



AERZEN COM·PRESS

Aerzen (Schweiz) AG

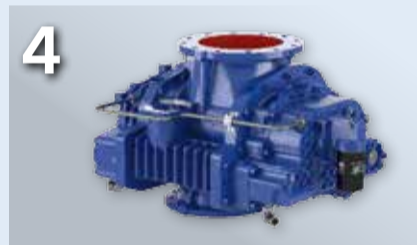
The trade world meets at the ILMAC



AERZEN biogas packages made in India



Development of Delta Hybrid Special machine D 98 V



Dear Readers,



Frank Glöckner,
Sales and Marketing After Sales

We're already into the third quarter of the year and we don't want to miss this opportunity to keep you well-informed. In this edition of the customer journal, which gives you an update on the performance and recent events at AERZEN, we report on numerous activities. The special focus of this edition is on the Holzkirchen wastewater treatment plant, where the concept of Performance³ has

been implemented. This concept describes the use of the three AERZEN standard machines Delta Blower, Delta Hybrid and Turbo in conjunction with AERsmart, the new overriding control system, which was unveiled at the IFAT fair in Munich. Thanks to the intelligent control system of the machines, the entire process always runs in the optimal performance range, and higher energy efficiency values than ever before can be achieved. Furthermore, this edition provides an overview of important dates, new projects and other products of the AERZEN group. I don't want to say too much more about this edition of AERZEN COM.PRESS - I'll leave you now to read it for yourself. Hope you enjoy it.

Cordially yours,

Frank Glöckner



To increase the energy efficiency is one of the sustainable objectives in Holzkirchen.

“We purify our wastewater optimally”

Holzkirchen wastewater treatment plant achieves a new milestone in energy efficiency with AERsmart

The Holzkirchen wastewater treatment plant has a clearly stated objective: “We purify our wastewater optimally.” For the municipal wastewater treatment plant, located 40 kilometres south of Munich, there is a requirement to operate in a way that is as resource-efficient as possible. Therefore, for blower technology, the Bavarians rely on AERZEN.

Partial load operation means reduced efficiency, impaired energy efficiency and thus an increase in operational costs. This scenario applies across all industries and has a serious effect in wastewater treatment plants - mainly in respect of the biology. The electrical energy for the drive of the blowers causes about 80 per cent of the costs in this field of sewage water cleaning. Consequently, efficiency increases and a really tailor-made design of the blowers to the daily requirement pay off accordingly fast. The question remains how the changing air requirement in the aeration basins can be covered optimally and not at the expense of overdimensionings and inefficient partial load.

Every blower only reaches its optimal operating point in a clearly defined performance range and works then with maximum efficiency.

Beyond cascading

The air consumption in the biology is subject to considerable variations. The performance cascading with packaged units in a row as well as the variable speed control of the blower drives are important approaches to supply the aeration basins needs-oriented with oxygen. With the new AERsmart control system AERZEN takes another step.

By co-ordinating in partial load operation different blower types with each other on the basis of the required air



Markus Leidinger,
Application Manager wastewater,
AERZEN

We count on reasonable solutions, which increase the efficiency and not on technical gadgets.

volume, the new AERsmart solution avoids partial load of individual packaged units to a large extent. Comparable with an autopilot, AERsmart takes over the complete control- and regulating management of a compressor group of up to twelve machines. The new solution goes beyond a simple cascaded connecting or shutdown. The sense of this technology rather is grouping blower units with different operating principles. Messrs. “Gemeindliche Einrichtungen und Abwasser Holzkirchen -GEA” (Municipal facilities and wastewater Holzkirchen), for example, covers the base load requirements with an AERZEN turbo blower. With a motor rating of 60 kW, type TB75-0.85 supplies an oil-free volume flow of



Worldwide rollout of AERZEN websites



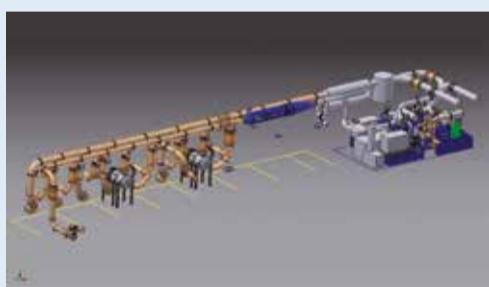
First of all, the German and English-language websites will be implemented.

