KAESER COMPRESSORS®

KAESER report

A Magazine for the Production Industry

Winter 2020

SIGMA AIR MANAGER 4.0 in harmony with building control systems

The new TG series SECOTEC compressed air refrigerated dryer

Compressed air at its best

A future-proof compressed air system with SAM 4.0 at the Popp Group, Forchheim

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Digital Twin as a key component of digitalization

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

Every business, no matter whether large or small, needs to embrace digitalization in order to assure its competitive edge and even its very survival.

Particularly for machine, device and equipment manufacturers, the Digital Twin concept is the most obvious, perhaps even the most important component for successful entry into the world of digitalization.

All real-world items (such as machines, equipment, etc.) have a Digital Twin, which includes all vital static and dynamic information regarding the product itself and its process description.

The real-world situation is complemented by a virtual reality, in the form of binary data that consequently enables the storage, transmission, processing and interpretation of this data.

Everything is networked with data exchange taking place electronically. Smart sensors, which also recognize the meaning of the data, provide all necessary information relating to the status and usage of the real-world items. Based upon this, functionality such as predictive maintenance that increases machine and equipment availability through reduced downtime is made possible. Moreover, maintenance costs are reduced as a result of the elimination of unnecessary inspections, downtime is minimized and service is successful from the very first service visit onwards. In addition, the energy efficiency of the applicable equipment is significantly improved.

Competitive technical services will no longer be possible in the future without the Digital Twin concept, since the need for cost reduction and increased availability can only be met by effective digitalization.

With their humorous act, "The Physicists" contributed to the day's entertainment, as did a host of musical groups.

The entrance hall of the "Research and Innovation Center", completed in late 2017.

100 years of KAESER

What to expect at a centennial celebration? One thing is for certain, expectations were high: after all, an event like this takes place only once every hundred years. However, judging by the unanimous feedback from our guests, all expectations were not only met, but were far exceeded. There was high praise for the variety of food and drinks, the diverse entertainment program and the attention to detail that had been lavished on planning and organization, demonstrating beyond any doubt just how much the business values each and every individual.

Whether approaching the celebrations on one of the many shuttle buses that were provided, by bicycle or on foot – the enormous party venue could be seen from afar, set against the impressive backdrop of the KAESER skyline, proudly boasting its new Research and Innovation Center. Hundreds of trestle tables and benches had been laid out for the festivities, together with parasols, tents and pavilions. A vast stage, reminiscent of the ones seen at Coburg's Samba Festival and "Schlossplatzfest" show, gave promise of the entertainment to come.

Let's have a party

The diverse musical offerings included KAESER's own in-house band, a Coburg-based Samba group, the 'Glas-Blas-Sing Orchestra' from Berlin (who demonstrated how to play cool tunes using glass bottles!) and, last but not least, Coburg cult band 'Six in the Basement'. Then there were 'The Physicists', whose humorous act included eye-opening physical phenomena from the world of compressed air. During the intervals, the big screen behind the stage showed video clips about KAESER and its products. For those wanting a more in-depth look, signs had been placed around the production halls to guide visitors on a walking tour of the facility and screens had been set up in each location, playing short films about the individual stages of production.

Various refreshments were on offer in the numerous pavilions that had been erected around the grounds. Moreover, a renowned Coburg catering company served delicious German cuisine from a huge marquee, while ten food trucks offered a rich selection of other specialities.

Success through communication

The first of the show's highlights came onstage at midday, as executive directors Thomas Kaeser and his wife, Tina-Maria Vlantoussi-Kaeser, took to the microphone. In a moving speech that clearly came from the heart, Thomas Kaeser first thanked all employees, in Germany and throughout the world, for their dedication that has been so instrumental in achieving the company's success. He then went on to emphasize the key importance of communication, not only between employees, but also between the different levels within a company: "The world is turning ever faster and will continue to do so at an ever-increasing rate. A business within a global context can only meet the many and varied challenges of the future if everyone pulls together."

In her compelling speech, Tina-Maria Vlantoussi-Kaeser also stressed the importance of communication, highlighting that the total work effort of three employees, if working in isolation from one another, still only represents the sum of the individual worker. A unified and interactive approach, however, achieves the very best results from an individual's efforts and provides the basis for the company's continued global success.

At the end of this perfect day of celebration, it was clear to see from the guests' happy faces that they had enjoyed it to the full and are immensely proud to be a part of this company.

Left: A walking tour of the facility with lots of interesting information was arranged for the guests.
Center: There was entertainment for the young and old alike with various compressed air themed attractions.
Right: Even spray-painting uses compressed air.

Photo: F.X. MEILLER Fahrzeug- und Maschinenfabrik GmbH & Co KG

SIGMA AIR MANAGER 4.0 in harmony with building control systems

Perfect partners

The year MEILLER was founded, 1850, coincided almost exactly with the transition from early industrialization to the Industrial Revolution in Germany. The First Industrial Revolution used water and steam power to mechanize production. Today MEILLER is a leading player in the Fourth Industrial Revolution, a transformation that is merging technologies and blurring human-machine interfaces.

MEILLER stands for technological excellence. Specializing in the production and sale of tipping superstructures and trailers, world-renowned MEILLER hydraulic equipment and high-quality lift doors, F. X. Meiller Fahrzeug- und Maschinenfabrik GmbH & Co KG has developed during its 169-year history into a market leader in the construction, waste management and utility vehicle sectors. MEILLER now has locations in Munich, Karlsruhe, Switzerland, Czechia, Poland, France, Russia, the UK and Austria. With a ground-breaking ceremony in the Austrian town of Oed bei Amstetten in October 2018, the company began preparations to replace its existing plant in Waidhofen/Ybbs. When completed, the facility will also be home to MEILLER's new Austrian headquarters.

Meanwhile MEILLER has launched a further chapter in its history with a new, relatively young business segment: "Meiller-Gärten" is one of the largest private-sector projects for the construction of rental housing in the city of Munich. A total of 600 apartments and a 150-room boarding house are now being built with floor space of over 1,000,000 sq. ft., distributed across 14 buildings on eight plots of land. The project takes direct aim at Munich's notorious housing shortage. The new housing will also benefit MEILLER employees.

Industry-standard smart homes

MEILLER, which holds both ISO 14001 and EMAS certification, is deeply committed to environmental protection. Consequently, one of the company's main objectives is to significantly reduce its CO_2 emissions. To that end, it has implemented an energy management system in accordance with ISO 50001. This requires all data, energy consumption figures and key indicators to be definable, retrievable and available for analysis. This involves the use of the latest technologies. MEILLER has been using building control technology since the new administration building was completed in 2016. It is used to log the operational status of system components and directly capture measurements, and to handle central control of the lighting, ventilation and heating systems along with the supply of cool and warm air.

When the time came to update the compressed air system in 2018, the company looked for compressed air system suppliers that could offer not only a compressed air system with fail-safe and energy-efficient components, but also an Industrie 4.0-compatible controller capable of perfect coordination with the building control technology, in order to ensure access to compressed air system data from the various user devices. After demonstrating its ability to meet both requirements in every respect, KAESER received the order to upgrade the compressed air system.

Industrie 4.0 in top form

Due to the many production applications where it uses compressed air, MEILLER attaches great importance to the energy efficiency and reliability of the related equipment. Compressed air is used for the CNC machines in the hydraulics division and to drive the robots, torque wrenches, compressed air wrenches, presses and valves, the paint systems and spray guns, and the compressed air cranes.

The integration of the SIGMA AIR MANAGER 4.0 controller into the building control system ensures that the operating parameters of the compressed air system can be accessed from a PC at any time.

Photo: F. X. MEILLER Fahrzeug- und Maschinenfabrik GmbH & Co KG

The user can view all operating data from the compressed air system on the screen and display other parameters from the building control system.

