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In the Dyckerhoff cement plant AERZEN blowers and compressors are applied for many different process steps.

For one hundred per cent availability

No standstill of rotary kilns, thanks to AERZEN

Numerous AERZEN blowers and compressors ensure the supply of materials and fuel in the Dyckerhoff cement plant in Lengerich.

The Dyckerhoff cement plant in the "Münsterland" region is a unique location in Germany for so-called deep well cement. The material is put into the bore holes of gas fields and crude oil fields all over the world to seal and stabilise the outer walls at depths of between 6,000 and 8,000 metres. The prevailing temperatures and pressures pose a real challenge for deep well cement, which is why the parent rock, and additional aggregates, must be of very special compositions. Within Germany, these materials are available only in Lengerich.

Specialists for deep holes

Whether it's for simple Portland cement, special types of cement for civil engineering, blast furnace slag cement, or mixtures with nanocrystalline structures, Dyckerhoff's basis is always limestone, found right on their doorstep, and a composition of aggregates. These materials

are mixed, well ground and then heated in a rotary kiln. To obtain this material, the mixture is exposed to a sintering process. The sintering zone in rotary kiln 8, with a length of 58 metres, reaches temperatures of about 1,500 degrees Celsius. The kiln is one of two rotary kilns in Lengerich which Dyckerhoff commissioned in 2001, and which is still one of the most modern kilns in Europe due to its high energy efficiency.

Blower technology for fuel supply

Hot process air is one of the most important energy sources, as heat ultimately determines the production process. Dyckerhoff uses fuel oil for heating up, and then switches to pulverised lignite which is blown into the rotary kiln by means of a burner lance. The lignite burns immediately. Dyckerhoff can also burn derived fuels in these kilns. This fibrous mass is called "fluff," which is ac-



Heinz Hülsmeier, former maintenance/factory guide Dyckerhoff.

Our daily capacity is up to 3,700 tons, so there would be a sizeable loss of production in case of a failure. With AERZEN we are on the safe side.

crued during the reclamation process for recycling sacks.

For the supply of the burner, Dyckerhoff also uses the principle of pneumatic conveying technology. AERZEN Displacement Blowers (GM25, 304 to 1452 m³/h, 55 kW max) of the series Delta Blower are used here. The packaged unit supplies volume flow of 16 cubic metres per minute at a motor connected load of 36 kW for the transport of the pulverised lignite and the fluff. With the new Generation 5 of Delta Blower, AERZEN has a series in the market which is extraordinary in terms of its effectiveness.

Both units at Dyckerhoff ensure that the fuel from the silos reaches the burner nozzle under optimal pressure and in sufficient quantity. The biggest cost driver in cement production is increasing energy costs. As a result, the company has responded by increasingly using derived fuels. Burning fluff brings a

Dear Readers,



Klaus-Hasso Heller,
Chief Executive Officer

A lot has happened in the AERZEN Group in the first three months of this year. In February, the re-certifications, which are so important to us, for DIN EN ISO 9001, 14001 and 50001 took place. In addition, the initial certification for OHSAS 18001 was effected – industrial safety and health protection. We are pleased to report that all certificates have been granted and the reliability of our group of companies has once more been confirmed. On the international

side, we have further expanded our sales channels – additional representation has been established in Vietnam, and, after the lifting of the embargo, we will expand our presence and serve our customers in Iran.

There is, naturally, also news with regard to our products: we have extended our successful Delta Hybrids by one size, in volume flow range 720 to 3,120 m³/h, so that we can now offer a unique series of 16 sizes of this machine. Moreover, the AERZEN Turbo has been updated. Besides various constructive improvements, energy efficiency has been optimized further. We would like to suggest that you come and see AERZEN products for yourself – just visit us at PowTech in Nuremberg, or at IFAT in Munich, or at one of the numerous other fairs worldwide. We look forward to your visit!

