

# KAESER report

A magazine for the production industry

1/20

## KAESER goes Turbo

...with the new PillAerator turbo blowers

# IFAT



New compressed air system  
at HeidelbergCement

FoamPartner in Leverkusen  
upgrades its compressed air station

Containerised compressed air  
stations for Rosenberger Hungary

Compressed air in the 'All Mag  
Wheels 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 behaviour. 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 behaviour 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 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.



Dipl.-Wirtsch.-Ing.  
Thomas Kaeser  
Chairman,  
Managing Board



Dipl.-Wirtsch.-Ing.  
Tina-Maria Vlantoussi-Kaeser  
Managing Board

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.

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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 revolutionised the world of construction. The “grey 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 modernisation 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.

Lepol kiln with conveyor drive and shell cooling fans.



Compressed air distribution below the combustion chamber.

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, 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?

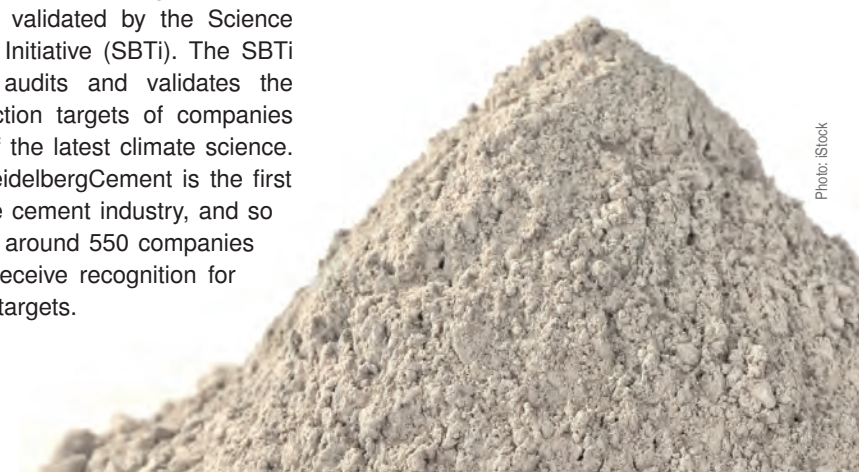
A cement-like building material has been known since ancient times – as evidenced by the concrete dome of the Pantheon in Rome, completed at the time of the em-

peror 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. 1450 °C 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 minimise 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 1450 °C to make clinker. Consequently, the modernisation 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 4500 t, it replaced two older kilns from 1963 and 1972 respectively.

As a logical consequence of this investment, the company conducted an assessment and subsequent modernisation 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 station before the modernisation project. The analysis showed that constructing three compressed air networks with individual pressure levels







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



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

and quality standards could generate enormous cost savings.

ment (pneumatic cylinders), that still requires extremely dry air, with a pressure dew point of  $-40^{\circ}\text{C}$ . This is achieved with

ry screw compressors, a DSB 170 and DSD 205. Although the latter is set up remotely in the new building, it is monitored

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

### 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 equip-

two refrigeration dryers and two desiccant dryers. The compressed air, at 6 bar, 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-

and controlled for optimised energy use – just like the other five systems – by the SIGMA AIR MANAGER 4.0 master controller. A modern HYBRITEC combination dryer combines the extremely low pressure dew points associated with desiccant dry-

ers and the energy-saving performance of a modern refrigeration dryer.

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 3–6 bar 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 controller ensures a secure and energy-efficient supply of compressed air.

The third network provides compressed air for air blast equipment. At 10 bar, it operates at the highest pressure level and is supplied with compressed air by a single 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 utilises all potential energy savings.



*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 pulverised into raw meal.*





Quiet and efficient: Turbo blowers from KAESER

# Lake Constance: Scenic holiday destination and vital water source

Located on the northern fringe of the Alps where Germany, Austria and Switzerland meet, Lake Constance is Central Europe's third largest lake by surface area, after Lakes Balaton and Geneva respectively. Due to its mild climate and delightful countryside, this scenic lake is not only a renowned holiday destination and local recreational area, but also serves as a key source of drinking water. With a water volume of some 48.5 km<sup>3</sup>, Lake Constance provides around 180 million cubic metres of drinking water per year to approximately 4.5 million people in the region. The Langwiese water 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 is the largest of its kind in the northern catchment area of Lake Constance.*

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 municipalities of Ravensburg, Weingarten, Baienfurt and Berg. Since 2013, in addition to the usual three purification stages – me-

chanical, biological and chemical – the facility has also employed a so-called "fourth purification stage", whereby powdered activated carbon is used to eliminate any remaining trace elements 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

after 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.

