

COM•PRESS

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Dirk Koob

Dear Readers,

The world is changing every day, and we humans are significant drivers of this change. The responsible use of all the earth's resources is increasingly becoming the focus of our actions.

Imagine a world with new solutions for the next generation, clean water for all, renewable energy and less resource consumption around the globe. This is the basis on which the entire AERZEN team strives to develop sustainable solutions for our future generations. You will find interesting articles on energy saving in wastewater plants and about the latest products from the world of renewable energy in this issue of our customer magazine COM.PRESS.

These ideas are developed and driven by people from the worldwide AERZEN family, which is constantly growing. We are therefore very pleased to introduce our new colleagues from the AERZEN Group in this issue of COM.PRESS.

Should you have any questions about the articles, or any suggestions about topics to cover in future articles, we will of course be happy to receive your feedback at any time. I hope you will enjoy reading the new COM.PRESS.

Yours,

Dirk Koob
Managing Director Aerzen Deutschland GmbH & Co KG



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New Managing Director Aerzen Rental UK



Steve Handy,
Managing Director Aerzen Rental UK Limited

At the beginning of June 2023, Steve Handy took up his position as Managing Director at Aerzen Rental UK Limited, with responsibility for the UK and Republic of Ireland.

With a technical sales background, Steve Handy worked for over 40 years in the pump industry with 27 years heading up a global division in a pump manufacturing company. This included two years setting up a division in Atlanta, USA. For the last 15 years he has been directly involved in equipment rental including 11 years as a Managing Director of a specialist pump rental company in the UK.



Alexandre de Harlez

New Managing Director **Aerzen North Africa:** Alexandre de Harlez

With a strong focus on growth and overcoming challenges, Alexandre de Harlez, the newly appointed Managing Director of Aerzen North Africa LLC, is determined to lead Aerzen North Africa to new heights in the wastewater treatment sector and industrial applications.

Aerzen North Africa, responsible for Egypt, Libya, Lebanon, Jordan, and Eritrea, has identified immense potential in the wastewater treatment market. Alexandre de Harlez aims to capitalise on these opportunities by expanding and structuring the dedicated team, ensuring they are well-equipped to meet the growing demand for efficient and sustainable solutions.

Despite facing significant challenges such as currency devaluation and import restrictions, Alexandre de Harlez's business-oriented spirit and hands-on experience have positioned him to tackle these obstacles head-on. His energy and determination are already making a positive impact within the company.

Born and raised in Belgium, Alexandre de Harlez brings a wealth of experience to his new role. With a successful career in the leasing industry, including positions at ALD Automotive and Alpha Trains, he has a proven track record of leading international strategic investments and managing projects in industrial environments.

"I am honored to lead Aerzen North Africa and be part of a team that is committed to making a positive impact on the environment and communities we serve," says Alexandre de Harlez. "Our focus will be on delivering innovative and sustainable wastewater treatment solutions that meet the unique needs of our customers."

With Alexandre de Harlez at the helm, Aerzen North Africa is poised to strengthen its position as a leading provider of wastewater treatment solutions and industrial applications in the region. The company looks forward to the exciting journey ahead under his leadership, as they continue to make a positive impact on the environment and communities they serve.

Outside of his professional endeavors, Alexandre de Harlez is a family man and the proud father of a little boy. His wife is from Spain.

Wooseok (Wilson) Kim manages Aerzen Turbo Korea



Wooseok (Wilson) Kim

Aerzen Turbo Korea, responsible for the production and development of AERZEN Turbo Blowers since 2011, has established itself as a trusted provider of air foil bearing Turbo machines in South Korea. With Wooseok (Wilson) Kim at the helm, the company is set to further expand its operations and strengthen its position in the market.

Wooseok (Wilson) Kim's journey in the industry began after studying shipbuilding engineering, where he developed a passion for control technology and system engineering. Throughout his career, he has worked with renowned companies such as Samsung, Phoenix Contact, and General Electric, as well as smaller enterprises like Marquip, Roxtec, and SLM. This diverse experience has equipped him with a deep understanding of the industry's requirements and the ability to drive growth. Expressing his enthusiasm for joining Aerzen Turbo Korea, Wooseok (Wilson) Kim states, "I am glad to be a part of Aerzen Turbo Korea and excited to contribute for energy efficient and sustainable process air generation which plays a vital role in numerous industries and infrastructure applications." He further adds, "With the ambitious factory expansion project that Aerzen Turbo Korea is currently undertaking, I am ready to leverage my knowledge, experiences, and strengths to achieve our common goals: ramping up production, satisfying customers with exceptional quality and innovative products, and fostering a stronger sense of competence as one united team."

Aerzen México remains on growth path

For over 20 years, AERZEN has offered its products and services in Mexico, from where the group covers a region that also includes Central America and some Caribbean countries like Cuba. With the inauguration of a Regional Production Center for the Americas (RPCA) in 2021, Aerzen México S.A. de C.V. with headquarters in Metepec, right outside Mexico City reached a significant milestone. "It allows for the customisation of equipment to meet the specific needs of the region and ensures short delivery times and faster service while adhering to AERZEN's high-quality standards," explains Subsidiary Manager Gabriel Ventosa.

"Establishing a local production in the Americas came with several benefits, including increased availability of products, optimised material flows, and a reduced CO₂ footprint," explains Subsidiary Manager Gabriel Ventosa. The AERZEN subsidiary serves customers in the food and beverage industries, the wastewater sector, the pulp and paper market as well as mining and cement companies. In addition, a new office and service shop of Aerzen México will have opened by the end of the year in Guadalajara to cover the western Mexico.

Already in 2022, the company took another important step by establishing the Turbo Competence Center (TCC) Latin America as an independent business unit. The TCC offers technical support for the region and supports all subsidiaries. A local Turbo production is being set-up in the course of this year.

AERZEN brings rental services to Mexico

But the expansion of Aerzen México does not stop there. By January 2024, the new subsidiary Aerzen Rental México shall be up and running providing low-pressure air machines and solutions for rent. "By bringing AERZEN's rental services to Mexico, we will close a market gap and position ourselves as industry leader in the region," says Gabriel Ventosa. ○



The team of Aerzen México

Aerzen Korea Limited established

AERZEN has restructured its business in South Korea by establishing a new sales subsidiary, Aerzen Korea Limited, at the end of March 2023, in the capital Seoul. "With the new unit, we will be closer to system solution providers and can better support end users of our products in South Korea," points out Managing Director Chang Young Kim, referring especially to the support of Korea's EPCs (plant manufacturer with the sectors engineering,

procurement, construction), which are actively pursuing important overseas projects.

These customers were previously served by AERZEN's distributor HC Corporation, which is now transferring part of its business to the new company Aerzen Korea Limited. Aerzen's Turbo segment had already been covered by a separate AERZEN company, Aerzen Turbo Co., Ltd., which had been founded in Korea in 2011 as the first AERZEN production site outside Germany.

