KAESER COMPRESSORS®

KAESER report

A Magazine for the Production Industry

Winter 2023

As individual as your needs

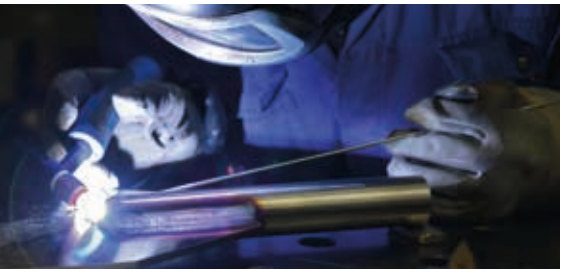
KAESER compressed air systems

Eco-friendly
energy extraction

Invest to save
with a new compressed air system

Industrie 4.0
and sustainability

Contents Issue Winter 2022



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Difficult times demand hope, will and action

Since early 2020 we have been confronted with challenges that are affecting us with an intensity and speed that we have not experienced in over 70 years.

COVID-19, disruption and breakdown of supply chains, bottlenecks in transport capacity, bottlenecks in raw materials, oil and gas, climate catastrophes, soaring energy costs, inflation on an unprecedented scale and war in the heart of Europe. Every person, every company and every organization is being negatively affected by these challenges.

But despite everything, we should not lose sight of the fact that our world today is the best that is has ever been from a historical perspective: never before has there been so much prosperity, so little hunger, such good medical care, so much employment and access to education in the world as there is today. However, this is not to say that today‘s world is perfect, on the contrary, there is still much to be done everywhere to make the world an ever better place for all of our tomorrows.

For time immemorial, people have consistently demonstrated their ability to find solutions, and therefore overcome the challenges of the present and the future, when they pull together, network and communicate with each other, exchange ideas and share work and responsibilities.

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

We need the hope and confidence to trust in our abilities and resilience. We must have the will to solve the problems that we face and have the courage to take matters into our own hands and act, even when we recognize the risks of doing so.

We should turn our doubts and fears into courage and take a sustainable and purposeful approach to the necessary courses of action. This applies to companies, employees, politicians, trade unions and every individual alike.

The future is open and unpredictable. Anything can happen, good and bad. We all have a responsibility to do our best to make the future even better than the present.

Let us all view crises as valuable opportunities to shape a more innovative, more successful and better world.

A new compressed air system provides maximum dependability

Eco-friendly energy extraction

Hamburg-based Abfall-Verwertungs-Gesellschaft mbH (Waste Management Services Ltd), part of the Indaver Group, was one of the first companies to specialize in controlled high-temperature incineration of hazardous and industrial waste. As pioneers in the field of eco-friendly waste disposal, they opened Germany's first facility of this type back in 1971 and, to this day, their environmental and quality standards are hailed as the benchmark for the industry.

High-temperature incineration represents the core business of Abfall-Verwertungs-Gesellschaft mbH in Hamburg. Since undergoing extensive modernization in the 1990s, the company's hazardous waste incineration plant is among the largest and most advanced anywhere in the world today: the facility can dispose of up to 175,000 tons of waste per year. Not only this, but the exhaust heat produced by the plant is fed into Hamburg's district heating system, providing warmth for up to 30,000 households via a neighboring combined heat and power plant.

Turning waste into energy

High-temperature incineration is a carefully controlled process, which incorporates extensive, state-of-the-art flue gas treatment. The plant consists of two identical incineration lines operating independently of one another, each boasting its own downstream flue gas treatment system. This enables alternating inspection and maintenance, and allows the facility to run 24 hours a day, 7 days a week. Optimal incineration conditions combined with highly effective

flue gas treatment reduce emissions to an absolute minimum. In fact, emissions from AVG's plant are not only below the limit values set by the Federal Emissions Control Act (17. BImSchV), but also the even stricter requirements of the licensing authority in Hamburg.

The centerpiece of each incineration line is a 40 ft.-long rotary kiln, which turns slowly on its axis, circulating the waste and ensuring thorough incineration. While the resulting bottom ash cools in a water bath, the flue gas is conveyed into a secondary combustion chamber, where the remaining organic compounds – such as dioxins and furans – are destroyed. Inside the waste heat recovery boiler, the flue gas gives off the bulk of its heat to produce superheated steam, which is then fed into the district heating system. An electrostatic precipitator removes particulates from the cooled gas, while a variety of wet-treatment stages serve to separate heavy metals, hydrogen chloride and sulphur dioxide.

Image left:
Extraction station with downstream compressed air diaphragm pumps.
Image right:
The centerpiece of each incineration line is a 40 ft rotary kiln.

