Dear Readers,

Energy efficiency in process engineering is still a central topic. Depending on whether it concerns conveying, drying or ventilating – a considerable proportion of the energy costs of plants involved in process engineering relate to the broad field of application of blowers and compressors. All the more need then for energy-saving concepts, in order to meet the current requirements of the industry. Moreover, investments in energy efficiency measures usually have a high return on investments and, consequently, payback is quickly achieved. For small and medium-sized enterprises in particular, an investment in energy-saving provides a clear competitive advantage.

In line with this topic, this edition gives you a small insight into the world of lime burning. Together with plant manufacturer QualiCal, AERZEN has supplied the new firing technology for the limestone producer KöhlerKalk in Northern Hesse. The new plant clearly shows, how economic advantages, sustainability and increasing product quality can be achieved. As usual, other interesting news, tips and contributions from all over the world are waiting for you.

Please enjoy reading this issue!

Kind regards,

S. Müllers

Small lime works with big technology

KöhlerKalk invests in a new kiln: QualiCal and AERZEN supply technology with maximum energy efficiency

Recently, KöhlerKalk in Northern Hesse commissioned a new kiln. Thanks to the rotary lobe compressors made by AERZEN, the plant manufactured by QualiCal counts among the most efficient solutions in its field.

In Northern Hesse, they are calcining dolomite, a crystalline mineral mixture consisting of calcium carbonate and magnesium carbonate. This burnt lime is particularly suitable for the steel industry, as the magnesium in the dolomite, as an oxide (MgO), has a positive effect in steel production and protects the converter walls when refining raw iron into steel. The general task of the added lime is to bind the sulphur in the melt. Therefore, steelworks are among the regular customers of KöhlerKalk, located in Vockerode, Hesse, east of Kassel. “There are not many dolomite deposits in Germany,” reports Christian Köhler, technical manager of the smallest lime works in Germany.

In view of the future security of the location in the Werra-Meißner district, the family-owned company decided to invest in a new kiln in 2017. The QualiCal specialists from Italy received the order. Designed as a parallel flow regenerative kiln (GGR kiln) this type is among the most energy-efficient lime burners according to BAT (best available technology, component of the installation authorisation law according to EU Directive 2010/75/EU concerning industrial emissions). While in the past, for KöhlerKalk, the consumption of coke had been the biggest factor in their operating costs, this has now shifted to their pulversised lignite and electrical energy costs. “Hitherto, electricity was never an issue,” reflects Köhler. “The old kiln was working almost mechanically.” When the new plant has been run-in, the fuel will no longer be brought into the kiln together with the dolomite rock in layers and set on fire, but instead blown directly into the calcination zones with distributed burner lances. For this, blowers for transport and cooling air are as necessary as they are for generating process air in GGR kilns.

Hybrid blower solution reduces energy consumption

The targeted blowing in of lignite with a total of 24 burner lances – equally distributed between the two shafts – improves the thermal efficiency as the carbon directly releases its energy onto the rocks. The calcination is accompanied by a sophisticated airflow – the parallel flow regeneration. At KöhlerKalk, rotary lobe compressors of the AERZEN Delta Hybrid series assume this function. Hybrid blowers combine two procedures for conveying air in one machine: the Roots principle as isochoric compression for low pressures and the screw compressor principle as isochoric compression for higher pressures. As far as the concept is concerned, the Delta Hybrid is based on the well-known and successful AERZEN series Delta Blower and Delta Screw. AERZEN has calculated...
The new Delta Blower G5plus sets the standard

The new generation Delta Blower G5plus is the result of the proven concept of our positive displacement blowers.

AERZEN has set the standard with the Delta Blower positive displacement blowers, and has now raised the bar even higher in terms of performance, efficiency and environmental awareness. To expand upon the success of the blower series, an exciting new design sets new energy saving records. The new generation Delta Blower G5plus achieves up to 5% higher energy efficiency and offers more flexibility to meet special requirements.