To specify the appropriate compressed air components, an ADA analysis (Air Demand Analysis) was initially carried out to determine the actual compressed air needs and a detailed consumption profile. The ADA revealed a required air flow of approximately 194 million cubic feet per year. To deliver that quantity, the previous compressed air system consumed 888,000 hp. It was immediately clear that the potential energy savings with the purchase of new compressed air components would be substantial. In addition, the project met all criteria for claiming a BAFA subsidy equal to 30 percent of the purchase price. As a result, two old compressors from another manufacturer were replaced by a single high-efficiency, frequency-controlled KAESER DSD 205 SFC rotary screw compressor. The upgrade also included a new TF 280 dryer and gures, the new compressed air station can therefore be credited with impressive annual savings of 103 tons. Also very much in line with MEILLER's environmental protection strategy is the heat recovery concept.

We have taken a decisive step towards CO_2 reduction. The compressed air system is part of our environmental strategy.

the SIGMA AIR MANAGER 4.0 master controller, as mentioned above, which could connect the machine to the building control system. The existing compressed air receivers located outside the compressed air system were integrated into the new concept.

Effective environmental protection

With the system running reliably and smoothly since the project was successfully completed in mid-2018, the time has come to sum up the results - the figures show that the goal of a drastic reduction in CO_2 emissions has been achieved. The new compressor has reduced annual energy consumption by nearly 166,000 hp, which means savings of 82 tons in CO_2 emissions. The new dryer is also saving energy and reducing emissions. As compared with the old system, where drying consumed 52,000 hp per year, MEILLER now uses just one fifth of that amount, namely 10,000 hp. That represents a reduction of almost 21 tons in annual CO_2 emissions. Combining those fi- This involves the year-round use of the waste heat from the compressor, resulting in a 72 percent improvement in efficiency.

One-stop shop

Franz Zehetmeier, the director of plant development and processes, has high praise for the implementation and realization of the project. Everything – from the planning stage through to the set-up, the necessary refurbishment work, and the integration into the building control technology – went smoothly and was completed to the customer's full satisfaction: "KAESER took care of everything under its own responsibility and with the help of reliable service providers and local KAESER partners. We didn't have to do a thing." Especially impressive from Franz Zehetmeier's standpoint is the fact that the commissioning of the KAESER rotary screw compressor required no production downtime, since all parties involved in the planning and implementation worked together seamlessly to complete the entire switchover on a national holiday.

Photo: F. X. MEILLER Fahrzeug- und Maschinenfabrik-GmbH & Co KG

For MEILLER, the manufacturing of mechanical parts to high tolerances is a top priority.

Compressed air technology meets the smart factory

Experiencing the digital future up close

The theme of the latest edition of the Hannover Messe, which took place in April 2019, was "Integrated Industry – Industrial Intelligence". The event attracted exhibitors and visitors from over 70 countries to Hanover. KAESER KOMPRESSOREN was in attendance too. The company made a strong impression with a 12,000 sq. ft. booth, offering visitors a close look at the latest compressed air technology in the world of Industrie 4.0. In addition, with the aid of advanced digital media, it gave them a realistic sense of how the equipment looks in action.

The fact that today, in the era of Industrie 4.0 and the smart factory, compressed air equipment manufacturers are increasingly becoming all-round service providers, is no longer a secret. This development has run parallel to the shift in the focus of customers, away from individual components and towards entire systems and the way they are networked. The magic word that inevitably comes up in this context is digitalisation – because that is the basis for the networking of machines, humans and computers. Visitors to the KAESER stand in Hanover were not only able to see and ask questions about the possibilities already available today through the digitalization and networking of compressed air systems – advanced technology also let them see these advances in action.

Key technologies for Industrie 4.0

Among the highlights at this year's KAESER stand were live demonstrations of the SIGMA AIR MANAGER 4.0 master controller, which visitors watched in action as it performed its tasks. The SIGMA AIR MANAGER 4.0 controls and monitors all components of a compressed air system, ensuring optimal interactions and creating unprecedented energy savings. Another sensation at the KAESER stand was the innovative SIGMA SMART AIR digital service, which has the potential to generate further spectacular cost efficiencies in a modern compressed air system.
Adding to the excitement for visitors was the realistic experience of both technologies provided by an advanced augmented reality system. This gave them a chance to see for themselves how KAESER products and services work perfectly, hand in hand, in a modern compressed air system, boosting efficiency to save costs and ensure maximum availability.

Numerous innovations

Another aspect highlighted at the KAESER stand was economic efficiency – and which modern, high-efficiency rotary screw compressors now deliver the best results in that regard. On hand for the event were a few of the latest water-cooled rotary screw compressors: ESD (flow rate: 212 - 1660 scfm), DSD/DSDX (flow rate: 141 - 1200 scfm), FSD (flow rate: 353 - 2154 scfm) and CSDX SFC (flow rate: 39-618 scfm). The latter is equipped with a future-oriented, energy-saving synchronous reluctance motor and speed control. Also on display, from the FSG series – the largest size class of oil-free rotary screw compressors – was the new FSG with i.HOC (integrated adsorption rotation dryer). And from its family of energy-saving refrigerated dryers, KAESER presented the SECOTEC TG. This new dryer, with its innovative latent heat storage system, was launched on the market in the summer of 2019.

Photo: ecoduna

Green energy for the future of the blue planet

The hanging gardens of ecoduna

An industrial operation where the only waste product is oxygen? It sounds far-fetched, but it is already a reality. At eparella GmbH, a subsidiary of ecoduna AG, production is based on nature's recipe. At the eparella plant in Lower Austria, this approach is being used to produce microalgae – on an industrial scale. And compressed air – of the highest quality standard – is an indispensable part of the process.

Microscopic – but highly versatile

The future potential of the market for microalgae is enormous – as demonstrated by the billions in sales already generated today through worldwide demand for this valuable raw material. Most demand comes from growth markets, for example the food and food supplement industries, cosmetics and pharmaceuticals, which benefit from the high concentrations of high-quality omega-3 fatty acids contained in microalgae. ecoduna is working to establish itself as an important player in this market, which the company believes will be adversely affected by a decrease in the supply of fish oil-based omega-3 fatty acids in the future.

Other high-potential ingredients for which microalgae serve as a raw material include pigments, antioxidants, carbohydrates and proteins. At present, most of the worldwide output of microalgae, totalling over 99,000 tons per year, is produced in East Asia, Australia and North America, with European producers still accounting for a relatively small share of global needs. That represents a big opportunity for ecoduna, especially considering that Asian microalgae often fall short of European standards and are therefore of limited use in the food industry.

Patented technology

In the Lower Austrian city of Bruck an der Leitha, eparella opened an advanced production facility for high-quality microalgae in March 2018. The company has built one of the world's largest production plants, with a total area of over 108,000 sq. ft. When fully expanded (planned for 2021), it will generate approximately 331 tons of biomass annually.

The key ingredient to success is a patented technology for the resource-conserving production of high-quality algae powder. And as mentioned above, the only waste product is oxygen. This patented ecoduna technology sets the company apart from its competitors. The microalgae are cultivated in a highly sterile environment using vertical glass tubes in a closed system.

The main components are 492 foot-long arrays of 20 foot tall, interconnected glass tubes known as photobioreactors. A special geometric configuration makes optimal use of the available light – a vital factor for algae growth – as compared to conventional systems. Also promoting ideal growth conditions is an innovative process for delivering carbon dioxide and nutrients to multiple locations in the system, with sensors monitoring precise adjustments to the individual algae culture. Through the use of the "airlift" principle, the reactor technology can be operated without pumps. Injected air bubbles cause mixing of the medium and clean the glass while transporting carbon dioxide into the system and oxygen out of it. This procedure maximises productivity while greatly extending the useful life of the equipment – and justifies eparella's proud claim to technological leadership.

