

KAESER report

A magazine for the production industry

Spring 2020

KAESER goes Turbo

with the new PillAerator turbo blowers

IFAT



New compressed air system at HeidelbergCement

FoamPartner in Leverkusen upgrades its compressed air system

Customized compressed air systems for Rosenberger Hungary

Compressed air in the All Mag Wheel Repairs workshop in Australia



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Ambidexterity leads to success

Today each and every business is faced with the enormous challenge of digital transformation. This will not only require technological change, in the form of a completely networked business environment using the very latest software, but also a social and cultural transformation involving a dramatic change in both our thinking and our behavior. The most important skill in the coming years will be the ability to manage constant change successfully and always being prepared for the unexpected. Digital technologies are the foundation for this, but actual people will need to learn to unleash their inventiveness and creativity to an extraordinary degree to make this happen.

The greatest difficulty ahead lies in combining our past and current successes with the innovations and new business models of the future in order to allow the efficient and profitable application of tried and tested methods to continue alongside systematic innovation and digital new business models.

Today's efficient behavior pays for our salaries; the innovative, digital revolution will secure our future business and long-term competitiveness. To achieve both, communicative leadership is essential. All individual stakeholders must understand and support the constant need to drive the



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

business forward and we all have to look far into the digital future together. Tradition, knowledge and experience are all prerequisites for success, but the apparent certainty of knowing all the answers can make it difficult – or even impossible – to consider alternative, potentially better solutions. We will need the ability to pair the broad, deep market knowledge of a large multinational with the pioneering spirit and emotions of a start-up. A clear vision to implement both is required and continuous daily communication with all stakeholders is essential.

Transforming this vision of the future into a successful and profitable business model will require a constant, ambidextrous integration of the tried and tested with the daring and the new; the most successful elements of today's business with promising new ideas.

We wish all businesses the courage, perseverance and sustainability needed for this important, necessary and promising journey ahead.

Published by: KAESER KOMPRESSOREN SE, 96450 Coburg, Germany, Carl-Kaesler-Str. 26
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Photographs: Marcel Hunger
Printed by: Schneider Printmedien GmbH, Weidhausen

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VAT identification no.: DE 132460321
Register of companies: Coburg HRB 5382

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New compressed air system at HeidelbergCement

Turning one into three – for big savings



Since it was invented over 150 years ago, cement has revolutionized the world of construction. The “gray powder” has become one of the most important building materials of the modern era. Few industrial sectors can match the pace of change seen in the cement industry through the rapid modernization of production facilities and plants over the decades. The HeidelbergCement museum website covers many major milestones in the company’s over 140-year history, which has also encompassed key events in the recent history of Germany.

The roots of HeidelbergCement are not far from its current headquarters in Heidelberg. Company founder Johann Philipp Schifferdecker purchased a mill in Bergheim, on the Neckar River, in 1873 and converted it into a Portland cement factory. During its tumultuous beginnings, the company weathered such dramatic developments as a major fire that burned the production halls to the ground (1895) and the upheavals of the First World War, the global economic crisis,

Lepol kiln with conveyor drive and shell cooling fans.



Compressed air distribution below the combustion chamber.

the Second World War and the subsequent reconstruction. Within just half a century of being established, it had become the market-leading cement manufacturer in southern Germany. Since first venturing abroad back in the early 1970s, HeidelbergCement has achieved increasingly rapid growth in international markets. Today the company employs approximately 58,000 people in about 60 countries and boasts over 3,000 locations on five continents. Reference projects constructed with concrete from HeidelbergCement include such world-renowned structures as the Sagrada Familia church in Barcelona, the FAIR particle accelerator facility in Darmstadt, Germany, and Cairo International Airport.

What is cement?

A cement-like building material has been known since ancient times – as evidenced by the concrete dome of the Pantheon in Rome, completed at the time of the emperor Hadrian in the early second century. But opus caementicium, as the Romans called it, was not yet made the same way as the material we know as cement today. Nowadays cement is made using the natural materials limestone and clay. As corrective materials, silica sand and iron ore are added to improve the sintering characteristics. The raw materials are crushed to a powder and then heated to approx. 2600°F until sintering takes place and the cement clinker is formed. The material, now in the

form of spherical pellets, is then cooled and ground down into the end product: powdered cement. To obtain cement with specific properties, quantities of slag, fly ash, limestone and gypsum are added in varying dosages and levels of fineness. Cement manufacture consumes large amounts of raw materials and energy. Consequently, using resources as efficiently and sparingly as possible is part of the corporate mission in a very literal sense. The company has also officially determined its carbon reduction targets for 2030 and had them validated by the Science Based Targets Initiative (SBTi). The SBTi independently audits and validates the emission reduction targets of companies on the basis of the latest climate science. As a result, HeidelbergCement is the first company in the cement industry, and so far one of only around 550 companies worldwide, to receive recognition for science-based targets.

To minimize the environmental impact of a cement plant, it is necessary to assess the efficiency of each and every energy consumer. The largest of these are the kilns that heat the raw mix to 2640°F to make clinker. Consequently, the modernization of the Schelkingen cement plant, carried out between 2016 and 2019, included the construction of a modern heat exchanger kiln.

With a daily output of almost 5000 tons, it replaced two older kilns from 1963 and 1972 respec-

tively. As a logical consequence of this investment, the company conducted an assessment and subsequent modernization of its existing compressed air system. The old system, from the 1980s – in which two older KAESER compressors continue to do their work right up to the present day – was implemented as a central system before the modernization project. The analysis showed that constructing three compressed air networks with individual pressure levels and quality standards could generate enormous cost savings.