**Full power**  
For their water purification and sludge treatment procedures, wastewater treatment plants consume a considerable amount of energy, in the form of both electricity and heat. The obvious solution to this problem is to use waste material extracted from the water during the purification process for the purposes of energy recovery. In practice, this involves 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 hence, at times when not enough waste gas can be

harnessed to produce the amount of electricity required by the plant, further supplies must be sought via 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 in order to ensure a healthy growth environment for the microorganisms active there. Before the plant was modernised, this air was provided by five ageing rotary lobe blowers, each one originally supplied by a different manufacturer. Owing to their age, these machines were not only far from energy efficient, but they also incurred high regular maintenance and repair costs. Furthermore, they happened to be located directly beneath the staff room and their noise could clearly be heard. The reasons for modernisation of the blower station were consequently threefold: to improve energy efficiency, to reduce noise levels and to minimise costs. In late 2017 / early 2018, these targets were met in full with the installation of four 150 kW LP8000 PiiAerator magnetic-bearing turbo blowers for flow rates up to 8000 m<sup>3</sup>/h. High-efficiency PiiAerator 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 PiiAerator turbo blowers from KAESER the perfect choice to meet a wide range of blower air needs.

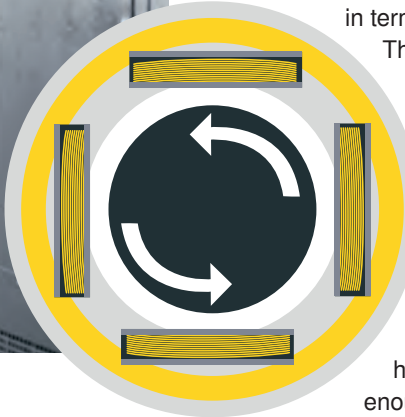
*Image left: From the first rotation, the drive shaft is suspended in a frictionless controlled magnetic field, which is generated by a circular array of permanent magnets and electromagnets.*



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



*The new LP8000 PiiAerator turbo blower from KAESER.*



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



# 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. Hence the world's leading trade fair for environmental technology – represented in many nations around the world – is always specifically tailored towards an individual country's local concerns. Germany's IFAT show will take place from the 7th - 11th September in 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 showcasing how the Coburg-based systems specialist plans 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 host of forthcoming new rotary screw blower models from KAESER are eagerly anticipated: the CBS 121 (with a usable flow rate of 3-13 m³/min, max. pressure differential of 1100 mbar and a rated motor power of 7.5-22 kW), the DBS 221 (usable flow rate 5-23 m³/min, max. pressure differential 1100 mbar, 15-37 kW rated motor power) and the EBS 410 (usable flow rate 10-41 m³/min, max. pressure differential 1100 mbar, 22-75 kW 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

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

with a frequency converter, the 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 analogue 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 con-

troller 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 50-300 m³/min, max. pressure differential 1400 mbar, rated motor power 150 and 300 kW). 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.

Last but not least, 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 the lightweight version (<750 kg), 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 virtually any task, including sewer rehabilitation work.

*The DBS 221 M rotary screw blower featuring KAESER's new system design is one of the highlights on show.*





# In the beginning there was sponge...



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 the Second World War increasingly cut off access to his source markets, the inventive company founder switched to 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 in the Swiss canton of Zurich, 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 & 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