The best technology available

The incineration plant uses compressed air to convey the waste via diaphragm pumps, conduct the flue ash out of the chamber and electrostatic precipitator, and atomize the waste in the kiln and secondary combustion chamber. Compressed air also plays an important role in the facility's safety locking system, which shuts the plant down if the pressure drops below 55 psi. Production Manager Thomas Pöthe explains: "Even a temporary loss of compressed air availability would mean we could no longer operate the incinerators, and the whole plant would shut down. Compressed air supply dependability is absolutely essential." The old system, parts of which dated back to the modernization project in 1997 and others which were added in 2014, could no longer meet this fundamental prerequisite. "We had problems covering demand when maintenance was needed, and as we gradually expanded, our two 215 hp compressors eventually reached their capacity limit," says Lars Schubert, responsible for maintenance and asset management at the plant. When a new storage tank was built in 2018, bringing additional compressed air diaphragm pumps into operation, air demand rose again and it immediately became clear that the time was right for the air system to be renewed. Bearing in mind the authorities' stipulation that companies are obliged to use the "best technology available", AVG Hamburg decided to contact the KAESER sales team. A subsequent air demand analysis (ADA) determined that current requirements were 3 x 1060 scfm at a pressure of 102 psi. It was also important to design for future expansion. The new KAESER air system was commissioned in 2021, inside a brand-new building to ensure optimum conditions in terms of space. Today, four DSDX 305 (max. working pressure 123 psi) rotary screw compressors guarantee a dependable supply of quality compressed air, while two HYBRITEC DTI 668-902 dryers ensure compressed air treatment both for the new compressors and the remaining older ones. Meanwhile, the whole system is monitored and controlled by a SIGMA AIR MANAGER 4.0 master controller. Given that the system reliability essential, Pöthe and Schubert place a high value on maintenance and service. With clear satisfaction, they conclude, "We're very pleased indeed with the high technical standards, the excellent support we have received, and the dependable KAESER service."

> We're very pleased indeed with the high technical standards and the dependable KAESER service
>
> *(Thomas Pöthe, Production Manager)*

An Italian yeast specialist chooses KAESER turbo blowers

Yeast from Florenc on the rise

Thousands of years ago in Ancient Egypt and China, people were already cultivating yeast. In the medieval period, breweries employed a professional yeast cultivator, whose job it was to care for the yeast and ensure that it multiplied, while the 19th century saw the introduction of the first industrial processes for producing baker's yeast. With a true passion for tradition and extensive expertise in modern production techniques, Florentine yeast specialist ZEUS IBA has dedicated itself to manufacturing industrial yeast.

In the center of Florence, just twenty minutes by bicycle from the Basilica di Santa Maria Novella and the Palazzo Pitti, you can find the production facility of ZEUS IBA. Still run today by the Grechi family, the company's origins go back to the 1950s and the production of fruit gelatine and gelling sugar. A few years later, the company took its first steps in the industrial manufacture of baker's yeast and by the 1980s, this had become their primary product. An important milestone in the development of this family-owned company was the joint venture launched in 2016 in partnership with LALLEMAND, a global manufacturer of industrial yeast for baked goods. Wholly owned by Lallemand Group since 2020, this has allowed ZEUS IBA access to new international markets, while still remaining true to its roots as a family busness.

The miracle of multiplication

The baker's yeast produced on an industrial scale by ZEUS IBA originates from cultivating a naturally occurring, microscopic single-cell fungus with an elliptical shape, belonging to the genus Saccharomyces Cerevisiae. The basic principle of production involves allowing a strain of yeast cells to multiply until the required amount of baker's yeast has developed. Under ideal temperature and nutrient conditions, fermentation can produce several tons of baker's yeast from less than an ounce of pure yeast culture in less than one day. Here, the supply of nutrients (molasses of sugar beet, phosphorous and nitrogen compounds), together with the correct process conditions (temperature, time, humidity), are key factors in achieving the right characteristics and quality for the finished product. Since fermentation can be both anaerobic and

Image: Adobe Stock

The high energy savings and virtually maintenance-free drive were decisive for us.

(Alessio Piccini, Maintenance and Process Security, ZEUS IBA, Florence)

Image: ZEUS IBA S.R.L., Florence

The LP 8000 turbo blowers have achieved cost savings of approximately 25 percent.

aerobic, significant skillis required to implement the individual production steps, as only a very fine line divides the two types of fermentation. Only by adding the correct amount of specific substances at precisely the right moment can the process produce baker's yeast rather than alcohol. Baker's yeast is produced predominantly under aerobic conditions, hence a controlled supply of atmospheric oxygen is vital. This is introduced into the nutrient solution in large quantities, under the watchful eye of some of the most sophisticated electronic instruments available.

Playing it safe

Prior to the refurbishment of 2016, the air for the aeration processes was provided by seven blowers from a variety of different manufacturers. Loud noise, high water consumption and high costs were just some of the problems the company faced, not to mention significant ongoing oil changes and maintenance. "Operation was inconvenient to say the least," remembers Alessio Piccini, responsible for maintenance and process security. "The old machines had to be switched on and off manually and used analogue control. We also experienced constant problems with the control valves. On top of that, the mode of operation in general was not very efficient." By 2016, it was clear that something needed to be done to address the situation – and quickly.

The PillAerator turbo blower solution from KAESER promised massive improvement. Because these systems are equipped with magnetic bearings, they operate contact-free, require no lubrication and are completely wear-free. Plus, there is no need for oil or bearing changes, and significant energy savings are made possible by state-of-the-art technology. But sometimes it pays to play it safe. Therefore, it was decided to replace one of the older machines with a turbo blower for a two month trial period. Piccini was interested to see the result…and he would not be disappointed. The results exceeded his expectations; the KAESER turbo blower achieved measurable energy savings of 25 percent. This revelation gave the go-ahead for revamping the entire system. Today, the air supply for the six fermentation units is provided by 10 PillAerator LP 8000 turbo blowers from KAESER. Piccini is more than satisfied with the result: "The new blowers have reduced our energy consumption by 30 percent overall and are saving us 0.5 MWh/year in comparison to the old systems." In fact, this reduction in energy consumption has allowed ZEUS to qualify for a TEE (energy efficiency certificate) issued by the GSE [1] to companies considered as exemplary, which means that the PillAerator turbo blower is providing a double contribution to cost savings.