"We see particularly great potential in the marine industry with oil-free boil-off gas compressors and air lubrication systems as well as with hydrogen compressors for the production of green hydrogen," adds Chang Young Kim, who is also the Managing Director of HC Corporation. Additional important product areas in Korea include process solutions for the chemical, petrochemical, food, cement and power plant industry, wastewater treatment applications and high vacuum application for the secondary cell and chemical industry. Aerzen Korea's key customers include DYPNF, KC Cottrell, DongHwa Pneutec, Korea Petrochemical Ind. Co. (KPIC) and Dongbang Plantech.

The team of Aerzen Korea Limited currently consists of five former HC Corporation employees and two new staff members. The company also plans to build a local assembly plant for blowers and compressors. ○



Managing Director Chang Young Kim: "With the new unit Aerzen Korea Limited, we will be closer to system package providers and can better support end users of our products in South Korea."

ISO system certification for Aerzen China

Aerzen China has been officially awarded the ISO system certification, marking an important milestone in the company's pursuit to increase its competitiveness on the market by demonstrating quality management and Environmental, Health and Safety (EHS) expertise.

The team acquired three certifications. ISO 9001:2015 underscores Aerzen China's commitment to quality. This quality management system ensures that AERZEN has the

capability to consistently provide products and services that not only meet customer requirements but also comply with relevant laws and regulatory standards. ISO 14001 and ISO 45001 are a testament to Aerzen China's dedication to the environment and the well-being of its employees. The environment and safety/occupational health management systems validate that AERZEN offers a safe and health-conscious workplace, minimising health risks. ○



Aerzen Deutschland expands its repair business

The Aerzen Deutschland GmbH & Co KG has taken over the repair workshop, as well as 21 experienced colleagues from the After Sales department of Aerzener Maschinenfabrik, as of 1 January 2023. With the integration of the repair workshop, Aerzen Deutschland is focusing even more strongly on the German market.

"Aerzen Deutschland's After Sales will meet customer needs even more flexibly and quickly in the future. The service portfolio of our workshop is to be sustainably adapted to customer requirements. With a new replacement concept and shortened repair times for all common stages, we will reduce our customers' downtimes to a minimum and thus increase their plant availability. This additional flexibility, in combination with our extended maintenance contract offer, sets new standards in customer support," says David Telge, Head of After Sales. We are very sure that this will sustainably improve the loyalty of our German customers to the AERZEN brand.

In 2024/25, the workshop and the entire Aerzen Deutschland team will move to Emmerthal. "The introduction of new product lines at Aerzener Maschinenfabrik and our continuous growth make this major change necessary", explains Dirk Koob, Managing Director Aerzen Deutschland. In Emmerthal, 75 jobs will be created in a new administration building with an adjacent new 1,500 m² logistics hall and a renovated 2,000 m² repair workshop. ○



David Telge (Head of After Sales Aerzen Deutschland):

“We are very sure that this will sustainably improve the loyalty of our German customers to the AERZEN brand.”



Stefan Bös (Team Leader Repair Shop Aerzen Deutschland):

“We will significantly streamline the currently very extensive process flows and adapt them to the needs of a pure repair workshop in a practice-oriented manner. This will make us faster in the repair process, which will directly benefit our customers.”

Aerzener Maschinenfabrik takes over tree sponsorship

For many years Aerzener Maschinenfabrik GmbH has been a partner of the DWA (German Association for Water Management, Wastewater and Waste). On the occasion of the celebration of the 75th anniversary of the DWA on 10 May 2023 in Düsseldorf, Aerzener Maschinenfabrik donated three trees. As a sponsor, the company is helping to ensure that native trees and shrubs support ecological improvement and climate protection at four stretches of water in the Düsseldorf urban area. In

the virtual forest at www.dwa.de/einbaumzumgeburtag, all 75 trees are annotated with tree species information and the name of the sponsor. Aerzener Maschinenfabrik is the tree sponsor for three black alders at the renaturalised Düssel.

As a tree partner, AERZEN is also involved in photo campaigns for visitors to our trade fair stands. For example, at IFAT 2022 in Munich, AERZEN planted a tree for every photo taken through the organisation "Grow My Tree" (www.growmytree.com),

which helps to make our planet more CO₂ neutral. Each tree planted corresponds to the neutralisation of 22 kg/CO₂ per year, which is equivalent to a train journey from Munich to Hamburg or - extrapolated over 20 years - a flight from Munich to Stockholm. More than 500 participants had their portraits taken during the AERZEN environmental campaign, thus ensuring a reduction of more than 11 t CO₂.

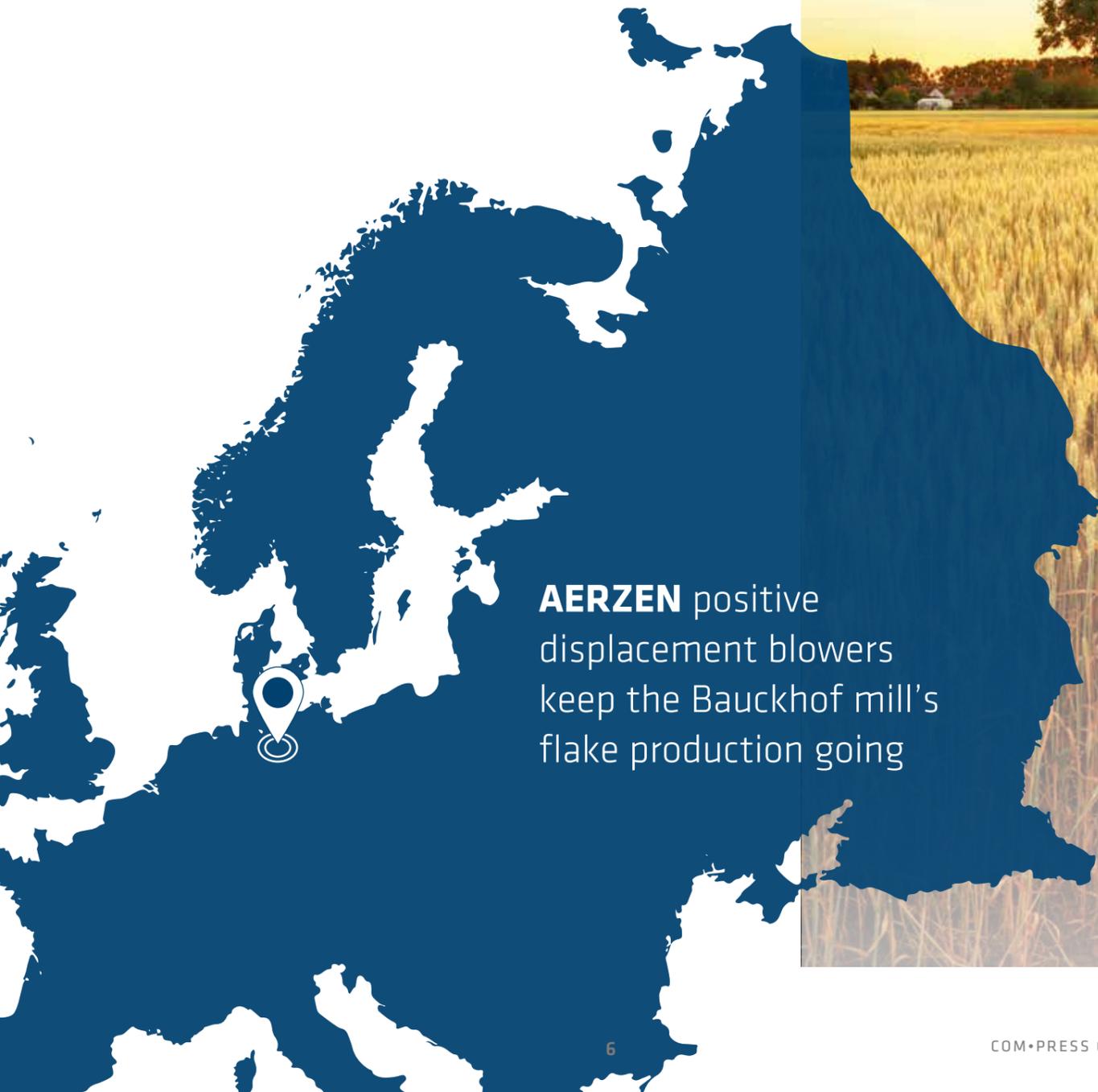
Read more about AERZEN's commitment to sustainability on pages 25 to 27. ○