This provides the operator with maximum clarity regarding system operating status, with all data available for retrieval at any time.

Turnkey compressed air

It will come as no surprise that this system needs compressed air. Firstly, it is used to transport the algae suspension through the photobioreactor. And secondly, compressed air is needed to control the pneumatic valves, 100 of which are installed in the system to facilitate a high level of automation. It is obvious that KAESER faced stringent demands when supplying a solution for an industry as sensitive as microalgae production. That starts with the reliability of the compressed air supply. Continuous operation must be guaranteed 24 hours a day, 365 days a year, with no interruptions. To meet that high standard, the compressed air system is designed with redundant functions. In that regard, it is worth noting that KAESER was brought on board

Refrigrated dryers of types TL 1301 and ABT 25, active carbon absorbers, microfine upstream filters, downstream filters for achieving Particulate Class 1 (as per ISO 8573-1) and several other filter devices ensuring the high quality of the compressed air.

The compressed air system for the eparella production facility was implemented as a turnkey project, with the piping, ventilation and electrical systems all included. Consequently, eparella opted for a complete ready-to-run package. All it took to put it into operation was a push of the button to start the compressed air supply.

Photo: ecoduna

The main components of the system are long arrays of 20 foot tall, interconnected glass tubes.

when the project was still in the planning stages and was able to provide key input on the design of the compressed air system and the layout plan. Another important reason for this early involvement was the fact that the system was implemented as a turnkey project, in other words with the piping, ventilation and electrical systems included. Consequently, eparella opted for a complete ready-to-run package. All it took to put it into operation was a push of the button to start the compressed air supply.

All components of the compressed air system are controlled and monitored by the SIGMA AIR MANAGER 4.0-4.

Two pressures, two networks

The demanding specifications for the system were not limited to the reliability of the supply, however. Because different pressures apply to the compressed air networks for reactor air and system controls, the set-up basically consists of two stations. The reactor air is generated by two energy-efficient, variable-speed FSD 475 SFC rotary screw compressors rated at 110 psi with flow rates between 374-1825 scfm. The two FSD compressors are specifically designed to operate in the low pressure range. The speed control ensures that the compressors can deliver any required compressed air demand between the minimum and maximum air flow. The compressed air for the pneumatic valves and other components is generated by two SK 22 T series rotary screw compressors, which keep power consumption to a minimum with their premium efficiency motors (IE3). This network can be placed under a maximum pressure of 160 psig – and is subject to much wider fluctuations than the reactor air network. The two-compressor set-up for both networks is necessary to meet the redundancy requirement. In practice, only one compressor runs in each network at any given time, with the baseload machine switched at regular intervals. This ensures an equal distribution of the operating hours across the two compressors and also makes it possible to service the compressors simultaneously – an obvious gain in efficiency.

Geared to quality

Due to the direct contact of the compressed air to the microalgae, its quality is decisive – and the same goes for the compressed air treatment. As mentioned above, the standards are indeed stringent. In figures, as per ISO 8573-1 (2010), that means: Solid Particulate Class 1, Water Class 4, Oil Class 1. KAESER'S engineers have spared no effort to guarantee these targets in the long term. The high quality of the compressed air is ensured by refrigeration dryers of types TL 1301 (reactor air) and ABT 25 (membrane cleaning / control), active carbon absorbers, upstream microfine filters, downstream filters for achieving Particulate Class 1 and several other filter devices. In addition, the pressure dew point is naturally monitored constantly. Another important detail: The compressors are equipped with a food-grade coolant fluid in accordance with the USDA H1 standard. Of course KAESER thought of that, too. All of the components of the compressed air system are controlled and monitored by the SIGMA AIR MANAGER 4.0-4. This provides the operator with maximum clarity regarding the operating conditions, with all data available for retrieval at any time. Maintenance intervals and notifications are also managed through the compressed air management system. Moreover, the consumption and energy data are tracked and logged through the installed visualisation system.

Almost 100% heat recovery

Another design specification from eparella was finally to achieve maximum utilization of the heat energy released by the equipment, in order to ensure the system operates as ecologically as possible. For that purpose, the two air-cooled FSD rotary screw compressors were equipped with the PTG 475-25 heat recovery system (plate-type heat exchangers), which achieves an impressive 76% heat recovery quota. The remaining recyclable heat from all installed components helps to meet the heating needs for the greenhouse. During the heating season, the system is switched to air circulation mode. The warm cooling air from the compressor station components is blown into the greenhouse. This permits almost 100% utilization of the recoverable heat from the compressed air system. In summer operations, the released heat is discharged through the roof to ensure optimal cooling of the components.

Onlineshop:
https://www.ecoduna.com/shop/

Photo: ecoduna

A global player in the polymer technology sector decentralizes its compressed air station

Client-tailored energy efficiency

A mid-sized town at the southern tip of Sweden, Trelleborg is the departure point for ferries heading across the Baltic Sea to Germany and Poland. It also happens to be the home of a huge multi-national company bearing the same name: the Trelleborg Group. Originally founded in 1905 as the Rubber Factory Corporation of Trelleborg, the company has expanded and diversified over the years, transforming itself into a global player in the polymer technology sector.

Trelleborg AB – based in Trelleborg, Sweden – is the world's leading supplier of engineered polymer solutions used to seal, damp and protect critical applications in demanding environments. What started out as a small rubber manufacturer is now a global giant that employs 24,000 people in 51 countries, and counts amongst its products damping systems, sealing systems and vehicle tires.

Anatomy of an economic miracle

Visit the Trelleborg works and you will be able to sense the company's 100-year history all around you. The current headquarters of the Trelleborg Group stands proud amidst a sea of factory buildings dating from the 1950s, a decade that saw the company expand rapidly. While fascinating to see the site's long heritage reflected in the buildings themselves, it was clear that the infrastructure here no longer met the energy requirements of a modern industrial powerhouse.

Lars-Göran Larsson is in charge of Trelleborg's Energy Excellence Programme. His brief? To optimize energy consumption – not just in Sweden, but worldwide. Amongst many other aspects, one of his team's tasks was to address issues regarding the company's aging compressed air system. Here, even the smaller of the two existing compressors was producing three times more air than was required by the entire plant. The unnecessary energy costs were therefore bad enough, but even worse was the contract with an independent steam power plant (housed in one of Trelleborg's buildings), which demanded round-the-clock compressed air availability, even at times when Trelleborg's three on-site production areas were not operating.

Photo: Trelleborg Sealing Solutions

Photo: Trelleborg Sealing Solutions

Lars-Göran Larsson discusses compressor maintenance with Managing Director Ronny Perdegård.

Priority no. 1: Energy efficiency

In consultation with Trelleborg's onsite Managing Director Ronny Perdegård, Larsson and his team began developing their action plan at the beginning of 2018. The goal was to decentralise compressed air production and to install individual water-cooled compressors in each production area. Moreover, in order to avoid 24/7 operation, an additional compressor system would be provided for the steam power plant, whose compressed air needs could then be taken care of separately from the other production areas. Moving forward, they also wanted to recover the heat energy from the compressors for space heating purposes and thereby benefit from significant heating cost savings.

In order to ensure essential redundancy and to accommodate potential emergency situations, the pipework from the original centralised design was retained and can be used, for example, when performing service work. Compressed air can be diverted from one of the other decentralised stations to cover the compressed air demand of the system that is currently being serviced.

Perfect timing

To help transform this concept into reality, the Trelleborg team turned to the experts at KAESER KOMPRESSORER AB in Täby, who conducted a comprehensive air flow and pressure analysis in order to determine the ideal compressor configuration. As well

Trelleborg is both the name and the location of this Swedish multi-national company.