After the successful relaunch of the corporate website www.aerzen.com, the rollout of the 36 international websites of AERZEN's subsidiaries will be next. This will be realised in three stages: The first stage includes the country websites with German or English as the main language. The second stage includes the websites which use Chinese, Spanish, Portuguese or French, and the third stage will cover the remaining websites. Stages 1 and 2 will be realised by the end of 2016, stage 3 will start next year.

Major order from Leibniz University Hanover

In May 2016, AERZEN received one of the biggest domestic orders in the company's history. For its new research building on the Campus Maschinenbau (mechanical engineering), Garbsen (CMG), Leibniz University Hanover ordered a "compressor station for the dynamic drive of turbo machines and power plant components." and a compressed-air station from AERZEN Systems, for a total of about 13.2 million euro. The unit consists of two GM 20.20 and two VRa 736S, all the pipings and coolers, and the measuring and regulating technology.

In future, thanks to the new research opportunities afforded by the unit, the University of Hanover will count among the world's leading institutions in the field of energy efficiency research.



Plan drawing of the compressor station

Exhibition dates

In the next three months, AERZEN will participate in the following fairs and trade exhibitions:

- Wasma**, Moscow/Russia
18th until 20th October 2016
- Solids**, Antwerp/Belgium
19th/20th October 2016
- Maintain**, Munich/Germany
19th/20th October 2016
- K**, Düsseldorf/Germany
19th until 26th October 2016
- PVCexpo**, Moscow/Russia
25th until 27th October 2016
- Vietwater**, Ho-Chi-Minh City/Vietnam
9th until 11th November 2016
- Biogas ConfE**, Hanover/Germany
15th until 17th November 2016
- Pollutec**, Lyon/France
29th November until 2nd December 2016



The touch-panel embedded in the front of the turbo blower shows that the packaged unit is working at the optimal operational range.



AERsmart coordinates the interaction of turbo blower (l.), two Delta Blowers and one Delta Hybrid (r.)

> 2,900 cubic metres per hour with a differential pressure of 0.8 bar. As the term base load says the turbo blower serves for covering the medium requirement. In case of peak loads, the machine is not sufficient, and with low loads the unit loses considerable efficiency.

In Holzkirchen, this context leads to the fact that Messrs. GEA combines the turbo blower with an AERZEN rotary lobe compressor series Delta Hybrid as well as two Delta Blowers with older manufacture dates. These were already available before the modification and now mainly serve as redundancy for operational reliability. AERsmart ensures that the Delta Hybrid starts with the air supply of the aeration basins, when the oxygen consumption at low load reaches a level where a turbo would be under-challenged and outside its optimal operational range. In reverse direction Delta Hybrid and Delta Blower help out in case of peak loads. This can occur "particularly on hot summer days, when the oxygen consumption is high," explains plant manager Markus Spallek.

AERsmart acts as an autopilot

In normal operation, the turbo blower runs at "optimal operating point". Looking on the visualisation of AERsmart you can see a conveying volume of 34 cubic metres per minute. If the requirement is between 28 and 16 cubic metres the Delta Hybrid is used. "Starting from 24 cubic metres AERsmart switches the Turbo off," reports Spallek. According to the plant manager's experiences the required air volumes are only a part of the design features, as also

the necessary blow-in pressures are important for the decision which technology is the most effective one. "If the basins are flatter and consequently the pressure is lower, a positive displacement blower can be an efficient solution."

With all the technical innovations and a general "We have always paid attention to energy efficiency", in Holzkirchen first of all the focus is on the water quality. "Our premise is to purify wastewater optimally. And this at a price which is as cost-effective as possible. This approach deviates from the industry. But plants want to purify their wastewater as cost-effectively and as well as necessary," notes Spallek. The point that in the southern suburbs efficiency is so important results from the fact that the economical use of resources is one of Spallek's hobbies. The plant counts "on reasonable solutions, which increase the efficiency and not on technical gadgets." It is clear to the expert that water can only be purified reliably by means of a certain energy input. "With a good machinery pool we can reach our goal of generating the required air volume economically." Consequently, the plants are optimised permanently and the use of energy is improved.