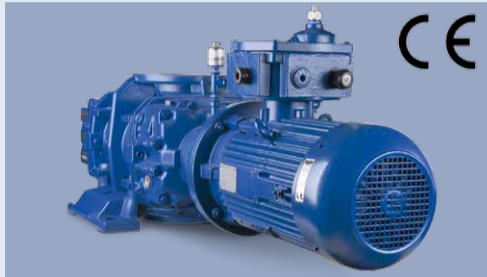
Yours sincerely

Klaus-Hasso Heller



CE-marking for AERZEN Vacuum Blowers

At the beginning of this year, following a new evaluation, AERZEN vacuum blowers of type HV and CM are complete machines, having attained the valued CE marking. This provides considerable simplifications for customers. AERZEN has re-evaluated with success the distinction between a complete and an incomplete machine through a new legal opinion for the purposes of the Machine Directive.



AERZEN Vacuum Blowers of type HV and CM attained the CE marking at beginning of 2016.

A new look for Aerzen Turbo

The successful Aerzen Turbo-Series TB has been updated: The innovative system was specially developed for biological wastewater treatment plants with small and average volume flow requirements. Now, the series TB, which, at present, is available in eleven sizes, has been the subject of numerous constructive adjustments, through which energy consumption has been reduced by up to six percent. The small dimensions of the TB series results in extremely high power density. Moreover, the air conveyance has been optimised. Due to the separation of electrical and mechanical technology, heat losses are not transmitted to process air and the efficiency and reliability of the electrical technology is increased.



The successful Turbo Series TB was revised.

News from the AERZEN site

After a one year construction period, the new production hall in the centre of the AERZEN premises is now ready to move into. The processing machines, which had been enclosed, or put in temporary storage during the construction period, have restarted their production operations.

In another section, a portal milling machine has been replaced by a new Uniport 7000. This ultra-modern machining centre has a mobile portal with a fixed table, which allows flexible and precise multi-sided machining of large components, such as pistons and housing parts. Thanks to the changeover to a Siemens Sinumerik 840D control system, the Uniport 7000 can be programmed with 3D data.

The new Uniport 7000 portal milling machine



Long transport routes are no problem at Dyckerhoff, thanks to AERZEN.

lot of advantages in ecological terms, as primary energy sources are conserved. One ton of fluff provides almost as much energy as one ton of lignite.

Dust generated during the production process, which consists of raw material, is separated by electrical gas cleaning (EGR) and collected in silos. Afterwards, the EGR dust is returned into the process - this is achieved by means of a conveying system where AERZEN Delta Screw packages (VML 18, 380 to 1.190 m³/h, 75

kW max) provide the necessary volume flow of 18 cubic metres per minute in the piping. Today, electrical filters are an established technology for removing dust from exhaust air and for ensuring that the amount of pure dust is significantly below 10mg/m³. Dyckerhoff applies smaller

positive displacement blowers (GM4 S, 46 to 342 m³/h, 15 kW max) from AERZEN, which blow air into the silo via a pneumatic ground, and which regularly mix the material with an air volume of six cubic metres per minute. This procedure avoids agglutination of fine material in the silo.

The unit is located in the area where the raw preparation of the untreated meal takes place. A vertical mill crushes the limestone into a fine pre-dried meal, which is then blown from the storage silo through transport piping into the heat exchanger which is more than 100 metres high. Here, the raw meal is brought to temperature and flows through zones which are progressively hotter and hotter, until finally the furnace intake of the rotary kiln is reached. Delta Screw packages type VML 18, with a motor rating of 45 kW, a pressure of 2.25 bar and a volume flow of 1,080 cubic metres per hour each, are those which keep the transport network running from the storage silo to the kiln. AERZEN offers single-stage, oil-free screw compressors in different sizes, with volume flows of between 950 and 15,000 cubic metres per hour. The units are designed

as universal tools, dimensioned for maximum energy efficiency, offering the possibility of combining any compressors and accessory components on a modular basis. The compressors can thus be adapted to suit the relevant application.