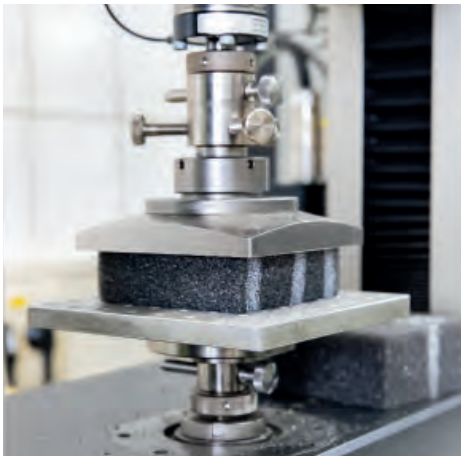
A key product segment is the automotive sector. FoamPartner engages in extensive research and development work in this area. In the age of climate change and amid the relentless search for energy-saving drive solutions, car manufacturers are increasingly concerned about the weight of the components and 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 stringent requirements, including strict anti-static, flame-retardant and impact-

resistant standards and tight limits on odours and emissions. Through the development of these innovative materials, the foam specialist 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 in Leverkusen 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 decisive 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



The strength testing machines also use compressed air.

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

bring about significant energy savings. To ensure redundancy and thus maximum availability in future, the choice was made to install a modern compressor combination. Consequently, the company purchased three liquid-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 regarding system functions and energy consumption from anywhere and at any time, hence it also acts as an energy management system. Other key 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 regarding the compressed air equipment to the user at any time – if necessary, even outside business hours via mobile phone. For this purpose, the system was complemented by the SIGMA AIR MANAGER

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

### Welcoming state-of-the-art technology

Before the compressed air system was replaced, these diverse applications were served by just one compressor. This was a high-risk situation, because there was no backup solution in place in case compressed air became unavailable due to repairs 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 of the piping. The obvious goal of the new installation would be to guarantee a reliable compressed air supply and

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, thus improving energy efficiency.



Compressed air plays a key 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.







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

The customer particularly appreciates the exceptional 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, yoghurt and margarine have in common? Some 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 are 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 in terms of shape and design. Although SPIES does produce some standard products, it is known above all for bespoke solutions. These solutions come from a single source, from development, through the mould shop to labelling 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 Melle (Lower Saxony) operating 120 automated injection moulding machines, state-of-the-art handling technology and automatic camera systems for quality control,

production is optimised so as to guarantee dependable product quality and maximum security of delivery.

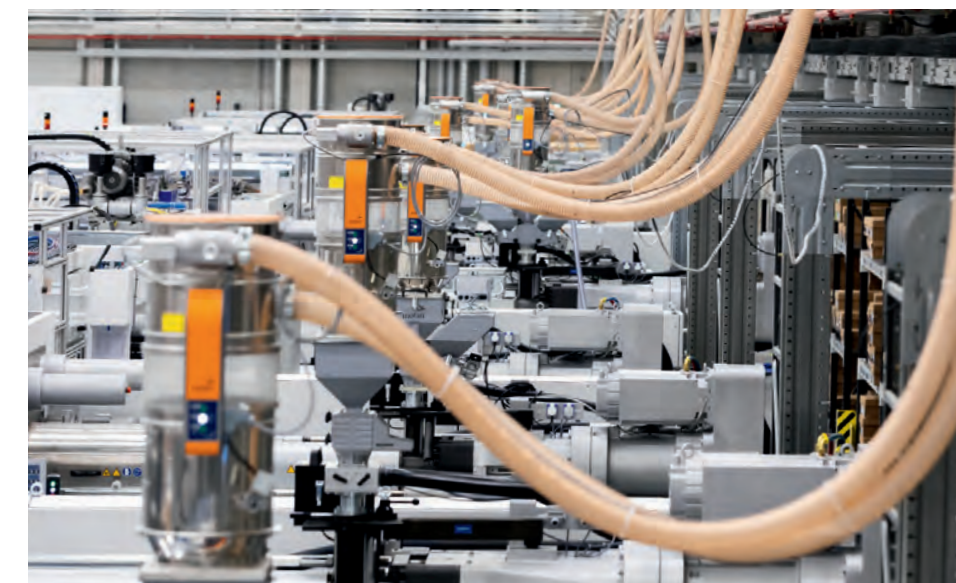
## From concept to production

Before a concept can go into batch production, there are a number of challenging and interconnected steps to go through. First of all is the creative process, in which the experts from SPIES discuss with customers the overall feasibility of their ideas and determine the appropriate materials. They must also consider the eventual size, weight and stacking capability of the final product, with a view to saving space and therefore costs when it comes to delivery. Once the preliminary design has been completed, a prototype is produced. This is used to develop a sample tool and, subsequently, a production tool. Only then

can the manufacturing process begin in earnest. The special technique used by SPIES for the labelling of food packaging is known as "in-mould labelling" (IML), in which labels are applied at the same time as the packaging is produced. In this innovative, single-stage labelling process, the pre-printed and stamped labels are placed directly in the injection moulding 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 optimisation of production processes and the responsible use of resources are essential aspects of the



