CUSTOMER JOURNAL · EDITION 3·2020

AERZEN COM·PRESS

Your rental advantage at AERZEN RENTAL

- Worldwide 24/7 service and delivery
- Wide range of assemblies from -700 mbar (g) negative pressure to 10 bar (g) positive pressure
- Efficient and environmentally friendly solutions in the precisely required pressure and volume flow ranges
- Wide variety of 100 % oil-free machines
- Depots throughout Europe and North America
- Application experts in customised solutions and process support

In case of need, AERZEN RENTAL is there, indeed. Here, with nine Delta Blowers GM 90S as replacement of a failed 60,000 m³/h turbo blower of a third-party manufacturer in a wastewater treatment plant near Berlin.

Dear Readers,

Klaus-Peter Glöckner, Chief Executive Officer

An exciting but exhausting year is behind us. We are still accompanied by the COVID-19 pandemic, which brought and still brings with it many changes and new regulations - some of them very unusual. Personal contacts must unfortunately be minimised due to the pandemic. So how do we communicate with each other, learn from each other and discuss innovations? One way is through webinars – and we cordially invite you to join our webinar series. You can read more about these in this issue.

We are particularly pleased about the 20th anniversary of our subsidiary AERZEN RENTAL. Around the clock, for short-term immediate use, and also for long-term needs, AERZEN RENTAL provides innovative plug & play solutions and supports you in securing the success of your business. We would also like to draw your attention to our new biogas packages: lower total cost of ownership, with improved ease of maintenance, shorter delivery times at 16 bar operating pressure, with a wide range of options. With these new packages we are closing the performance gap in the upper pressure range. A very special project is the Strass wastewater treatment plant in Zillertal, Austria. Without any need for new pool construction the capacity has been increased by 50 percent in the Triple-A procedure - of course with Aerzen Turbo. There is more about this project in this issue.

We would like to take this opportunity to thank you for your continuing cooperation and especially for the trust you have placed in us again this year. We wish you and your families a good start to the year 2021!

Cordially yours,

AERZEN RENTAL covers temporary air requirements

20 years of success with 100 percent oil-free AERZEN rental machines and complete solutions

On November 1, 2020 AERZEN INTERNATIONAL RENTAL B.V. celebrated its 20th anniversary. This subsidiary of Aerzener Maschinenfabrik GmbH offers a wide range of 100 per cent oil-free rental machines and accessories, providing complete solutions covering numerous areas of application. With several depots in Europe, delivery is guaranteed to customers around the clock, every day of the year. Since 2019, this also applies to the USA and Canada, which are served by AERZEN RENTAL USA, based in Atlanta.

With the entry of AERZEN into the rental machine business in 2000, a success story began: established as the rental business of AERZEN Nederland B.V. in Duiven, AERZEN RENTAL has grown continuously since then. The headquarters remain in Duiven, and depots in Germany (Rinteln), Spain (Madrid) and the United Kingdom (near Birmingham) have been added. A new depot near Stockholm in Sweden will open at the beginning of 2021. The team of Managing Director Gerben Keurentjes consists of about 20 employees. These include five process engineers who each have a high level of expertise in electrical and mechanical engineering, three technicians, three customer service staff, and an eight-person sales team which is headed by Jean-Michel Dufour.

Portfolio for low pressure and compressed air applications

For customers and interested parties, AERZEN RENTAL holds the complete AERZEN machine portfolio for low pressure and compressed air applications in pressure ranges from -700 mbar (g) negative pressure to 10 bar (g) positive pressure ready - from turbo blowers to positive displacement blowers and rotary lobe compressors up to single and two-stage compressors. Thus, AERZEN RENTAL offers for each differential pressure or volume flow the most appropriate and energy-efficient machine for every requirement - an offer that is unique in the rental market. There is also a wide range of accessories, including power generators (transformers/diesel units), power distributors, power cables, piping, coolers (air-air coolers, water-air coolers), dryers and condensate separators. Typical areas of application include:

- Pneumatic conveying of bulk material
- Aeration in the drinking and wastewater treatment, e.g. in aeration tanks of wastewater treatment plants, often combined with aeration plates to create a complete and self-sufficient aeration system
- Oxidation and combustion processes
- Transport of neutral gases
- Compressed air supply during tunnel construction

Products from AERZEN RENTAL are specially developed for the rental market: they are always modu-

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AERZEN RENTAL provides solutions for many applications in the most diverse application areas and sectors.