Close co-operation in service as well

Rotary kilns are designed for continuous operation because of the high energy consumption during firing alone. Furthermore, these units are very sensitive to temperature changes - the lining of the interior would suffer damage because of alternating hot and cool phases. If this were to happen, repairs would be necessary, and these would cause a week of standstill - a long period of production downtime for Dyckerhoff.

Therefore, the group exclusively applies technology which ensures maximum availability - supported by servicing. Because of that, the co-operation with AERZEN is very close on the service level and goes hand-in-hand on preventive maintenance: as soon as the service technician from AERZEN sets off, the maintenance team in Lengerich begins the preparation work.

AERZEN Delta Hybrid D 52 S

New possibilities in the generation of process air

The already extensive product portfolio of the AERZEN rotary lobe compressor series Delta Hybrid has been further extended with the introduction of the new size D 52 S.

The compression of air and neutral gases is very energy-intensive. Today, the generation of process air covers a major part of the energy costs for pneumatic applications or for the municipal and industrial waste water treatment.

It is more important than ever for the plant operators to select the right compressor or blower for their process.

Following their introduction in 2010, and with more than 4,000 installations since, AERZEN has extended the series of Delta Hybrid rotary lobe compressors permanently. The current product range comprises a total of 16 sizes. Due to the wide range of sizes and different pressure capabilities, this technology is suitable for a variety of applications in the field of pneumatic generation of process air. Delta Hybrid captivates through its energy efficiency: it makes savings of up to 15 per cent possible



Delta Hybrid D 52 S, our latest extension of the series

compared with conventional packages. Now AERZEN complies with the request of customers and particularly offers in the medium volume flow range, which is increasingly requested, a closer separation of sizes. The new Delta Hybrid D 52 S covers a volume flow range of 720 to 3,120 m³/h as well as a drive power from 11 to 110 kW. Compact design and the small outer dimensions in this volume flow range are another reason for the new series. In addition, investment costs are reduced for plant operators and system manufacturers due to the smaller connection nominal width DN 150.

Four ISO certifications for AERZEN

The management system is complete

Following three re-certifications, and one initial certification, the integrated management system at AERZEN is now complete.

DNV GL audited the integrated management system of AERZEN at the end of January 2016. This system comprises the certifications for DIN EN ISO 9001 (quality management), 14001 (environmental management) and 50001 (energy management), representing the annual monitoring audit. The certifications for ISO 9001 and 14001 were undertaken accord-

ing to the new, completely revised, 2015 version. This version more consistently pursues the process concept and requires, in principle, information about the process owner, objective, inputs, outputs, key figures and responsibilities. In addition, the risk-based approach is emphasised, and possible process risks are considered more extensively than previously.

In addition to the monitoring audits, AERZEN received initial certification for OHSAS 18001 (work and health protection management) which completes, for the time being, the integrated management system. Thus, AERZEN offers products of high technical quality, which are produced

in an ecologically-friendly and energy-efficient way, with due care given to the reliability of delivery.

Members of the HSE team are happy about receiving four certifications: (from left) Eckhard Buchholz (BI), Matthias Walter (QM), Christian Wegner (BIP), team leader Olaf Tanner (Q), Metin Kondakci (GSF) and Christian Schlie (GSF).



AERZEN Process Gas Division (PGD)

Globally successful together

Through effective teamwork across the locations, competence centres of the AERZEN Process Gas Division (PGD) undertake successful projects worldwide.

Besides the process gas team of 45 at the parent company, our subsidiaries in Hungary and the U.S.A. also have essential know-how and separate capacity for the process gas business. PGD Hungary, in Esztergom, primarily distinguishes itself through its wide range of manufacturing capabilities. Besides Sales and Engineering, all the piping and welding work according to ASME and PED, switch cabinet construction, packaging, leakage tests with acceptance tests witnessed by the customer at site, are also carried out. Short distances and a young, dynamic team make PGD Hungary flexible and efficient. As a result of intensive co-operation with the quality control division in Aerzen, the quality standards in production have improved considerably of late.