[1] *The GSE is a state-owned company which promotes and supports renewable energy sources in Italy*

Image: Adobe Stock

Preserving cultural heritage with advanced portable compressors

Assuring the future of the past with modern technology

The Romanian village Geoagiu, located in the heart of Transylvania, is home to what is believed to be the oldest medieval chapel in Romania. In the early 1990s, archaeologist Gheorghe Petrov began his quest to find out when exactly the chapel was built. On a journey of discovery that would last over a decade, he examined both the exterior and the interior of the building in minute detail. During the associated excavation work, he and his team uncovered more than 200 tombs, the oldest of which date back to the reigns of King Ladislaus I (1077-1095) and King Coloman the Learned (1095-1116).

The Romanesque chapel in Geoagiu is one of the oldest surviving sacred buildings in Romania. Due to its circular shape and the construction materials used, it is a rarity among Romanesque architecture in Transylvania. Its exact construction date is unknown, but based on the archaeological finds – especially the tombs located in the churchyard, which date back to around 1100 AD – the church must have existed as early as the late 11th century. The chapel rotunda was used as a church until the end of the 16th century, when the new church (Biserica Reformata) was complet-

Image right: Compressed air is essential to operate the various special equipment needed for façade restoration.
Image below: Numerous details both inside and outside the church reference aspects of Roman history and tradition.

ed adjacent to it in the churchyard. Today, the building remains home to a valuable pipe organ crafted by the renowned organ builder István Kolonics. Numerous church details, both inside and out, reference aspects of Roman history and tradition. Two lion statues near the front door are possibly ex-voto statues for healing of the sick, given the church's proximity to thermal baths. However, they may refer to the coat of arms of the XIV Roman legion, the so-called Gemina, who were encamped in the Geoagiu area. To the right of the entrance is a bas-relief depicting the demigod Hercules, who was worshipped by Roman soldiers, and directly beside it is a funerary monument embedded in the church wall, with a portrait of a Roman woman.

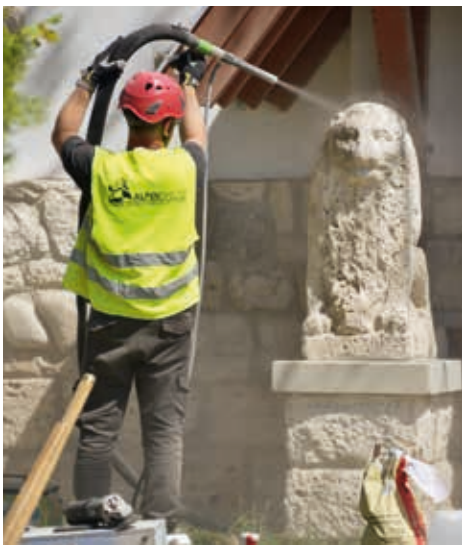
In-depth technical skill

In order to preserve this unique edifice for future generations, the "Reformed Diocese of Transylvania" commissioned Domino Construct Expert, a renowned construction company, with restoration of the sacred building in 2021. The extensive renovation work on the façade not only required in-depth technical skill and specialized equipment, but also a particular proficiency in working at great heights. The necessary expertise for this part of the restoration was provided by façade specialist ALPIN SHUNT. Founded in 2009 by Managing Director István Cseresznyes, the company provides expert façade restoration and cleaning services for historical monuments and buildings – skills which are in great demand today.

ALPIN SHUNT employs a wide variety of sophisticated equipment, allowing it to conduct specialist operations such as the most diverse sandblasting processes currently available (blasting with sand, dry-ice blasting and hydroblasting). When it comes to performing restoration and cleaning work on tall buildings and monuments (such as church towers) or metal structures (e.g. tin roofs), such operations have to be conducted in combination with climbing techniques – as was the case with the Romanesque chapel in Geoagiu.

Construction site powerhouses Made in Germany

Compressed air is essential to operate the various special equipment needed for façade restoration. It provides the power for all devices, such as vacuum cleaners, high-pressure cleaners, dry-ice blasters, water jet washers, steam cleaners, etc. To deliver the necessary compressed air, ALPIN SHUNT relies on MOBILAIR 31 and MOBILAIR 82 portable compressors from KAESER. Equipped with advanced, fuel-saving Kubota diesel engines and durable bodywork, these versatile powerhouses are able to meet even the toughest of construction site conditions. Featuring PE enclosures for maximum impact resistance, they are also intuitive and simple to operate, making them highly valued construction site partners. Costly downtime is also avoided thanks to optimal accessibility to all maintenance points, which is especially important for timely completion of restoration work. Furthermore, the MOBILAIR 82 is equipped with a generator to provide a mobile power source whenever and wherever it is needed on site. Emission-free e-Power versions with energy-saving electric motors are also available for sensitive indoor and enclosed areas.



All images: Sorin Gliga, GLISOR MIX SRL

> The portable compressors from KAESER provided a dependable supply of quality compressed air for all of our restoration equipment.
>
> *(István Cseresznyes, Owner, ALPIN SHUNT)*

New KAESER compressed air system ensures reliable and efficient continuous operation

Invest to save

Quebec's forestry sector is one of the strongest drivers of the local economy and is a mainstay of many of the 140 rural and urban municipalities throughout the province. Moreover, forestry provides approximately 60,000 highly qualified and well-paid jobs, supporting the livelihood of many families. Numerous innovative products used in the construction of countless buildings, bridges, sports centers and arenas are manufactured from the wood products produced here.

All images: Viviane Wybou, Wybou La Photographe

The SIGMA AIR MANAGER 4.0 master controller shows all operating data at a glance.

