



AERZEN

COM·PRESS

150 years AERZEN

AERZEN breaks records



IFAT 2014

Successful exhibition



Safe solution

Positive displacement blowers in vacuum cleaning systems



Two Delta Hybrid machines alternately generate the compressed air for the moving bed reactor.

View of the water surface of a moving bed reactor basin

From fresh water to waste water

AERZEN supplies oil-free oxygen to Nordland Papier

Water is the elixir of life at every paper mill. At UPM Nordland Papier in Dörpen, Lower Saxony, AERZEN Delta Blowers and Delta Hybrids contribute to the economical use and careful treatment of this precious element.

The UPM Nordland Papier fine paper factory in Dörpen is the largest of its kind in Europe, producing up to 1.4 million tons of uncoated and coated paper every year with four machines. The company is part of UPM Paper ENA (Europe and North America), a worldwide leading manufacturer of graphic papers, with its head office in Germany and production facilities in Finland, the UK, France, Austria and the U.S.A.

Accumulating waste water is treated in a sewage plant, which first works mechanically and then biologically with a maximum capacity of 650 m³/h and it is then fed into the River Ems as "fully purified water".

Double-stage biological waste water treatment

Since 1968, packaged units made by AERZEN have been in operation here. At

that time, the first positive displacement blowers were installed in the fresh water sector. In 2009, two further Delta Blower packaged units were supplied for waste water treatment in the sector of the aeration basins. Since 2012, two rotary lobe compressors of the new Delta Hybrid series have been supplying oxygen for the new moving bed reactor.

The "moving bed" comprises plastic bodies with a size of about five centimetres, floating freely in the waste water and of-

fering an ideal growth surface to micro-organisms, which prefer packed beds. To encourage the multiplication of these bacteria, oxygen, which is generated by the two Delta Hybrid machines, each with a drive capacity of 250 kW, is fed into the reservoir via vents. The two units, one of which covers the operational requirements, and the other kept as redundancy, have been designed for a maximum pressure of 1,500 mbar. They are run depending on demand via the integrated AERZEN AERtronic control system and frequency converter, and supply the reactor basins, which have a height of 12 metres, with a constant maximum pressure of 1,400 mbar.

In the subsequent second treatment stage, the activated sludge

Dear Readers,



Klaus-Hasso Heller, Chief Executive Officer

An exciting first half of the year is behind us. In February, the groundbreaking for a new office and production building took place in Shanghai in accordance with traditional Chinese rules. In March, we gave the starting signal for the brand AERZEN and have consequently given our customers a promise to "Expect Performance!" Now we are measured by our customers and must not disappoint them.

In May, we participated very successfully with our new Delta Hybrid D 152 S in the IFAT Fair in Munich, and then celebrated our 150th anniversary with an excellent party. Just like the motto "Expect Performance!"

Several weeks ago, we moved into the second phase of construction of our new office building and can now concentrate fully on the completion of our logistics centre. The most significant task of recent decades, the introduction of SAP, has almost been completed, with just a little fine-tuning now remaining.

As we now move with enthusiasm into the second half of the year, many of us are now contemplating a particularly attractive prospect: the vacation period. I wish you all a restful holiday and a wonderful summer.

Yours

Frank Berlage, sewage plant manager

The packaged units were used for a field test. As they worked to our utmost satisfaction, we purchased them. Thanks to their reliability, the current factory-provided monitoring could be reduced to the usual servicing and maintenance by the manufacturer. Furthermore, the Delta Hybrids are particularly energy-efficient due to their economical use of electrical energy.



New logistics concept

The new AERZEN logistics centre is nearing completion. With the opening of the logistics centre, the trucks will follow a new route on the premises. The position of the entrance for trucks which deliver goods will be relocated from the entrance at the federal highway B1 to a new entrance at the street called Wiesenweg, including a new gatehouse.

The planning for a high-performance high-bay storage facility, with a picking zone in front, to be situated next to the logistics centre, has started in parallel with the final building measures.

With the new logistics concept AERZEN takes into account the permanent, worldwide growth of the company.