Three networks for three pressure levels

In the new system, it is only the central plant compressed air supply, used for the filter systems, analysis instruments, pneumatic controls and pneumatic drive equipment (pneumatic cylinders), that still requires extremely dry air, with a pressure dew point of -40°F. This is achieved with two refrigeration dryers and two desiccant

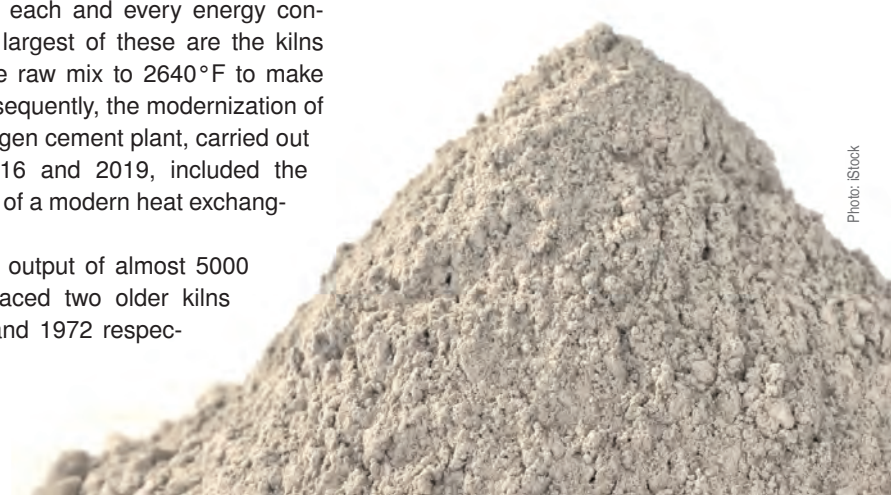


Photo: iStock



Part of the old compressed air system. It distributes compressed air subject to stringent dryness requirements.



The new compressed air system, which includes a HYBRITEC combination dryer.

dryers. The compressed air, at 87 psi, is delivered by an ESB 250 rotary screw compressor, a speed-controlled DSD 238 SFC rotary screw compressor (to handle demand peaks), two CSDX 162 rota-

troller. A modern HYBRITEC combination dryer combines the extremely low pressure dew points associated with desiccant dryers and the energy-saving performance of a modern refrigerated dryer.

44-87 psi range and delivered by three newly purchased KAESER rotary screw compressors: a CSDX 165 SFC variable-speed unit and two CSD 125 units. Here, too, a SIGMA AIR MANAGER 4.0 master control-

The new, state-of-the-art compressed air system will support the company in achieving its certified environmental targets.

ry screw compressors, a DSB 170 and DSD 205. Although the latter is set up remotely in the new building, it is monitored and controlled for optimized energy use – just like the other five systems – by the SIGMA AIR MANAGER 4.0 master con-

Also housed in the new building is the compressed air system installed for the two newly created compressed air networks. One of these networks is used to clean the combustion chambers. This requires relatively low pressure levels, fluctuating in the

ler ensures a secure and energy-efficient supply of compressed air. The third network provides compressed air for air blast equipment. At 145 psi it operates at the highest pressure level and is supplied with compressed air by a single



Image left: The raw stone storage area with the conveyor system for transportation of the stone to the mills.

Image right: Roller grinding mill, where the raw stone is pulverized into raw meal.



CSDX 140 rotary screw compressor. And finally, each of the two new networks has an emergency inlet connected to the plant compressed air network and all three networks are equipped with a KAESER air-main charging system.

The new compressed air system at HeidelbergCement reflects state-of-the-art technology and fully utilizes all potential energy savings.

Quiet and efficient performance: Turbo blowers from KAESER

Lake Constance: Scenic vacation destination and vital water source

Located on the northern edge of the Alps at the point where Germany, Austria and Switzerland meet, Lake Constance is Europe's third largest lake by surface area (after Lake Balaton in Hungary and Lake Geneva on the French-Swiss border). Due to its mild climate and delightful countryside, this scenic lake is not only a popular vacation destination and local recreational area, but also serves as a key source of drinking water. With a water volume of some 11.6 mi³, Lake Constance provides around 48 billion gallons of drinking water per year to approximately 4.5 million people in the region. The Langwiese treatment plant, situated within the lake's drainage basin, uses the very latest technology to meet the required stringent water quality standards.

The Langwiese wastewater collection and treatment plant, designed to meet the needs of 184,000 inhabitants, is the largest treatment plant in the northern catchment area of Lake Constance, serving the German municipalities of Ravensburg, Weingarten, Baienfurt and Berg. Since 2013, in addition to the usual three purification stages – mechanical, biological and chemical – the facility has also employed a so-called "fourth purification stage", in which powdered activated carbon is used to eliminate any remaining trace elements



The Langwiese wastewater collection and treatment plant is the largest of its type in the northern catchment area of Lake Constance.

and micro-pollutants (residue from detergents or medications, for example) from the water. This adsorption treatment procedure ensures that the treated water flowing back into Lake Constance via the Schussen River meets the very highest water quality standards. It predominantly takes place af-

ter the biological stage and before the filtration process, using a single-line adsorption stage consisting of a contact reactor with a 3-tier cascade, followed by a circular sedimentation tank. Next, in order to boost the adsorption process, the partially laden activated carbon is redirected back through the biological stage. Expansion of the adsorption stage into a full-flow treatment phase was one of the Langwiese plant's pilot projects back in 2013. Today, it is one of the biggest of its kind in Germany.



Compressed air is used to supply oxygen for the microorganisms active in the clarification tanks.



The new LP8000 PillAerator turbo blower from KAESER.

Installing new turbo blowers achieved three goals in one: energy efficiency, noise reduction and cost efficiency.

Full power

For their water purification and sludge treatment procedures, wastewater treatment plants consume a lot of energy: both electricity and heat. The obvious solution is to use waste material extracted from the water during the purification process for the purposes of energy recovery. In practice, this means harnessing gases released during the sludge digestion process and using them to generate electricity – generators at the facility's 3 thermal power plants convert

the energy released by burning these gases into electricity and usable heat energy. This allows the Langwiese treatment plant to be fully self-sufficient in terms of its energy needs.

This is not to say, however, that the subjects of energy consumption and energy efficiency have been rendered completely irrelevant. Even recycled resources have limits to their availability and so, at times when not enough waste gas can be harnessed to produce the amount of electricity the plant needs, further supplies must be brought in from the local energy supplier. In fact, this works both ways: at times when the treatment plant is recovering more energy than it requires, it becomes a supplier to the local network.