Since the beginning of the health crisis, we have witnessed a global shortage of raw materials on an unprecedented scale. The reasons for this are often attributed to the worldwide increase in demand coupled with insufficient production capacity. This is compounded by supplier transportation issues and production losses. The resulting ubiquitous shortage of raw materials is also affecting the wood industry and poses a major challenge for companies such as

and ascertain the company's exact compressed air requirements, Stephane Fortin and his team from the KAESER Canada headquarters first performed an air demand analysis (ADA). "The existing compressed air system at the Saint-Félicien plant was quite complex, due to the specific requirements of the production equipment," recalls Fortin. "The two existing compressors dated from 1982 and 1995 respectively and were outdated from a technical perspective. They ran continuously regardless of actual air requirements and consumed a disproportionately high amount of energy. Since the old system wasn't equipped with sensors or a central controller, it was impossible to state actual system performance and efficiency.

Image left: The two 1300 gallon air receivers and the optimally dimensioned piping maintain consistent system pressure.
Image centre: Over 525,000 tons of wood are processed annually at the Saint-Félicien site.
Image right: Resolute Forest Products offers a diverse range of products – including structural timber products.

Resolute Forest Products to meet market demands. Resolute Forest Products is a global leader in the wood-processing industry and offers a diverse range of products – including structural wood products, pulp and paper towels – that are marketed in over 60 countries. Resolute Forest Products is represented by 40 locations in the United States and Canada and, among other activities, also operates power generation facilities.

The company is known for its holistic environmental approach: 100 percent of its managed forests are certified to internationally recognized standards for sustainable forest management. In recent years, Resolute Forest Products has received not only regional but global recognition for its pioneering role in the areas of social responsibility, sustainability, and corporate governance. The Saint-Félicien site in northern Quebec processes over 525,000 tons of wood each year. In order to meet the markets demanding conditions, management has a keen focus on maximum operational efficiency and reliability. Needless to say, this also applies to the compressed air supply, as the plant relies on compressed air to power the pneumatic systems used in almost all of its processes (log handling, debarking, cutting, sawn timber handling). Needing a reliable partner, the operator reached out to KAESER Canada's head office in Boisbriand (Greater Montréal) for an in-depth analysis of potential improvements.

From old to new

In order to determine the current situation Furthermore, an undersized distribution system caused undesirable pressure fluctuations in the network." It was clear that modernization was essential. The operator was looking improve efficiency and increase compressed air system reliability as well as add system monitoring capabilities.

The resulting new compressed air includes three KAESER CSD 125 rotary screw compressors, a SIGMA AIR MANAGER 4.0 master controller and two 1300 gallon air receivers with optimally dimensioned piping direct from the compressor room to help maintain consistent system pressure. Thanks to the new air receivers alone, operating pressure was able to be reduced by nearly 5 psi, which reduced energy consumption by 6 percent. The new, heat-regenerated KBD 1300 desiccant dryer from KAESER also consumes significantly less

energy than the previous compressed air dyer. Plus, it only requires 1 percent of the compressed air flow to operate, while the old one used a massive 15 percent. Detailed analysis also showed that the old pipe network was not able to reliably deliver the necessary supply of compressed air to the points of use without unacceptable pressure drop. The new smart pipe system optimizes the compressed air network and maintains consistent pressure. To avoid costly downtime due to lack of compressed air availability, the master controller ensures that only two rotary screw compressors operate at a time, leaving the third in reserve for redundancy. In addition, the SIGMA AIR MANAGER 4.0 evenly distributes operating hours between the three compressors allowing a coordinated preventive maintenance schedule. Since the system's upgrade by KAESER, wood processing in Saint Félicien has been running smoothly, and the inconvenience of costly downtime is just a distant memory. And thanks to KAESER'S comprehensive 5-year warranty, the operator can look forward to even better cost control.

The SIGMA AIR MANAGER helps prevent costly downtime.

(Stephane Fortin, Sales, KAESER COMPRESSORS Canada)

Bild: fotolia.com

All images: Viviane Wybou, Wybou La Photographe

Things can often get hot at CTC advanced GmbH, quite literally: as an accredited test laboratory, the Saarbrücken-based company is responsible for testing a huge variety of products, from electromobility technology and telecommunications equipment to electronic payment systems. Given that part of its responsibility, is to ascertain load limits for the products it inspects, some tests, such as those conducted on high-performance lithium-ion batteries, can be particularly dangerous and require fire-resistant test equipment. Accordingly, the experts at CTC advanced always have to be ready for anything.

CTC stands for Consulting, Testing and Certification – a name which neatly sums up the array of services the company provides. The test laboratory, established in 1998 out of the former Federal Office for Approvals in Telecommunications (BZT), assists companies in developing and implementing their product qualification plans, determining the conformity status of their products, and navigating the increasingly complex certification procedures of the worldwide market. Thanks to its many years of experience, CTC advanced is well versed in the subject of global approvals regulations and, as a member of numerous international committees, is always up to date with the latest requirements.

Stringent testing

The broad range of products put through their paces in CTC advanced's test facilities cover everything from automotive components (e.g. batteries for electromobility systems), contactless credit cards, hearing aids, and other medical equipment, to biometric passports. Goods are tested for such properties as electrical safety, electromagnetic compatibility, and virtually all radio technolo-

At CTC, different payment terminals are tested for compatibility with the corresponding means of payment (e.g. credit cards, mobile payment systems).

Compressed air is a
electricity – we can't

(Sascha Sande

CTC – the one-stop shop for consulting, testing

One for

Sascha Sander, Manager of IT & Facility, with two SK 22 rotary screw compressors.

gies (from 0 to 500 GHz). Environmental simulation labs test for resistance to factors including salt spray, cold and heat, while destructive testing is conducted to test for battery safety. In the laboratories used for electronic payment and identification system testing, cashless payment devices such as credit cards and card readers are tested for their adherence to the relevant approval standards.