Project	Scope of supply	
Construction of a wastewater treatment plant for a seasonal sugar factory	Delta Blower GM 25S, aeration system, piping	
Planned overhaul of a VML 60 compressor in a flour mill	Delta Screw VML 60	
Planned reconstruction of a blower station in a yeast factory in Denmark. The fermentation tanks required 20,000 m³/h of air for one week. Special requirement: H12 filtration against bacteria.	Delta Blower GM 90S, connection system, diesel generators	
Temporary aeration in an industrial wastewater treatment plant in the Netherlands. 4,800 m³/h of air was required.	aeration plates, Delta Blower GM 90S, diesel generator, piping	

Gerben Keurentjes, Managing Director AERZEN INTERNATIONAL RENTAL

We offer our customers complete and immediately available system solutions, without any problems. Our support starts with the first call and only ends when the process is running again at the customer's site. We'll take care of everything: transport, installation, integration of the process IT and on-site service are included in our scope of supply!

lar and, therefore, easy to connect, easy to transport and robust to simplify handling. The machines are equipped as standard with complete control and regulation technology to ensure low starting currents and maximum controllability. Special interfaces facilitate their integration into the customer process. Customer service includes the possibility of remote monitoring of the assemblies. Together with AERZEN Digital Systems the use of artificial intelligence is currently being further developed.

Solutions for short, medium or long-term needs

"Whether in the short, medium or long term, our aim is to keep our customers' plants operational with tailor-made solutions," emphasises Gerben Keurentjes. AERZEN RENTAL is the first choice especially in case of **machine failures** which can quickly lead to economic losses for customers. "In emergencies, every minute counts. It is, therefore, necessary to react quickly and determine the rental scope", says Jean-Michel Dufour. Therefore, AERZEN RENTAL is often on site within a few hours. "In order to maintain control at all times, we also recommend our clients an emergency plan with possible solution scenarios that take effect in case of failures," adds the sales manager.

AERZEN RENTAL also provides rental machines and accessories for planned plant shutdowns – for example during the **conversion or maintenance of production lines**. "We are able to implement bypass solutions for these periods, thus ensuring the continuity of the process and unimpeded production," emphasises Keurentjes. The AERZEN RENTAL portfolio is also in demand by customers who only **produce seasonally**, for example in harvest phases in the food industry or in wine production. During these periods, AERZEN RENTAL ensures that the air requirement is covered, for example for wastewater treatment. For customers who need compressed air for limited periods of time, AERZEN RENTAL offers a **long-term rental option**. With this solution, the machine is configured according to the customers' needs and the rental and maintenance costs are adjusted based on the period. An investment by the customer to purchase new equipment is, therefore, no longer necessary.

Jean-Michel Dufour,
Sales Manager AERZEN INTERNATIONAL RENTAL

Customers, who have used foreign makes up until now, often decide in favour of AERZEN machines for the next new acquisition due to the good experiences with the rental machines and services of AERZEN RENTAL.

Roll on the next 20 years!

On the occasion of this year's anniversary of AERZEN INTERNATIONAL RENTAL, Gerben Keurentjes is optimistic about the future: "our tailor-made solutions, which are customised exactly according to the needs of our customers, make the difference compared with the competition", and adds: "once you have worked with AERZEN RENTAL, you will always want to come back to us". So roll on the next 20 years! ○

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AERZEN webinars

Free training for customers

Learning from each other, creating connections and added value - this is the demand that the AERZEN Group aims to fulfil by means of AERZEN webinars. Earlier this year, online events are also offered internationally.

The webinars offer our customers an extraordinary added value: in just 45 minutes all participants can acquire advanced knowledge about an important topic. Questions can be asked at any time via the live chat option, because our experts will continue to answer questions after the event - and all this is completely free of charge.

The high number of participants in the webinars shows from the beginning, how well these online sessions are being received. This initiative was launched in the German-speaking market on 19 June with the seminar "Implementation of savings potential in wastewater treatment plants". Since then, three more webinars have been held, at an interval of eight weeks between each.