Turbo blowers hold the key

The biological purification stages of the treatment process, which take place in the clarification tanks, require ambient air to ensure a healthy growth environment for the micro-

organisms active there. Before the plant was modernized, this air was provided by five aging rotary lobe blowers, each of which was originally supplied by a different manufacturer. Because of their age, these machines were not only far from energy efficient, but they also incurred regular high maintenance and repair costs. Not only that, they were located directly beneath the employee lounge and their noise could clearly be heard. There were three reasons for modernizing the blower station: to improve energy efficiency, to reduce noise levels and to minimize costs. In late 2017 / early 2018, these targets were met in full with the installation of four 201 hp LP8000 PillAerator magnetic-bearing turbo blowers for flow rates up to 4708 cfm. High-efficiency PillAerator turbo blowers from KAESER are renowned for their quiet operation, exceptional cost efficiency and low-maintenance design. The vertically configured drive shaft is connected to the impeller and is suspended in a magnetic field generated by a circular array of permanent magnets and electromagnets. Thanks to its dynamic magnetic bearings, the drive motor is oil-free, vibration-free, frictionless, non-wearing and maintenance-free – all of which make PillAerator turbo blowers from KAESER the perfect choice to meet a wide range of blower air needs.

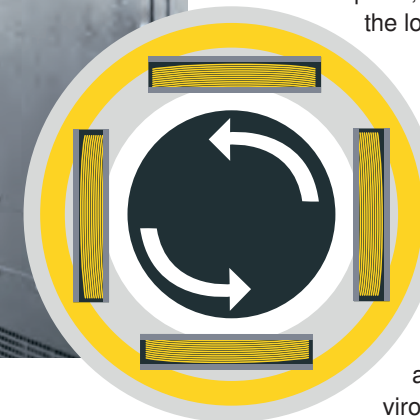


Image left: From the first rotation, the drive shaft hangs suspended in a controlled magnetic field, which is generated by a circular array of permanent magnets and electromagnets.

Driving innovation in the world of eco-technology and water management

Water catchment and treatment, waste disposal technology and recycling are all matters of global importance, so the world's leading trade fair for environmental technology – represented in many nations around the world – is always specially tailored towards an individual country's local concerns. Germany's IFAT show will take place from September 7-11, 2020, Munich and is due to feature over a thousand exhibitors displaying ground-breaking technology, brand new innovations and tailor-made solutions.

The world's leading trade fair for green technology, IFAT, exhibits new strategies and solutions for the management of drinking water, wastewater, refuse and raw materials, with the aim of establishing intelligent, sustainable cycles that ensure the preservation of precious resources. At IFAT 2020, KAESER will be demonstrating how they plan to meet the global challenge of effective water management head-on, with the introduction of a new range of blowers, the increasing use of high-efficiency drive motors and, last but not least, the very latest in control systems technology.

State-of-the-art blower technology

A number of upcoming new rotary screw blower models from KAESER are eagerly anticipated: the CBS 121 (with a usable flow rate of 106 – 459 cfm, max. pressure differential of 16 psi and a rated motor power of 10 – 30 hp), the DBS 221 (usable flow rate 177 – 812 cfm, max. pressure differential 16 psi, 20 – 50 hp rated motor power) and the EBS 410 (usable flow rate 353 – 1448 cfm, max. pressure differential 16 psi, 30 – 100 hp rated motor power) all featuring KAESER's new system design. Moreover, versions designed for operation at a constant speed will in future be fitted with IE4 Super Premium Efficiency drive motors, whilst variable-speed models will feature synchronous reluctance motors from 2020 onwards. In combination with frequency-controlled systems, advanced, slip-free synchronous reluctance motors (SRMs) ensure exceptional efficiency and durability. Operating with a frequency converter, the

Visitors to the KAESER stand will discover new blower models, high-efficiency drive motors and state-of-the-art control technology.

complete system achieves the IES 2 level of system efficiency as per IEC 61800-9-2. All KAESER rotary screw blowers are delivered as complete machines including electrics, meaning that they can be connected immediately as "plug and play" systems. STC versions operate at a constant speed and are equipped with an integrated star-delta starter, whilst SFC versions feature variable speed control and an integrated frequency converter. The

SIGMA CONTROL 2 compressor controller ensures that the blower is compatible with the requirements of Industrie 4.0; blower operating mode can be changed at the push of a button from speed control to pressure regulation, or to external analog process values. Furthermore, the control algorithm within the SIGMA AIR MANAGER 4.0 master controller was specially developed for low-pressure operation with blowers. This efficient and reliable

controller has proven its worth thousands of times over and is perfect for operation with multiple, networked machines. IFAT 2020 will also see the newest addition to KAESER's product range on display for the very first time: the Pillaerator turbo blower (usable flow rate 1765 – 10,594 cfm, max. pressure differential 20 psi, rated motor power 201 and 402 hp). This high-speed turbo compressor with direct-coupling and speed-controlled, permanent-magnet synchronous motor (PMSM) is in a class of its own, on account of its highly efficient, wear-free magnetic rotor bearings. And finally, IFAT 2020 will also see the introduction of KAESER's next generation of compressors that is designed to comply with the new EU5 emissions standard: the brand new MOBILAIR M59 / M59 PE. No matter whether it's the lightweight version (<1653 lbs), or the version equipped with PE gullwing doors, the M59 is impressive. This highly versatile compressor features 'pv Control' as standard, which provides outstanding flexibility when it comes to operation at various maximum pressures. Together with a wide range of additional options, this makes the M59 a true all-rounder that can perform almost any task, including sewer rehabilitation work.

The DBS 221 M rotary screw blower in Kaeser's new system design is one of the highlights of the stand.



FoamPartner in Leverkusen upgrades its compressed air system

Foam for All



FoamPartner Leverkusen GmbH is the global market leader in the production of polishing pads for paint surfaces.

The Swiss businessman Fritz Nauer began importing natural sponges to Switzerland in 1937. As the turmoil of World War II increasingly cut off access to his source markets, this inventive company founder switched to using polyurethane foam materials. In doing so, he laid the cornerstone for the global success story of today's FoamPartner Group.

FoamPartner, with its headquarters in Wolfhausen, Switzerland, is a global leader in foam technology. Reisgies Schaumstoffe GmbH, based in Leverkusen, Germany, and now incorporated as FoamPartner Leverkusen GmbH, has been part of the Swiss-based FoamPartner Group since 1992. Under the FoamPartner umbrella brand, the company offers its customers a broad portfolio of foams and other material solutions. More than 1,100 employees worldwide develop, manufacture, process and distribute custom-tailored polyurethane foam products in three main market segments: mobility, specialties and living and care. The Leverkusen site primarily develops, manufactures and processes ester-based polyurethane foam products. The extensive product portfolio ranges from technical foams, such as acoustic, sealing and filter applications, through to solutions for the

household and cleaning segment and surface treatment products.