Click here to visit the DWA virtual forest

The perfect flake – made with love and process air

The Bauckhof mill in Rosche (Lower Saxony) is one of the most modern organic oat mills in Europe. Central component of the highly efficient mill technology: positive displacement blowers made by AERZEN. The robust, low-maintenance Delta Blower packages reliably supply clean process air over their entire service life and ensure maximum availability with the best possible energy efficiency.



AERZEN positive displacement blowers keep the Bauckhof mill's flake production going

Digital info

Further information on various website links and QR codes on page 11

People who start their day with muesli or porridge in the morning certainly don't think about how the flakes are made and what technology plays a role in the process. The main thing is that it tastes good. The production of the nutritious flakes is an art in itself. One of the most modern and efficient organic oat mills in Europe is located in the small village of Rosche in the Uelzen district of Lower Saxony the new Bauckhof mill of Bauck GmbH. The company is considered a pioneer among natural food producers and is now one of the market leaders for organic food. The secret of success? Enthusiasm for biodynamic agriculture, passion for good grain products and long-term partnerships with grain farmers - to name just a few aspects. Keyword quality: not only in the field, but also in the production halls, high-quality products are the be-all and end-all. The best example: AERZEN blower solutions. For the new mill the packages did not have to make a long journey. After all, the Bauck headquarters in Rosche and the town of Aerzen, where the entrepreneurial heart of the global player AERZEN beats, are less than

200 kilometres apart - short transport routes par excellence and entirely in keeping with the Bauck philosophy. The plant went into operation in late summer 2020. Since then 21 positive displacement blowers of the Delta Blower type keep the flake production running.

State-of-the-art technology for 100 % organic

25 m wide, 80 m long and 45 m high (eight floors): This is the new Bauckhof flake mill. The gluten-free plant has both a fine (flour) and a flake mill and has a processing capacity of up to 20,000 t per year. In addition to the main raw material oats - preferably from regional organic and Demeter producers - millet, brown millet, chickpeas, rice, buckwheat and maize grits are processed into flakes and flours. State-of-the-art sorting, cleaning, grinding and flocculation technology ensures consistent and high quality.

Pneumatic transport of salt with AERZEN technology

Seven processing steps are necessary before the grain kernel becomes a finished flake: grain reception, pre-clean-

ing, fine cleaning, sorting, hulling, gritting (splitting of the grain kernels) and flaking. The paths between the individual processes are covered by conveying air from AERZEN's positive displacement blowers. "The blowers are used in all sections - from transporting the raw oats to the fine cleaning section to filling the flaking section. The pneumatic overhauls with the packages give us a high degree of flexibility with regard to the conveying pipe routing and, thus, the product flow through the plant," says Alexander Bachur. The mill operations manager adds: "We have SCHULE Mühlenbau to thank for the AERZEN machines. The latter has been using only these in the mills they design for many years. Our millwright Jan Gausepohl agreed to use it based on his positive experience."

Jan Gausepohl, a trained process engineer as well as a self-employed mill construction engineer with more than 20 years of experience at operational level, prefers AERZEN for a good reason: "AERZEN machines have been with me since my first day at work in 1978. Reliability, longevity and mileage are simply convincing. I spent



State-of-the-art sorting, cleaning, grinding and flocculation technology ensures consistent and high quality.



A total of 21 AERZEN Delta Blower positive displacement blowers keep the flake production going.



Reliability, longevity and mileage of AERZEN machines are simply convincing.

Jan Gausepohl,
mill architect



many years in Africa. Even under the often extreme operating conditions there, the packages run smoothly. Quality just pays off."

The longevity of the Delta Blower is legendary

The Delta blowers in particular have made a name for themselves as robust, continuous runners. The extremely resilient and durable positive displacement blowers compress over 150 years of experience as the world market leader in blower development - AERZEN manufactured the first positive displacement blower in Europe in 1868 - and are the driving force in countless conveying processes. The sophisticated machines with a pressure range between -500 and 1,000 mbar (g) achieve intake volume flows of 30 to 15,000 m³/h and are available in a wide variety of designs, sizes and special versions. They provide absolutely oil- and absorption material-free conveying air and are characterised by a low-maintenance, user-friendly design. Their proven robust nature and longevity are no coincidence. AERZEN manufactures all core components itself - from the package to the control system, from the idea via engineering to the configuration - and, thus, ensures the high productivity of its machines.



The Delta Blowers take over the pneumatic transport of the grain kernels, intermediate products and finished flakes.



Downstream of every pipe is a blower, some leading from the ground floor to the eighth floor. The grey pipes supply the raw gas. As soon as food is involved, stainless steel tubes are used (silver).

nician. "The service team does a super job and tries to be flexible with the maintenance to suit our needs. This means that maintenance is fast with minimal downtime in production," says the mill operations manager happily. Every day, around 154,000 Bauckhof packs come off the production line in Rosche. This is made possible above all by the tirelessly working Delta Blowers, because without them, the grain kernels would not make their way through the huge milling plant, the largest of its kind in Europe. For Alexander Bachur, therefore, one thing is certain: "For all future projects where pneumatic conveying technology is used, AERZEN is our first choice." ○

Absolutely oil- and absorption material-free conveying air

Since the conveying air in the Bauckhof mill comes into direct contact with the grain kernels, intermediate products and flakes to be transported, it must meet particularly high quality standards. After all, impurities in the compressed air such as dust, moisture, oils or microorganisms have an effect on product quality - and must, therefore, be avoided at all costs. As competent and experienced partner to the food industry AERZEN knows exactly the industry-specific challenges and supplies packages that reliably supply clean process air. AERZEN is ISO 22000 certified, guarantees oil-free operation according to ISO 8573-1, class 0 and trusts in silencers without absorption material. This means that AERZEN machines meet the highest food safety requirements and guarantee 100% product purity. The process air is guaranteed free of contaminations such as oil or abrasion. Pressure losses that occur in every process air application, for example due to deposits do not increase over the service life of the machines. This reduces the cleaning and maintenance effort. The result is safe, pure, reliable and efficient processes.