Photo: Trelleborg Sealing Solutions

Photo: Trelleborg Sealing Solutions

Lars-Göran Larsson discusses compressor maintenance with KAESER engineer Bengt Fristorp.

as meeting all of the specified technical requirements, the compressors needed to be of a similar size and design to make servicing and maintenance as easy as possible. "KAESER's measurement and configuration expertise was very impressive", beams Lars-Göran Larsson. "As a result, we were able to identify which machines with precisely the right capacity margins were perfectly suited to meet our needs."

The decision was made to go with three energy-saving, fluid-cooled CSD 105 T SFC rotary screw compressors – one for each production area – with variable speed control and a modular add-on dryer to help save space. In addition, a BSD 65 T rotary screw compressor featuring an add-on dryer was chosen for the Mixing area, whilst an ASD 50 T SFC with variable speed control and an add-on dryer was provided for the steam power plant. These new units were all delivered in October 2018, which turned out to be perfect timing, as one of the old compressors coincidentally decided to give up the ghost at exactly the same time!

KAESER's measurement and configuration expertise was very impressive.

Photo: Trelleborg Sealing Solutions

Significant energy savings

By December 2018, all five compressors were installed and operating as planned. Two months later, KAESER's technicians returned to perform a KESS (Kaeser Energy Saving System) analysis. The results were nothing short of astounding: Trelleborg was saving an incredible 375,000 hp/year compared to the previous year's energy consumption figures. That equates to a CO_2 reduction of 185 tons and an improvement in energy efficiency of 2 hp for every cubic yard of compressed air produced. Furthermore, 90% of the heat energy from the cooling water, which exits the compressors at a temperature of 158°F, is now being recovered and helps boost efficiency of the plant's heat pump. Larsson sums up his thoughts with evident satisfaction: "These are results that we can build upon and further develop."

KAESER at bauma 2019

A meeting of the giants

According to the organizer's figures, bauma 2019, held at Messe München from the 8th to the 14th of April, welcomed over 620,000 visitors from more than 200 countries. That was the highest-ever attendance in the 65-year history of the world's leading trade fair for construction machinery, building material, mining machines, construction vehicles and equipment.

Klaus Dittrich, CEO of Messe München, was more than satisfied: "For the industry, bauma is by far the world's most important innovation platform and economic engine, something that we clearly saw this year. bauma 2019 highlighted the opportunities and tremendous outlook of the industry as a whole."

Another indicator of this year's success is the number of visitors, which increased by approximately 40,000 over the figure recorded at the previous event in 2016. More than 250,000 of the attendees came from outside Germany, for example from Austria, Italy, Switzerland, China and Australia, among other countries. The 3,700 exhibitors from 63 countries also represent a new record. The exhibitors at bauma 2019 presented countless innovations and new products to the trade fair's global visitors – and reported that visitors showed a strong interest in investment.

Visitors dazzled by trade fair highlights

Industrie 4.0 is already well established in the construction industry. That was more than enough reason for the KAESER trade fair team to focus on the key thematic area of the "networked building site". Visitors had a chance to kick the tires of the KAESER equipment on display or, with the "MOBILAIR fleet management" online platform, to check machines at remote locations in real-time, for example to view current operating data, analyze machine utilization for maintenance scheduling purposes, or simply to locate the machines. Another highlight of the KAESER stand was the alternative drive product range, in particular the systems with electric motors. Quiet-running, emission-free e-powered portable compressors are in increasing demand. Thanks to their IE4 Super Premium Efficiency motors, they also have much lower operating costs than their diesel-powered counterparts. The electric portable compressors are equipped as standard with the SIGMA CONTROL SMART controller with an easy-to-read colour display and patented anti-frost control, ensuring quick and easy set-up and safe operation for users.

Photo: iStock

Today, global warming is a topic that also affects manufacturers and operators of compressed air components. The so-called F-gas Regulation EU 517/2014 aims to control emissions of fluorinated greenhouse gases, which also includes the refrigerants currently used in refrigeration dryers, by gradually withdrawing them from the market in Europe. KAESER's new SECOTEC TG refrigerated dryers use the significantly more environmentally-friendly R-513A refrigerant and therefore provide efficient and future-proof compressed air drying - even for high compressed air requirements of up to 3469 scfm.

The new SECOTEC TG series of compressed air refrigerated dryers

The future-proof refrigerated dryer

Legal background

In force in Europe since January 2015, the F-gas Regulation contains a set of measures that all have one goal: to significantly reduce the emissions of partially fluorinated greenhouse gases (F-gases) by 2030. Similar mechanisms outside the EU are already effective or will come into effect in the future.

Since F-gases are used as refrigerants in refrigerated dryers, the EU regulation affects operators of compressed air systems. The regulation's goals are not only being implemented in the form of actual bans, for example of the refrigerant R-404A, but also by systematically withdrawing refrigerants with a high global warming potential (GWP) from the market. In other words, current refrigerants will only be available for system repairs and maintenance at high prices, or potentially not at all. It is not always therefore possible to switch to alternative refrigerants. This does not just affect older refrigerated dryers; systems that work with R-407C or R-410A refrigerants could also be particularly hard hit. Certain systems may even be subject to imminent decommissioning. Therefore, operators are advised to review their existing refrigerated dryers without delay, to be vigilant regarding preventive checks and to insist on future-proof refrigerants when purchasing new equipment.

By the end of 2019, KAESER will use the R-513A refrigerant – whose similar properties, incidentally, make it an ideal substitute for the previously used R-134a – in all of its refrigeration dryers, including the new SECOTEC TG series. It currently has the lowest global warming potential of all refrigerants used in available refrigerated dryers and is therefore not only considerably more climate-friendly, but is also the most future-proof refrigerant solution.

Efficient and reliable compressed air treatment

With its integrated latent heat accumulator and phase change material, the tried-and-tested SECOPACK LS heat exchanger system ensures cost-effective partial-load operation and stable pressure dew point performance. Depending on the model, the specific electrical power consumption of the SECOTEC TG refrigerated dryer is significantly below 100 W per cubic yard of air to be dried per minute (ISO 7183 A1, air-cooled).

The efficient SECOTEC storage control has long been associated with KAESER'S high-quality, industrial-grade, energy-saving refrigerated dryers. A special innovation in the TG series is that the SIGMA CONTROL SMART controller can switch up to three fixed-speed scroll refrigerated compressors connected in series, according to load and on a rolling basis. As a result, with rated flow rates between 1340-3070 scfm (ISO 7183 A1), the five new air- and water-cooled models have a compact footprint of just 18 sq. ft.

Furthermore, operation of SECOTEC TG refrigerated dryers is simple and intuitive. They are equipped with the renowned SIGMA CONTROL SMART electronic controller. Features such as a message memory, service hours counters and maintenance timers for each component facilitate operating data evaluation and analysis. Moreover, all models are fitted with a Modbus TCP communications module as standard, which makes networking with master controllers, such as the SIGMA AIR MANAGER 4.0, simple and straightforward. In addition, the refrigerated dryers feature floating contacts to allow indication of group alarms, group warnings, dew point warnings and operating messages.

Cost-saving maintenance

An additional requirement when developing the new TG models was to ensure even lower maintenance costs. As a result, the condensate separator in the TG series is now virtually maintenance-free. Only the service unit of the electronically-controlled Eco-Drain condensate drain requires regular maintenance, which considerably reduces life-cycle costs.

The compact design of these innovative refrigerated dryers means that they require very little R-513A refrigerant, which has a global warming potential of just 631. The product of the two values, expressed as a CO_2 equivalent, is below 5.5 tons for all models. This even eliminates the need for the mandatory leak test prescribed by the F-gas Regulation. Nevertheless, an annual preventive inspection is still recommended.