PGD Hungary recently designed and manufactured a chlorine liquefaction plant

for a system manufacturer in Germany. Chlorine is used for the disinfection of water and for manufacturing many substances such as PVC, pharmaceuticals, as well as intermediate products. Two VMY 156 M-NR packaged units operate an ammonia refrigeration circuit for the cooling of ethylene glycol. This serves to dissipate heat and thus for liquefaction of 95 per cent of the chlorine vapour, which is produced electrolytically. The system has been installed in a chemical factory in Switzerland.

In the U.S.A., six additional process gas specialists work in sales, engineering and project management of process gas projects. As in Hungary, as a rule only the blower or compressor stage is supplied from Aerzen. It is designed through co-ordination with both groups. Packaging is made by local plant manufacturers, meeting the high AERZEN quality standards. Recently,

PGD U.S.A. handled the largest project in AERZEN company history for a new chemical factory in Louisiana: a fuel gas mixture is drawn off the process by means of GM 19.19 HV vacuum blowers and compressed and cooled by a VRa 136 S compressor to six bar in the final stage. The complex, redundant four-stage system comprises four blower and two VR compressor stages, intermediate cooling, condensation, intermediate pressure management, control system, as well as very extensive documentation. When the plant is completed, about 40 AERZEN packaged units will be running there: these include special instrument air packaged units, VM compressors for pneumatic conveyance, Delta Blowers for the wastewater treatment plant and HV blowers for various processes. ○



The PGD competence centre in Hungary is seeing growing demand for AERZEN products in Western Europe. This is a chlorine liquefaction plant for a system manufacturer in Germany.

AERZEN maintenance contracts

Availability is a matter of agreement

AERZEN has more than 150 years of experience in service. AERZEN service packages offer considerable design freedom for individual solutions, for utmost availability and safety in the production process.

Nobody knows AERZEN packaged units better than AERZEN service technicians. In addition, there are more than 150 years of experience behind a service world which is perfectly adjusted to customer requirements. Operators directly define which kind of preventive maintenance is the most reasonable for the most diverse applications.

Basic or professional?

OEM service quality is the best basis for the highest machine availability and is therefore guaranteed in both packages.

With AERZEN maintenance contracts you are safe from failures.



These contract types complement each other and thus offer operators considerable flexibility and protection. The range of contract types starts with the "basic" contract – this lasts for three years and includes the use of OEM spare parts and liability for defects of twelve months for all work carried out and for the wear parts (air filters, V-belts, oil, oil filters, compression sleeves). This is followed by the "maintenance contract" – this lasts for five years and includes all wear and spare parts, as well as a main inspection. Finally, there is the "carefree" package – this is the full maintenance contract, which covers liability for defects for the entire duration of the contact and includes two service employments every year, 7/24/365 service and no cost for spare parts or repairs.

Experience brings perfection

During every maintenance assignment, special inspection and check lists are processed, in particular for AERZEN screw compressor and positive displacement

blower packaged units. These fully cover the necessary scope of work which is mandatory for the protection and care of the machine. In this way, AERZEN ensures the most economical solution and avoids unnecessary (and expensive) additional costs for operators which can often occur when service is performed by non-OEM service technicians.

Numerous advantages for operators

- Optimisation of availability
- The possibility of machine failures is minimised
- General overhauls in accordance with OEM-stipulations, including liability for defects
- Use of OEM spare parts
- Extension of service life
- Optimisation of operation modes
- Machine engineering advice
- Cost-effective service kits
- Competent evaluation of the machine
- Pro-active, predictable services

In addition, AERZEN offers an extension of liability for defects for new packaged units for a period of up to five years. Against payment of an annual fee, AERZEN takes over maintenance tasks, as well as handling all unforeseen repairs during the contract period. ○

Service location South re-staffed

Due to the continuously increasing number of machines to be serviced and customers to be supported in this region, AERZEN decided to re-staff the Service location Blaubeuren/South: since mid 2015, service technician Izudin Licina has been responsible for postal code area 7, and Markus Mühlbauer for postal code area 8 and parts of area 9.