Fewer machine variants, more process reliability

Positive displacement blowers in three different sizes are used in Rosche - for a total of 21 packages. This has a decisive advantage, as Jan Gausepohl explains: "Normally,

the blowers are precisely matched to the respective process. However, this leads to a large number of different configurations, in our case it would have been six or seven. Through a variant-reduced design, we get by with half, namely three. The machines within a performance range are interchangeable. This means that another package can simply be used in case of maintenance or repair work. This increases process reliability."

The 21 Delta Blowers are housed together in a sound-proof room and are arranged in three rows in a shelving system. Thanks to a slide system, they can be quickly moved out with a forklift truck and put back again. "The blowers are process-relevant for the flake mill. If they don't work properly, the entire production comes to a standstill," says the mill architect and emphasises: "High-quality, reliable and low-maintenance blowers are, therefore, essential for the plant, just as straightforward processes and easy maintenance."

AERZEN is and remains first choice

Since late summer 2020, the AERZEN positive displacement blowers have been in use at the Bauckhof mill in Rosche - and are living up to their reputation as reliable process air suppliers. Alexander Bachur is thrilled: "Our experience with the AERZEN machines has been very positive throughout. The blowers run day and night continuously without any problems." Once a year, the packages are put through their paces by an AERZEN service tech-



Delta Blower from AERZEN: First choice for generating pneumatic conveying air



More about AERZEN positive displacement blowers:
<https://www.aerzen.com/products/positive-displacement-blowers.html>



Pneumatic conveyance applications:
<https://www.aerzen.com/applications/pneumatic-transport-for-bulk-material-handling.html>



Applications in food processing:
<https://www.aerzen.com/applications/food-processing.html>



Website of Bauck GmbH:
<https://www.bauckhof.de/muehle-hoefe/bauckhof-muehle-rosche/>

Further information

AERZEN builds new oil flooded screw compressor VMY 836 H

The package is suitable for a wide range of process gas applications

After announcing the official product launch at ACHEMA 2022, AERZEN is currently on the starting blocks with the construction of the first bare-shaft stage of the VMY 836 H - the largest oil flooded compressor ever made by AERZEN.

In spring 2021 a team from the product line process gas of Aerzener Maschinenfabrik, together with the process gas specialists of Aerzen USA, began the preparation of the requirement profile, which is based on continuous market observation and concrete inquiries received in past years.

Market demand in industrial gas treatment

The largest VMY 536 to date is mainly used as a tail gas compressor in gas separation and treatment plants. The so-called pressure swing adsorption technology (PSA) is the world's leading and proven process for concentrating or producing pure gases. In this process, various gas components are adsorbed more or less strongly in porous materials under pressure, which leads to an enrichment or concentration of a desired gas component. For example, refineries are increasingly recovering hydrogen from gaseous mixtures in this way. Other scopes of application include air separation, i.e. the generation of pure nitrogen, oxygen or argon. The increasing recovery of carbon dioxide from biogas or blast furnace gases from pig iron production is also further increasing the importance of the established PSA technology.

With the help of a targeted customer survey, including three of the world's largest gas manufacturers, demand

for the new VMY 836 H could be verified in advance, allowing its development both technically and commercially to go ahead.

Global market growth for PSA plants is expected to continue unabated in the coming years, averaging around 7% per annum. This trend is driven by increasing requirements for decarbonisation (reduction of greenhouse gases), higher raw material and energy costs, as well as the growing demand for industrial gases as chemical raw material, energy carrier or fuel.

This is what distinguishes the new machine

The maximum final operating pressure is 25 bar (a). The maximum suction volume flow is 23,500 m³/h with 60 Hz mains frequency or 19,150 m³/h with 50 Hz.

As with the whole series, the volume flow is controlled by means of the installed slide valve control or via a speed control with frequency inverter.

To achieve maximum service life, the machine is equipped with an axial tilting pad bearing with which AERZEN achieves service intervals of at least three years. Even five-year intervals have already been documented with this bearing to the fullest customer satisfaction.

The machine monitoring kit includes housing vibration transducers, bearing temperature measurement, axial

displacement measurement and instrumentation for measuring shaft vibrations and the bearings of the rotors in the radial bearings. As shown in figures 1 and 2, the VMY 836 H is based on the proven design of the well-known VMY series. To make the package as compact as possible, the compressor outlet was led to the side (figure 2).

Due to its size and weight, the package is divided into two subassemblies. The compressor skid includes the compressor with motor and the supply pipes. The oil unit and the separation system for separating process gas and oil are installed on the second skid. Figures 3 and 4 illustrate the pre-constructed package concept.

In addition to PSA applications, the bare-shaft stage can also be used for ammonia, natural gas, in hydrogen liquefaction, for helium extraction and in the compression of various refrigerants. Booster applications for downstream compressor types such as reciprocating compressors are also pertinent to the VMY 836 H. ○



Figure 3: The pre-designed package concept ...



Figure 4: ... provides for division into two subassemblies.

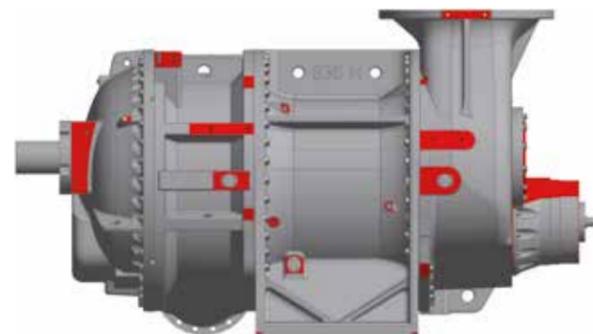


Figure 1: The AERZEN VMY 836 H is based on the proven design of the well-known VMY series.



Figure 2: To make the VMY 836 H as compact as possible, the outlet of the compressor was led to the side.



Efficiency and reliability in material handling

AERZEN offers application-optimised solutions for pneumatic conveying of bulk materials

Pneumatic conveying processes have a key function in the material flow of many industrial companies and place correspondingly high demands on blower technology. Efficiency, reliability and purity of the conveying air are particularly in focus. As one of the world's leading compressor specialists, AERZEN knows exactly the challenges of pressure and suction conveying and implements energy-saving, safe and smart solutions for the powder, granules and bulk materials industries.

The pneumatic conveying has established itself as the ideal solution for transporting large quantities of bulk materials - whether for loading and unloading vehicles and ships or for conveying within the production process. High-performance technologies are needed to get materials and products from A to B quickly, gently and with the lowest possible energy consumption. The oil-free compression Positive displacement blowers, Screw blowers, Screw compressors and Turbo blowers from AERZEN set standards on the market and solve every transport task - efficiently, safely and smartly.

Energy savings of up to 30 %

With the aid of intelligent control systems, the combination of different technologies and sizes as well as options for heat recovery, AERZEN implements solutions that are equally economical as they are resource-saving and environmentally friendly. The AERZEN screw and turbo blowers in particular are unbeatable in terms of energy and achieve significant energy savings compared to conventional positive displacement blowers. Up to 30% are possible. AERZEN's application engineers know the industry-specific processes and develop bespoke product concepts that are precisely tailored to the customer's individual application. With its worldwide sales and service network, the compressor specialist ensures short distances to the customer and guarantees fast and reliable on-site support.