Savings of 10,000 Euro.- every year

In Holzkirchen, AERsmart has been running excellently from the beginning - which reflects in perceptible energy savings of about ten per cent. What the final rate of the saving potential will be mainly depends on how good the plant worked before. "We had already optimised our processes.

Therefore, for us, ten per cent is much." Expressed in figures: in Holzkirchen, every year about 500,000 kWh of electrical energy are spent for the aeration basins. So, the savings of 50,000 kW protect the city's purse noticeably - by reduced expenditure of EUR 10,000.--. With this, the solution installed consisting of turbo blower and AERsmart will have paid off after about three years.

Wastewater treatment plants as energy centres of tomorrow?

This trend will come, to combine different blower types so, that the overall interaction finally generates the required air volumes with an optimal efficiency and maximum energy efficiency," Spallek is convinced. In his opinion, wastewater plants only have two chances for improving their sustainability: To reduce the energy consumption by using intelligent technology and to increase the self-energy production. Therefore, Holzkirchen also utilises a block-type thermal power station to convert the sewage gas generated in the digestion tower into electricity and to utilise the heat for heating the bioreactor. Another possible solution for Spallek: Decentralised sewage sludge incineration within a local heat network. "Dry sewage sludge has a similar calorific value to lignite." As in the disposal industry the task in future will increasingly be to recover phosphate from the residues such solutions would be predestined. Wastewater treatment plants as decentral energy centres of tomorrow - and suitable for meeting baseload requirements also when generating

Aerzen (Schweiz) AG at the ILMAC fair 2016

Meeting point for specialists from the pharmaceutical, chemical and biotech industries

Basel is located in Europe's most important Life Sciences area. This region offers an ideal environment for the ILMAC fair, the Swiss trade show for process and laboratory technology. This year's fair took place from 20 - 23 September, with AERZEN participating as an exhibitor.

Since it started, in 1959, ILMAC has developed into the leading supplier fair in Switzerland for the pharmaceutical, chemical and biotech industries, as well as for foodstuff, beverages and cosmetics.

As processes within companies continually change, innovative concepts are needed, such as "Industry 4.0." This year, the ILMAC fair celebrated its 20th anniversary, and around 430 exhibitors showed their global approaches, new products, innova-

tions and solutions in the range of process and laboratory technology.

Aerzen (Schweiz) AG impressed visitors with a rotary lobe compressor Delta Hybrid, which is among the most innovative solutions in compressor technology. In the field of process gas and wastewater treatment, the VMY compressors and the turbo blowers, made by AERZEN, attracted considerable interest. Thanks to their mode of operation, which is free of oil and absorption material, these machines are particu-

larly suitable for use in the pharmaceutical, foodstuff and cosmetics industries. All in all, this year's ILMAC fair fulfilled all expectations as a networking platform, and offered visitors and exhibitors a representative industry overview.

This year's ILMAC focussed on Industry 4.0.





The first biogas package produced in Asia.

Available at short notice, high in quality, cost-conscious

AERZEN biogas packages made in India

Since the beginning of 2016, Aerzen Machines India Private Limited has manufactured biogas blower packages in Vadodara, India.

Research in the Indian market revealed a significant requirement for biogas blower packages in the country, especially types from GM3S to GM50L (volume flows from 168 to 252 m³/h). This research was the starting signal for local production! Thanks to the production of local components on site, and machines adjusted to the needs of the market, AERZEN is able to quote for attractively priced packaged units within a short time-frame.

The set-up of the production facilities started in September 2015. Aerzen Machines India already manufactured blower packages of series Delta Blower in nominal widths from DN50 to DN400, as well as compressor packages with a volume flow of max. 6,760 m³/h, and maintained stages through its own after-sales service. This was a good basis for extending the product range! In order to comply with German standards insofar as the Indian-made packaged units were concerned, an

exchange of staff and a steady knowledge transfer took place between the Indian subsidiary and the parent company in Aerzen. Particular focus was thereby placed on the observance of standards and on AERZEN's quality demands for high quality.

The big premiere came on 25th March 2016: For the first time, a packaged unit of this performance class, completely manufactured in Asia, had been successfully taken into operation.

Aerzen Asia

Being cheap is not what counts!