Demand for compressed air is omnipresent throughout each of the five buildings at the Saarbrücken facility. Compressed air is used almost everywhere that test pieces require handling: in the vacuum, salt spray, and dust chambers, for example, as well as during the RF shielding tests. For automotive components, there are vibration test stations of various sizes which feature sliding tables equipped with pneumatic bearings. The same goes for the huge 300 kN shaker (for vibration tests with simultaneous climatic variation) – the base plate of which weighs over 3 tons alone, bringing the overall weight of the device up to an impressive 33 tons. In one laboratory dedicated to payment systems, we come across a sophisticated machine built especially for this section: a domed test bench, in which different payment terminals are tested for compatibility with the corresponding contactless cards. Here, compressed air creates a vacuum in accordance with the ejector principle, allowing the card to be drawn in with pinpoint accuracy.

Discovering KAESER

The company's success has meant continuous expansion, with the result that the two aged reciprocating compressors it had been operating could no longer cope with the ever-increasing air demand. Sascha Sander, Manager of IT & Facility, found himself tasked with planning an entirely new compressed air supply for the business. The question was – how? "The decisive moment came when I attended a compressed air seminar arranged by KAESER in Bochum," he remembers. "I came across it when hunting for information, and it made such an impression on me that I knew immediately this was what I was looking for." When it came to deciding on the right system, Sander was supported by both his local KAESER sales team and KAESER's partner INDRUBA GmbH in Saarbrücken. Since the various consumption points were spread far and wide throughout the site, they chose a decentralized solution for the main buildings, where reciprocating compressors such as KAESER's EUROCOMP EPC 630-250 now supply the compressed air for numerous RF and electromagnetic compatibility test stations. Another building, in which electromobility batteries are tested for safety, operates an AIRCENTER SX 4. In two other test areas, the compressed air supply is centralized via an interconnected ring distribution system, and is designed for 100 percent redundancy so individual components can be bypassed when maintenance is required – without affecting compressed air availability.

The centralized system operates with an AIRCENTER SM 12 and two SK 22 rotary screw compressors, each with a SECOTEC TB 19 refrigerated dryer, plus a DHS 4.0 air-main charging system; monitoring and control is provided courtesy of a SIGMA AIR MANAGER 4.0 master controller. "We are now well prepared for our future development", declares Sander with complete satisfaction.

Schulz dental laboratory renews with a KAESER reciprocating compressor

Mile

When it comes to producing the perfect set of dentures, harmony, individuality and naturalness are key to providing wearers with a radiant and flawless smile That is the aim of the Schulz dental laboratory in Nuremberg, whose dentures are renowned for their seamless appearance and perfect performance.

Established by master dental technician Peter Schulz in December 2000, the Schulz dental laboratory has been a valued partner of numerous dental practices throughout Nuremberg and the surrounding region for over 20 years. Specialist dental technicians perform their work with exceptional diligence and skill in bright and friendly premises, with light bathing the four to five workstations on all sides. The modest size of the laboratory is part-and-parcel of the company culture, which “serves to maintain consistently high quality standards,” in the words of founder Peter Schulz.

Compressed air makes it possible

As is the case with many businesses, compressed air plays a central role at various application points in the laboratory: for blowing out and cleaning surfaces, or operating the various sandblasters used for blasting the cement and embedding compounds used at every workstation. The dental turbine, used for surface finishing, also utilizes compressed air, as do the press furnaces and kilns, which melt the pellets at temperatures of 1450-1650 °F so they can be processed into ceramic dentures.

One of the most fascinating applications for compressed air is the CAD/CAM milling machine. Modern dentistry employs high-tech, computer-assisted processes for the design and manufacture of denture pieces such as crowns, bridges, implant prostheses, abutments (the connecting elements between a dental implant and the crown, bridge or prosthesis set upon it) and long-term temporaries. Always ahead of the curve, the laboratory invested two years ago in new, technologies for processing the necessary materials, such as zirconium dioxide, ceramic, titanium, metal, alloys, all-ceramic and high-performance polymers.

Ready for digitalization

The purchase of the new CAD/CAM milling machine meant that the KAESER reciprocating compressor, which had

> For me, quality is everything. I need good, dependable equipment for my business.
>
> *(Peter Schulz, master dental technician and owner)*

s of smiles

served the laboratory faithfully for the past 20 years, was no longer powerful enough to meet the increased air demand. Peter Schulz contacted the KAESER sales team: “I was determined to have a KAESER compressor”, he remembers with a grin, “because I needed it to be as dependable as its predecessor.” The laboratory’s compressed air requirement (flow rate 20 cfm, pressure up to 160 psi), coupled with restricted available space, led to selection of a KAESER i.Comp 9 TOWER T reciprocating compressor. This system includes a compressor block, two air rceivers, a refrigeratedd ryer and an internal SIGMA CONTROL 2 controller, all packaged within a space-saving housing which only requires about 10 square feet – compact enough to fit in the small service room.

Plus, the i.Comp 9 TOWER T has many other features which benefit the dental laboratory in its daily operation. Take enegy consumption, for example. Thanks to its speed-controlled motor, the system delivers the exact amount of compressed air required by the application at any given time, making it impressively enegy-efficient. This means the i.Comp 9 has a significantly better specific package input power than conventional reciprocating compressors, which has a direct effect on the operating costs of the business.

