Schindler, Electrical and Wastewater Technician, Marburg wastewater association)

act had come and a KAESER PillAerator LP 8000 turbo blower (operating pressure 0.3-0.9 bar, flow rate 1,500 to 8,000 m³/h) was purchased to meet the needs of the aeration processes in the six tanks. Of the old equipment, only one turbo blower remains. It is not actually needed however, but can be temporarily used for redundancy purposes if necessary. Thanks to the PillAerator blower, the machine room is no longer op-



Water quality analyses are performed daily in the in-house laboratory.

pressively hot and operating sound levels are pleasantly quiet, showing what a difference new technology can make. Even more impressive though, are the savings: due to the wear-free operation and exceptional reliability of its innovative magnetic bearing technology, the PillAerator blower has virtually eliminated the maintenance costs previously associated with the old system, which used to total upwards of 10,000 € per year. In addition, the turbo blower's infinitely variable speed control means that flow rate can be quickly and easily adapted to meet current demand. This is determined from the oxygen, nitrogen and ammonium values, which are recorded by measuring instruments in the respective tanks and forwarded to the process control system.

Modern technology therefore creates the conditions for maximum performance of the biochemical processes with lowest possible energy consumption. Although system modernisation took place more than six years ago now, Jürgen Schindler is still impressed with the reliability and simplicity of the PillAerator LP 8000. Should the Marburg-Cappel wastewater treatment plant require expansion to include additional aeration tanks in the future, have no doubt that a PillAerator from KAESER will be on the wastewater association's to buy list.

Cost-efficient compressed air supply at a French textile care specialist

Idéal: All colours of the rainbow

Many companies that later went on to achieve great success had humble beginnings in a small backyard workshop, for example. In the case of French textile care specialist Idéal however, it was a kitchen. The year was 1907 and Louis Gonnet, an employee of the BASF factory in Lyon, France, and his wife began to pack small bags of textile dye for domestic use, in their home kitchen. The idea was groundbreaking and his products are now renowned throughout Europe.

Clothing may seem expensive in the current economic climate, but when Idéal was founded in 1907, nobody had the money to keep buying new clothes. The concept for Louis Gonnet's business idea was therefore simple, yet brilliant, and still holds true today: the possibility of freshening up textiles with dye provides used clothes with a new lease of life to help them look new and well-cared-for for longer. It is no wonder then that the young company enjoyed rapid success and was quickly able to inspire consumers across Europe with its products; Idéal has continuously grown, modernised and expanded its product range ever since. Always in tune with the times, the company is also concentrating on its household products, such as the disinfectant "Sanytol", a product whose sales figures significantly increased during the health crisis. It is not least thanks to this development that Idéal

was able to relocate one of its production lines back to Vaulx-en-Velin in France. Idéal currently employs approximately 100 people in France, of which 60 are based at the Vaulx-en-Velin site. Since 2005,

the company has been part of the Spanish AC MARCA group, which has 10 subsidiaries around the world and employs over 800 people. The product portfolio is divided into three categories: household products, personal care and DIY adhesives.

Social and ecological commitment

Since its founding more than 110 years ago, Idéal has always attached great importance to the quality of its products. This uncompromising commitment to quality is also confirmed by numerous independent awards, such as the Responsible Care® Award presented by the "Union des Industries Chimiques" in 2013, which recognises chemical companies for exemplary initiatives in the areas of environment, health, safety and social responsibility. The Vaulx-en-Velin plant is ISO 9001 certified and the raw materials used comply with REACH and CLP regulations (CLP = Classification, Labeling and Packaging). The company recently invested 3 million euros in robotics and automation for a new production line at the Vaulx-en-Velin site for multi-purpose disinfectant wipes (30,000 packs per day), which were previously produced in Spain.

Reduced costs and emissions

Idéal has been a satisfied customer of KAESER COMPRESSEURS in Genas (Greater Lyon) for many years. The first compressed air station from 1998 consisted of two 37 kW KAESER AS 36 rotary screw compressors. Today's larger compressed air station (150 kW) includes three additional rotary screw compressors, namely a BSD 83 (8.5 bar), a BSD 62 (11 bar) and a CSD 125 SFC (8.5 bar) with variable speed control, whilst an energy-saving SECOTEC TF refrigeration dryer provides the necessary compressed air treatment. To enable all compressed air system components to work together with maximum energy efficiency, the station is monitored and controlled by a SIGMA AIR MANAGER 4.0 master controller. Constant network pressure is maintained by a DHS air-main charging system and a 3,000 litre air receiver, which also facilitates coverage of consumption peaks. With regards to the compressed air network, it was completely modernised by KAESER's partner AXE PROCESS:

the resultant increase in cross-section and volume made it possible to reduce the flow rate and thereby minimise pressure losses. Furthermore, the plant utilises an Aquamat condensate treatment system that separates the accumulating condensate into oil and water. This helps save 90% of the costs compared to treatment by an external service provider. And the station offers up yet another significant savings advantage: the heat resulting from the compression process is recovered via the plate-type heat exchangers integrated in the BSD rotary screw compressors and is used to produce hot water. The company's management team was therefore more than satisfied with the compressed air system's combination of cost saving performance with resource-saving and environmentally friendly operation. Confident about the

development of his markets and about the ability of his company to react to the demands of the market in general, Managing Director Jean Chanas also forecasts sales figures to increase moving forward. The KAESER compressed air station can also

The SIGMA AIR MANAGER 4.0 master controller ensures efficient interaction of all compressors.

accommodate the textile care experts' future needs, whilst the KAESER Service organisation ensures maximum compressed air availability and efficiency.



Jean Chanas, Managing Director of Idéal Sanytol, AC Marca subsidiary in Lyon.



Mobilair M 59

Setting the standard for the 5 m³ class



Flexible

Adjustable pressure 6-14 bar

Durable

Impact-resistant polyethylene enclosure

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Latest emission Stage V standards



Efficient

SIGMA CONTROL SMART
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Optional generator and
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KAESER KOMPRESSOREN – More compressed air for less energy