Izudin Licina (l.) and Markus Mühlbauer (r.), new AERZEN service technicians at location Blaubeuren/South

New representation in Vietnam

AERZEN wanted to strengthen its presence in Asia and thus established a new representation in Ho Chi Minh City, Vietnam in the middle of last year. Since 6th July 2015, Nha Ca Nguyen has been responsible for all local business developments. In future, Nha Ca Nguyen will work closely with sales engineer Edmund Tan of Aerzen Asia Singapore.



Since 6th July 2015, Nha Ca Nguyen has been responsible for the Vietnamese AERZEN representation.

New Sales Manager for Iran

Jalil Pazoki is the new AERZEN Sales Manager for the Sales region of Iran. Since 1st October 2015 he has represented AERZEN from his office in Tehran. Pazoki has both German and Iranian nationalities, studied electrical engineering, and in his previous roles he worked for system manufacturers and other engineering companies, and as a project and sales engineer in Iran, where he was able to make contact with numerous AERZEN customers.



Jalil Pazoki, since 1st October 2015 AERZEN Sales Manager for Iran

AEO-F Certificate extended

After a successful monitoring on 14th December 2015, the main customs office Hanover has renewed the AEO-F certificate for AERZEN. As Authorized Economic Operators AERZEN's customs procedures and export of goods operations are streamlined, so that a fast and secure supply chain can be guaranteed for the customer.

By the extension of the AEO-F certificate, AERZEN, furthermore, guarantees a fast and secure supply chain.



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

Exhibition dates

During the following months AERZEN will participate in the following fairs and trade exhibitions:

- Asiawater 2016,**
Kuala Lumpur/Malaysia 6th – 8th April 2016
- SC Environmental Conference,**
Myrtle Beach/USA 6th – 9th April 2016
- AWEA, Orange Beach/USA** 6th – 9th April 2016
- Texas Water,**
Corpus Christi/USA 14th – 17th April 2016
- Neftegaz, Moscow/Russia** 18th – 21st April 2016
- POWTECH,**
Nuremberg/Germany 19th – 21st April 2016
- Maintenance,**
Antwerp/Belgium 20th – 21st April 2016
- ECWATECH,**
Moscow/Russia 26th – 28th April 2016
- Maintenance Stuttgart,**
Stuttgart/Germany 27th – 28th April 2016
- CWEA, San Diego/USA** 29th April – 1st May 2016
- Florida Water, Orlando/USA** 3rd – 6th May 2016
- Powder Bulk, Chicago/USA** 3rd – 6th May 2016
- AISTech Show (Iron/Steel - Process Gas),**
Cleveland/USA 4th – 7th May 2016
- ITE Iran Oil Show, N/A/Iran** 5th – 8th May 2016
- Arizona Water,**
Glendale/USA 6th – 8th May 2016
- WOD-KAN,**
Bydgoszcz/Poland 10th – 12th May 2016
- EXPOASEAC,**
Rio de Janeiro/Brazil 10th – 12th May 2016
- EXPO APA 2016,**
Bucharest/Romania 16th – 18th May 2016
- Solids,**
Saint Petersburg/Russia 18th – 19th May 2016
- IFAT, Munich/Germany** 30th May – 3rd June 2016
- FIMA, Bogotá/Colombia** 1st – 3rd June 2016
- SyMas, Krakow/Poland** 5th – 6th June 2016

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Heat recovery is a promising green trend in the wastewater industry.