It is now two years since the i.Comp 9 TOWER T was installed in his laboratory, and Peter Schulz remains as satisfied as ever with the dependability, energy efficiency, and compressed air availability of KAESER reciprocating compressors. What’s more, there was yet another reason for him to be pleased with his purchase – the system qualifies him for a subsidy from the Federal Office for Economic Affairs and Export Control (BAFA) for particularly energy-efficient investments, making him eligible for a rebate amounting to 30 percent of his procurement costs.

Thanks to its compact dimensions, the i.Comp 9 T fits into the small space available.

Image above left: In the dental laboratory, compressed air is required at every workstation.
Image above center: The work demands high levels of concentration and skill.
Image above right: Harmony, individuality, and naturalness are the key ingredients for the perfect set of dentures.

A wastewater treatment plant in Germany's Ore Mountains benefits from heat recovery

Impressive dual energy savings

The Ore Mountains (Erzgebirge in German) are among the most beautiful highland areas in Germany, and full of historical riches from the mining era. The opportunity for numerous leisure activities attracts tourists from all over the world to this unique mountainous region, which, thanks to its scenic diversity and historical significance, has been listed as a UNESCO World Heritage Site since 2019.

Nestled among the charming peaks in the German state of Saxony lies the municipality of Gelenau. Responsibility for wastewater treatment in these parts falls to the Wilischthal Wastewater Treatment Association, established in 1991 as a municipal corporation under public law. Serving a current population of 16,800 inhabitants, its fully biological treatment plant, includes two circular combination tanks with primary and secondary clarification, currently operates at around 90 percent of capacity.

Renewal required

Wastewater purification requires complex technical infrastructure, not to mention continuous maintenance and modernization to ensure maximum reliability, sustainability and cost efficiency. For these matters, the

technical systems which provide the oxygen supply for the two aeration tanks take center stage.
Both of the existing rotary lobe blowers had begun to show their age. The noise level was so loud they could be heard clearly in the building above and the machines were anything but efficient. Also, because there was only one blower for each aeration tank, there was no redundancy in the system. It was clear that installing up-to-date machines would bring much-improved results in terms of energy efficiency and CO_2 emissions. With this in mind, Managing Director Matthias Bauer and the team at the treatment plant began to update the technical equipment at the facility. Because it would be necessary to draw upon two separate funding measures, the options offered by several vendors underwent extensive calculations and precise comparisons.
The demands placed upon the new blower system would be high indeed. Not only would it need to be quiet and efficient, it would also need to offer the necessary redundancy and a much-improved control range over the old system which only offered the option of "switch on" or "switch off". Ideally, the new system would be able to operate in perfect synergy with the existing process management system, which records process values such as oxygen, ammonium and nitrate content, and would provide the basis for control of the blower system. The comparison of various potential suppliers revealed that the KAESER solution was the best choice, based on relevant technical criteria alone.
And there was another factor in KAESER's favor – none of the other providers offered a blower small enough to fit through the floor hatch leading to the basement where the machines were to be located. Thanks to their compact size, three KAESER rotary screw blowers could be accommodated where only two would fit before – thereby fulfilling the redundancy requirement. The machine room at the Gelenau treatment plant now contains three DBS 220 L SFC frequency-controlled rotary screw blowers to supply air to the two aeration tanks, plus a BB 52 C rotary lobe blower for the sand trap.