Visionary mobility

A key product segment is the automotive sector. FoamPartner engages in extensive research and development work in this area. In the age of climate change and amid the endless search for energy-saving drive solutions, automobile manufacturers are increasingly concerned about the weight of the components and materials built into their vehicles. Naturally, FoamPartner products for the automotive sector must be as lightweight as possible. To meet future demands, however, they are also subject to strict requirements, including tough anti-static, flame-retardant and impact-resistant standards and tight limits on odors and emissions. Through the development of these innovative materials, the foam spe-

cialist is also involved in developing new design and comfort features throughout the vehicle.

And last but not least, there is a product group where the company is already the global market leader: polishing pads for treating and sealing paint surfaces, which are produced using a special foam.

Compressed air wherever you look

Compressed air is used in every stage of foam processing. This starts with the mixing head, the beating heart of the manufacturing process at FoamPartner, in which the liquid raw materials are blended as required for the specific product being made. Here, the compressed air is used to maintain pressure in the storage tanks, squeeze out the material and control the valves in the reticulation section (follow-up processing of foams to achieve specific liquid, air and gas permeability properties). Next, in the adjoining curing area, the pneumatic cylinders need compressed air to raise and lower the belt drives. Compressed air is used in such areas as quality assurance and at the station where air permeability of the products is measured (mainly for the automotive sector).

An application requiring the utmost precision is the laminating machine, where compressed air is used to apply velour back coatings to wide rolls of foam. With the aid of compressed air, the press can be precisely adjusted to the requirements of the materials being combined. Compressed air plays a major role in the manufacturing of polishing pads, where it is used in nearly every machine. It maintains the roller track tension when applying the velour backing to polishing pads and is used in many other machines to operate needle grippers

for handling rod and bar products. In another important application, compressed air is used to clean and extract dust from the grinding dust filters.



The strength testing machines also use compressed air.

Welcoming state-of-the-art technology

Before the compressed air system was replaced, these diverse applications were

combined. The company purchased three fluid-cooled rotary screw compressors (one SM 13 T and two SM 16 T units) with energy-saving SIGMA Profile rotors and IE4 Super Premium Efficiency motors with a modular, space-saving dryer and SIGMA CONTROL. Also on the shopping list was a master controller. This allows operators to view and retrieve data on system functions and energy consumption from anywhere and at any time, so it also acts as an energy management system.

Other priorities for the equipment operator were an easy-to-use control system and readily accessible information, in the form of an automatic alarm system to transmit important messages on the compressed air equipment to the user at any time – if necessary, even outside business hours via cell phone. For this purpose, the system was complemented by the SIGMA AIR MANAGER 4.0 master controller, which permits direct access to the entire compressed air system from any PC via the integrated web browser and continually adapts the flow rates and energy consumption of the compressors to the current compressed air requirements, improving energy efficiency.

One of the things we appreciated most of all was the excellent support from KAESER's field service.

served by just one compressor. But this was a high-risk situation, because there was no backup solution in place in case compressed air became unavailable due to a breakdown or maintenance work. "When that happened, the whole plant came to a standstill," says Friedrich Jonas, Head of Maintenance at FoamPartner Leverkusen. Because the compressor was quite old and frequent compressed air leaks were causing considerable energy losses, it was time to replace the entire system, including all the piping. The obvious goal of the new installation would be to guarantee a reliable compressed air supply and bring about significant energy savings. To ensure redundancy and maximum availability in future, the choice was made to install a modern compressor com-



Compressed air plays a major role in the manufacture of polishing pads.



FoamPartner uses state-of-the-art compressor technology.



In polishing pad production, almost every machine is operated using compressed air.



Photo: iStock



The state-of-the-art high-bay warehouse facility has room for 19,500 pallets, which allows just-in-time delivery of customer orders.

What the customer loves is the high reliability and clean operation of the KAESER compressed air system.

A trusted partner for the food industry: SPIES Kunststoffe GmbH, Melle

Passionate about packaging

Have you ever wondered what noodle salad, ice cream, yogurt and margarine have in common? You might simply guess the answer is that they are all foods. That's true of course, but it's not so much about what they contain as what they're contained in.

SPIES, a mid-sized, family-run company, has been a partner of the food industry for more than half a century. The niche in which the company has made a name for itself in the industry is premium packaging: catering to customers who are looking for something special when it comes to shape and design. Although SPIES produces some standard products, it is best known for customized solutions. These solutions come from a single source, from development, through the mold shop to labeling and logistics. SPIES products are also 100% Made in Germany, with all stages of the process taking place exclusively in Germany across the entire value chain. With three advanced production sites in the town of Melle, operating 120 automated injection molding machines, state-of-the-art handling technology and automatic camera systems for quality

control, production is optimized so as to guarantee dependable product quality and maximum security of delivery.

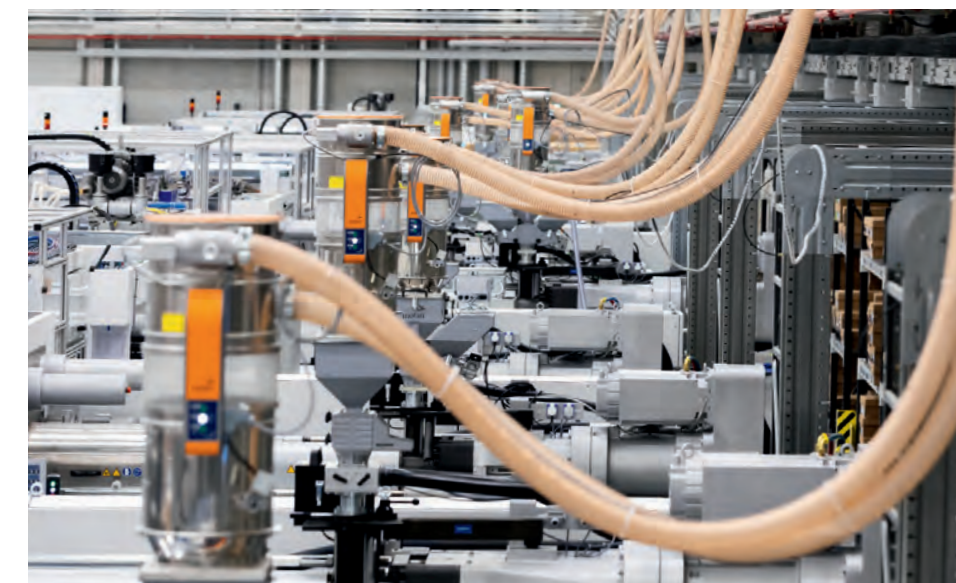
From concept to production

Before a concept can go into batch production, there are several challenging and interconnected steps to go through. First is the creative process, in which the experts from SPIES discuss with customers the overall feasibility of their ideas and determine the right materials. They must also consider the eventual size, weight and stacking capability of the final product, with a view to saving space and costs when it comes to delivery. After the preliminary design is completed, a prototype is produced. From that, SPIES first makes a sample tool, followed by a series tool: production can now begin. The special technique used by SPIES for label-