Photo: iStock

SECOTEC TG 780 with future-proof R-513A refrigerant

Garage Rehab: The “before and after” show for auto service shops

KAESER and the “Garage Rehab” TV series

KAESER’s been doing it for years: evaluating each customer’s needs and designing the right system for the job. Some may think this philosophy applies only to large industrial and manufacturing facilities. But KAESER has always known that automotive service, collision repair and other aftermarket specialty shops also deserved the same consideration.

US Reality Show

Photo: Fotolia

Photo: Discovery Inc.

Richard Rawlings and his team.

The potential for substantially reduced downtime and adding more money to the bottom line is greatly enhanced when there’s a reliable source of clean, dry air. Over the years, KAESER has helped thousands of auto service shops upgrade their aging or outgrown air systems. And we’ve been there to set up many new installations as well. But it is not very often that an existing shop starts over from scratch.

Now, KAESER is featured in Discovery Channel’s hit motor series, Garage Rehab. The series chronicles Fast N’ Loud star and Gas Monkey Garage owner, Richard Rawlings and his expert team, Russell Holmes and Chris Stephens, as they help breathe new life into shops that have seen better days. Once selected, no aspect of the garage’s business is overlooked – and it’s not just the cosmetics! Richard looks at the business as a whole, helping the owners find opportunities for success. Looking at the entire operation, including software upgrades, personnel allocation, product and service promotion, the Garage Rehab team’s keen business sense can lead to a whole new lease of life for these struggling businesses. Tools, lifts, fans, diagnostic equipment and support systems are all updated, including the shop’s compressed air system.

The philosophy of operating efficiency

KAESER’s reputation for providing a reliable source of clean dry, compressed air is perfect for garages and automotive repair facilities. Tools can’t run and technicians can’t do their job, if the compressed air supply can’t keep up or if the air is contaminated with water or oil. KAESER offers a wide range of compressed air solutions, and are featured in the show to make sure the right system is installed for all Garage Rehab projects.

Air System Specialist Frank Remsik from KAESER COMPRESSORS Fredericksburg (Virginia) reviews the specific needs of the shop and selects the right combination of compressor, air treatment, storage and piping. “We do a total system design – tailored to what they do in their business. We find that KAESER AIRTOWERS work well because they have a tank, dryer and compressor all in one package. They save floor space and most of these shops are small and need to be efficient with floor space.”

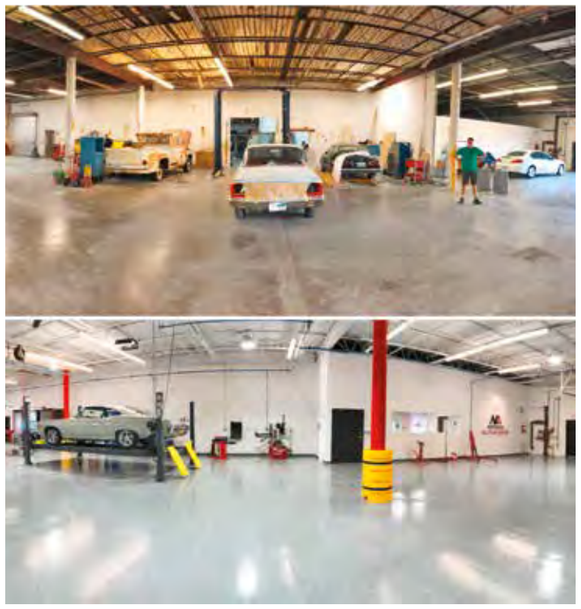
KAESER also sees many automotive shops that would benefit from rotary compressors still using reciprocating or piston compressors. Depending on compressed air uses and the overall air demand, more consistent flow, lower pressures and cleaner air can significantly improve operations in these shops. Most piston compressors normally operate at pressures of 145-175 psi when most shops only need 125 psi or less. Operating at lower pressures is a significant energy saver. Plus, because most tools only require 90 psi, tool life is likely to be extended.

> We find that KAESER AIRTOWERS work best for auto workshops.

Time is money

Getting the air to where it is needed is just as important as choosing the right compressor. “If the shop has old iron pipe, if the piping isn’t up to code, or if the compressed air distribution system needs to be reworked because of the overhaul, KAESER can help with its modular, aluminium SmartPipe™ system. A lot of these older systems are done in PVC and we have to take it all out because they don’t meet code. We want to make sure they stay safe and SmartPipe helps maintain the integrity of the system with excellent air quality and low pressure drop,” says Remsik. SmartPipe has become an increasingly popular product for KAESER in the last 15 years because it solves numerous performance issues. The Garage Rehab refurbishment experts also swear by the pipe system. It’s beneficial to the Garage Rehab team because it can be installed quickly and their projects are normally under very strict deadlines. Plus, it offers shop flexibility for the future if they need to expand or reconfigure.

Every episode of Garage Rehab and every shop comes with their own set of challenges. However, it is always fun to watch Richard and his team perform miracles as they turn a struggling garage back into a successful business. Every week, they work their magic – with a little help from KAESER COMPRESSORS Fredericksburg.



Richard Rawlings helps old workshops that have seen better days to shine again. KAESER COMPRESSORS are there to help.

Photos: Discovery Inc.

Frank Remsik (KAESER Fredericksburg) and Chris Stephens (Specialist team) by the KAESER air receiver.

Garage Rehab logo reproduced with kind permission of Discovery Channel

SanoRice chooses KAESER compressors

Rice cakes with a bite

Photo: SanoRice

SanoRice is the world's largest private label producer of puffed rice, corn and multi-grain crackers.

With plants in Italy, Belgium and the Netherlands together manufacturing in excess of 3 billion product items per year, SanoRice is the world's largest private label producer of puffed rice, corn and multi-grain crackers. Using state-of-the-art technology, the necessary compressed air supply is in the safe hands of KAESER KOMPRESSOREN at all locations.

SanoRice is a family-owned business with its head office in the Netherlands (Veenendaal) and subsidiaries in Belgium (Zottegem) and Italy (Borgo Vercelli). Originally trading under the name Reforma, the Dutch company's road to success began over 30 years ago, with the production of rice cakes, which were initially only sold via health food shops. Today, more than 450 employees at the three European locations produce approximately 12 million rice cakes every day. Theo Hey, responsible for technology and projects at SanoRice, predicts enormous continued growth potential for the company. "Rice cakes are healthy, cheap and low in calories. Their increasing popularity is also related to expansion of the product range in recent years and the increased demand for organic products".

Organic products growing in popularity

Organic products are growing ever-more popular throughout the world. SanoRice is also wholeheartedly committed to this trend, with over half the product range being made with organically sourced raw materials. The production facilities have all been certified individually for organic products; this certification confirms that neither fertilisers nor pesticides are used on the fields where the organic raw materials are grown.

Highly sophisticated technology

Careful selection of the raw materials is one stage of the value chain. This meticulous approach continues throughout the entire production process at SanoRice. Wilco van Doorn, a technical specialist with years of professional experience at SanoRice under his belt, knows more than any other about the ins and outs of rice cake production. "We developed most of the machines here ourselves, including the ovens in which the crackers are baked at high temperatures. Pneumatic moulds give the cakes their pristine round shape and sharp edges", says the production specialist. The cakes are transferred from the ovens to the packaging lines via internal conveyor systems, either directly or via other processing stations (e.g. to be covered in chocolate). "Since we work with different types of packaging, we use specific modules, which we connect to the assembly line, depending on the type of packaging. We link the module controllers together by means of a network to ensure efficient production. When switching to another product and/or a different type of packaging, we modify the configuration of the modules", Wilco van Doorn explains.