International offer

Initially, the online events with topics ranging from the wastewater treatment plant of the future, to resource-efficient wastewater treatment using individual reference plants, were addressed to the wastewater markets in German-speaking countries. But AERZEN has achieved success with webinars aimed at other countries as well. The first events in the Spanish language has been very well received. In order to make the AERZEN webinars accessible to a wide circle of customers and partners, the presentations will be provided with an English language voice-over and made available on the country pages in the new year.

In 2021, AERZEN plans to offer further online offerings. The range of topics will be expanded by addressing not only the area of wastewater but also other sectors. Our experts are already working hard on these future webinars. ○

Anytime online

All international webinars are available at www.aerzen.com/webseminars and are free of charge.

Added value for customers through useful content with practical relevance and interactive exchanges are the focus of the AERZEN webinars.

AERZEN with optimised compressor solution for oil compatible gases

New assembly concept VMX 16 bar developed

The AERZEN division "Biogas and Standard Gas Products" now offers VMX assemblies for discharge pressures up to 16 bar. Based on the experience gained with the previous VMX 13 bar assemblies, this newly developed assembly concept for VMX 16 bar closes a significant performance gap in the upper pressure range.

The 3D model shows a VMX 110-16 bar assembly for the compression of approx. 670 Nm³/h biogas. The dimensions of the assembly skid are approx. 2,500 x 1,800 x 1,900 mm (length x width x height).

AERZEN thus now fulfils an essential demand of many customers for a cost- and maintenance-efficient concept for the compression to 16 bar of oil-compatible gases such as biogas, biomethane, natural gas, synthesis gases, hydrogen and many more.

Within the scope of a development project, both the compressor stage and the associated compressor package were redesigned and further standardised. The new compressor concept now offers a wide range of standardised options to choose from, such as three different instrumentation variants (Standard, High End or Low Cost). This is additionally rounded off by the possibility of controlling and monitoring the new VMX 16bar assemblies by means of the machine control AERtronic. With the connection to the AERtronic a cost-effective alternative to conventional control systems is also available for this series of assemblies.

The assemblies also offer the usual reliability, availability, robustness and ease of maintenance - in other words, everything the customer needs for smooth operation. The simple and manageable assembly concept will also be reflected in short times both for commissioning and for necessary maintenance work.

Brochures and further information will soon be available on the website www.aerzen.com. ○

Two separate turbo stages in one assembly

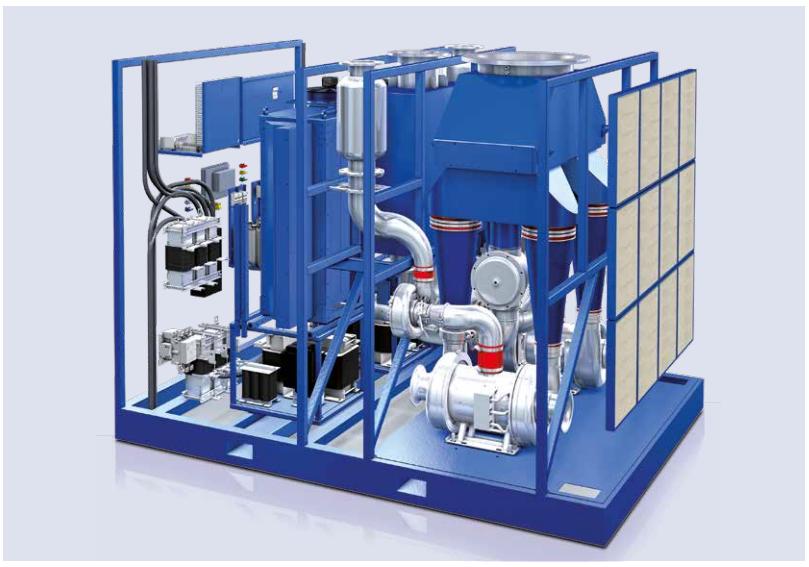
New Multicore Turbo Series

The newly developed turbo blowers from AERZEN represent an efficient and space-saving alternative to conventional geared turbos or multistage central compressors for wastewater treatment plants with high oxygen demand.

The regulation of the oxygen content as required is the key to an optimal biological process, which is necessary for the decomposition of organic material in the aeration tank.