The new logistics centre is supplemented by a high-bay storage in future.

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.aerzen.com/news

Certifications for Emmerthal

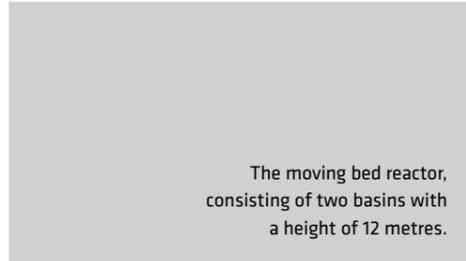
Emmerthaler Apparatebau, a subsidiary of AERZEN, is pleased about receiving three new certifications: the first of these came when, TÜV Nord granted certification for the integration of the working and health protection management system BS OHSAS 18001 into the existing quality management system DIN EN ISO 9001:2008 in October. Then, at the beginning of December, Emmerthaler Apparatebau received its China-Manufacturer-License for a further four years, with no deviations found during the audit. In January 2014, the Joint-Review and the extension to the U2-stamp followed, necessary for ASME-U-stamp for pressure vessels in higher pressure stages (>200 bar). Emmerthaler Apparatebau was also duly certified in this case.



> stage, the waste water first of all passes through a circular above-ground aeration basin, which is supplied with oxygen by two speed-controlled AERZEN Delta Blowers operated in parallel. In the following three aeration basins, surface aerators are used at the water surface. Afterwards, the waste water passes through a degassing basin and four secondary settling tanks working in parallel. Prior to being fed into the River Ems, an additional clear water filter retains the finest residual contaminants. Due to the multistage treatment of the purified waste water a BOD decomposition of 98 per cent is achieved.

Worldwide novelty

The new Delta Hybrid packages have been designed for all application cases where



The moving bed reactor, consisting of two basins with a height of 12 metres.

air and neutral gases are conveyed up to 1.5 bar. Initially, the series only comprised packaged units in the performance range from 600 to 5,900 m³/h. With further development work, AERZEN has increased the performance range to a maximum 9,000 m³/h. These new machines are not only easy to use and to maintain, are robust and have a long service life, but they also reduce energy consumption by 15 per

cent compared with conventional compressors.

“So it is not surprising that in spite of nationwide requests for quotations for new investments in the field of compressed air generation in our sewage plant, we have again and again decided on the packaged units made by AERZEN”, says Dipl.-Ing. Hartmut Wagener, operating engineer in the field of public utility.



Subsidiary company Aerzen Hungária Kft.

Hungarian success story

As the representative for products made by AERZEN in Hungary, the former Ariadne Hafi Kft. started up operations in 1994 with six employees. Since then not only the team of the present subsidiary company Aerzen Hungária has grown, but with regard to the customers' requirements in particular the scope of performances.



Motivated and successful: the team of Aerzen Hungária

Ariadne Hafi Kft. manufactured the first gas and refrigeration compressors 20 years ago in co-operation with another Hungarian company. On 1st July 2001 AERZEN took over the company and changed its name into Aerzen Hungária Kft., under the management of András Legányi. Five years later, the company expanded its portfolio with After Sales Service, to be able to support the customer better.

Soon, the next step followed: AERZEN designed and produced independently gas and refrigeration compressors in Hungary. “We call this new business unit within the company ‘Ariadne’ and supply refrigeration machines worldwide as well as gas compressors to Eastern Europe”, explains managing director András Legányi.

For a Russian customer Aerzen Hungária recently supplied three VMY 536H flare gas compressors, in which each one fire extinguishing system and an air-cooled oil cooler are installed. With these compressors the customer can feed the lost gas into a boiler instead of into the flare and can thus reuse a large quantity of the gas.

This success story will soon be continued under a new management: As of 1st July 2014 managing director András Legányi, and his wife Mónika Legányi, head of the engineering division at Aerzen Hungária, will retire after 20 years and pass on the company to Tamás Jakab and Rolf Heinemeyer. Working for the Process Gas Division at AERZEN, Rolf Heinemeyer will particularly support the field of process gas compressors.