The Delta Blowers of Generation 5 made by AERZEN are almost universally applicable positive displacement blowers. Their performance data is impressive: they achieve intake volume flows between 30 and 15,000 m³/h with a control range of 25% to 100% and overpressures of up to 1,000 mbar. Delta Blowers are suitable for use in many branches of industry, for example in waste water treatment plants, for ventilation, filter flushing, pneumatic and gas conveying, degasification or dedusting.

The new Delta Blower G5plus is the result of the proven concept of our positive displacement blowers, taken to the next technological level. The new compact design means that installations take up less space in the machine room. According to AERZEN Environmental Concept, all blowers achieve oil-free class 0 as per ISO 8573-1, and they are 100% free of absorption material. Changing the oil is only necessary after 16,000 operating hours. Energy-efficient motors of class IE3 are applied as standard. The suction side of the assembly. The multifunctional base supports the possibility to connect an additional channel for optional heat recovery. But the "plus" also refers to the additional comfort. The new acoustic hood concept reduces the installation surface area by up to 10%, depending on the size. The acoustic hood door makes easier and faster access possible to facilitate the maintenance of the assembly. The multifunctional base support creates a plus of flexibility with an integrated spark arrester (ATEX), connectivity for the installation of a start unloading device and components for installation of third-party motors.

AERZEN supplies the technically optimised and conceptually enhanced Delta Blower G5plus positive displacement blower in two sizes at present, and more are being planned.
In the aeration tank, the turbo provides ventilation

At Emsbüren wastewater treatment plant, Wasserverband Lingener Land invested in new blower technology for the aeration tank. In comparison with the old assembly, the turbo blower made by AERZEN saves between 100 and 200 kilowatt hours every day. Modernisation of wastewater treatment plants in order to reduce their energy consumption benefits the entire population.

Wasserverband Lingener Land has four wastewater treatment plants in the towns of Leng- erich, Freren, Spelle and Emsbüren. About 35,000 citizens in nearly 12,000 households are connected. With a capacity of 16,000 population equivalents, Emsbüren wastewater treatment plant is the biggest, and in the course of its modernisation, it was equipped with a turbo blower made by AERZEN. The compact unit supplies the aeration tank cyclically with oxygen for the oxidation of ammonium to nitrate. This had been preceded, in 2015, by equipping the basin, which has a depth of six metres, with modern fine-bubble diffusers made in Austria. According to the estimation of Hermann Schräer, a local skilled worker, the energy savings at the wastewater treatment plant, which amount to around 30 per cent in overall operation, are mainly due to the new aerator concept.

Modernisation with great effectiveness

“In the purification process, we are now working so productively that we could take one of our two aeration tanks out of opera-
tion,” says Schräer. And this increase in effec-
tiveness directly improves resource effici-
cy - for example, only one submersible mixer has to be used, instead of two. “The agitator only has a power of 3 kW, but that is three kilowatts saved over a long operat-
ing period,” adds Schräer. After all, the agit-
ators are working around the clock, as in Emsbüren the biology is not aerated in dif-
ferent zones of a basin but intermittently in one basin. This has a diameter of 24 me-
tres and a capacity of 2,500 cubic metres. The AERZEN Turbo blower TB 50-0.85, with its electrical motor power of 42 kW and a maximum speed of 42,000 rpm, supplies a volume flow of up to 2,000 cubic metres per hour. The turbo blower installed beside the aeration basin in a compact building has to reach in its performance class a dif-
ferential pressure of up to 800 millibar. This value is sufficient as the maximum back pressure at the ground of the biology, with a water depth of six metres, is 600 millime-
tres. As the air supply is provided only a few metres away from the basin, the efficiency increases once again. Shorter pipings reduce friction losses, thus resulting in a lower flow resistance in the system.

Energetically optimised turbo

The cyclic reduction of the nitrogen bound in ammonium and nitrate compounds makes it necessary that aerated and non-

erated phases alternate as far as time is concerned. At present, the daily operation comprises nine aeration cycles. The capac-

ity of the turbo blower is controlled within the redox curve via the current actual value of the oxygen saturation in the water. "For the nitrification phase, an oxygen concentration of 2 mg/l can be achieved. This has been achieved and the PLC reduces the capacity of the turbo," explains Schräer. If the wastewater plant blew in more air and increased the oxygen concentration to about 3 mg/l, on the other hand this would mean wasted money, and on the other hand the time required for the anaerobic nitrate removal would increase. At Emsbüren, they operate on the basis that a wastewater treatment plant will usually observe a COD value of 70 mg/l, but their average value is 40 mg/l. There-

fore, Schräer assesses the available tech-
nology as “a very good solution, particular-

ly for small wastewater treatment plants.”