ing food packaging is known as "in-mold labeling" (IML), where labels are applied at the same time as the packaging is produced. In this innovative, single-stage labeling process, the pre-printed and stamped labels are placed directly in the injection molding tool. When the liquid plastic is injected, the labels bind instantly with the polymer melt. No additional processing steps are needed. The label and the plastic consist of the same material so that all packaging is 100% recyclable.

Company objective: environmental protection

The continuous optimization of production processes and the responsible use of resources are key aspects of the efforts by SPIES to protect the environment. To try to conserve resources, the company has



Compressed air is used to control the valves in the injection molding systems, for unmolding, and to control the ejector pins.



Compressed air is also used for transporting the parts and ejecting them from the molds.

been conducting research into the possible use of bio-based intermediate products as substitutes for crude oil. These could include used fats and oils, which have the same processing characteristics as petroleum-based plastics. To give customers complete transparency regarding the origins and recycling procedure behind the plastics used in its products, SPIES has obtained certification under the globally recognized ISCC Plus standard. In addition, SPIES maintains a balance sheet for the processed material, which is documented and audited per ISCC Plus rules.

One plant makes company history

In March 2017, work began on Production Plant 3, the largest single investment in the company's history. It includes an ultra-modern high-bay warehouse facility with space for 19,500 pallets, permitting "just-in-time" delivery of customer orders on demand – usually on the same day.

Because all the production machines in Plant 3 need compressed air, SPIES had to purchase a compressed air system in time

for completion of the facility at the end of 2018. This new system had to be able to meet the high quality standards of the food industry while reliably and cleanly delivering the compressed air needed for production. Compressed air is used to control the valves on the injection molding machines, for unmolding and for controlling the ejector pins on the injection tools, the handling robot, the camera station and the labeling machine. It is also used as control air for valves and cylinders, for transport and for removing the parts.

Its excellent experience with an older KAESER compressed air system in Plant 1 made the choice of supplier an easy one for SPIES. What ultimately sealed the deal was the fact that KAESER could function as a one-stop shop for the entire process, including planning, delivery, commissioning, maintenance and support.

The KAESER compressed air station not only meets all current requirements. It is also designed to be scaled up in line with future needs. The compressed air is delivered by four rotary screw compressors: one

CSD 125, one DSDX 305 and two CSD 105 units. For production purposes, the plant needs compressed air at 90 psi – no problem for these four 175 psi systems. They also have power in reserve in case there are changes in the compressed air demand in future. For drying, three SECOTEC TF 280 refrigerated dryers are installed, and two activated carbon adsorbers with a variety of filters ensure that the compressed air meets the right quality standards. All this equipment is monitored and controlled by a SIGMA AIR MANAGER 4.0 master controller, which will also help to incorporate the next planned addition to the compressed air station – a second DSDX rotary screw compressor. Because all the compressors are equipped with a heat recovery system, the waste heat they generate will be used to heat the whole of Plant 3.



The four 175 psi systems not only deliver the required pressure level of 90 psi easily – they also have power in reserve in case there are changes in the compressed air demand in future.

Bad Dürrheimer – mineral water from the Black Forest

From the heart of the Earth

Mineral water is a natural product. All mineral water is formed through the same long, natural process, in which rainwater falls to the ground and spends years – sometimes even centuries – seeping through layers of rock and soil. The water collects far below the surface, beneath massive layers of impermeable rock, where it is protected from impurities as if by a roof. This makes mineral water much purer than tap water.

The Earth's mineral water reserves are hidden far below its surface. To find these deposits and tap into them, it's necessary to conduct complex geophysical investigations into the rock and soil conditions. The spa town of Bad Dürrheim, Germany – located within the Black Forest – has its former mayor and spa manager, Otto Weissenberger, to thank for the discovery of the town's underground water source in 1956. Commercial exploitation began just two years later, when Adelbert Vogt and Klaus Dettling, later the managing partners, established the Dürrheimer Johannisquelle Vogt KG mineral water company. The first bottle of natural BAD DÜRRHEIMER mineral water rattled down the bottling line on May 23, 1959. In 1982 the operation at Bad Dürrheim was officially elevated to the status of a state-certified "healing spring" and today the company trades as Bad Dürrheimer Mineralbrunnen GmbH + Co. KG Heil-