Safety is the most essential thing

AERZEN packages provide absolutely oil- and absorption material free air (oil-free operation according to ISO 8573-1, class 0), meet the ISO 22000 standard and the current ATEX product directive 2014/34/EU and can be used in highly critical, explosive working environments (e.g. flour dust) without any problems. The robust construction and service-friendly design ensure high machine availability. The use of silencers without absorption material increases process reliability, guarantees the highest compressed air quality and increases energy efficiency through reduced pressure losses. A spark arrester integrated into

the silencer further increases safety: it prevents sparks, which could emanate from blowers and compressors in the event of a malfunction, from entering the conveying pipe or the silo. The process air is guaranteed free of contaminations such as oil or abrasion.

Digital solutions for blowers and compressors

As a leading technology developer, AERZEN focuses on the data-driven consideration of the entire life cycle of its

machines and provides bespoke cloud-based digital services which combine over 150 years of experience in mechanical engineering with the latest technology from the information processing and artificial intelligence ranges. The recording of all relevant operating data provides information about the processes involved in the compression process. In this way, malfunctions can be reduced and downtimes minimised. The result: more energy efficiency, process safety, transparency and reliability.



The AERZEN Delta Hybrid achieves energy savings of up to 30% compared to conventional positive displacement blowers.

With the "Fantastic 4" at POWTECH 2023: AERZEN's oil-free compression Positive displacement blowers, Screw blowers, Screw compressors and Turbo blowers are efficient, safe and smart compressor solutions for the bulk materials industry.

Aerzen Rental: flexible and reliable rental solutions

For temporary air requirements, for interim solutions in an emergency or for planned maintenance work, Aerzen Rental is on the spot. The international rental service holds the entire AERZEN machine portfolio for vacuum and compressed air applications in pressure ranges from vacuum -650 mbar (g) to 10.5 bar (g). All machines are ready for immediate use thanks to the plug-and-play concept, and a comprehensive portfolio of accessories is also available. On request, the complete rental system can, therefore, also be handed over turnkey - 24 hours a day, 7 days a week, 365 days a year. ○



Digital info

Further information on various website links and QR codes on page 21

Quick help after the flood disaster

Wastewater treatment plant Sinzig (Ahrtal): Rental solution from **Aerzen Rental** for wastewater treatment plant operation

The Ahrtal in the German states of North Rhine-Westphalia and Rhineland-Palatinate is still struggling with the devastating consequences of the July 2021 flood. Especially within the first weeks, enormous efforts were necessary for this. It was also important to restore the municipal infrastructure as quickly as possible. Wastewater treatment has been particularly important in this respect. At the Sinzig wastewater treatment plant directly on the banks of the Ahr river, mobile rental solutions were the key to the fast resumption of operations.

Lush green vineyards, Rhine shipping, historic castles and many other sights: the Ahrtal has always had a lot to offer for tourists. When the flood of 2021 devastated the idyllic area, the residents did everything they could to clean up the aftermath as quickly as possible. With success: today, the Rhenish region is once again a popular destination for excursions. Attentive visitors notice, however, that the event of the century

has left its mark. For example, many new buildings are now built with an open ground floor. In the event of a new flood, it is more likely that the buildings can be protected.

The consequences of the flood are still felt in the Ahrtal today

The Ahr flood also caused damage to the municipal infrastructure that is still noticeable today. Several waste-

From left: Peter Link (Account Manager, Aerzen Rental) and Sascha Becker (Operations Manager of Sinzig wastewater treatment plant, AZV Untere Ahr) in front of the mobile rental solution that ensures the operation of wastewater treatment in Sinzig.

water treatment plants had been damaged by the water masses, some so severely that they could no longer be repaired. One of the municipal operators with the greatest challenges is the Abwasserzweckverband (AZV) Untere Ahr. The association's task is to dispose of and purify the wastewater of its six founding communities: Altenahr, Bad Neuenahr-Ahrweiler, Grafschaft, Bad Breisig, Remagen and Sinzig. One of the wastewater treatment plants hardest hit by the flood is the Sinzig wastewater treatment plant, which is designed for 115,000 population equivalents (p.e.). The originally deliberately chosen location became its undoing: of all the municipalities in the AZV, Sinzig is located at the lowest - and directly on the banks of the Ahr.

Due to this location, the wastewater from almost all communities did not have to be pumped, but could flow freely to the plant. But when the flood came, it buried the entire infrastructure of the wastewater treatment plant, the administration building was one metre high under water. When the operations staff entered the site on 15 July 2021, the day after the flood, it was immediately

clear: removing the acute consequences of the flood will take weeks. At the same time, the staff were aware that the plant, as part of the critical infrastructure, had to be put back into operation as soon as possible. So, quick help was needed. The AZV wanted to put the plant back into operation as quickly as possible - and at the same time, due to the vulnerable location, it was uncertain whether the plant would be completely rebuilt at all. Initially, therefore, no more new equipment should be bought. Within a few days, when the clean-up had just begun, the decision was made: A rental solution is needed.

Destroyed technology and flooded basins

Until the Ahr flood, the AZV had still planned to expand the plant in Sinzig. To make this work as efficient as possible, the association had therefore contacted Aerzen Rental three years earlier: the subsidiary of Aerzener Maschinenfabrik rents out high-quality oil-free blowers and screw compressors from the manufacturer with a focus on emergencies, repair and reconstruction work and avoiding downtime. This contact now paid off. "After all,

At the centre of Aerzen Rental's mobile co-solution is a container with three turbo blowers. Each blower supplies oxygen to an aeration basin as needed. In addition to mobile aerator plates, the rental solution consists of a container for the process air (blue) and a container for the control technology (white).



The Sinzig wastewater treatment plant

Designed for 115,000 population equivalents, the Sinzig wastewater treatment plant is operated by the Abwasserzweckverband Untere Ahr. In addition to the cities of Ahrweiler, Bad Neuenahr, Remagen and Sinzig, the plant is also responsible for the treatment of wastewater from several other local communities, two mineral springs and several small and medium-sized commercial enterprises.

The wastewater reaches the plant from three inlets, where it is conveyed by a screw elevator to the screening plant with coarse and fine screens. The sand trap and grease trap are followed by primary treatment and a round basin with an upstream denitrification stage. Biological purification takes place in three basins. After the aeration phase, the water is finally fed into two secondary treatment tanks.

The sludge is dewatered in a centrifuge and has so far mainly been used in agriculture. In the future, a regional waste management company will thermally utilise the sludge in a sludge incineration plant.

At the moment, the Sinzig wastewater treatment plant is operated with temporary solutions for aeration and sludge dewatering. The plant will not return to regular operation due to the risk of flooding. Instead, plans are underway to build a new plant at a less vulnerable location.

Background



The aeration phase is followed by secondary treatment in the Sinzig wastewater treatment plant in two circular basins.

we had to get back into operation as quickly as possible," emphasises Sascha Becker, wastewater master and operations manager at the Sinzig wastewater treatment plant.