During an aeration cycle, first of all the turbo blower starts operating for a few minutes at 100 per cent capacity, to set the wastewater in the basin in motion. For the remaining time, the plant runs energy-
cially optimised at about 60 per cent of the maximum capacity. At present, the time span of the aerobic and anaerobic phases is fixed at approximately two hours. During the night, with less inflow, longer peri-


ods apply and the considerably lower air requirement is covered by a small positive displacement blower.

At Wasserverband Lingener Land (WVLL), the turbo blower is the heart of the biol-

genome and is running very well," says the skilled worker. In comparison with the re-

placed technology (an older turbo blow-
er), the operation is extremely safe and energy efficient. The AERZEN Turbo type

TB 50-0.85 starts with a power of 42 kW and then reduces to 23 kW. As improved energy efficiency always involves the correct design for the necessary air re-

quirement, the blower capacity has been designed exactly for this basin. The old blower, manufactured in 2001, had been dimensioned generously and had a con-

nection capacity of more than 70 kW - too much for the aeration system of 2,500 cu-

bic metres and its basin with a depth of six metres and a diameter of 24 metres.

While magnetic bearings involve an ex-


tremely complex regulation and monitor-

ing of the function, the AERZEN Turbos work with a simple and effective air foil bearing. A specialist in blower and com-

pressor technology uses as a maintenance-

free friction partner a 2-pot coating. One of these materials is polytetrafluoroethylene. PTFE is a thermoplastic, which, due to its very low coefficient of friction, is used as a non-stick coating.

Conclusion

The wastewater treatment plants of WVLL Emsbüren show the energy saving advan-
tages offered by turbo blowers, even in relatively small biological basins. Moreover, the robust construction of the turbo series TB makes it possible to end continuous operation and to operate the turbo cycli-
cally instead. Thus, this procedure forms the basis for a simple and effective mod-

emisation of small municipal wastewater treatment plants in the countryside. At Wasserverband Lingener Land they are al-

ready planning their next projects.

New AERZEN subsidiary in Argentina

On 14th May 2017, AERZEN Argentina S.R.L. com-
menced business operations, headed by Alejan-
dro Knoop, based in the suburb of Vicente Lopez of the Argentine capital Buenos Aires. Cristina Pilz is working for AERZEN Argentina as the of-

fice's administrative assistant. There were two reasons for the foundation of the 49th AERZEN subsidiary: on the one hand, a U.S. company had taken over the AERZEN representative in Argen-
tina, which had been working for us there for 37 years, and this led to the fact that AERZEN products were no longer in focus; on the other hand, the arrival of the new Argentine Govern-

ment has been accompanied by signs of an eco-

nomic upswing. An important partner is Germa-

ny, as it became clear on the occasion of Angela Merkel’s visit to Buenos Aires on 8th June. Ale-

jandro Knoop was also invited to the gala dinner with the Argentine President Mauricio Macri and the Federal Chancellor – a great honour for him and AERZEN Argentina.

In the initial phase, AERZEN Argentina will focus on serving existing customers. The wide distribu-


tion of AERZEN machines in many main applica-


tions provides a good basis for the successful es-


tablishment of this new subsidiary. In 2018, sales and service activities will be extended.

AERZEN USA opens sales office in Houston

AERZEN USA based in Coatesville, Pennsylvania is on an expansion track: This is evidenced by the recent opening of our American subsidiary's first regional sales office in Houston, Texas. We will now have the opportunity to support our nu-


mous customers in the Gulf of Mexico region directly and more intensively, while also gain-


ing new customers. There are many important refineries and petrochemical plants on the Gulf coast, where our blowers for pneumatic trans-


portation and our process gas compressors are in operation. "Close cooperation with our cus-

	mers is the key to our mutual success," says Tony Morris, Managing Director, AERZEN U.S.A. On 20th April 2017, many customers and busi-


ness partners celebrated the Open House day of the new office in Houston. Employees mainly in sales, application technology and support work in this building, which is also equipped with a conference and training room.