> KAESER was head and shoulders above the rest on every level.

Putting compressor manufacturers to the test

Throughout the entire production process, care is taken to meet the highest quality standards. These exacting requirements also apply to supplying the compressed air needed for the numerous production stages. "When we started expanding the Veenendaal plant four years ago, it was obvious that we would require increased compressed air capacity", Theo Hey recalls. "The existing compressors were insufficient to meet the near-double compressed air requirement of the new plant. All movements are controlled pneumatically, particularly in the ovens, while plenty of pneumatic systems are integrated in the packaging lines. Without compressed air, production comes to a complete halt. Therefore, it was important to consider carefully who would supply the new compressors. We reached out to three manufacturers and it became clear that KAESER was head and shoulders above the rest on every level".

High efficiency

The new compressor room in Veenendaal is now home to a DSDX 302 SFC variable-speed rotary screw compressor and two DSDX 305 fixed-speed rotary screw compressors. All compressors at SanoRice are equipped with heat exchangers. The thermal energy generated by the compressors is used to heat the process water or cleaning water. Moreover, the system is connected to the heating circuit used to heat the premises.

Since it is a food production environment, the compressed air must comply with the most rigorous quality standards in accordance with DIN ISO 8573-1, for which the downstream dryers and filters are responsible. A large air receiver ensures consistent pressure throughout the system.

"A huge advantage, and one that heavily swayed our decision to choose KAESER, is the excellent collaboration. Since we cannot afford any unscheduled production downtime, we occasionally require some highly creative solutions when it comes to planning service and maintenance. Here again, we can completely rely on KAESER", says Wilco van Doorn.

Photo: SanoRice

Photo: SanoRice

Photo: Fotolia

Left: The cakes receive the finishing touches, with a coating of chocolate or yogurt.
Centre: Three new KAESER compressors dominate the compressor room at the SanoRice plant in Veenendaal, which now has more than double the original floor space.
Right: The rice cakes are a delicious, healthy snack.

Compressed air at its best – nobilia in Verl

Dream kitchens à la carte

Photo: nobilia

nobilia builds intelligently engineered kitchens with attractive designs that cater to every taste. This kitchen manufacturer from eastern Westphalia has an impressive track record. Every day, a staggering 3,300 units are produced at its two manufacturing bases in Verl. All this and much more is why nobilia is the market leader and Europe's largest kitchen manufacturer.

nobilia builds kitchens that cater to every taste and any interior décor.

The white trucks with the red 'nobilia' logo are a familiar sight on our roads. The company's impressive pool of 200 trucks and 700 semi-trailers transport a yearly total volume of 29 million sq. ft. Thanks to its 'white' fleet, the kitchen specialist has a reputation for unrivalled delivery quality and punctuality. It is important that neither timeliness nor product quality suffer during delivery, since the three to four kitchens being transported in these vehicles should make the customers' kitchen dreams come true as quickly as possible.

An area the size of 25 football fields

nobilia specializes in the manufacture and sale of fitted kitchens. But this was not always the case: this decision came only a quarter of a century after the company was founded back in 1945. Shortly after the end of the World War II, the brothers Johann and Willy Stickling teamed up to establish a small carpentry workshop in Avenwedde (Gütersloh), initially producing sewing cabinets and occasional furniture in rented halls. In 1956, the brothers went their separate ways and Johann Stickling continued to manage the original company.

In the late 1960s, the decision to specialize in manufacturing fitted kitchens under the new name of NOBILIA-Werke J. Stickling KG set the company on the road to success. From this point on, the kitchen specialist expanded on an annual basis and now employs approximately 3,600 staff and generates a total turnover in excess of €1.2 billion per year.

nobilia now has two production sites in the Gütersloh area: plant I in Verl-Sürenheide and plant II in Verl-Kaunitz. The available production area is enormous: together, the two plants cover 2.7 million sq. ft., equivalent to 25 football fields. However, the kitchen specialist has proved so successful that its ever-increasing production repeatedly outgrows the available space. Therefore, plans are already underway for two further plants.

Large volume of one-off designs

As unique as its owner, the style of a kitchen is a personal preference. Therefore, the aim is to offer a wide variety of options in order to provide the perfect solution for any style of home and to accommodate every taste. Moreover, the kitchen specialist aspires to ensure that every nobilia kitchen is affordable. Both objectives can be achieved by means of a consistently configured product line with clearly defined kitchen components. This makes kitchen planning straightforward and enables large-scale manufacture. We are talking large numbers: approximately 3,300 kitchens roll off the assembly lines every day in the huge production areas. This equates to 727,000 kitchens per year at the two plants in Verl. The export share is 47.7%. In other words, almost one in two kitchens is shipped abroad. nobilia kitchens can be found in 90 countries around the world.

From untreated panels to a complete kitchen

Highly automated workflow, state-of-the-art manufacturing technology and advanced logistics are essential in order to produce 3,300 kitchens a day. Accordingly, the kitchen elements pass through assembly lines in the production halls. It all begins in the high rack warehouse (approximate floor

Compressed air is needed at every production stage: transportation of the wood panels shown here.

Cutting the worktops to size.

And glueing the edges.

area 54,000 sq. ft.), where almosts 5,000 tons of wood are delivered each day, at half-hourly intervals. The timber all comes from controlled sources. For every tree used to make a nobilia kitchen, a new one is planted. The boards are cut in an optimised process to ensure minimum waste. Even these few offcuts are either recycled or used to heat the production plants.

The first step in transforming the raw panel into a finished kitchen panel is to cut it into side sections, shelves, plinth panels and front panels, etc. In this way, 241,000 individual elements are produced on a daily basis. The parts are mass-produced, yet according to individual specifications. In the second production stage, following interim storage, the individual components required for every commission are assembled to order. The complete kitchen, including the electrical appliances, worktops and accessories, is only put together at the end, shortly before the finished kitchen is loaded onto the truck. This is a logistical tour de force, since all components have to be ready to go at this point.

Compressed air for 2.6 million sq. ft.

Compressed air plays a crucial role at nobilia. It is needed to cut and glue the front and side panels, shelves and worktops, to power the automation technology and, last but not least, as work air for the process technology. Given the vast production area and immense number of units, it comes as no surprise that the compressed air system is also of gigantic proportions. The complex setup was based on an air demand analysis (ADA), which revealed that plant II alone required 5120 scfm compressed air. As KAESER regards itself as a systems supplier, the compressed air system is viewed from a holistic perspective. With this in mind, it is best if all compressed air station components come from a single source: from generation to treatment, control technology and regulation, right through to intelligent compressed air distribution. Three KAESER BSD 72 rotary screw compressors, four DSD 202, one DSD 202 SFC and two CSDX 137 and 162 are responsible for the reliable production of compressed air in plant II, while the air treatment is handled by four TE 141 and four TF 340 refrigerated dryers, together with various compressed air filters and oil/water separators. A SIGMA AIR MANAGER 4.0 master controller orchestrates the different components. The thermal energy generated by the compressors and made available via the internal plate-type heat exchangers is used to heat the canteen. What is more, during the spring and autumn, this energy is sufficient to heat three office complexes and the exhibition area. In winter, the compressor heat supports the chip heating, resulting in substantial extra cost savings.

3,300 kitchens roll off the assembly line every day.
Compressed air is crucial for production.

Photo: nobilia

The custom-made kitchen cabinets wait in a row to be transported.

Wood is the most important raw material.

The compressed air production 'Hall of Fame' at nobilia, seen here in plant I.