The weeks after the flood are also still present in Peter Link's mind today. As an account manager at Aerzen Rental, he and his colleagues provided quick assistance to many wastewater treatment plants throughout the Ahr-tal. "Then the water came, three hours later it was gone again - and in that short time everything that was there in terms of machinery and piping was destroyed," Peter Link recalls. At the Sinzig wastewater treatment plant, too, he was always on site from the very first inventory.

The clearing work focused on the aeration basins of the biological treatment stage - the flood masses had completely destroyed the biology of the basins in Sinzig. And not only that: a simple pump truck was not enough to clear the basins. "In our case, many basins were not only contaminated, but also full of glass and PET bottles," explains Sascha Becker. Because the premises of the Sinzig Mineralbrunnen directly above the plant were also hit by the flood. The empties stored on the site were washed away and spread over an area of hundreds of square metres.

Fast commissioning with mobile rental solution

Once the basin had been cleared, Peter Link suggested a solution of mobile aerator plates and a BVS 5500 GM 90 S positive displacement blower with a maximum volume flow of 5,000 m³/h as the best option. "With this technique geared to the oxygen needs of the pool, we were able to ensure that operations could be resumed as quickly as possible," Peter Link says. With his team, he planned the details while the basin was being cleared in Sinzig. Afterwards, the biology, which had been destroyed by the flood, had to be completely rebuilt and the purification stage had to be restarted. At the same time, Sascha Becker and his team were already taking care of cleaning the other basins.

In the aeration basin, which was cleared first, the mobile aerator plates from Aerzen Rental were installed first. They were connected to the BVS 5500 rental pack-



The turbo blowers of the mobile rental solution are state-of-the-art. If required, they can be taken over and permanently installed at the new location of the future wastewater treatment plant.

age via mobile piping. As complete solution, Aerzen Rental supplied the blower in a container, with sound insulation and a special frame as well as a complete electrical equipment including frequency inverter. The plug-G-play solution was installed in the outdoor area directly next to the basins. This increased flexibility while minimising piping and installation costs. Control is via Profibus and runs independently of the technology originally installed in the plant. "Our solutions can be connected to the existing stock without any problems, but in Sinzig the flood had destroyed the control system as well as the rest of the technology," Peter Link explains. "That's why we set up another container next to the blower, where completely new control cabinets were installed."

In August 2021, just a few weeks after the flood, the entire AERZEN solution was installed. Now the wastewater treatment plant team could set up the biology and supply the basin with oxygen as needed. "After inoculation, the biomass in the basin needs about three weeks until it is actively working," explains Sascha Becker. "So while the biology was coming in, we were preparing the other basins." These were then fitted with new aerator candles. It took until December 2021 to get all the basins ready for use again. "At that point, we had enough biomass available to distribute among all the basins," the Production Manager recalls.

In order to reliably supply all three basins with oxygen again, the blower container had to be adapted to the total demand. Peter Link was again on site with his team: Less than four months after commissioning, the container was dismantled and replaced by a new rental solution. Three Aerzen Turbo G5plus - one AT 200 and two AT 150 - have

been running in the wastewater treatment plant Sinzig since then. Each of the compact, efficient turbo blowers supplies one basin with oxygen as needed. When the optimum oxygen content for operation is reached, the fans are set to idle to save energy.

Efficient solution for present and future

“Most of our staff experienced the flood not only at the facility, but also privately,” recalls Sascha Becker. “During the work to remove the flood damage, you had to blank out all that and it just worked,” says the Production Manager. The fact that Aerzen Rental’s rental solution simply works has made many things noticeably easier. “We had regular contact with AERZEN, exchanged ideas and optimised the technology at some points. After the set-up, the plant has been working exactly as it should.”

“This job was not a standard one for us either - just like none of the projects in the Ahrtal after the flood,”

emphasises Peter Link. The fact that the work nevertheless went so smoothly is due to the fact that the rental park of Aerzen Rental is consistently aligned to the demand. “About 40 percent of our customers are municipalities that have to ensure the operation of their wastewater treatment plants. We have the appropriate equipment available for this, which we can provide immediately. So we were able to help quickly in Sinzig, too,” Peter Link explains.

For the future, the plans of AZV Sinzig envisage a new wastewater treatment plant site - seven metres higher than the previous one and designed for over 180,000 p.e., to replace yet another plant destroyed by the flood. “Dur-



The control system for the turbo blowers is housed in a separate container. As the technology of the wastewater treatment plant was destroyed by the flood, the control of the mobile rental solution runs separately.

The piping of the rental solution is mobile. Each of the three basins of the biological purification stage is connected to a turbo blower which supplies the oxygen.



ing the planning process, care was also taken to ensure that the new site was not located in the floodplain of either the Ahr or the Rhine,” adds Sascha Becker. But not everything has to be planned, built and purchased from scratch: AERZEN turbo blowers can be moved and permanently installed when the new wastewater treatment plant goes into operation. If required, the rental solution can be taken over permanently.

“So far we are thinking about buying, after all we have good experience and the rented turbos are state of the art,” says Sascha Becker. At the same time, the flood taught him that you never know what the future holds: “There will be a lot of rethinking, after all there is always flooding.” Peter Link’s team also constantly adapts the services to the needs. Because whether it’s an emergency, a conversion or a new build: with over 150 rental machines, the provider ensures that customers keep their operations running as quickly, safely and efficiently as possible at all times.



More about the Aerzen Turbo Generation 5^{plus}:
<https://www.aerzen.com/product/aerzen-turbo-blower-generation-5plus/performance/at-200-08-g5plus.html>



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Website Aerzen Rental:
<https://www.aerzenrental.com/>



Aerzen Rental solutions for water and wastewater treatment:
<https://www.aerzenrental.com/applications/water-and-wastewater-treatment.html>



Website Abwasserzweckverband (AZV) Untere Ahr
<https://www.azv-untere-ahr.de>

Further information



AERZEN ensures the highest level of security for industrial cloud applications

Implementation of cybersecurity measures using the example of AERprogress

In globalised markets, digital networking and communication of industrial automation and control systems is playing a rapidly increasing role. Such cloud applications enable, among other things, the remote monitoring of plant, the exchange of data between locations and the analysis of large amounts of data. It is also possible to control machines and plant, diagnose faults, and much more besides. This is accompanied by strong security requirements for users. Aerzen Digital Systems, the digitalisation specialist within the AERZEN Group, describes in the following article, using the example of the product AERprogress, how “state of the art” cybersecurity measures are implemented in both hardware and software.

Around 20 years ago, the International Society for Automation (ISA) began to specifically define standards for the implementation of safe industrial automation and control systems (IACS). Today, legislators worldwide mandate compliance with minimum cybersecurity standards for critical infrastructure. In addition, operators of this infrastructure must report security-relevant incidents.

The manufacturers of automation and network components, integrators, as well as plant operators, are also obliged to comply with the so-called state of the art in terms of cybersecurity. This legal concept is relevant because technical development usually progresses faster than legislation. State of the art is defined on the basis of existing national or international standards and norms - such as ISO/IEC 27001 or IEC 62443 - or specifications that have been successfully tested in practice. Manufacturers, integrators and cloud providers are also subject to the compliance and data protection regulations of the respective countries.