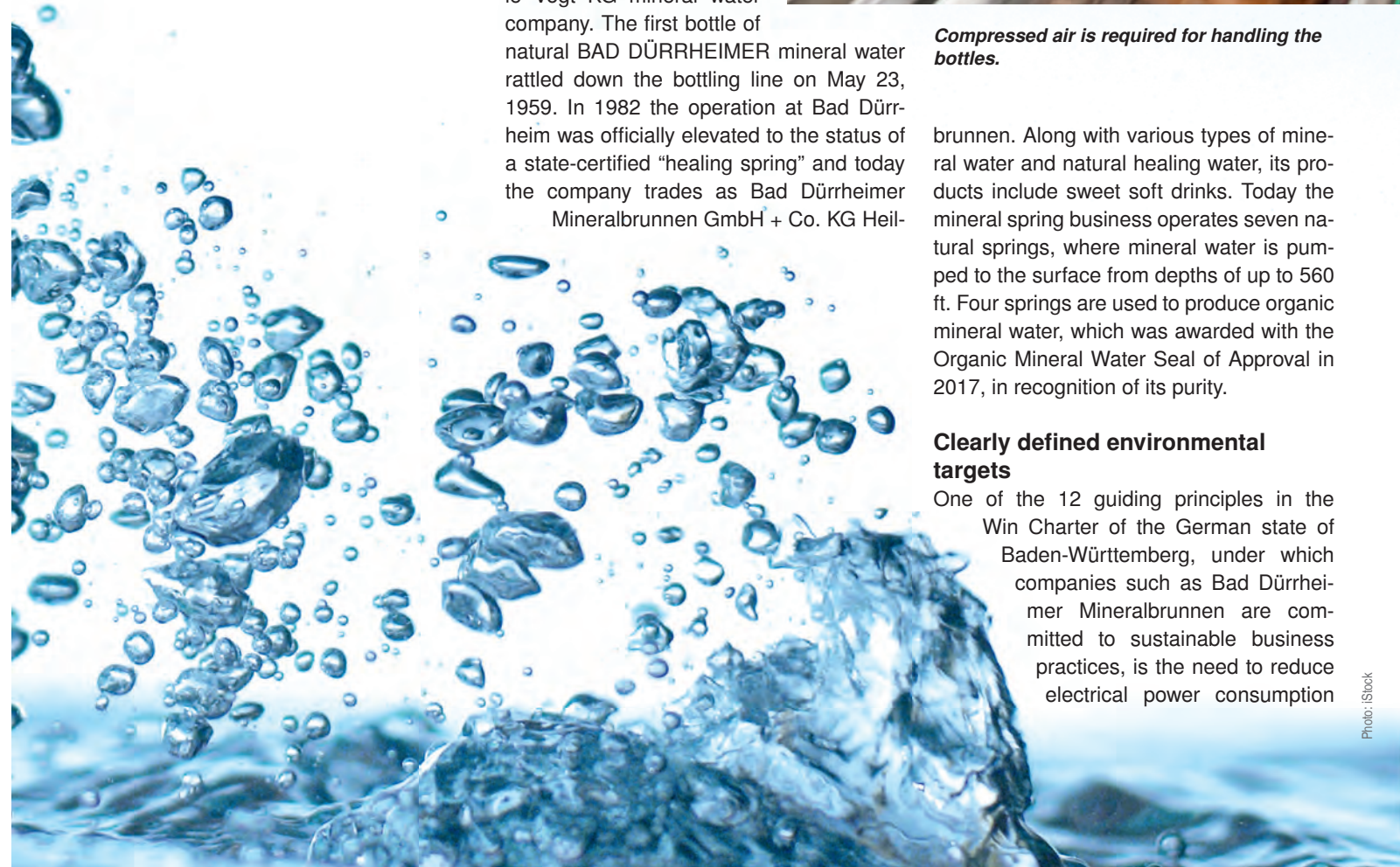


Compressed air is required for handling the bottles.

brunnen. Along with various types of mineral water and natural healing water, its products include sweet soft drinks. Today the mineral spring business operates seven natural springs, where mineral water is pumped to the surface from depths of up to 560 ft. Four springs are used to produce organic mineral water, which was awarded with the Organic Mineral Water Seal of Approval in 2017, in recognition of its purity.

Clearly defined environmental targets

One of the 12 guiding principles in the Win Charter of the German state of Baden-Württemberg, under which companies such as Bad Dürrheimer Mineralbrunnen are committed to sustainable business practices, is the need to reduce electrical power consumption





The compressed air station equipped with KAESER rotary screw compressors.



Using compressed air, new bottles are whisked straight from the glassworks to the production facility.



To ensure that the compressed air supply meets the right purity and quality standards, the system includes two TF 340 refrigerated dryers, as well as activated carbon adsorbers and a variety of KAESER filters with very low pressure losses.

and CO₂ emissions. The company already covers two thirds of its electricity use through green energy, 100% of which takes the form of hydroelectric power, and generates the remaining one third with its own combined heat and power (CHP) plant. The heat from the CHP plant keeps the bottle washing line operating at the required water temperature of 180 °F. Any discussion of electricity consumption and CO₂ emissions reduction in a modern production operation will inevitably touch on the subject of compressed air production. The pneumatic control air needed for handling the glass bottles was previously produced using three older systems from another manufacturer. An assessment of the old system showed that the business was using over 155 million ft³ of compressed air per year and consuming approx. 640,000 kWh of electric power to produce it. It was obvious from the start that the potential savings were huge. To exploit this potential in full,

Compressed air is essential for filling and transporting the bottles.

the company invested in a modern compressed air system from KAESER in the spring of 2019. The resulting improvement in energy efficiency made the project eligible for a subsidy from the German Federal Office for Economic Affairs. The new systems – two KAESER CSD 105 rotary screw compressors (flow rate: 238 to 358 cfm), one of which is speed-controlled, and two KAESER BSD 75 rotary screw compressors (flow rate 156 to 247 cfm) –

now provide a reliable supply of compressed air and also guarantee the necessary system redundancy. The speed-controlled unit ensures that any desired flow rate between the specified minimum and maximum can be selected and delivered according to actual demand. To achieve the compressed air quality required by the food industry, two energy-saving SECOTEC TF 340 refrigerated dryers are installed along with activated carbon adsorbers with a variety of



By helping to conserve precious resources, the KAESER compressed air system is ideally aligned with the company's sustainability strategy.

filters. A SIGMA AIR MANAGER 4.0 master controller ensures the perfect coordination of all the equipment.

