

Pioneering for You

**wilo**

*Product brochure*

**Wilo-Sevio AIR,**  
the system optimiser.





## Efficient sewage treatment

### With ventilation systems from Wilo

Seen as mixing and ventilation normally account for 60 to 80 % of a wastewater treatment plant's total energy consumption, it makes good economical and ecological sense to modernise the existing installations in order to increase system efficiency and reduce energy consumption.

Wilo offers a complete range of large-blade mixers and aerators, thus ensuring optimum equipment compatibility. That allows us to provide you with the best oxygen transfer for your wastewater treatment.



The marked characteristics of Wilo disc aerators are their robust construction as well as their flow-optimised design. The aerators permit increased oxygen transfer due to their optimised diaphragm perforation and can be used efficiently across a wide range of air flow rates, making them very cost effective.

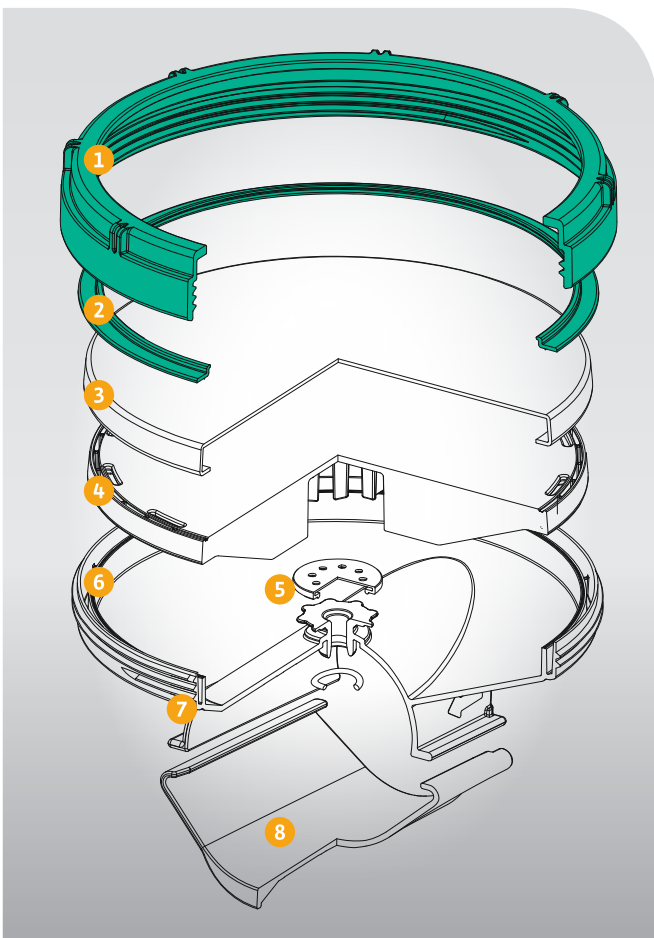
This makes it possible for operators of wastewater treatment plants all over the world to lower their energy consumption and operating costs. The Wilo-Sevio AIR ventilation systems are not only of interest for new wastewater treatment plants, but also for optimisation of sewage treatment in existing plants.

#### **Tailor-made for your requirements**

- For the biological treatment of municipal and industrial sewage
- Specially designed for the ventilation of activated sludge
- Suitable for optimising existing plants
- Also suitable for use in particularly deep basin geometries

## Efficient ventilation with Wilo-Sevio AIR

### Thanks to flow-optimised design



- 1 **Threaded ring:**  
Made of robust GRP, ensures easy dismantling even after many years of use.
- 2 **Separation ring:**  
The separation ring is made of durable, low-friction polyacetate and ensures easy diaphragm replacement even after years of operation.
- 3 **Diaphragm:**  
Ensures high reliability and energy efficiency, made of a protected EPDM\* mixture, specially designed for use in activated sludge, with optimised slit geometry for the widest possible range of volumetric air flow.
- 4 **Diaphragm mount:**  
Made of GRP and integrated in the aerator housing, ensures homogeneous air distribution all the way to edges of the diaphragm. Designed to resist high transverse forces, therefore suitable for use in particularly deep basins.
- 5 **Integrated non-return valve:**  
For reliable operation thanks to EPDM\*, prevents water from entering the housing.
- 6 **Aerator housing:**  
Maximises the available blow-in depth and ensures operation thanks to one-part, twist-proof GRP design.
- 7 **O-ring:**  
Made of EPDM\* for sealing between the aerator housing and pipe.
- 8 **Fastener:**  
Made of GRP for form-fit fastening of the disc aerator onto the aerator pipe without the need for an adapter or adhesive.