*Compressed air is used to control the valves in the injection moulding systems, for unmoulding, and to control the ejector pins.*





*Compressed air serves to transport the parts and eject them from the moulds.*

efforts by SPIES to protect and preserve the environment. In order to conserve resources, the company has been for some time conducting research into the possible use of bio-based intermediate products as substitutes for crude oil. These might 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 recognised ISCC Plus standard. In addition, SPIES maintains a balance sheet for the processed material, which is documented and audited in accordance with 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 the ultra-modern high-bay warehouse facility

with space for 19,500 pallets, permitting a "just-in-time" delivery of customer orders on demand - usually on the same day.

Because all of 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 capable of meeting the high quality standards required by the food industry whilst reliably and cleanly delivering the supply of compressed air needed for production. Compressed air is used to control the valves on the injection moulding machines, for unmoulding and for controlling the ejector pins on the injection tools, the handling robot, the camera station and the labelling 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 the Coburg-based system

provider was capable of acting 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 expanded 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 6.4 bar - which means these four 12-bar systems have plenty of power in reserve for any future changes in air demand. For drying purposes, three SECOTEC TF 280 refrigeration dryers are installed, and two activated carbon adsorbers with a variety of filters ensure that the compressed air meets the required quality standards. All of this equipment is monitored and controlled by a SIGMA AIR MANAGER 4.0 master controller, which will also smoothly incorporate the next planned addition into the compressed air station, namely a second DSDX rotary screw compressor. Because all of 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 12-bar units not only deliver the required pressure level of 6.4 bar with ease - they also have power in reserve for future changes in compressed air needs.*

## **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. Consequently, by its very nature, mineral water is 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 is necessary to conduct complex geophysical investigations into the rock and soil conditions. The Black Forest spa town of Bad Dürrheim has its erstwhile 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 Heilbrunnen. Along with various types of mineral water and natural healing water, its



*Compressed air is required for handling the bottles.*

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 170 m. 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 of the Win Charter of the 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 and CO<sub>2</sub> emissions. The company already covers two thirds of its electricity use through





*The compressed air station equipped with KAESER rotary screw compressors.*

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 82°C.

Any discussion of electricity consumption and CO<sub>2</sub> emissions reduction in a modern production operation will inevitably touch on the subject of compressed air production.

The pneumatic control air needed for handling of 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 4.4 million m<sup>3</sup> 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 enormous. To exploit this potential to the greatest possible extent, the com-

pany 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: 6.74 to 10.14 m<sup>3</sup>/min), one of which is speed-controlled, and two KAESER BSD 75 rotary screw compressors (flow rate 4.43 to 7.00

m<sup>3</sup>/min) – 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 refrigeration dryers are installed along with activated carbon adsorbers with a vari-



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



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

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

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

#### **SIGMA SMART AIR**

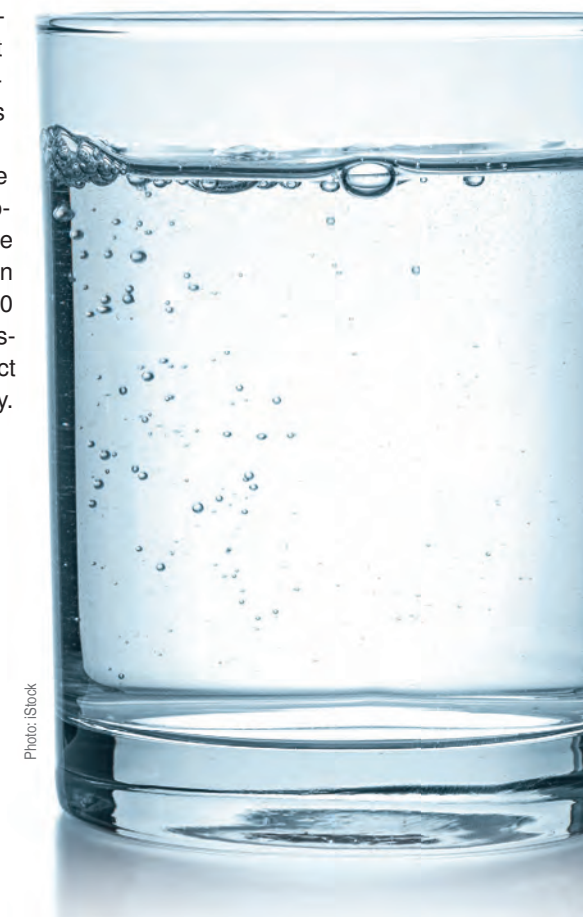
Another argument in favour of KAESER is the innovative SIGMA SMART AIR service concept, which generates even more cost savings and further improves compressed air availability. The beating heart of this service package is the SIGMA AIR MANAGER 4.0 master controller. As the central brain of the compressed air system, it performs control tasks and handles the streaming of data 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 antic-