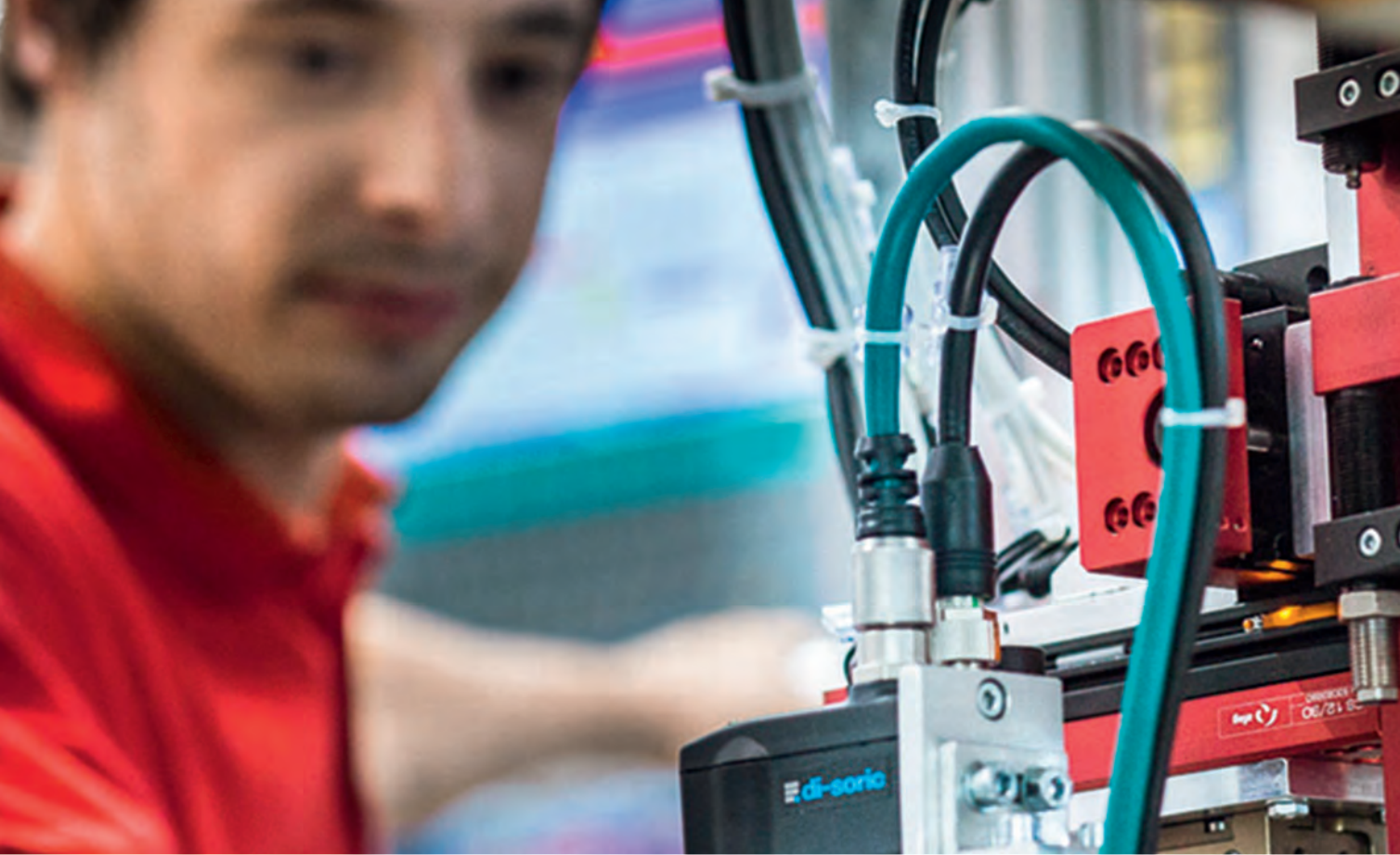
SIGMA SMART AIR

Another argument in favor of KAESER is their innovative SIGMA SMART AIR service concept, which generates even more cost savings and further improves compressed air availability. The beating heart of this service package is the SIGMA AIR MANAGER 4.0 master controller. As the central brain of the compressed air system, it performs control tasks and handles data streaming to the KAESER Plant Control Center. Process data are transmitted in encrypted form and in real time via a wireless modem. The KAESER Plant Control Center contains a digital twin of the customer system, using a structural model to link physical and virtual worlds. Real-time availability of the operating data makes it possible not only to track the current operating status of the compressed air system, but also to antici-

pate developments in advance by predicting future trends. This makes it possible to identify maintenance requirements in advance and take measures when needed. The improved energy efficiency of the newly installed compressors and components and the enhanced adaptation to the actual compressed air demand will result in annual savings of approximately 190,000 kWh, or around 114 tons of CO₂ emissions. This makes the new system a perfect fit for the company's sustainability strategy.



Photo: iStock

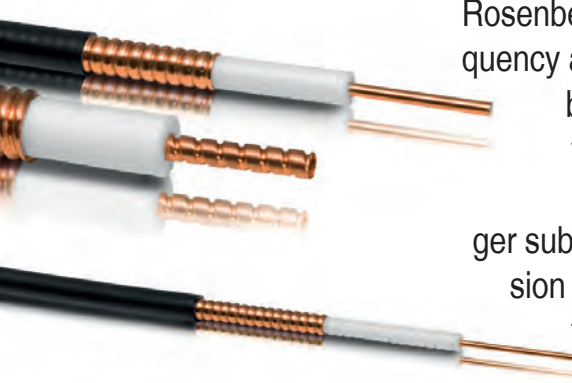


All photos: Rosenberger Magyarország Kft.

Customized compressed air systems for Rosenberger Hungary

Success knows no borders

Rosenberger is a global manufacturer of connector solutions in the high-frequency and fiber optic technology sectors. Customers of the company, based in southern Germany, include renowned high-tech names across various fields, including cellular and telecommunications technology, data systems and medical electronics. The success of the Rosenberger subsidiary in Hungary, established in 2003, has resulted in steady expansion of its production facilities. However, this has not posed a problem for the compressed air supply, since that too has grown.



The Rosenberger head office, located in south-eastern Germany in the foothills of the Bavarian Alps, was established by Hans Rosenberger Sr. in the town of Tittmoning in 1958. The mid-sized industrial company is still family owned. With its relocation to today's site in the neighboring town of Fridolfing in 1968, the company took its first steps into the world of high-frequency technology. The Rosenberger Group offers a wide range of standard and customized connector solutions in the fields of high-frequency and fiber optic technology. Its products are developed, produced and sold by more than 11,000 employees worldwide, in-

cluding at its headquarters in Germany and production / assembly plants and sales outlets in Europe, Asia and North and South America. The Rosenberger Group is represented by its own subsidiaries and trusted sales partners around the world.

Rosenberger and the world

The history of Rosenberger subsidiary Magyarország KFT, based in Jászárokszállás near the Hungarian capital of Budapest, began in 2003. The immediate success of Plant 1 resulted in repeated expansion of the production area in several stages. When a new assembly hall was built in 2007, Ro-

senberger Hungary contacted the KAESER subsidiary in Budapest for the first time. In the initial project, to supply compressed air to the new assembly hall, three KAESER ASK 27 rotary screw compressors (min. flow rate: 92 cfm at 116 psi) were purchased, along with compressed air treatment components, condensate technology and a SIGMA AIR MANAGER 4.0 master controller.