A future-proof compressed air station with SAM 4.0 at the Popp Group, Forchheim

Award-winning sustainability

By developing and manufacturing stage equipment for film and television, the family-owned Popp Group has repeatedly made statements with extensive media coverage. However, the core business of the Forchheim-based company revolves around products for medical devices, such as side furniture and patient tables for X-ray systems and MRI scanners.

The CT scanner tubes are coated with a special finish.

At Popp, numerous production stages are carried out by hand: for example, shaping the plastic parts...

...loading a CNC machine...

...or applying multi-component adhesive.

Founded in 1905 in Erlangen as a carpentry workshop, the family-owned business Popp can look back on a history spanning some 115 years. Now in the hands of the fourth generation, Popp has moved premises a total of three times, all the while remaining true to its Franconian roots. Not just the devastating flash floods of 2007, but the perpetual lack of space prompted the two managing directors, Frank and Sonja Geppert, to relocate the company in 2012 to the mixed industrial/residential area in Forchheim (Nuremberg-Erlangen Metropolitan Region). Remarkably, the two entrepreneurs prioritized the environmental focus of the entire project from day one. “Ultimately, it is our duty to preserve this planet for future generations”, Sonja Geppert explains.

Environmental credentials as a guiding principle

The central ecological theme runs throughout the entire building concept; for example, the photovoltaic system supplies 469,000 hp of electricity annually, generating a large part of that required by the energy-intensive operations. Two rainwater cisterns are used to water the gardens via a computer-controlled process. Moreover, the solid fuel heating system ties in perfectly with the sustainable concept. It meets all heat requirements by burning the wood and paper waste produced by the plant. Frank and Sonja Geppert refused to compromise on the sustainability of the company building and the company has consequently won several awards in official recognition of this achievement.

Medical products as the main line of business

The family-owned company specializes in the manufacture and development of technical medical products, which account for approximately 80 percent of its turnover. Needless to say, the watchwords here are maximum precision and premium quality. These products include components for MRI and CT scanners, as well as bedside cupboards and tables for technical medical equipment, which are sprayed with a special finish for use in clinical areas. To patients the ‘tubes’ may seem like metal; however, they are actually made of MDF, plastic or special foam.

In 2013, when the company moved to its new, nearly 65,000 sq. ft. premises in Forchheim Pfaffensee, it took along a large number of premium production facilities from the previous building in Baiersdorf. But since the new hall is almost double the size of the old one, there was finally enough space to add several new, highly sophisticated systems to the existing fleet of machines. Once the state-of-the-art paint robot was installed in 2018, the obsolete compressed air station could no longer keep pace and urgently needed to be replaced with a modern system. As the main energy source at every stage of production, compressed air serves as control air for numerous processing machines. Compressed air is required to handle the panels in the panel storage system, to convey them to the sawing plant for cutting, then to the milling machines for processing; it is needed for the pneumatic control units, for blowing out the workpieces, for the vacuum extraction of the chips and dust, and of course for the new paint robot.

The compressed air wish list

Managing Director Frank Geppert compiled a list of his compressed air requirements; the new system had to be able to deliver compressed air in a range of pressure levels, to accommodate fluctuations in demand, to accomplish a slow start-up

The lacquered housing parts are ready for the next processing stage.

Compressed air is also needed to bore wood parts.

and shutdown and, above all, to do all the above autonomously and on a timer. Moreover, Frank Geppert placed particular emphasis on finding a compressed air partner that, firstly, had the 'Made in Germany' seal of approval and, secondly, was based close to his company. This proximity makes support, service and maintenance significantly easier.

The decision was taken to install a compressed air system from KAESER KOMPRESSOREN. As of the end of last year, a variable-speed ASK 34 SFC rotary screw compressor now handles the base load, while two fluid-cooled SK 22 rotary screw compressors each cover consumption peaks in turn, reliably delivering the compressed air for the entire operation in compliance with guidelines. Two SECO-TEC TC 44 refrigerated dryers, various filters and an Aquamat oil/water separator ensure the compressed air quality, which has a purity class of 1:4.1. as per DIN ISO 8573:2010. To maintain this purity class at all times, different sensors transmit their quality parameters to the master controller on a continuous basis, which then autonomously takes appropriate measures to respond to any deviations. If necessary, it would even completely shut down the system.

Given the customer's specifications regarding the option of online monitoring and the automatic response of the compressed air system, it was clear from the outset that a SIGMA AIR MANAGER 4.0 compressed air management system would be the perfect solution. Now, thanks to secure network technology, Frank Geppert can obtain a complete overview of his entire system from any PC, around the clock, in just a few simple steps. Furthermore, the SIGMA AIR MANAGER 4.0 is designed to accommodate potential future upgrades of the compressed air system. A straightforward software upgrade allows for expansion of the master controller without the need for additional investment in new hardware.

The SIGMA AIR MANAGER 4.0 continually displays all operating parameters at a glance.

To maintain the required purity class at all times, different sensors transmit their quality parameters to the SIGMA AIR MANAGER 4.0 on a continuous basis.

Photo: Kostal

The finest compressed air at a global player from Lüdenscheid

The good connection

KOSTAL Kontakt Systeme GmbH is an independent company within the KOSTAL Group, which serves the world's leading automotive companies as an international, family-owned business. The core business of KOSTAL Kontakt Systeme is the development, production and distribution of connector systems and electromechanical components. KOSTAL Kontakt Systeme has a global presence, with nine sites and 1,400 employees in eight countries across three continents.

The history of the KOSTAL Group, the corporate family to which the independent company KOSTAL Kontakt Systeme GmbH belongs, began in 1912 when Leopold Kostal founded a company of the same name in Lüdenscheid. Its initial focus was on manufacturing installation materials for industrial and domestic applications. However, in 1927, the company branched out into automotive electronics, which was still in its infancy in Germany at the time. The vehicle direction indicator developed by KOSTAL that same year is one of the first of the company's countless patented innovations, which can still be found today in vehicles from virtually all of the world's leading car manufacturers. Other automotive milestones such as the headlamp flasher, the rain sensor, the door control unit with pinch protection and many more were designed in the development laboratories at KOSTAL. Now in the

Photo: Kostal

Photos: Kostal

Top left: The raw material for the plugs comes in strips and is die cut in the machine.
Bottom left: KOSTAL's product portfolio also includes the plastic casing.
Right: The air centre has been upgraded and extended on an ongoing basis.

hands of the fourth generation, the family-owned company is a true global player, having established its reputation for the development and production of operating elements, sensors and control units among the world market leaders in the industry.

The market leader for plug connection systems

Founded in 1993, the KOSTAL Kontakt Systeme division develops and produces plug connection systems. KOSTAL has focused on the development of these systems since 1938, when everything began with circular contacts. Today, the product range includes a wide variety of application-specific plug-in contacts, including their casings.

With this business segment, KOSTAL is an important partner of the automotive industry; after all, today's automotive electrical systems simply cannot function without plug connections. Having realized this at an early stage, the family business thereby laid the foundations for its current success. KOSTAL Kontakt Systeme is now the world market leader in the field of connectors in automatic transmissions. Every year, billions of contacts are manufactured at the Lüdenscheid plant, achieving zero defect quality. A particular source of pride, this is the result of efficient, process-controlled production methods and optimally coordinated workflows. The traceability of the products is a central manufacturing element. Given the typically high volumes on-site, this quality can only be maintained by continuously logging all key process data for the components. To this end, KOSTAL engineers have developed a laser identification label for the contacts, an alphanumeric code that contains the lifecycle of the contact system.