The AERprogress infrastructure

AERprogress is a digital solution for global machine park management. The cloud application adds digital services to AERZEN's high-performance blowers and compressors, enabling users to monitor their machine parks across locations and national borders. Supplementary add-ons provide an overview of energy efficiency, thus helping to prevent efficiency loss and increasing the availability and reliability of the machines. It is also possible to save energy data according to DIN EN 50001. Historical data is essential for future models and calculations.

Typically, cloud applications consist of several components and working layers. The individual hardware and software components are subject to corresponding security measures. Both the safety functions of the machine controls and of the gateways themselves, and the measures taken in the development process, such as risk analyses, programming guidelines, code analyses and audits, are relevant here. Monitoring and compliance with

processes are also important. In compliance with these safety requirements, the overall AERprogress system is divided into three levels: field level, platform level and user level:

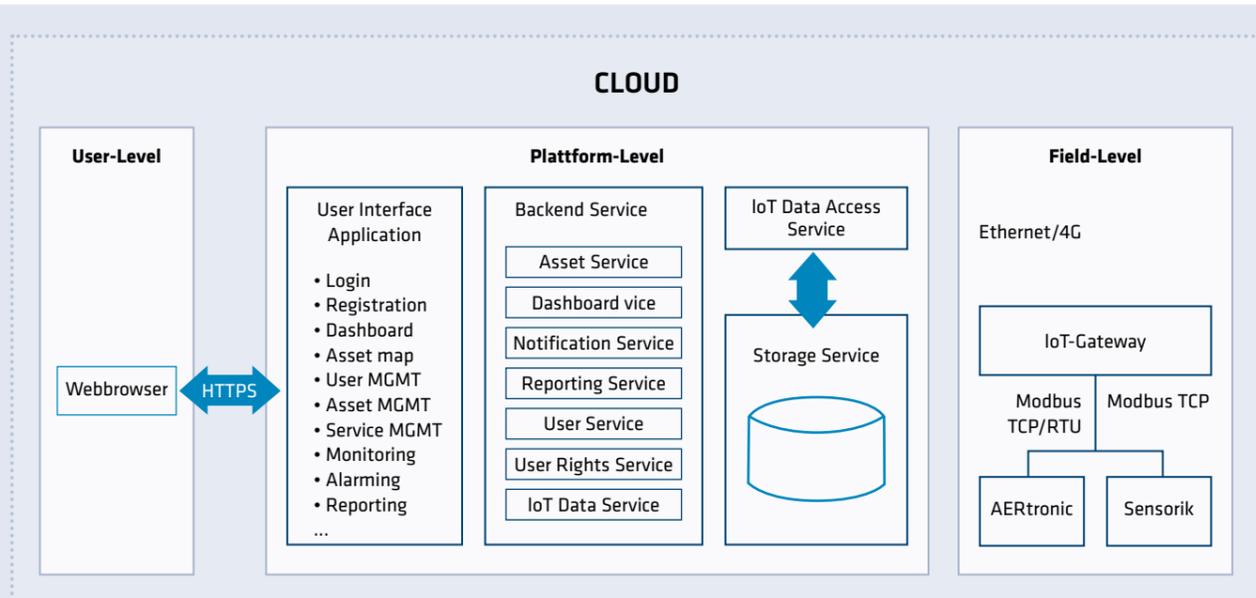


The example of AERprogress indicates that by implementing complex, multi-layered security measures according to the defence-in-depth principle, i.e. the coordinated use of several security measures in the sense of a 'layered defence', comprehensive protection against cyber attacks is provided.

Ricardo Wehrbein,

Managing Director Aerzen Digital Systems GmbH





AERprogress system architecture

- The **field level** is the machine level. This is where the blower or compressor is located, for example. They communicate via the IoT gateway over the internet with the platform level, the cloud level. Therefore, measures to protect against cyber attacks according to IEC 62443 must be implemented here.
 - The **platform level** is the cloud application that provides the user interface in the form of a web-based dashboard (AERZEN Digital Platform). In addition, data storage and data processing in the cloud are both secured by encrypted data. The subsequent data analysis is carried out using methods from the range of artificial intelligence such as machine learning. The AERZEN Digital Platform is a cloud application based on Microsoft Azure and the Azure IoT Hub. Thus, responsibility for and im-
- plementation of cybersecurity measures rests with the provider, Microsoft. By operating multiple data centres across different countries, Microsoft ensures the highest level of redundancy.
- Users access the Digital Platform via a web browser. The connection is established via the Hypertext Transfer Protocol Secure (HTTPS). The encryption and authentication used in this process guarantees confidentiality and integrity in the communication between the machine and the cloud. The user logs in via a personal login in conjunction with two-factor authentication via e-mail PIN. Through appropriately assigned **user levels**, each user only has the access for which he or she is authorised and accredited. User management is carried out via a central administration.



You can find more information about cybersecurity and the services of AERZEN Digital Systems GmbH at www.aerzendigital.com or by scanning the QR code:

Glossary

Kritische Infrastrukturen (KRITIS) are organisations and facilities of vital importance to the state community, the failure or impairment of which would result in lasting supply bottlenecks, significant disturbances to public safety or other dramatic consequences. CRITIS sectors are, for example, energy, transport and traffic, water, food, government and administration, health as well as information technology and telecommunications. (Source: Federal Office for Information Security, Berlin, Germany)

The **ISO/IEC 27001** standard describes the organisational requirements for management systems in the IT environment. It specifies how a company must be structured in order to secure IT safety in data communication.

The **IEC 62443** series of standards defines the protection goals of availability and integrity.

Machine learning uses specific mathematical algorithms to analyse data and "learn" that data by using patterns found in the data to create models. For example, it is possible to predict the Remaining Useful Lifetime (RUL) and the status of machines.

AERZEN ignites the turbo for even more sustainability

The company positions itself as an application and solution-oriented designer for the next generations



Olaf Tanner (Director Quality, AERZEN Maschinenfabrik GmbH), and Sophie Krenzek (Sustainability lead within Quality) present the first AERZEN Sustainability Report.