With these three VMY 536H flare gas compressors the Russian customer can feed the lost gas into a boiler instead of into the flare and can thus reuse it.



Bernd Wöhlken, Managing Director

AERZEN has always oriented itself to meet the requirements of its customers and has thus been able to set new standards over and over again.

150 years AERZEN, part 2 1931–1984

AERZEN breaks records

From a local manufacturer of agricultural machines to a global player: with its product innovations, AERZEN has always underlined its international importance and future orientation.

The production of screw compressors, which have since become one of the most important products made by AERZEN, began during the Second World War. At that time, the Reich Ministry for Armaments and War Production instructed Managing Director Karlheinz Heller to design a screw compressor, intended to serve as an exhaust gas compressor in new submarine types. After a period of negotiations lasting two years, AERZEN was awarded a sub licence by the Swedish company Ljungströms Angurbin, now Svenska Rotor Maskiner AB. During the 1930s, Chief Engineer Alf Lysholm developed the prototype of the modern screw compressors for use in gas turbines.

In 1943, manufacturing of the new product line began. As twin-shaft positive displacement machines, the screw compressors optimally supplemented the range of products. Concerning oil-free handling with internal compression they achieved higher compression ratios than positive displacement blowers.

The first "K60" screw compressor manufactured in AERZEN, called helical blower or rotary positive displacement compressor, had an asymmetrical rotor profile according to the Lysholm principle.

From the beginning, Heller had planned a universally applicable screw compressor which could be equipped according to a modular system. His plan ultimately became a reality. Now, screw compres-

sors made by AERZEN cover all the fields of application of air and gas compression. They are used, for example, for pneumatic conveying, for the industrial generation of compressed air, at chemical companies, power plants, steel production plants and also in the refrigeration industry and in process gas technology.

Economic miracle brought prosperity

But at the end of the Second World War, instead of complex technologies, it was beetroot juice presses, oil mills and tobacco cutters which were produced.

In spite of the difficult post-war situation, AERZEN soon resumed the production of twin-shaft positive displacement machines - dismantling of the production facilities by the allies was avoided. The economic miracle of the 1950s and 1960s also brought prosperity for AERZEN. Numerous new products took the company forward.

During the years that followed, AERZEN continued its investment and modernisation strategy. When the company celebrated its 100th anniversary in 1964, the machinery range had been extended with ultra-modern special machines.

In 1967, the production of special air compressors for higher pressures began. The VM-series for oil-free compression of air was equipped with ball bearings. The new screw compressors minimised the risk of contamination during the pneumatic

transport of grain, cement or chemical bulk material.

In 1968, at the Hanover Fair, AERZEN presented for the first time screw compressors with oil-injection for refrigeration technology. The new VMY series were mainly used in refrigerated food warehouses and in air-conditioning systems on ships.

With the new VMX series of screw compressors with oil-injection for compressed air technology, the company gained entry into new fields of application in 1971.