\* Ethylene propylene diene monomer rubber



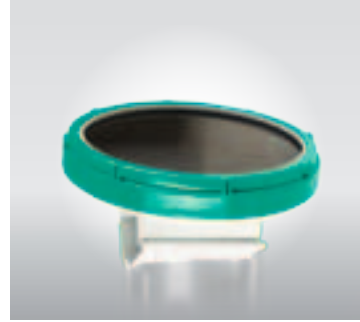
#### Flow optimisation

Flow-optimised diaphragm mount for uniform ventilation



#### System optimisation

Increased oxygen transfer through the combination of aerator systems and submersible mixers



#### Process optimisation

Aerator housing with integrated diaphragm mount, non-return valve and twist guard

The Wilo disc aerator design is based on considerations regarding flow and pressure.

Wilo disc aerators are all factory-tested to ensure that they are within the specified pressure loss range.

The ventilation systems are individually configured and are characterised by their compact, modular design. Depending on the ventilation power required, an appropriate number of disc aerators are installed on pipes and supplied with compressed air. The system is delivered in the form of components that are pre-assembled at the factory – no need for gluing or welding. This allows for quick and easy installation on site.

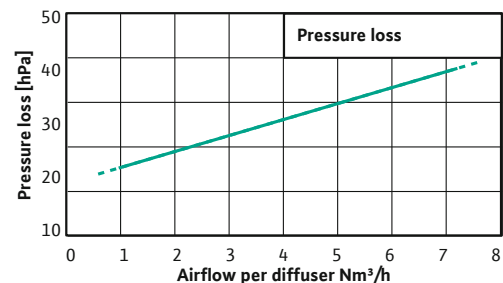
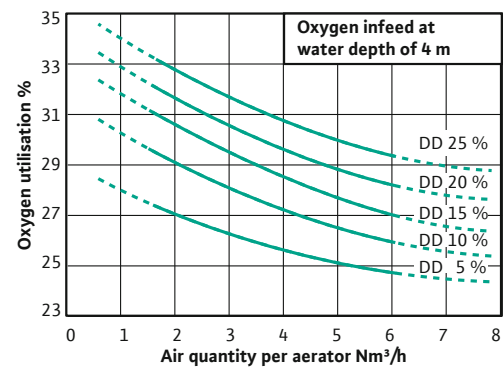
The combination of submersible mixers and aerators ensures an increased transfer of oxygen. At Wilo, all components are provided from one source, which increases the system's efficiency.

#### The advantages to you

- Reduced energy costs
- Optimal processing
- Increased oxygen entry
- Improved treatment performance
- Minimal installation and maintenance required

#### Increased overall efficiency of the system thanks to:

- Combination with Wilo submersible mixers
- Complete configuration for a turnkey solution
- A single contact person throughout all phases of the project

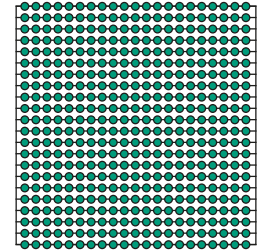
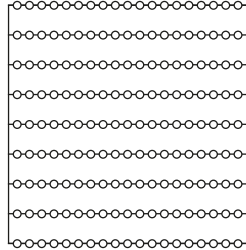




# The Wilo–Sevio AIR ventilation system

## All features at a glance

The following model calculation for a square basin area of 100 m<sup>2</sup> with a water depth of 6 m shows how much can be saved with the new Wilo disc aerator.



Comparison	Low-invest ventilation system	Standard ventilation system	Wilo ventilation system
SOTR Standard Oxygen Transfer Rate	100 kg/h	100 kg/h	100 kg/h
No. of disc aerators	171	260	462
Diffuser density DD	8 %	11 %	20 %
SOTE Standard Oxygen Transfer Efficiency	33.95 %	37.02 %	44.7 %
SSOTR Specific Standard Oxygen Transfer Rate	17.7 g/Nm <sup>3</sup> /m	19.3 g/Nm <sup>3</sup> /m	23.2 g/Nm <sup>3</sup> /m
Total volumetric air flow/basin	985 Nm <sup>3</sup> /h	903 Nm <sup>3</sup> /h	749 Nm <sup>3</sup> /h
Volumetric air flow	5.76 Nm <sup>3</sup> /h	3.47 Nm <sup>3</sup> /h	1.62 Nm <sup>3</sup> /h
Pressure difference (new)	620 mbar	615 mbar	610 mbar
Power consumption of air compressor	28.77 kW	26.20 kW	22.17 kW
Power consumption per year	250,324 kWh	227,921 kWh	192,856 kWh

