



# FUCHS

A Metawater Company

**Aeration  
Mixing  
Experts**

**Wastewater  
Treatment**

**Sludge  
Treatment**

**Innovative  
Technology  
Worldwide**

## WATER WELL TREATED

**Aeration  
Mixing  
Experts**

...Efficient and long-lasting Aeration

...Powerful Mixing and Agitation

...Customized Processes around Wastewater and Sludge Treatment



# MUNICIPAL & INDUSTRIAL WASTEWATER TREATMENT

INDIVIDUAL SOLUTIONS FOR  
DIFFERENT MARKETS  
AND REQUIREMENTS



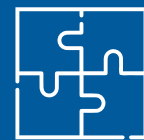
## Our Markets



### ...Municipalities and Industry

- » Sugar Industry, Vegetable Processing, Dairies
- » Breweries and Distilleries
- » Pulp and Paper Industry
- » Textile Production
- » Leather Industry
- » Rendering Plants and Slaughterhouses
- » Petrochemical Industry
- » Mining
- » Waste Management
- » Industrial Estates / Common Effluent Treatment Plants

## Solutions



### ...tailor-made and individual

- » Activated Sludge Plants
- » Time based activated Sludge / SBR
- » Aerated Lagoons
- » Equalization Basins
- » Rivers and Lakes
- » Aerobic Sewage Sludge Treatment
- » Process Water Treatment
- » Biofilm Technology
- » Lamella Clarifier
- » Emergency and Supplementary Aeration
- » Replacement and Retrofitting

## Tasks



### ...for many areas

- » BOD Removal
- » Nitrification
- » Denitrification
- » Iron and Manganese Precipitation
- » CO<sub>2</sub> Stripping
- » Sludge Stabilization and Disinfection
- » Maximization of Settling Area by Minimization of Footprint
- » Prevention of Water Eutrophication

## Our Powerful Brands



### ...quality for a robust and low-maintenance operation

- » OxyStar® Aerator
- » DualStar Aerator
- » Centrox Aerator
- » AeroStar Aerator
- » TurboStar® Mixer
- » AquaSBR® Sequencing Batch Reactor

## WHAT ARE OUR CUSTOMERS' CONCERNS?

### WHAT ARE THEIR ISSUES?

We have other aerators in operation, but the maintenance costs are much too high!

We need an effective solution to stabilize our sludge.

We want to renew our plant and apply the SBR technology. Where can we find a solution?

We need to mix our equalization tank and aerate it. What can we do?

Our existing brush aerators need to be renewed. What are my alternatives?

I have to add more oxygen on very short notice. Are there machines for rent?

The discharge values of our lagoon system are too high for future requirements!

There is no space for a conventional sedimentation tank and I am looking for a solution.

I looked at your products. So, what do I need for my plant?



**FUCHS** CAN  
HELP YOU!



### WHAT DOES FUCHS OFFER?

### WHICH PROBLEMS DO WE SOLVE?

We help you to choose the right machine technology.  
We ensure **maximum reliability and operational safety**.

Our original FUCHS products are **robust, low-maintenance and high quality**.  
Other aerators can be replaced without any problems.

Our **experienced experts** will help  
you to optimize the aeration of your lagoon system.

We can provide additional aeration with **rental aerators** on short notice.

Our proven **AquaSBR® technology** with high reliability  
is used in hundreds of plants all over the world.

Brush aerators can easily be replaced with **FUCHS OxyStar® Aerators**.  
We support our customers on size selection and with design.

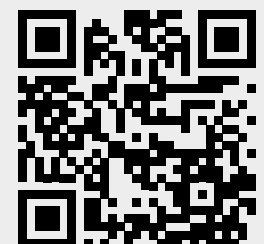
Our aerobic processes for sewage sludge treatment provide **stabilized sludge**  
and **disinfection (Class A)** if needed.

The required tank volume for our **lamella clarifiers**  
is significantly lower compared to conventional  
sedimentation tanks. This saves both space and costs.

Our solutions with **biofilm systems** ensure a reliable nitrogen removal.



ASK THE  
**EXPERTS!**







FUCHS Aerators in an industrial application (Thailand)

## ACTIVATED SLUDGE PLANTS

### with FUCHS Aerators – powerful and flexible

FUCHS Aerators are the ideal solution for activated sludge applications, with low maintenance and operational costs. They are suitable for almost all tank geometries and water levels. Existing plants can easily be retrofitted or upgraded. Other aerator systems, such as rotor-brush, low-speed surface, and diffused air are replaceable or enhanceable, even without interrupting the operation.