The AERZEN Multicore turbo blowers are based on air foil bearing technology and are equipped with two separate turbo stages in one assembly. So far, the most powerful speed-controlled turbo blowers have currently had a connected load of approx. 400 kW. Now, even larger wastewater treatment plants will be able to replace their outdated assemblies with modern air foil bearing technology. Like the proven G5 and G5plus series, the single stage turbo blowers of the Multicore series are characterised by very low energy consumption and cover a wide volume range on the turbo blower market.

The new sizes AT600 and AT800 enable maximum volume flows of 29,000 m³/h and outputs of up to 600 kW, and all this with an extremely wide control range of 15 to 100 percent of the nominal volume flow. ○



New on the market: AERZEN Multicore turbo blowers.

New and revised marketing materials

AERZEN has recently revised or introduced new marketing materials for the application areas of wastewater treatment, food technology and process gas technology.

How can energy costs be saved in wastewater treatment? How can hygienically pure process air be generated? What requirements must modern process gas compression meet? These are some of the questions which AERZEN customers will have to ask themselves in order to address the challenges posed by Industry 4.0, globalisation and constantly increasing cost pressures. We are supporting you in dealing with these challenges and offer answers to your questions in our new brochures. You can download the new brochures using your CustomerNet access via our website, or printed versions can be ordered by completing this request form:

https://www.aerzen.com/company/request-and-contact/directory-of-contacts.html

The new brochures AERwater, Food and Process gas technology

AERZEN - the number one worldwide

The special issue was published on 2 November 2020.

The "WirtschaftsWoche" magazine has again ranked AERZEN as a world market leader in its special issue "The 500 Secret World Market Leaders 2021". The coveted listings go to companies which are worldwide number one or number two in at least one relevant market segment. Accordingly, AERZEN is world market leader in the field of positive displacement blowers and screw compressors, thanks to its sizeable market share.

New Head of Material and Logistics

Rainer Hellweg

Rainer Hellweg took over the management of the Material and Logistics division in July 2020. As Chief Procurement Officer, he is also responsible for co-ordinating the worldwide purchasing activities of the AERZEN Group. The Graduate Industrial Engineer brings a wealth of professional experience to his new role at AERZEN. Rainer Hellweg worked for the mechanical engineering company and AERZEN customer Haver & Boecker for more than 20 years. Among others, he worked at its subsidiary in Brazil for a long time. In 2005, he took over as Purchasing Manager of Haver & Boecker and from then on also promoted the worldwide networking of purchasing within the group.

The Triple-A process is revolutionising primary treatment

50 percent capacity increase without new tank construction

The Strass wastewater treatment plant in Zillertal is currently investing in an expansion of capacity by 50 percent. Alternating Activated Adsorption is the name of the process for which air is also required in the first purification stage. Two AERZEN turbo blowers, type AT100-0.6 S G5^{plus}, each deliver up to 70 standard cubic metres per minute with high energy efficiency.

In the Austrian Zillertal, the wastewater treatment is currently successfully raised to a new technological level. Triple-A is the name of the process that can achieve twice as much capacity in high-load biology as conventional methods. Behind AAA at the Strass wastewater treatment plant are also three companies that are jointly implementing the new process: ARAconsult, Aquaconsult and AERZEN.

A higher degree of efficiency in preliminary purification provides the Strass wastewater treatment plant with a gain in efficiency across the board. The plant, which belongs to the Achental-Inntal-Zillertal (AIZ) wastewater association, has so far been designed for 167,000 population equivalents (PE) per day. The average annual load is 20,000 PE. Started up in 1989, extensive modernisation and repair work was due after 30 years - from plant technology to concrete refurbishment. Moreover, the inflow values no longer matched the size of the plant – especially during peak tourist periods. With a view to future-proofing, one of the aims of the modernisation was to increase the capacity of the plant by 50 percent to 250,000 PE – but without building new tanks. „So we have to make the process much more productive," emphasises plant manager Christian Fimml. The AIZ invested € 1.8 million in technology instead of in concrete that takes up space.