Mission accomplished

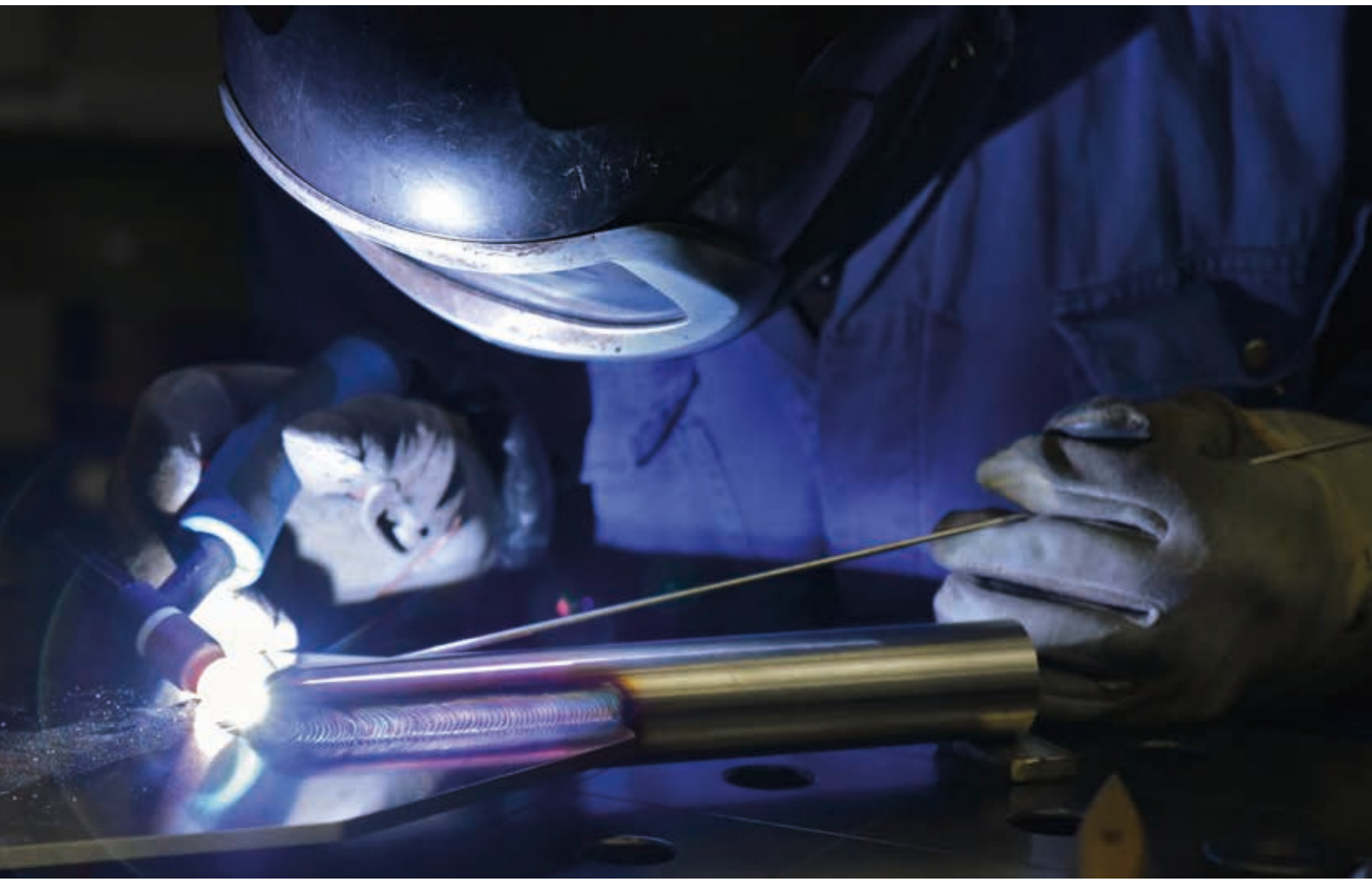
And what of the requirement to reduce CO_2 emissions? Figures show these have been reduced by an incredible 44 tons per year, which also represents a significant cost saving. Furthermore, when it comes to saving energy, the blower station still has one more trick up its sleeve: the option of using the exhaust heat from the blowers to supplement the building's heating system, which previously consumed almost 2000 gallons of fuel oil per year. By directing the heat generated during compression via a heat exchanger and generously dimensioned buffer storage to the underfloor heating, this fuel oil requirement has been reduced by 60 percent, equating to further CO_2 savings of over 15 tons per year. That is a highly impressive figure in today's world, where everything revolves around the replacement of fossil fuels. Bauer and Plant Manager Ralf Scheidhauer are very satisfied with the new blower station from KAESER, which has fulfilled all of their expectations and more. The icing on the cake is the full service contract, which means they can enjoy complete peace of mind regarding system dependability and performance.

> We value the complete dependability and efficiency of the blower station above all else.
>
> *(Ralf Scheidhauer, Plant Manager, Gelenau wastewater treatment plant)*

Upper image: The compact design of KAESER rotary screw blowers has ensured the necessary redundancy.
Lower image: Regular water analyses are conducted in the in-house laboratory.

Dinnissen chooses an intelligent and holistic system solution from KAESER

A global leader in process engineering



Dinnissen optimizes, innovates and automates its customers' entire processes with tailor-made solutions.

Always striving for unique solutions, viewing problems as potential solutions, and doing things right even when nobody is looking – that's the Dinnissen company philosophy. With this credo, the Dutch family company, based in Sevenum, has become the global market leader in the process engineering of powders, pellets and granules.

In 1948, Dinnissen developed the first machine for a customer in the compound feed industry. Today, billions of people use products every day that have come into contact with Dinnissen equipment. The Netherlands-based process engineering specialist develops innovative applications both for stand-alone machines and complete process lines. Thanks to the creative, win-win oriented company philosophy, combined with more than 70 years of experience in a gamut of projects, Dinnissen solutions can now be found in a wide variety of sectors in the food, dairy, animal feed and chemical industries. Dinnissen optimizes, inno-

KAESER ASD 40 T rotary screw compressors with heat recovery.

vates and automates its customers' entire processes with tailor-made solutions that are developed, manufactured and tested in-house. The ultimate goal is to ensure that the entire process operates with maximum performance and efficiency at all times, and this is precisely what the process specialist has been successfully achieving for over seven decades. However, success requires space. In order to accommodate the innovative company's current growth, additional, energy-neutral production facilities were constructed. On a tour of the factory, Operating Director Wouter Kuijpers proudly shows the new buildings, which cover over 5,000 square feet. The first building houses the fully automated sheet metal store with advanced laser cutting and sheet metal processing machinery. An abundance of daylight streams through the large roof windows, while a welding fume extraction system with heat recovery has been installed in the stainless steel welding hall.

Sustainability and efficiency

Compressed air also plays a central role in the new facilities, for example in driving various pneumatic tools (e.g. polishing tools for stainless steel parts) and for operating laser cutting systems.

To mirror the new building's environmentally friendly design, Kuijpers also wanted the new compressed air system to be as energy-efficient and sustainable as possible; heat recovery was on the wish list too. A careful comparison of various compressed air systems providers followed. It was the combination of expert advice from KAESER Compressoren B.V. in Borne (Netherlands) and perfectly aligned corporate philosophies that won Kuijpers over in the end. The decision was made to choose an intelligent and holistic system solution from KAESER that would provide Dinnissen with a dependable and efficient supply of quality compressed air with minimal energy and maintenance costs. The new compressed air system which has also found space in the new building includes three KAESER ASD 40 T rotary screw compressor packages (flow rate 138 cfm max. working pressure 125 psi). The integral refrigerated dryer in ASD T units provides highly efficient performance, thanks to its energy-saving control. The dryer is only activated when compressed air drying is actually required. As a result, the specific compressed air quality is achieved with maximum energy efficiency. Three Aquamat CF 9 series oil-water separators are responsible for environmentally friendly condensate treatment and save approximately 90 percent of the costs that would otherwise be incurred for disposal by a specialist company. At the heart of the compressed air system is a SIGMA AIR MANAGER 4.0 master controller orchestrating component operation and making compressed air production and treatment even smarter, safer and more efficient.