This building in Houston houses the regional sales office of AERZEN U.S.A.
Aerzen Systems: complete packages around two-stage, oilfree compressing screw compressors

Customised compressed-air solutions from one single source

For the last eight years, Aerzen Systems GmbH has been responsible for the business of customised two-stage, oilfree compressing screw compressors. “Customised” means: that solutions from Aerzen Systems involve special designs which precisely meet customers’ needs and specifications.

The technical heart is a modified AERZEN screw compressor capable of operating in a bandwidth of between 5 and 10 bar (g) pressure, with volume flows of between 600 and 8,000 m³/h and at driving speeds of between 90 kW and 1,000 kW. All accessories, such as compressed-air filters, driers and reservoirs, superordinated control, piping and exhaust air channels can be included, if necessary. Aerzen Systems offers maximum flexibility, as Managing Director Tim Schultz makes clear: “Unlike our competitors, we are not restricted to certain manufacturers or products, so, the customer gets either the best, or the most suitable, accessories for his project. Moreover, we only work with standard parts which can be purchased on the open market.” All details are fixed during project discussions with the customer at site.

“There is nothing, that we cannot manage”

However, this Aerzen subsidiary focusses not only on providing quotations for complete compressed-air stations, but also offers interested parties an extremely broad range of other services. These include the provision of advice, planning support, project management (including expediting and site supervision), assembly, commissioning and after-sales service, as well as plant monitoring with vibration measurements or using the WebView module from AERZEN. Moreover, the portfolio includes special solutions and equipments – whether it involves external installations for operation in extreme cold or heat, drives with turbine or Diesel engines, designs for explosive ambient air (ATEX) or with HOC-driers (heat of compression) for utilisation of compressed-air (heat of compression) or for use in food industry.

Concentrated know-how: the Aerzen Systems Team

All three Aerzen Systems employees have many years of experience in the compressed-air industry. Tim Schultz was part of the foundation team, and since April 2013 has had overall responsibility as manager. He is an economic engineer (BA) and Master of Science in Industrial Engineering. At the beginning of 2014, Sales Engineer Florencio Cabanillas moved over from Aerzen’s sales office North in Walldorf to Aerzen Systems and is mainly active in acquisition. Eugen Dirksen is a qualified technician and is primarily responsible for project management in internal services.

Contact information for Aerzen Systems:
• Telephone: +49 511 646628-11
• Web: www.aerzen.com
• email: info@aerzener.de

Aerzen Systems has obtained around 150 orders such as this in the last few years. The company is called upon wherever oil-free compressed-air is required as the driving medium for machines, for example, in power stations and refineries, chemical, steel and food industries or at gas manufacturers and pharmaceutical companies.

From its central, and very conveniently situated, location in Hanover, the Aerzen Systems Trio (see Infobox) also serves international customers and interested parties for AERZEN subsidiaries, particularly those in neighbouring European countries. The proximity to the head office of Aerzen means that assembly inspections and factory visits can easily be arranged for customers.

Oilfree compressing screw compressors are completely on trend

Aerzen Systems has become firmly established in the market with its range of services – and the signs that growth will continue. After the first quarter 2017, which saw the best level of incoming orders in the company’s history, a successful presentation at ComVac followed in Hanover at the end of April, with a new visitor record at Aerzen’s booth and correspondingly a lot of contacts. “The fair reflected the increasing trend of screw compressors with oil cooling to oilfree compressing screw compressors which offer compressed-air of high quality,” adds Schultz, who looks forward to ComVac 2019. With a new generation of machines, Aerzen will also serve the standard market for two-stage, oilfree compressing screw compressors – appealing perspectives for Aerzen customers which also suggest that there are good prospects for Aerzen Systems to expand strongly.

For the food industry: a VMT 4 W compressed-air assembly, used in food industry

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