Making the preliminary step more efficient

In the past, the comparatively small tank was in high load phases the bottleneck in wastewater treatment in the Zillertal. Especially during the ski season, the A level turned out to be a bottleneck with a steadily decreasing efficiency. Today, the AAA process is used in Strass. In this process, the inflowing wastewater in the existing sedimentation tanks undergoes a sedimentation and filtering process of two hours. "Triple-A," which stands for "Alternating Activated Adsorption." Finely blown in air plays a decisive role in activating biosorption. It is supplied by two AERZEN turbo blowers of type AT100-0.6 S. Each of the energy efficient G5^{plus} assemblies delivers up to 70 standard cubic metres per minute with 84 kW motor connected load. "We work with an overpressure of up to 450 millibar", reports Patrick Quitt, sales engineer at AERZEN Austria. "The delta is enough to put the air into the water in two separate compression stage rings." The strip aerators are distributed in two different depth levels at the bottom of the round tanks. The independent strands are due to the fact that the existing tanks become deeper from the outside to the inside like a funnel. On the one hand, the air supplies bacteria in the sludge layer with oxygen, but on the other hand, it also takes over the lifting of the forming solid layer in order to transport it out of the tank.

In the AAA tank, four phases occur within a cycle of about one hour. Here, the layer of sludge that forms takes over an essential filter function. The solids settle to the bottom of the tank during the non-aerated phase. In the AAA process, this layer is used as a natural filter. Over a period of about half an hour, fresh wastewater is fed into the reactor tank from below. The sludge cover above prevents mixing with the already pre-treated water near the surface.

Sewage sludge as a natural filter

During the approximately half hour inflow, the pre-treated, near-surface water is displaced and flows via overflow into the second purification stage. On the one hand, the sludge layer acts as a barrier, on the other hand, it acts as a filter and a place for massive COD degradation by bacteria. An EPS matrix (Extracellular polymer substances) is formed in the process. EPS are long-chain compounds that are formed by microorganisms. EPS are often referred to as biofilm and help the cells to establish a connection with neighbouring cells.

The purification and filter effect is so effective that it agglomerates 60 percent of the organic matter contained in the wastewater and also binds nitrogen strongly. According to the experience, classic primary wastewater tanks achieve only 30 percent. A further advantage is in the technical realisation. The process does not require a complex clearing mechanism to get the sludge out of the tank. Air is enough - and the two turbo blowers from AERZEN provide that as well.

Air in the first purification stage? The answer to this can be found in the process flow. In the AAA process, after the briefly sketched half-hourly inflow, the sludge layer that has formed is lifted by compressed air and transported via a vortex-like turbulence into the thickener in the middle of the tank. Subsequently, the two AERZEN Turbos take over the so-called activation of the remaining sludge. Here, the bacteria build up the EPS-matrix so that the filter can work. Once this has formed, the next inflow starts.

Turbo blower as first choice

The turbo blowers have been designed together with AERZEN. An essential factor in the selection of the aeration technology was to use assemblies that have the lowest possible energy consumption. The extremely durable and maintenance-free air bearing of the turbo stage from AERZEN enables the compact, energy-efficient assemblies with their high power density to be used throughout the entire control range. The advantage of AERZEN is clearly the variety in the programme. The customer can select the right assembly for the application and knows that the machines work reliably.

Summary

The new process is particularly interesting for wastewater associations and municipalities that are about to expand their plants. The investment pays off very quickly. Even if the demand for electrical energy increases in the preliminary purification, is all the less needed in the subsequent aeration. The less organic matter arrives in the aeration stage, the lower the corresponding oxygen demand. ○

The air supply for the AAA process is ensured from the existing machine room.

The strip aerators are divided into two different pressure ranges, which are each supplied with air by an Aerzen Turbo.

Questions, Suggestions, Ideas?

We are looking forward to all your queries, comments and suggestions on our customer journal, and we are at your disposal for further information on AERZEN products and services. Give us a visit on our website:

WWW
www.aerzen.com/news

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AERZEN COM•PRESS
Customer journal of
Aerzener Maschinenfabrik GmbH
Edition 3•2020

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Picture credits
AERZEN, Aerzen Rental, Shutterstock, Thorsten Sienk, WirtschaftsWoche

Realisation
Maenken Kommunikation GmbH
Von-der-Wettern-Straße 25, D-51149 Cologne
Number of copies: 8,400

AERZEN