Growing in stages

With the company's rapid growth, however, the compressed air system was soon unable to meet the growing demand. In addi-

tion to compressed air, the assembly lines required vacuum technology, originally provided through pneumatic vacuum ejectors. After KAESER Hungary completed a comprehensive analysis and advisory process, a KAESER ASV 40 rotary screw vacuum package was added to the compressed air system. A good choice – because through this change alone, the vacuum generation costs were reduced to a quarter of their former level. A further expansion project was carried out in 2011, with the establishment of the CNC-based production of turned parts (Plant 2). Here, too, a compressor was needed. KAESER Hungary began by preparing an ADA (Air Demand Analysis) report. Based on the calculations of KAESER's experts, a cost-effective set-up was found. To get around the space limitations, plans were drawn up for a custom engineered installation. Shortly afterwards, two 20-foot enclosures, each with three KAESER BSD 62 rotary screw compressors delivering 116 psi, along with compressed air treatment and control equipment, were set up in Plant 2. The same year, the compressors in the enclosures were retrofitted with heat recovery systems. They use the waste heat from the compressors to heat the service water, resulting in further major cost savings. Because this approach quickly proved effective, the compressors in Plant 1 were subsequently fitted with heat recovery components as well. Due to the expansion of the product portfolio and the corresponding increase in production area, the compressed air demand increased again in 2014. For this expansion, KAESER's experts proposed a turnkey system including three BSD 83 rotary screw compressors with compressed air treatment and a master controller. The option of placing the compressed air equipment outside the production hall had

a lot of advantages – including easier maintenance. In 2016, for its next expansion move, the company leased another building (Plant 5) to the west, in Nyírbátor, and also leased KAESER systems to supply the new plant with compressed air.

Ready for the future

In 2017, when Rosenberger Magyarország KFT started planning the compressed air supply for the newly completed Plant 6,

One of the key advantages of the KAESER compressed air system was the easy adaptability of its components.

again in Nyírbátor, it was obvious – in view of the excellent cooperation in the past – that Rosenberger would again turn to KAESER KOMPRESSOREN Hungary. This time the customer opted for four turnkey 20-foot enclosures, two of which contain three KAESER ASV 60 rotary screw vacuum packages. The other two each have three KAESER CSD 125 rotary screw compressors on board (effective flow rate at 108 psi: 100 – 423 cfm). Naturally the turnkey solution also includes the compressed air treatment components and the control system. And the developments continue. In 2018, a future-ready, speed-controlled KAESER CSDX 140 SFC rotary screw compressor was added to the Plant 1 system. Thanks to the SIGMA AIR MANAGER 4/4 master controller, it has been operating smoothly and efficiently

with the system that was installed in 2014, meeting all the operator's needs in terms of reliability and cost efficiency.



The adaptability of the KAESER components made it easy to expand the system again and again.



KAESER Contain-Air: The complete compressed air system and container.



Compressed air is an essential assistant for repair and maintenance tasks: in this case for powering pneumatic tools.

All Mag Wheel Repairs, Australia

Kaeser keeps the wheels turning at All Mag Wheel Repairs

New South Wales is located on the south-east coast of Australia and with its 800,642 km² is about three times the size of Great Britain. And it reminded the explorer James Cook, who landed here in 1770 and gave the name to the first British colony in Australia.

Sydney is the capital of this oldest and second most densely populated state of Australia after Victoria. Located forty four kilometers southwest of Sydney's central business district, Ingleburn is the location of Mag Wheel Repair, a rim repair and maintenance company. The rim specialist offers professional help for all kinds of problems with alloy wheels - for all brands and models. This makes them the first point of contact for rim damage due to momentous contacts with high curb stone edges or other damage to the wheel or rim. Each alloy wheel that is brought to the repair shop for repair will be manually repaired by

one of the team's experienced technicians. The use of compressed air is indispensable in many activities: from inflating the tyres, to driving pneumatic tools, to painting the repaired rims.

Fit for the future

When the company, which was founded over 17 years ago, recently expanded and moved into a larger building, Milan Skocic, the owner, placed great emphasis on investing in a high quality, reliable compressed air system from the outset, in order to be able to offer its customers the well-known professional service with quality guarantee at

the new, larger company location. After examining a number of different options, the company owner decided to install two KAESER AIRCENTER SM12s, which are monitored by a SIGMA AIR MANAGER cross-machine control system. A good choice, because KAESER's AIRCENTER compressed air systems offer a high performance screw compressor, a refrigerated dryer and an air receiver in a com-



Photo: iStock

Compressed air is also used to power the paint spraying equipment.

pact housing, providing a reliable supply of compressed air with minimal space requirements. All models are equipped with an integrated SIGMA CONTROL 2 industrial PC-based compressor control system, which dynamically adapts the flow rate to the actual compressed air requirement, thus ensuring further energy savings. Relevant information can be viewed at a glance from the easy-to-read display.

At the heart of every SM screw compressor is a high quality KAESER screw compressor block with flow-optimised and energy-saving SIGMA PROFILE rotors. The KAESER SIGMA PROFILE is designed for maximum energy efficiency and offers energy savings of up to 15 percent compared to conventional screw compressor rotor profiles.

Reliable and quiet

Installed almost two years ago, the KAESER compressed air system at All Mag Wheel Repairs has proven to be reliable and efficient. Milan Skocic is very satisfied: "Our team of wheel specialists is very experienced in repairing alloy wheels. In order to fulfil the repair quality promised to our customers, we rely on the quality and performance of the equipment we use. KAESER's compressed air equipment has proven to be very reliable. Since the compressed air supply system is located near the site of use, it was also important to us that it is very quiet in operation."



The SIGMA AIR MANAGER (SAM) ensures optimal efficiency and connectivity.

Since the compressed air supply system is located near the site of use, it was also important to us that it is very quiet in operation.

PillAerator Turbo Blowers

With Active Magnetic Bearings

- Oil-free air
- Vibration free
- Maintenance free
- Friction free bearing
- Variable Speed
- Flows to 9,700 cfm
- Pressure range from 4 to 19 psig