At the end of 2015, Aerzen Asia received a large order from a cement plant in Malaysia.

In 2012, Messrs. Hume Cement, member of Hong Leong Group, built a cement plant in Perak, Malaysia. When establishing the production line 1, costs were saved in the wrong places. As a consequence, it was soon apparent that the blowers, ma-

de by an unknown Chinese manufacturer, could not cope with the high requirements for cement production. Hume Cement struggled with continuous breakdowns, which caused damage to the coupled motors. Suitable spare parts could not be procured on the Malaysian market in good time. All this caused high costs and led to significant production losses.

Coincidentally, colleagues from Aerzen Asia visited this location. They recognised

the problem immediately and submitted a proposal for its solution. Thanks to our good references, Hume Cement were convinced by AERZEN products and services. All of the existing blowers on the production line needed to be replaced by AERZEN blowers, i.e. seven machines from type GM 25S to GM 130L. This order had a value of 150,000 Euro.

The production line at the cement plant was in a disastrous condition.



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

New information material

AERZEN has developed a new planning folder for its waste water range. This is available in both German and English versions and in digital as well as in print form.

The IFAT fair has shown that there is an increasing level of interest in heat recovery systems. Therefore, AERZEN now offers corresponding leaflets. A unique selling point of AERZEN products is that they are free of absorption material.

Accordingly, this topic is also included in the leaflet portfolio. The new brochures "ISO-Standards" and "Safety Standards" provide information on, amongst other things, discharge silencers free of absorption material and oil according to class 0.



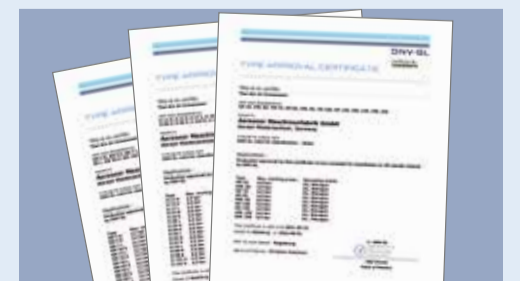
These new information materials are available, as usual, via our customernet.

Adjudged seaworthy

In mid-2016, AERZEN blower and compressor packages were certified for marine applications by the DNV GL, one of the world's leading classification societies for the marine industry. The international certification body and classification society DNV GL sets standards for ships and mobile offshore units - the so-called class rules. These rules include standards for safety, reliability and environmental requirements which ships and mobile offshore units have to comply with in international waters.

Therefore, our series Delta Blower, Delta Screw and Delta Hybrid were certified. In future, they will be available on ships for all process air applications. Individual acceptance tests will no longer be necessary, so customers will save significantly in both cost and time. Furthermore, the DNV and LR series certificates will emphasise the high standards of quality and safety of AERZEN compressors. Further certificates will be provided upon customer's request.

Delta Blower, Delta Screw and Delta Hybrid were certified by DNV GL.



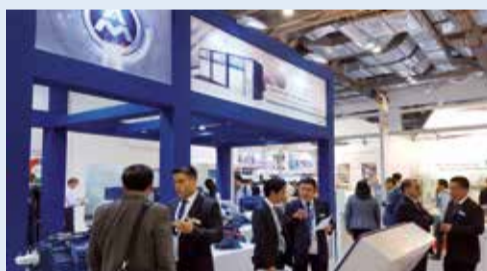
AERZEN receives seal of approval from Donors' Association

The Stifterverband für die Deutsche Wissenschaft (Donors' Association for German Science) has honoured AERZEN's research activities with the seal of approval "Innovativ durch Forschung" (innovative by research). The Donors' Association is the only joint initiative for companies and foundations to advise, interconnect, and promote holistically in the fields of education, science and innovation in Germany.



Aerzen Asia at Singapore International Water Week 2016

In July 2016, Aerzen Asia participated in the Singapore International Water Week, the country's biggest event in the wastewater industry, at Marina Bay Sands, Singapore. The highlight of our booth, with a size of more than 50 square metres, was our new AERsmart control combination, which attracted numerous visitors from Germany and abroad, e.g. system manufacturers, system providers, consultants from authorities, consulting companies and industrial companies. Furthermore, Aerzen Asia had a meeting with the Public Utilities Board (PUB), the executive board of the Ministry for the Environment and Water Resources, at which they demonstrated the high savings potential of AERsmart in conjunction with Performance³. The next SIWW fair will be held from 8th until 12th July 2018.