ipate developments in advance by predicting future trends. This in turn 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 tonnes of CO<sub>2</sub> emissions. This makes the new system a perfect fit for the company's sustainability strategy.



*Compressed air is essential for filling and transporting the bottles.*



*Photo: iStock*

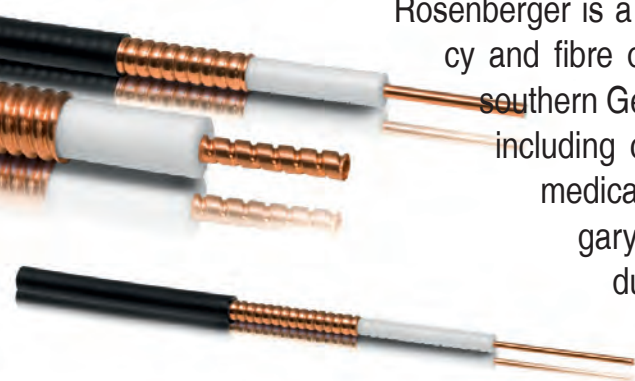




All Photos: Rosenberger Magyarország Kft.

Container-based compressed air stations for Rosenberger Hungary

# Success knows no borders



Rosenberger is a global manufacturer of connector solutions in the high-frequency and fibre 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 continuously.

The Rosenberger head office, located in south-eastern Germany in the foothills of the Bavarian Alps, was established by Hans Rosenberger Sr. in Tittmoning in 1958. The mid-sized industrial company is still family-owned. With its relocation to today's plant site in the neighbouring 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 customised connector solutions in the fields of high-frequency and fibre optic technology. Its products are de-

veloped, produced and sold by more than 11,000 employees worldwide, including at its headquarters in Germany and production / assembly plants and sales locations 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 in Jászárokszállás, near Budapest, began in 2003. The im-

mediate success of Plant 1 resulted in repeated expansion of the production area in several stages. When a new assembly hall was built in 2007, Rosenberger 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: 2.6 m³/min at 8 bar) were purchased, along with compressed air treatment, condensate technology and a SIGMA AIR MANAGER 4.0 master controller.

## Growing in stages

With the company's rapid growth, however, the compressed air station was soon unable to meet the steadily increasing requirements. In addition 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 station was needed. KAESER Hungary began by preparing an ADA (Air Demand Analysis) report. Based on the calculations of the KAESER experts, a cost-effective set-up was identified. To address the space limitations, plans were drawn up for a container-based installation. Shortly afterwards, two 20-foot containers, each with three KAESER BSD 62 rotary screw compressors delivering 8 bar, along with compressed air treatment and control equipment, were set up in Plant 2. The same year, the compressors in the containers were retro-fitted with heat recovery systems. They use the waste heat from the compressors to heat the service water, resulting in further significant cost savings. Because this approach quickly proved highly effective, the compressors in Plant 1 were subsequently equipped 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 expan-

sion, the KAESER experts proposed a turnkey containerised station comprising 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 many advantages – including easier maintenance.

