

# WHETHER IN SUMMER OR WINTER - ALWAYS AN EFFICIENT AERATION.

## No expensive planning phase, no time-consuming tender process.

The legally independent wastewater association took the initiative to manage the project including the quotation phase itself and appointed "UD Umwelt-Dienste GmbH" as a powerful partner. The success: Declining costs and more latitude for the selection of the aeration technology which would fit best to the existing aeration tanks. "If we had gone the way of a tender, a less expensive solution would probably have been selected, but not necessarily the best one," explains Gernot Wege, the plant manager.

## Perfect aeration.

"We invest on a reasonable basis and must not fear the municipal surveillance," says the Production Manager. His team on site knows everything about the plant, particularly where oxygen demand in the aeration tanks is concerned. So, the wastewater association started searching for a solution with this data in hand. Today, after the reconstruction within less than two months, a blower combined system, consisting of Turbo and Delta Hybrid, with connected Aerostrip fine-bubble diffusers made by Aquaconsult, guarantees perfect oxygen entry in the aeration tanks. According to Wege, 39,000 inhabitants on both sides of the river Lahn are connected to this wastewater treatment plant located in the area of the city of Biedenkopf in the district of Marburg-Biedenkopf.

Wege added that actually the aeration tanks - with a depth of 2.65 metres - were not ideally suited to be provided with plate aerators. The depth should be five metres at least so that the bubbles would have enough time to emit as much oxygen as possible to the microbiology on their way from the bottom to the surface. "With us, the way is short - and therefore, it was so important to find the perfect solution. A rigid tender would have impeded us."

## Perfect design for winter and summer season.

Depending on the prevailing freight volume, the employees in the control room have the possibility to regulate optimally the combination of Aerzen turbo blower and Delta Hybrid. The tandem mode is mainly designed for applications during



<b>Segment</b>	Environmental engineering
<b>Problem</b>	Need of control load changes ideally
<b>Solution</b>	Delta Hybrid and Aerzen Turbo
<b>Result</b>	An optimum energy use of oxygen for biological degradation processes
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winter and summer time. For higher air requirements during the summer months, the wastewater association uses the AERZEN turbo blower as an efficient base load machine; the Delta Hybrid will be switched on for peak loads. For this purpose, the type AT 100-0.6 S supplies a volume flow up to 4,200 m<sup>3</sup>/h and shows a control range of 40% to 100%. In winter, the system will be switched to Delta Hybrid, as less oxygen is necessary for aeration at this time of year. The maximum volume flow of type D 36 S is 2,150 m<sup>3</sup>/h with a control range of 25% to 100%. The major difference evident at Wallau is the result of its special geology, as the sewer system carries a comparatively high level of groundwater via connected drainages and this strongly dilutes the waste water. The reason for this is a schist layer, because of which the rain seeps away very slowly in the region of the river Lahn.

Eventually, however, the energy savings of 15% forecast at the beginning of the project in Wallau were considerably exceeded. The new combined system has already achieved savings of 26% in respect of the electricity demand of the entire wastewater treatment plant. In view of the fact that the aeration needs half of the electricity demand, "the retrofitting in this sector yields savings of more than 50%", demonstrates Gernot Wege. "For us, it is a tremendous step forward - ecologically and economically."



### Conclusion.

The variable air demand for the cleaning of wastewater can be controlled more energy-efficiently with cascaded and speed-controlled systems. But since each machine only operates in a determined operation range at its optimum efficiency, AERZEN makes a further step with Performance3 and combines different types of machines to a highly energy-efficient combination. "We can use and combine ideal blowers for the individual load case. The solution offered by AERZEN has the advantage that we can buy all types from one hand and this is something that our customers appreciate." Standardisation makes the complete service much easier. The fact, that the discharge silencer has a patented bearing and operates without absorption material and without oil to 100%, is a guarantee for the durability of the installed membrane aeration technology and the process safety. "All I have to do is to call the company of my confidence and ask for maintenance or repair," remarks Gernot Wege.



### AERZEN. Compression as success principle.

AERZEN was founded in 1864 as Aerzener Maschinenfabrik. In 1868 we built Europe's first rotary lobe blower. The first Turbo compressors followed in 1911, the first screw compressor in 1943, and in 2010 the world's first rotary lobe compressor unit. Innovations "made by AERZEN" keep driving the development of compressor technology. Today, AERZEN is among the world's oldest and most significant manufacturers of rotary lobe blowers, rotary lobe compressors, rotary lobe meters, screw

compressors, and Turbo blowers. And among the undisputed market leaders in many areas of applications.

More than 2,000 experienced employees in over 45 subsidiaries the world over are fully engaged in the advancement of the compressor technology. Their technological expertise, our international network of experts, and constant feedback from our clients form the basis for our success. Products and services from AERZEN are setting standards when it comes to reliability, lasting value, and efficiency. Go ahead: challenge us!



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