The operator is therefore able to benefit from maximum energy savings. The new compressed air system is rounded out by a 500 gallon air receiver and a DHS 4.0 series electronic air-main charging system developed by KAESER. Plus, the operator enjoys additional savings by reusing the energy that was supplied to the compressors. The heat energy produced during the compression process is recovered via the integrated plate-type heat exchanger and is available to heat the stainless steel welding workshop and to support the facility's central heating system.

> Thanks to expert advice from KAESER, our new compressed air station is future-proof, sustainable and energy-efficient.
>
> *(Wouter Kuijpers, Operating Director, Dinnissen, Sevenum)*

A welding fume extraction system with heat recovery has been installed in the stainless steel welding area.

The new production facility with its high-tech machinery.

All images: Dinnissen B.V. Sevenum (NL)

Contracting provides the perfect solution for an automotive supplier

Industrie 4.0 and sustainability

The “Just in time” inventory management principle is widespread in the automotive industry. “Just in sequence”, on the other hand, takes the concept a step further, with the necessary parts being delivered directly to the point of assembly, in the right quantity and at the precise moment they are required. For this method to work effectively, maximum operational efficiency, and high-performance logistics are essential, while downtime is completely out of the question due to the high costs it incurs.

Light Mobility Solutions GmbH (LMS) is a global supplier of exterior parts for the automotive industry, and counts most of Europe’s leading original equipment manufacturers (OEMs) in this sector as customers for its comprehensive product range. An early adopter of “Just in time” and “Just in sequence” delivery models, LMS manufactures entire bumper systems at its facility in Obertshausen. There are four sites in Germany, delivering the complete value chain directly to the customer’s assembly line: from plastic granulate to fully painted bumper system, including audible parking aid, rear-view camera, LED lights, and more.

As a Tier 1 supplier, LMS considers itself obliged to adopt a sustainable approach to raw materials, working in tandem with the automotive manufacturers. “The future will see us being measured not only on the volumes, condition and quality of our products, but also under what conditions they are produced, how much energy we use, how sustainable and efficient our operation is,” declares Stephan Spengler, Production Manager at LMS Obertshausen. an energy management system in accordance with ISO 50001 allows the company to improve its energy efficiency on an ongoing basis, while reducing its power consumption and the associated greenhouse gas emissions.

Light Mobility Solutions GmbH in Obertshausen supplies complete bumper systems to Europe’s leading OEMs.

Obertshausen delivers the complete value chain directly to the customer's assembly line: from plastic granulate to fully painted bumper system.

The product range includes bumper systems for the automotive aftermarket segment.

The data and values necessary to achieve this are provided via comprehensive machine and system networking facilitated by advanced Industrie 4.0 technologies.

Compressed air contract

Every area of the business at LMS contains high-tech applications that rely on compressed air, the dependable availability of which is a fundamental prerequisite for achieving the "Just in sequence" principle of parts delivery. "The robots in the injection moulding area need compressed air for the smallest of movements, as well as to take the parts in," Stephan Spengler explains, "as do the machines in the assembly area, which use cylinders to lift, lower and process parts. The paint shop, which is very highly automated, also requires compressed air to atomize and apply the paint." Not only does the compressed air have to be supplied at the right quality (Purity Class 1.4.1), but 100 percent redundancy must be available in order to prevent costly downtime. It was these considerations that convinced the automotive supplier to opt for the SIGMA AIR UTILITY operator model from KAESER: "Instead of purchasing the machines for our compressed air system outright, we benefit from a contractually assured compressed air supply for all of our equipment, which reduces the risk of production downtime to an absolute minimum. Another advantage of this model is that our monthly compressed air costs are easy to calculate."

Eco-friendly compressed air technology

The compressed air demand at Obertshausen last year amounted to some 600 cfm at a pressure of 120 psig. To guarantee the required supply, KAESER power is concentrated in the form of six rotary screw compressors, while compressed air treament is provided by four energy-saving refrigerated dryers, two desiccant dryers and an array of filters and oil-water separators. Since the individual components are spread across four separate systems a SIGMA AIR MANAGER 4.0 master cotroller is used to ensure seamless interaction between all elements in the system, regardless of their physical location. The SAM 4.0 also ensures the system is Industrie 4.0-compatible and, by providing live data and key performance indicators, provides the necessary prerequisites for the energy management system. It also achieves the company objectives with rgards to energy efficiency, sustainability, eco-friendliness and CO_2 reduction. Plus, there is one final way in which LMS profits from this arrangement: since all of the compressors are equipped with heat exchangers, the business reaps additional cost savings from using heat recovery to warm its production facilities.

> The SIGMA AIR MANAGER allows us to protect the environment and save costs.
>
> *(Stephan Spengler, Production Manager, LMS in Obertshausen)*

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Mobilair M 255E

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Viewable on the SIGMA CONTROL SMART controller display, or online via wireless modem

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Ideal for temporary operations, or permanent installation outdoors

Compressed air aftercooler standard
Also optionally available with integrated microfilter combination

Compact and eco-friendly
Durable skids and a closed floor pan

Innovative and maintenance-friendly
Fluids drain to the outside for rapid outdoor maintenance