In 2016, as its next expansion move, the company leased another premises (Plant



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

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, again in Nyírbátor, it was obvious – in view of the invariably excellent cooperation in the past – that Rosenberger would again turn to KAESER KOMPRESSOREN Hungary. This time the customer opted for four turnkey 20-foot containers, 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 7.5 bar: 2.84–12.0 m³/min). Naturally the turn-

key solution also includes the compressed air treatment components and the control system. Yet modernisation did not stop there: in 2018, a future-ready, speed-controlled KAESER CSDX 140 SFC rotary screw compressor was added to the Plant 1 container station. Thanks to the SIGMA AIR MANAGER 4/4 master controller, it has been operating smoothly and efficiently with the container station that was installed in 2014, meeting all of the operator's needs with regard to reliability and cost efficiency.



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



KAESER Contain-Air: The complete compressed air station in a container.





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

## Compressed air in the 'All Mag Wheel Repairs' workshop

# Wheel quality and service Down Under

Located on Australia's south-east coast, at 800,642 km<sup>2</sup> the state of New South Wales is around three times the size of Great Britain. The beautiful landscape he discovered upon landing there in the year 1770 reminded the explorer James Cook of the British countryside – more specifically, that of South Wales. Hence the name he gave to the first British colony to be established on the Australian continent.

Sydney is the state capital of NSW, the oldest state in the union and the second-most densely populated, after the far smaller state of Victoria. 44 km south-west of the city's central business district lies the suburb of Ingleburn, home to the 'All Mag Wheel Repairs' workshop. Providing a high-value, reliable service for all makes and models of vehicle, this wheel and tyre specialist is proud of its professional service and guarantee of quality. Each and every alloy wheel brought in for repair is reworked manually by an experienced technician. Compressed air plays an essential role in numerous stages of the

process, such as tyre inflation, the powering of pneumatic tools and painting of the repaired wheel rims.

### Fit for the future

Founded 17 years ago, the business recently moved into larger premises. Having taken the decision to expand and relocate, owner Milan Skocic felt it was of utmost importance to invest in a high-quality, dependable compressed air system from the outset, in order to ensure that he could continue to provide his customers with the professional service and guarantee of quality for which his business is renowned.

Having considered a range of various options available to him, Skocic opted for two KAESER AIRCENTER SM 12s, controlled and monitored by a SIGMA AIR MANAGER master controller. This proved to be the perfect choice; KAESER's AIRCENTER systems feature a high-performance rotary screw compressor with an integrated refrigeration



Photo: iStock

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

dryer and air receiver, all housed within a single compact enclosure. Therefore, in addition to being highly reliable and efficient, each unit takes up minimal floor space. All models are equipped as standard with an integrated SIGMA CONTROL 2 compressor controller, allowing all relevant information to be viewed at a glance on the display. At the heart of every SM-series rotary screw compressor lies a premium-quality KAESER rotary screw airend equipped with flow-optimised SIGMA Profile rotors. Designed to provide maximum energy efficiency, the SIGMA Profile helps achieve considerable energy savings compared to conventional rotor profile designs.

### Quiet and reliable

Installed almost 2 years ago, the KAESER compressed air system at 'All Mag Wheel Repairs' has proved itself every bit as reliable and efficient as expected. Milan Skocic is more than happy with the results: "Our team of specialists is highly experienced when it comes to repairing alloy rims, but for us to be able to fulfil our quality promise to our customers, we can't afford to spend time worrying about the quality and performance of our equipment. Fortunately, KAESER's compressed air system has proven its reliability and efficiency beyond any doubt. Also, because the compressed air system needs to be located close to the point of use, it was very important to us



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

that the compressor system should be as quiet as possible – it's perfect."

Because the compressed air system needs to be located close to the point of use, it was very important to us that the compressor system should be as quiet as possible – it's perfect.



## i.Comp 8

Efficient & exceptionally compact

**KAESER**  
KOMPRESSOREN®

### Oil-free

Minimal maintenance  
and condensate-free

### Powerful and ready-to-run

All-in-one compressed air station,  
including refrigeration dryer and air receiver  
Flow rate 412 - 580 l/min

### Compact

Convenient size, small footprint



### Elegant roto-moulded polyethylene enclosure

Sound-insulating, quiet, scratch-resistant  
and assures value retention

### SIGMA CONTROL

Integrated industrial PC for optimum  
control and networking

**KAESER KOMPRESSOREN – More compressed air for less energy**