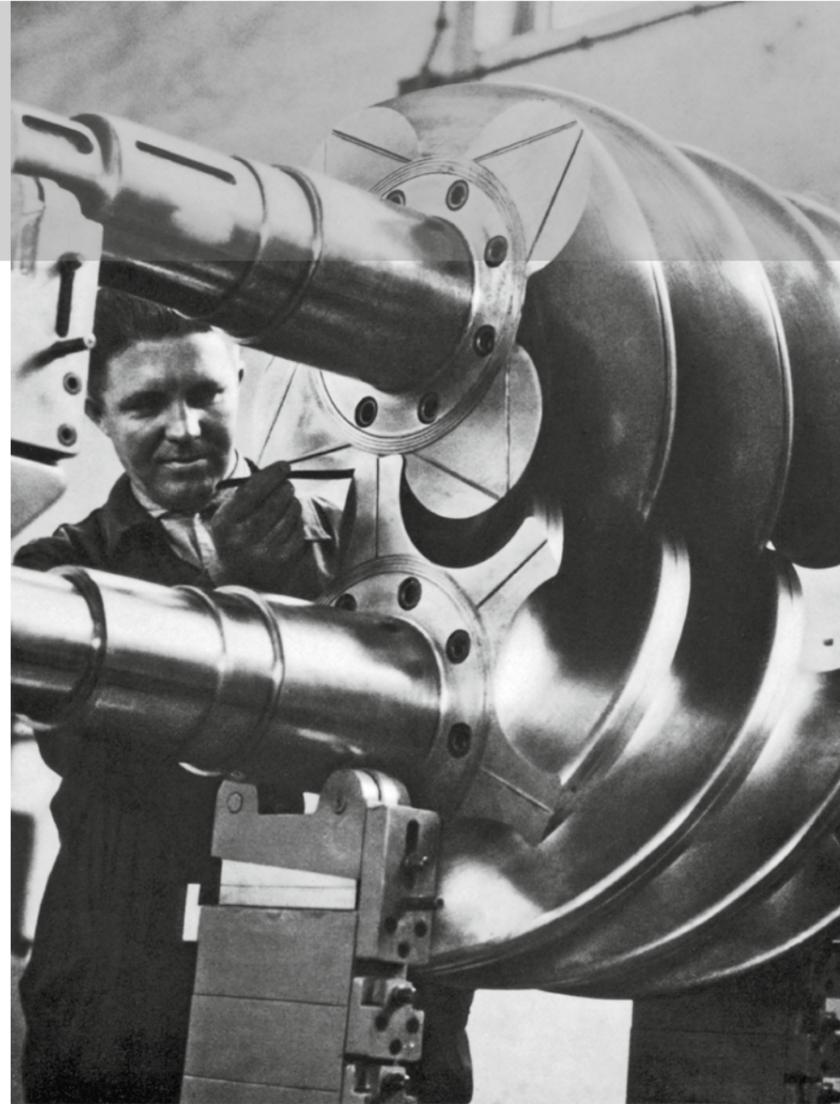
World's largest positive displacement blower

In 1978, AERZEN presented the world's largest positive displacement blower, the huge piston of which, with a diameter of 1.5 metres and a drive capacity of 3 megawatts, could convey 84,000 cubic metres of process gas per hour. To manufacture

this giant, the hall doors had to be enlarged and larger piston planing machines and milling machines had to be procured. Regarding volumetric handling of gas, AERZEN successfully extended the previously technically feasible field of application of a positive displacement blower. The new blowers enjoyed and still enjoy today high demand in the steel production sector.

AERZEN experienced a similar success story with the development of the world's largest screw compressor in 1984. With a rotor diameter of 845 millimetres, it could compress about 65,000 cubic metres of process gas per hour. The special machines were supplied to soda factories in France and Italy - consequently to a branch which had relied on turbo compressors before.

You can read in our next edition about the product innovations that followed in the ensuing years. ○



An AERZEN worker inspecting screw compressor rotors in the testing appliance.



1943

The production of screw compressors began in the middle of the Second World War.



1959

New production record: the 100,000th positive displacement blower made by AERZEN.



1978

The world's biggest positive displacement blower conveys 84,000 cubic metres of process gas per hour.



1950

AERZEN produced superchargers for Diesel engines and blower units for filling and emptying of rubber dinghies.



1971

With the new VMX-series of screw compressors, with oil-injection for compressed air technology, the company gained entry into new fields of application.



1984

The biggest screw compressor in the world has a rotor diameter of 845 millimetres.

Delta Blower in new E-Design

Energy efficiency is a key issue today, especially in compressor technology, where energy costs amount to more than 90 percent of product life cycle costs (considered over a period of ten years). Now AERZEN has complemented its blower series Delta Blower Generation 5 with new design, characterised by top marks in terms of energy saving. The new E-Design uses up to four percent less energy, depending on volume flow and differential pressure. This improved energy efficiency is the result of numerous enhancements, such as a flow-optimised guide for the intake air in the acoustic hood and in the filter silencer. The patented intake cone minimises both pressure losses and sound input. Furthermore, the cooling system design has been revised. Instead of a mechanically driven acoustic hood fan, an electrical fan is now used, which ensures perfect ventilation at lowest power consumption.