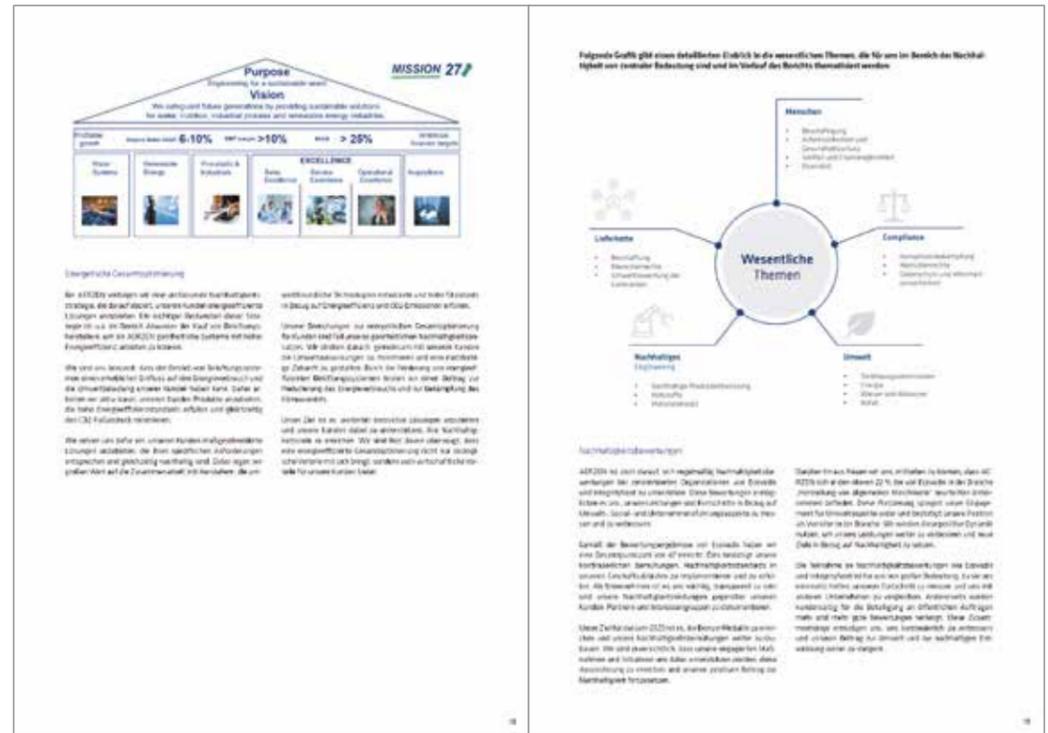
From the foreword by the management to the AERZEN Sustainability Report:

"Engineering for a sustainable world" - this is our claim and shows where the focus on sustainable management lies at AERZEN: "Engineering for a sustainable world" - this is our claim and it shows where the focus on sustainable management lies at AERZEN: global megatrends such as climate change, the growing world population with the associated urbanisation and the resulting increase in demand for clean drinking water, as well as the careful use of natural resources and a predominantly regenerative energy production in the future. As a machine and system manufacturer, we use our innovative strength and our daily actions to find and develop individual solutions for the global challenges in the sectors of wastewater, industry, chemistry, energy, food and maritime applications for a world that will be worth living in in the future."

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The cover page of the AERZEN Sustainability Report



“Engineering for a sustainable world” - this is AERZEN's claim. The first AERZEN sustainability report, which was recently published, shows what our group of companies understands by this.

Imagine a world with new solutions for the next generations. Imagine a world of clean water, renewable energy and less resource consumption. Imagine AERZEN. These aspirations are deliberately highlighted on the front page of the sustainability report published this summer - because they form the core of AERZEN's sustainability philosophy.

“AERZEN sees itself as an application and solution-oriented designer for future generations. Through our solutions, we want to make our contribution towards a more sustainable world and towards saving planet Earth,” emphasises Olaf Tanner. The Director Quality at AERZEN Maschinenfabrik GmbH and his colleague Sophie Krenzke (Sustainability lead within Quality) oversee the topic of sustainability in the AERZEN Group worldwide. With the support of the Finance, Human Resources and Compliance teams, the duo was also responsible for the production of the Sustainability Report 2022, which presents AERZEN's different perspectives on our claim “Engineering for a sustainable world” over more than 50 pages. “Among other things, we highlight our sustainable applications, prod-

ucts and development activities, the issue of sustainability in the supply chain, as well as how we deal with occupational safety, health and the environment,” explains Sophie Krenzke. Another chapter with the title “Governance, Responsibility and Ethics” presents, among other things, the AERZEN Code of Conduct.

The sustainability report, which is based on the GRI (Global Reporting Initiative) standard, cites numerous examples of AERZEN's future-proof and sustainable activities. These include innovations such as the Delta Hybrid 2.0, whose isentropic efficiency at the best point has been improved by around 11 percentage points compared to the previous series. “Through the increased use of the new Delta Hybrids, we achieve a considerable reduction in CO₂ during the operating period. This measure actively contributes to reducing our ecological footprint and underlines our claim to offer our customers innovative and high-performance solutions that are both energy efficient and environmentally friendly,” explains Olaf Tanner.

AERZEN is ahead of its time

With the Sustainability Report 2022, AERZEN is sending a strong signal to the sector as well as to customers, suppliers and employees. “With our voluntary publication, we have laid the foundation for future mandatory sustainability reporting,” emphasises Sophie Krenzke. The

European Commission has created a uniform framework for this with the Corporate Sustainability Reporting Directive (CSRD), the application of which will be mandatory from 2025. AERZEN must demonstrate the implementation of the CSR Directive for the first time in the Sustainability Report 2025, which must be published by 30 June 2026. The contents about which companies must provide information in the future are defined in the European Sustainability Reporting Standard (ESRS). The ESRS, which also takes into account the requirements of the current EU Supply Chain Sourcing Obligations Act, for example, comprises hundreds of key figures.

“The requirements for reporting will increase significantly due to the new specifications,” says Olaf Tanner. The Director Quality believes that AERZEN is well prepared for this: “We are sustainably active and well on the way.” This is evidenced not only by AERZEN's integrated management system with certifications for quality, environmental and energy management, but also by the assessment by the external auditors from EcoVadis. According to its own information, the world's leading provider of sustainability ratings operates the platform www.ecovadis.com. AERZEN is currently going through an elaborate evaluation process to receive the EcoVadis Bronze Medal for the first time. Sophie Krenzke is confident of achieving the goal: “The Silver Medal should then follow in 2024 we hope.”

Digital information

AERZEN's sustainability activities will soon be published in detail on the corporate website www.aerzen.com under the heading “Environment, Social, Governance”. Then the AERZEN Sustainability Report 2022 will be available for download.



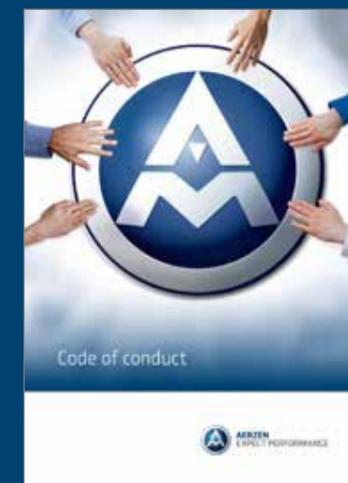
Thanks to investments into advanced technologies and methods AERZEN develops innovative products and procedures. The company is guided by recognised, national and international standards and aligns its business processes with the DIN ISO 9001, DIN ISO 14001, DIN ISO 22000 and DIN ISO 50001. Scan the QR code to get an overview of AERZEN certificates.



Further information

Guideline for the day to day work activities

The **AERZEN Code of Conduct**, which was drawn up under the leadership of Group Compliance Officer Markus Gajek, is the binding and obligatory guideline for the members of the management as well as for all managers and employees of the AERZEN Group covering their day to day work activities. AERZEN also encourages its business partners to accept the Code of Conduct and implement similar principles and standards. So far more than 500 suppliers worldwide have been contacted with a request to comply with the AERZEN Code of Conduct or to provide the required evidence in terms of legal conformity, compliance, diligence, fairness, transparency, ethical behaviour and respect for the interests of all stakeholders.



To download the Code of Conduct, enter the link www.aerzen.com/de/compliance.html or scan the QR code.

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