Comparison	Low-invest ventilation system	Standard ventilation system	Wilo ventilation system
Energy costs per year*	€25,032	€22,792	€19,285
Investment for air compressor**	€10,500	€10,500	€10,500
Investment for disc aerators	€7,500	€11,000	€18,000
Maintenance costs over 10 years	€3,890	€5,140	€7,970
Total costs over 10 years	€272,214	€254,561	€229,326
Potential savings over 10 years***	–	€17,653	€42,888

This example is based on list prices and the following assumption: only aerators (without ventilators) – 1 diaphragm replacement over a period of 10 years.

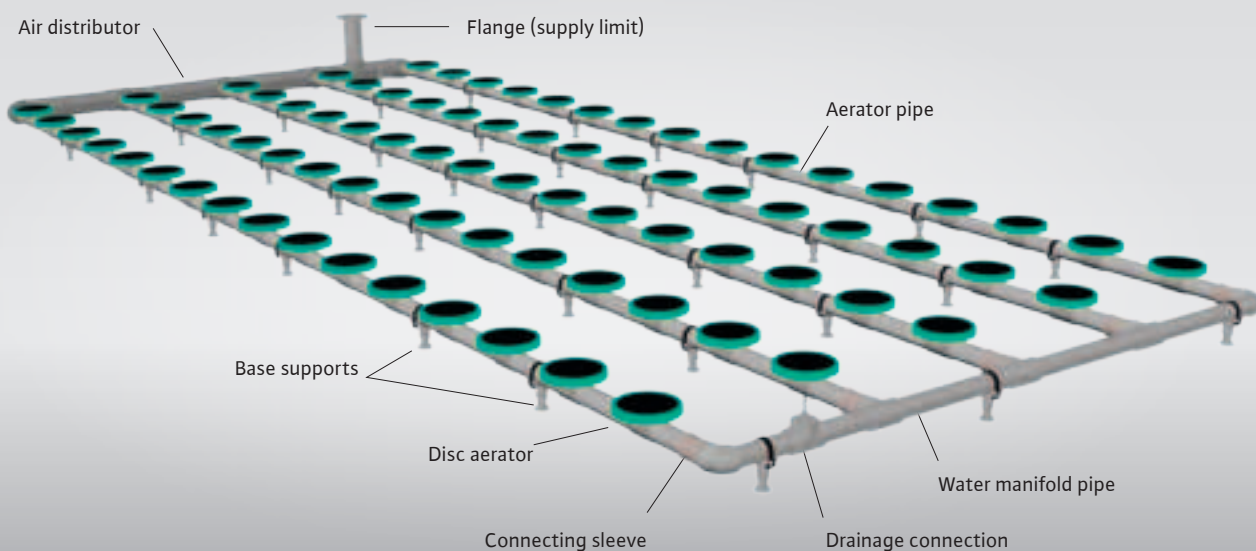
\* 0.10 €/kWh at 8700 h/a.

\*\* PN = 30 kW

\*\*\* Energy costs calculated at a constant rate of 0.10 €/kWh.

### The advantages to you

- Robust construction through the use of GRP
- Flow-optimised shape
- Optimised air entry thanks to perforation across the entire diaphragm surface
- Diaphragm installed with a separation ring for easy replacement
- Operationally reliable due to twist guard
- Optimised control range for economical operation from 1.5 to 6.0 Nm<sup>3</sup>/h per aerator
- For air temperatures up to 100 °C
- Integrated non-return valve



### Scope of delivery

A Wilo-Sevio AIR ventilation system contains the following components:

- Configuration of entire ventilation system
- Installation plan with location of drilled holes
- Disc aerators
- Air distributor with flange connection DN 80 to DN 125 (PVC pipe) or DN 125 to DN 350 (stainless-steel pipe)
- Ventilation pipes made of plastic (ø 90 mm) or stainless steel (ø 88.9 mm)
- Height-adjustable base supports made of plastic or stainless steel
- Connecting sleeves
- Drainage connection

### Technical data for disc aerator

Volumetric air flow*	1-8 Nm <sup>3</sup> /h
Diaphragm diameter	237 mm
Active diaphragm surface	0.044 m <sup>2</sup>
Bubble diameter	1-3 mm
Oxygen utilisation	6.50-8.50 %/m
Pressure loss	22-43 mbar
Diffuser density in basin	5-30 %

\* Under standard conditions (0 °C and 1,013 mbar).



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