As with all AERZEN series, the E-Blower is also characterised by absolute reliability and longevity. It is a robust endurance runner in innumerable compression processes where air and neutral gases have to be conveyed oilfree. It is available in six sizes for intake volume flows from approximately 30 m³/h up to 1.000 m³/h and overpressures up to 1000 mbar resp. negative pressures up to 500 mbar.



Up to a four percent reduction energy consumption: the Delta Blower E-Design

A helping hand is natural

One of the most devastating fires in the history of Chile raged on 12th April in the mountains around Valparaiso and destroyed at least 2,500 houses. Also a colleague of Aerzen Chile was directly affected and lost his house in the disaster. "Team spirit and social commitment are among the basic values of AERZEN, therefore, for us as a team, we took it for granted that we must help our colleague", Octavio Alarcón V., managing director Aerzen Chile, comments.

The employees collected donations in kind, organised a new accommodation and helped with the cleaning up.

A total of 11,000 people were made homeless as a result of the fire, another 6,000 had to be evacuated. 15 people died in the fire and 10 more were seriously injured.

Active support on the spot: the team from Aerzen Chile



Rush-hour at the exhibition stand

IFAT - world's leading fair for sewage management

Expect Performance! Successful fair presentation at the IFAT 2014

From 5th to 9th May, AERZEN presented a variety of branch relevant products and solutions to customers and prospective customers at the IFAT. The main focus was on the compound operation of AERZEN technologies Blower, Hybrid and Turbo: the message "Performance³" was the key thread running through the entire fair presentation.

The fair programme of the IFAT offers the world's biggest variety of innovations and solutions in the environmental technology sector. At the fair, strategies and applications were presented in the fields of water, sewage, waste and raw materials management. It was shown how to use resources in an intelligent way, i.e. in cycles, so that resources can be saved in the long run. Thanks to more than 150,000 visitors and around 3,000 exhibitors, the IFAT is the world's leading fair for environmental technology.

Performance³

About 1,700 interested guests also visited the fair stand of AERZEN and gathered information about technical possibilities in the subject of energy efficiency:

Various technologies have to be considered in order to find the right solution for every application in waste water treatment. This means primarily turbo blowers, rotary lobe blowers, and rotary lobe compressors. The perfect combination of these

high performance technologies is ideal for maximising energy efficiency - exactly the way AERZEN offers it under the name Performance³. The physical advantages of turbo machinery - the high efficiency of the design point - with the advantages of rotary piston machines - can be perfectly

combined with high controllability and good efficiency, also in part-load operation. The position of Aerzener Maschinenfabrik is unique in this connection because of the company's ability to offer all three technologies from one single source. Blower, Hybrid and Turbo!

Exhibition dates

In 3rd quarter of 2014, AERZEN, its sales companies and representatives will once again participate in fairs and trade exhibitions worldwide:

| | |
|---|---------------------------------|
| GAWP, Savannah/USA | 20th-23rd July 2014 |
| FENASAN 2014, São Paulo/Brazil | 30th July-1st August 2014 |
| Oil. Gaz. Chem. 2014 (Technoexpo), Saratov/Russia | 9th-11th September 2014 |
| WIOA, Melbourne/Australia | 13th September 2014 |
| Electra Mining Africa 2014, Johannesburg/South Africa | 15th-19th September 2014 |
| RWM NEC, Birmingham/GB | 16th-18th September 2014 |
| WEFTEC, New Orleans/USA | 27th September-1st October 2014 |
| Industrial Processing 2014, Utrecht/The Netherlands | 30th September-3rd October 2014 |
| VA-Mässan, Jönköping/Sweden | 30th September-2nd October 2014 |
| POWTECH, Nürnberg/Germany | 30th September-2nd October 2014 |
| GAT, Karlsruhe/Germany | 30th September-1st October 2014 |



Exchange of experiences: Björn Heuer, Klaus Grote and Frank Glöckner (from left) in talks with visitors

AERZEN Positive Displacement Blower in vacuum cleaning systems of EMDE

Suction for safety

Messrs. EMDE use AERZEN Positive Displacement Blowers in their vacuum cleaning systems – the ideal solution for the effective, efficient and safe cleaning of large units.