Also at the SIWW AERsmart was in the focus.

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AERZEN

The colleagues of Sales Office North and East are an experienced team.



Celebration on the occasion of the 25th anniversary.

AERZEN Sales Offices North/East

Celebration on the occasion of the 25th anniversary

In 2016, AERZEN Sales Office North looks back on 25 successful years. Together with Sales Office East, the eleven colleagues of manager Torsten Lehmann are an experienced and powerful team, supporting about half of Germany in terms of geographical coverage

It all began in 1991 with an office in Bad Fallingb. After the merger of the branch office Lower Saxony and the Sales division for the Hamburg region, the Sales Office North opened. From Bad Fallingb, in May 2010, they moved to the Lueneburg Heath, the present location Walsrode, strategically well situated close to the motorway junction.

Sales Office North is responsible for Schleswig-Holstein, Lower Saxony, Hamburg and Bremen, the administrative district of Detmold, Mecklenburg-Western Pomerania, Brandenburg, Berlin and Northern Saxony-Anhalt. The business is character-

ised by the cement industry, mill building, wastewater technology, biogas and ship technology.

Office East, founded in 1990, was first of all divided between two cities - Berlin and Leipzig. In March 2009, the two locations were combined in Lutherstadt Wittenberg as Sales Office East. Located in the middle of Eastern Germany, they cover the regions Saxony, southern Saxony-Anhalt and Thuringia. Their customers come from the fields of waste water, chemicals, refining and pneumatics.

Over a 25 year period, Sales Offices North and East have achieved an impres-

sive amount of incoming orders, totalling 436 million euro. The majority of the items sold were blowers, closely followed by screw compressors, including VMX-stages. But several hundred Hybrid machines and several turbos were also sold.

Office manager North/East, Torsten Lehmann, can look back on a long AERZEN history: in 1993, after studying mechanical engineering, the aircraft mechanic, who trained at Messrs. Airbus, joined our company as an external service representative. In April 1997, he was promoted to deputy office manager, and in 2010 took over the management of Sales Offices North and East. Under his leadership, the team has grown further. On 22nd September, they celebrated the 25th anniversary at the Walsrode Town Hall with about 150 selected customers and the AERZEN management team.

Development of Delta Hybrid

Special machine D 98 V makes negative pressure of -950 mbar possible

With the introduction of the rotary lobe compressor series Delta Hybrid, in 2011, AERZEN implemented a very successful symbiosis between positive displacement blowers and screw compressors in the volume range of 10 to 100 m³/min. With the new special machine Delta Hybrid D 98 V, the range of maximum possible pressure has now been expanded further, up to -950 mbar.

The features of the Delta Hybrid series are an increase in energy efficiency of up to 15% and extension of the application fields. The pressure ranges, as compared with positive displacement blowers, could be increased from 1,000 mbar to 1,500 mbar, and negative pressure from -500 mbar to -700 mbar. Thanks to the new special machine Delta Hybrid D 98 V - the first packaged unit of this developed series - AERZEN has been able to improve the maximum achievable pressure still further, down to -950 mbar and, therefore, to the vacuum range. This

improved performance is made possible by more intensive internal cooling of the compressor stage via additional pre-inlet channels. According to the motto "heavier, faster, more efficient" the new packaged unit offers clear advantages with its increased negative pressure capabilities: transport of heavier materials, over longer distances and at higher speed. Result: increased efficiency in loading and unloading operations. The new Delta Hybrid, producing overpressures of up to 1,500 mbar as well as negative pressures/vacuum down to -950 mbar, is therefore the perfect rotary lobe com-

pressor for a wide range of operations. This compressor is suitable for both mobile and stationary use. For mobile applications, the packaged unit can be mounted directly on a vehicle and driven either by the truck's motor or electrically. It can also operate in a stationary location, powered by a fixed installed electrical drive, delivering conveyed air with overpressure/negative pressure for the loading/unloading of vehicles, as well as for general pneumatic transportation tasks.



Particularly efficient: the AERZEN Delta Hybrid series