New site

KOSTAL Kontakt Systeme GmbH was based in Hagen from 2005 to 2012. The Timberg plant in Lüdenscheid was purchased in 2010. Production started in mid-2012, once the high rack warehouse was completed. Once acquired from the previous owner, the building was continuously expanded and extra space added. Following the last extension in 2017, the available production area had tripled in size. Production is currently in full flow, with three shifts, seven days a week. In other words, KOSTAL's manufacturing processes constantly depend on a reliable supply of quality compressed air. Compressed air is required at every stage, from the control technology with valve terminals to the handling system, the injection moulding and thermoplastic machines, through to the gripper systems. "Any problems with the compressed air supply would mean that a large number of employees would unexpectedly get time off", says Johannes Hundhausen, head of plant maintenance at KOSTAL, with a twinkle in his eye. In reality though, a failure in the compressed air supply would lead to production downtime. No company can afford that, but especially not automotive suppliers.

Extending the air center

When the building was purchased, an excellent basic configuration was already in place, with four energy-efficient, fluid-injected KAESER BSD 62 rotary screw compressors and two TF 201 refrigerated dryers, which were included in the package from the previous owner. Although, in the early days, the dimensions of the center were insufficient to meet the new requirements of the production area, whose surface area had tripled, the first-generation SIGMA AIR MANAGER master controller was already in place, making the forthcoming expansion of the air center a breeze. In 2012, as the first step in the expansion process, two DSD 142 rotary screw compressors were installed, both with a flow rate of 470 scfm, whereby one was designed as a redundancy unit to ensure that production was not interrupted at any time, even in the event of maintenance or inspections: a key criterion for the automotive supplier.

In 2016, it was time for the next step and a third energy-saving SECOTEC TF 340 refrigerated dryer was added to the line-up. When the production area was extended once again in 2017, the air center had to be upgraded to cope with demand. As a result, one of the four original BSD 62 units was replaced with a modern, even more efficient BSD 83 rotary screw compressor, with a flow rate of 288 scfm. In late 2017/early 2018, the ongoing efforts for further improvements and energy savings culminated in the purchase of a new SIGMA AIR MANAGER 4.0-8, which prepared the compressed air system for potential future expansion and paved the way for even greater cost efficiencies. Since the master controller constantly calculates the best combination of machines to cover actual compressed air demand, KOSTAL currently boasts an idling time of just 2 percent thanks to the SIGMA AIR MANAGER 4.0-8. "To all intents and purposes, as the optimal machine mix is a factor in cutting energy costs, this purchase has already paid for itself", Hans Kmoschka, workshop manager in plant maintenance, is delighted to report. As if that were not enough, all compressors are fitted with heat exchangers that recycle a substantial portion of the compressor exhaust heat by feeding it into the heating circuit and the hot water supply. This set the stage for even greater savings than the power costs alone.

> The SIGMA AIR MANAGER 4.0 transformed the existing and the new compressors into one complete, energy-saving system.

Photo: Kostal

Compressed air for wine lovers

A winery down under

South Australia is an Australian state with a particularly wild, pristine nature. Here can be found the 60 mile long coastline with a picturesque steep cliff known as the "Bunda Cliffs", the huge, dry Nullarbor plain and the red sand dunes of the Simpson desert. But because of its Mediterranean climate and ideal soil, this area is also home to one of the most famous and fertile wine-growing areas on the fifth continent – the Barossa Valley.

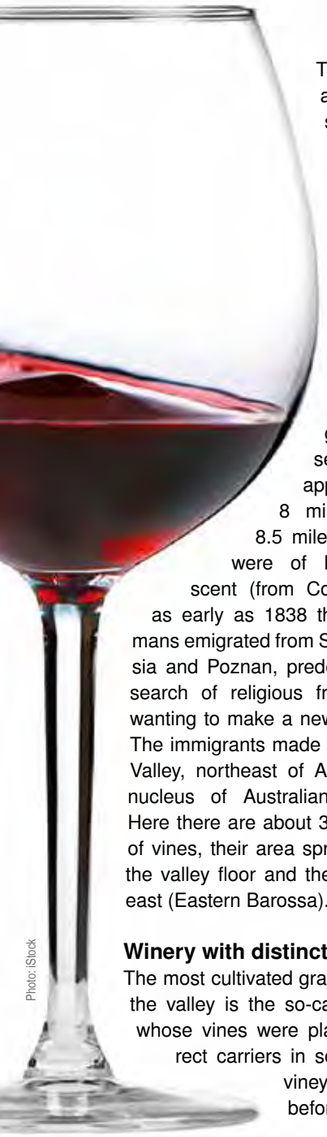


Photo: iStock

The climate and the good soil were also appreciated by immigrants from Europe, who came to the Barossa Valley over 180 years ago. The first groups of settlers in the approximately 8 mile-long and 8.5 mile-wide valley were of English descent (from Cornwall), but as early as 1838 the first Germans emigrated from Silesia, Prussia and Poznan, predominantly in search of religious freedom and wanting to make a new start here. The immigrants made the Barossa Valley, northeast of Adelaide, the nucleus of Australian viticulture. Here there are about 32,000 acres of vines, their area spreading over the valley floor and the hills in the east (Eastern Barossa).

Winery with distinction

The most cultivated grape variety in the valley is the so-called Shiraz, whose vines were planted as direct carriers in some historic vineyards long before the 19th century and are more than 130 years old in parts. Teusner Wines, an award-winning winery located in the Barossa Valley for over 15 years, also cultivates this historic vine to produce Shiraz, as well as a variety of other wines. The production of valuable wines depends on various distinguishing features. Of course the taste and the aroma are important, but also the colour and texture. In order to give each wine its special character and appearance, the fruits of the different grape varieties are separately crushed and the crushing process is closely monitored.

An important role in the crushing process is played by the compressed air that drives the pneumatic presses responsible for pressing the grapes in modern winemaking. The pneumatic press is filled with grapes and as soon as the door is closed, a sealed pouch inside the press is inflated with compressed air, pressing the grapes firmly against a large sieve, which gently squeezes out the juice.

Wineries grow too

This award-winning winemaker's wine is so coveted that Teusner recently built a much larger winery to meet growing demand. As a result, the pneumatic presses had to be designed for even greater capacity, which of course meant the need for a larger compressed air system.

Following the three-month harvest, the time window for processing the grapes is very short. It was therefore important for the owner, Kym Teusner, to invest in a reliable and efficient compressed air system that would be available throughout this short processing time and would avoid the risk of press failure.

Filling the presses with grapes is a labor-intensive process. In order to save time, operation must alternate between the two presses, i.e. one press is loaded while the other is working. For the planned investment in the new compressors, this meant that it was cheaper to purchase two individual compressors than a single, larger unit. The result for Teusner was significant cost savings, not only in terms of investment, but also in the longer term, life cycle costs of the new compressors. After analyzing the requirements of the new plant, two KAESER SK 25 screw compressors and a 1300 gallon compressed air tank were purchased.

KAESER's SK series offers the reliability and efficiency Teusner needs, not only delivering more compressed air for lower power consumption, but also combining ease of operation and maintenance with exceptional versatility in an environmentally-friendly design. The SIGMA CONTROL 2 internal compressor control provides reliable control and system monitoring with maximum efficiency.

The compressed air system at Teusner Wines has now been in operation for over a year and to the full satisfaction of owner Kym Teusner: "We have been using the KAESER compressed air system since the last harvest and it has worked perfectly. We were very satisfied with the quality of the machines".

> The KAESER compressed air system has been in operation since the last harvest and it has worked perfectly.

Teusner's new compressed air station: two KAESER SK 25 rotary screw compressors and an air receiver with 1300 gallons of storage capacity.

Images below: Compressed air plays an important role in the crushing of grapes in pneumatic presses.

Photo: Teusner Wines

Photo: Fotolia

Kaeser Compressors, Inc.
P.O. Box 946 Fredericksburg, VA 22404

HBS – The innovative rotary screw blower: energy-efficient and powerful

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