Björn Redert, Sales of conveyor technique, EMDE

Vacuuming is the only correct and effective cleaning method. For producing the negative pressure in the vacuum cleaning systems, the low maintenance oil-free AERZEN Positive Displacement Blowers are optimal.

Dust deposits on machinery operating within closed buildings give rise to a significant risk of dust explosions. Only regular cleaning with a vacuum cleaning system will ensure clean operations and a safe work environment. The blowing-off, as well as permanent sweeping, can calculate dust and increase the risk of a dust explosion.

Convenient solution

In large units and multi-storey buildings, small mobile vacuum cleaning units are often difficult to handle. In such environments, a central pipe system, connected with a stationary or mobile vacuum cleaning system, is much more suitable. A suction kit with flexible, electrically conductive suction hoses is regularly connected to this network via a spring-loaded flap valve. The vacuum cleaning system of Messrs. EMDE

allows the removal of contaminants in several places at once.

Moreover, the piping network can be extended at any time, or else installed into a unit in an existing building. Its central unit consists of a separator with filter system and a positive displacement blower for producing negative pressure. This can be mounted on a chassis with StVZO-approval for mobile use, which is particularly suitable in the operation of several separated suction systems where permanent cleaning is not necessary.

The filter separator separates the vacuumed-off product from the transport air. To protect the filter elements, and to avoid additional ignition sources, a magnetic separator is installed with a pull-out device, or pipe magnet, in the suction pipe. An oil-free differential pressure monitored positive displacement blower of low main-

The mobile vacuum cleaning system is designed for a maximum explosion pressure of ten bar (g).



tenance, type GM 35S, generates the negative pressure. It switches off automatically should it encounter a filter surface. The fully automated vacuum cleaning system is operated via an electrical control with SPS.

Completely protected

For the suction of explosive dust, the filter system can be designed in 10 bar (g) shock-proof design according to VDI 2263 DIN EN 1127-1, or alternatively in a pressure-reduced variant 1,5 bar (g) with relief valve. The piping network, as well as the positive displacement blower, are decoupled via corresponding protective devices.

For the safe disposal of dust, which could cause dust explosions, there is dust-free return of the product into the material flow. In addition, EMDE has a closed system for discharge of the material. ○

The service fleet has a new look

Our new brand positioning AERZEN also includes the service vehicles: the cars have so far been branded with the new logo and given a special white varnish paint treatment. For the transport of spare parts and tools for assembly work, the car boots have all been equipped with special vehicle floor-plates. With a view to the well-being of the service technicians who have to drive many thousands of kilometres every year, the service cars have been equipped with special health seats.



White varnishing and new company logo: the new service vehicles

Replacement after 30 years

In 1984, AERZEN supplied an oil-free screw compressor, type VRo 936L, to the Italian chemical company Versalis. This machine had been used in a process for the manufacture of polystyrene foam. Apart from periods when it was undergoing regular servicing, the compressor had been in continuous operation for 30 years! More than a quarter of a million operating hours had been reason enough for the customer to replace the machine with a new compressor stage from AERZEN. As a result, the course has been set for the future, in order to keep the work at this production plant running without any problems. The key challenge in the production of this compressor stage VR, which was delivered in January, was its tremendous weight: almost 34 tons!



Heavy weight: the new compressor stage for Versalis

Spare Parts: Better Take the Original!



Aerzen original spare parts are specially designed for the compressors and blowers of Aerzener Maschinenfabrik. Consequently, they stand for a high degree of reliability and safety. In addition, Aerzen After Sales Service offers warranty, a vast storage and a quick identification of the correct parts as well as short delivery and reaction times. In short: Confidence is good – Original is better!



The system has a separate AERZEN positive displacement blower for the generation of compressed air installed in an acoustic hood.