AERZEN blowers for heat recovery

Heating efficiently with lost heat

Blower technology plays a functional key role in wastewater treatment plants, but causes the lion's share of the operational costs. For the highest possible level of energy efficiency, the Wertach wastewater treatment plant relies on energetically optimised AERZEN Delta Blowers. Moreover, this wastewater company has invested in a heat recovery unit – a promising green trend in the wastewater industry.

When it was decided that the 23-year-old oil heating system in the operations building required renovation, the main consideration was to arrange its replacement. However, in parallel with this decision process, they had the idea of using the heat coming from the three positive displacement blowers to heat the room and the warm water. "The awareness developed continuously", reflects Harald Gerbeth, head of the wastewater treatment plant. Physically related waste heat originating from the compression of air, mainly during the warm summer months, was recognised as having unexploited potential. It is important to understand that Wertach is one of 15 award-winning communities in Bavaria which have been particularly successful in their commitment to dealing with climate change as pilot communities under the European SEAP project (Sustainable Energy Action Plan).

Utilise heat from the process air

Conversion of the wastewater treatment plant was translated into action during the three-year SEAP-project phase. The objective was to extract heat from the blower air and use this to supply the hot water for the heating system boiler. With this system, the air coming from the AERZEN positive displacement blowers flows into the air-water plate heat exchanger with a temperature of 68 degrees C and leaves it in direction to the aeration basin with a temperature of below 30 degrees C. "Thus, we are utilising a delta of about 40 degrees", underlines Gerbeth.

The system works simply but effectively: in case of low heating requirements in the operations buildings, a mechanical flap in the piping can be set so that the air coming from the blowers is fed into the basins without any detours. When the requirement for heating is high, the volume flow can be channelled through the heat exchanger completely or partially before the air reaches the basin. To ensure that the heat recovery does not affect the operational costs of the blowers, flow-optimised profiles are installed in the plate heat exchanger. The pressure losses are only about 0.05 bar with a delta p of about 0.5 bar. "After all, the Delta Blowers are primarily destined to supply air for aeration of the basins and not to generate heat", wastewater manager Gerbeth, who heads the wastewater treatment plant of the community Wertach as independent contractor, makes clear.

Simple and efficient technology

The wastewater treatment plant, located in the Allgaeu region, has a total of three Delta Blowers (GM 4 S, Vmin 46 m³/h, Vmax 342 m³/h) with an installed power of 7.5 kW each. Combined into a cascaded group, two Delta Blowers with fixed speed cover the permanent base load. The third positive displacement blower works with variable speed, to adjust the volume flow energy-efficiently to requirements.

All in all, the technology installed in Wertach is nearly maintenance-free, as the construction with only two pumps, a small control system and a buffer storage with

feelers and the self-cleaning plate heat exchanger has been designed effectively and simple. And the linkage of the positive displacement blowers including heat exchanger installed was simple. For transport of the recovered heat they only had to recess an isolated pipe including control cable in the floor. The connection to the preserved heater network is accomplished via a used buffer storage, which was not needed anymore at the Wertach primary school. The overall costs for the modifications amounted to about EUR 13,400. The annual savings of fuel oil, of 1,850 litres on average, correspond to about 1,000 Euros and five tons of CO₂.

The example at Wertach shows how energy efficiency can be increased easily and with short ROI periods with currently available technology. Gerbeth sees the highest potential in linking positive displacement blowers and plate heat exchangers mainly for smaller wastewater treatment companies. So, heat recovery from process technology is becoming ever more important. AERZEN is closely tracking this trend and providing engineering support, so that positive displacement blowers and heat recovery are perfectly in tune with each other. Moreover, in the medium-term we recognize that in blower technology heat recovery will have an even greater influence on the design of the complete solution. ○

Three energetically optimised AERZEN Delta Blowers play an essential role in heat recovery at the Wertach wastewater treatment plant.



Harald Gerbeth, manager of Wertach wastewater treatment plant

When we were faced with the decision to invest we were wondering who offers technology for effective heat recovery - and found AERZEN.