FUCHS Aerators in the oxidation ditch of a municipal WWTP (UK)

The sophisticated design and the use of corrosion-resistant materials ensure durability and absolute reliability. Moreover, there are neither seals nor bearings in the immersed part.



Treatment of paper mill effluent with FUCHS Aerators  
(Bosnia Herzegovina)



FUCHS Aerators in the activated sludge tank  
of a sugar factory (China)

### VERSATILE APPLICATIONS

FUCHS Aerators provide technically high-quality solutions, no matter if they are used for the treatment of wastewater from industry or municipalities.

They excel in the treatment of industrial effluents from food processing - such as dairies, vegetable and fruit processing, breweries, sugar mills, slaughterhouses etc., as well as the pulp and paper industry, textile and leather industry, petrochemical industry, mining and many others.



Floating FUCHS Aerators in an activated sludge  
tank of a slaughterhouse (Australia)



FUCHS Aerators for aeration and mixing of  
wastewater from textile industry (China)





Reliable and cost-efficient wastewater treatment with AquaSBR® (USA)

## AquaSBR® SEQUENCING BATCH REACTOR

The **AquaSBR® sequencing batch reactor** provides true batch reactor technology with all phases of biological treatment accomplished in a single reactor. All components are easily accessible and the advanced decant system ensures optimum quality effluent withdrawal.

The **AquaSBR® system** provides flexible control of aeration and mixing. Time-managed operation provides lower energy consumption and offers process flexibility with greater handling of hydraulic fluctuations.

The floating decanter provides subsurface withdrawal of decant volume. Aeration can be realized with proven FUCHS aerators or a classic pressure aeration system, depending on the requirements.

The **true-batch system** allows react, settle and decant phases to occur within the same reactor.

- » No secondary clarifiers and return activated sludge lines
- » Lower construction, installation, operation and maintenance costs
- » Low cost of ownership



AquaSBR® system with flexible process control easily adapts to changing effluent demands (USA)

## AERATED LAGOONS

### With FUCHS Aerators – an ideal combination

Aerated lagoons have their strength in low maintenance and high process stability, even at peak loads. The introduction of rainwater can easily be treated through stock-up operation. The construction costs are usually very low. Our solutions help to prepare existing lagoon systems for future requirements.



Aerated wastewater lagoon system for 70,000 p.e. (Albania)

FUCHS Aerators are perfectly suitable for wastewater lagoon systems. Through fine-bubble aeration and directed horizontal flow, the active biomass is uniformly supplied with oxygen and the total lagoon volume is thoroughly mixed.

The application of FUCHS aerators is possible in virtually all lagoon systems and water depths. Un-aerated oxidation lagoons can be easily retrofitted to improve performance.



FUCHS Aerators in a dairy (France)



Effective oxygen transfer with FUCHS Oxystar® Aerators (Algeria)



Large aerated wastewater lagoon system with FUCHS Aerators (Morocco)





Supplemental aeration in an oxidation ditch (UK)



Replacement of brush aerators in municipal WWTP (South Korea)

## REPLACEMENT AND RETROFIT

### FUCHS Aerators – flexible in use

FUCHS Aerators with their low maintenance requirements and operating costs are ideally suited for the replacement of old aeration systems, as addition to existing aeration equipment, or for retrofitting of activated sludge and lagoon plants.



FUCHS Aerators successfully replace old floating brush aerators (USA)

Rotating brushes, low speed rotary aerators, and compressed-air aeration systems are easily replaced or supplemented without interrupting the operation. Existing basins or lagoons can be further used without problems.

- » Integration into existing plants
- » Retrofitting without emptying the basins
- » Usage in virtually any tank geometry and water depths



FUCHS Aerators easily supplement the existing compressed air aeration (Bulgaria)



FUCHS rental aerators to compensate an oxygen deficit (Germany)



FUCHS Aerators in an emergency application in a river (Germany)



# MINE WATER TREATMENT

## A heavy duty application with FUCHS Aerators

Mine water from brown coal mining is often characterized by its acidic pH and high iron and sulfate concentrations. Before discharging into the receiving water, treatment of the mine water is necessary.