Intelligent G5 logistics in South Africa

Airgas Compressors, AERZEN's South African subsidiary, has taken over the logistics for the import of Generation 5 on the African continent and developed an efficient concept for this:

unlike the previous model that had been manufactured and assembled at site except for the stage, now, the G5 packaged units are imported as complete machines and are only partly assembled in South Africa. Thanks to this well thought-out transport and assembly concept, Airgas Compressors is able to serve its customers quickly and efficiently across Africa.



Airgas Compressors has taken over the logistics and local assembly for the G5-units

Order chronicle now



The chronicle offers details and backgrounds of the company history.

In our freshly printed chronicle, comprising more than 150 pages, you can read the details of the history of AERZEN from 1864 until now. ISBN-numbers are 978-3-94037132-4 (German) or 978-3-94037133-1 (English).

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About 40 journalists arrived for the press conference in the new administration building.



Great interest in the factory tours; here a group with a point of history.



Lengthy queue in front of the huge guestbook.

Events concerning 150th anniversary

AERZEN celebrates

150 years AERZEN, a new administration building, a new logistics centre. Many reasons to celebrate, with all persons that contributed to the company's success: On 22nd May about 800 customers and partners were invited to celebrate the anniversary together with AERZEN. On 24th May a big celebration for the colleagues followed.

The celebrations began with a press conference, on occasion of which numerous representatives from the specialised and local press arrived at the new administration building. Chief Executive Officer Klaus-Hasso Heller gave a review on the company's history of 150 years and represented the company's growth and internationalisation strategy and the investments, that are made around the world for translation into action of this strategy and for achieving the vision 2022: Besides the new office building and the logistics centre in Aerzen, in China a new building was established, and the foundation of subsidiary companies in Peru and North Africa is pending. Marketing manager Stephan Brand introduced the new brand positioning of AERZEN as well as new products: the new Delta Hybrid size as well as Delta Blower and Delta Screw in E-design. In the service range AERZEN offers innovations such as the automatic regreasing unit and the Delta Real Time Monitoring. The participants were astonished by some calculation examples, to explain the amount of energy and cost saving potentials by using the optimal combination of the products made by AERZEN.

Afterwards, representatives of the press as well as customers and their partners could visit the AERZEN Expo 150 exhibition. According to the motto "Tradition creates innovation" spots of history from each era were spread around the company premises, where both historical and current AERZEN products could be touched or even climbed into. A particular highlight was the reconstruction of the oldest blower of AERZEN from 1868.

For the big ceremonial act furthermore representatives of the economy and politics as well as the Regional Adviser for Regional Development of the federal state

The show also included futuristic LED-robots.



Marcus Richter, FL Smidth Hamburg

We are working in the field of pneumatic conveying and storage technology. We have a longstanding partnership with AERZEN with a high level of reliability, although we frequently have exotic special applications. I am glad to be participating in this successful celebration.



Lower Saxony, Karin Beckmann, arrived at the new logistics centre. There the guests experienced a breathtaking show according to the motto "Tradition creates innovation". In a combination of projected images and live acts, shapes and light, robots and dancers the story of AERZEN was told - products, innovation, vision and values of the company were shown. The programme was presented by Esther Sedlacek, a presenter at the Television broadcast station Sky since 2011. A delicious menu was then

offered to the guests by the German celebrity chef Martin Baudrexel.

The celebration for the employees the following Saturday, where 2,000 colleagues and their partners had been invited, many of them of the worldwide subsidiary companies and sales offices, was in no way inferior to the event for the customers. During the event among others donations amounting to EUR 100,000 for local institutions were handed over to Bernhard Wagner, Aerzen's mayor.



Georg Stein, Georg Stein Process Equipment

I have been co-operating with AERZEN for more than 20 years and have always been extraordinarily satisfied. For me, the company stands for reliability, flexibility and know-how, and it understands how to transfer traditional values to each new era.



Klaus-Hasso Heller emphasizes: "Continuity and social cohesion" make AERZEN special.