Where other aeration systems fail, such as diffused aeration and surface aerators with submerged bearings, FUCHS Aerators in heavy duty version are successfully in operation in numerous large mine water treatment plants.



Heavy duty application with OxyStar® Aerators (Germany)



AeroStar Aerators on floats for stripping of carbon dioxide (Germany)

- » Targeted oxidation of iron and manganese with OxyStar® Aerators through effective oxygen injection and intensive mixing
- » Stripping of free carbon dioxide with AeroStar Aerators for a reduction of operating costs

FUCHS Aerators in heavy duty version for challenging media:

- » Robust, durable and field-proven machine technology with low maintenance demand



OxyStar® Aerators for oxidation of mine water (Germany)



AeroStar Aerators for desorption of CO<sub>2</sub> in mine water (Germany)

# AEROBIC SLUDGE TREATMENT

The core element of FUCHS aerobic sewage sludge treatment is the targeted stabilization of the sewage sludge through aeration.

FUCHS has been involved in aerobic sewage sludge treatment since the 1970s. Today, our customers benefit from our decades of experience and use it for planning or as full consultancy support.

We can provide the right solution for your problem!

## OUR APPLICATIONS:

- » Autoheated Thermophilic Aerobic Digestion ATAD: Stabilized and disinfected sewage sludge as valuable fertilizer
- » Aerobic Digestion: Sludge stabilization at mesophilic temperatures
- » Aeration of Sludge: A single machine keeps sludge fresh, existing basins can be used



FUCHS ATAD plant for municipal or industrial sewage sludge treatment (Poland)



FUCHS Centrox Aerators with foam control for Aerobic Digestion (Spain)

	Aeration of Sludge	Aerobic Digestion	Autoheated Thermophilic Aerobic Digestion FUCHS ATAD
Minimization of odor	✓	✓	✓
Stabilization	–	✓	✓
Disinfection Class A according to US EPA 503	–	–	✓
Proven FUCHS Technology	✓	✓	✓
Industrial and municipal applications	✓	✓	✓
Investment costs	€	€€	€€€





FUCHS fixed-bed system for carbon removal and nitrification (Germany)

## FUCHS BIOFILM PROCESSES

### Biological wastewater treatment with fixed bed or trickling filter systems

FUCHS biofilm processes with completely submerged and aerated fixed-bed systems or trickling filters are high-performance and cost-effective systems for biological wastewater treatment. They are used as a biological treatment stage with or without nitrogen oxidation, as a nitrification stage within a multistage process or as a downstream stage for residual nitrification.

They are suitable for both new plants and retrofitting existing wastewater treatment plants. Many advantages become apparent, especially in combination with activated sludge plants and wastewater ponds. Existing pond treatment plants or single-stage activated sludge plants can be upgraded without any problems. Depending on the customer's requirements, FUCHS provides support from design to selection, delivery and installation of the components.



Trickling filters convince with energy efficiency

- » Adaptation to increasing requirements
- » Upgrading of lagoon systems
- » Low operating costs

## FUCHS LAMELLA CLARIFIERS

### Powerful sedimentation with low space requirement

Conventional clarifiers can be reduced in size or upgraded by installing angled parallel plates. These plates are typically installed at a 60° angle to create a projected settling area. Sludge or particles will settle onto the parallel settling planes and slide downwards, while the clarified water will rise into an overflow.

While the lamellas are the core element of a lamella clarifier, the corresponding components such as launders, support structure, sludge scraper and overall tank shape define the overall lamella clarifier performance. Additionally, the interaction of all components must be carefully designed.

FUCHS Experts are firm in the design of lamella clarifiers and are happy to assist this process to reach the clients goals.

### TYPICAL APPLICATIONS FOR LAMELLA CLARIFIERS:

- » Process water clarification
- » Drinking water clarification
- » Stormwater clarification
- » Primary, secondary and tertiary clarification

FUCHS designs and delivers all components of a lamella clarifier project:

- » Early design when choosing tank layout and dimensions or configuration
- » Design and engineering support to choose the right internal components such as lamella type, customized launders and scrapers



FUCHS performs installation work on site or offers supervision for client's own installation



FUCHS Lamella Clarifiers are suitable for any size of plant (Germany)





**THAT'S YOUR WAY TO A  
CLEAN SOLUTION!**

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