



Clean Solutions



FUCHS
A Metawater Company

Aeration
Mixing
Experts



FUCHS

traditionally innovative

Pristine Environment

Over recent decades, protection of the environment has become one of the most pressing issues of our time. At the same time, the drive to achieve this goal has yielded one of the most innovative and forward thinking branches of business. The complex field of environmental technology demands the highest skills in innovation, engineering and workmanship, both in concept and in practice.

Clean Solutions

FUCHS has taken up this complex challenge and has built up an outstanding tradition based on high quality. Thus, FUCHS has gained a worldwide reputation as one of the foremost environmental enterprises. The focus on the complete picture of each application, the thorough commitment, the use of the immense wealth

of experience and know-how of a diversified team of engineers, technicians and craftsmen and the ongoing ambition to work out customized solutions for each client have led to FUCHS' ongoing success worldwide.

Ambitious Prospects

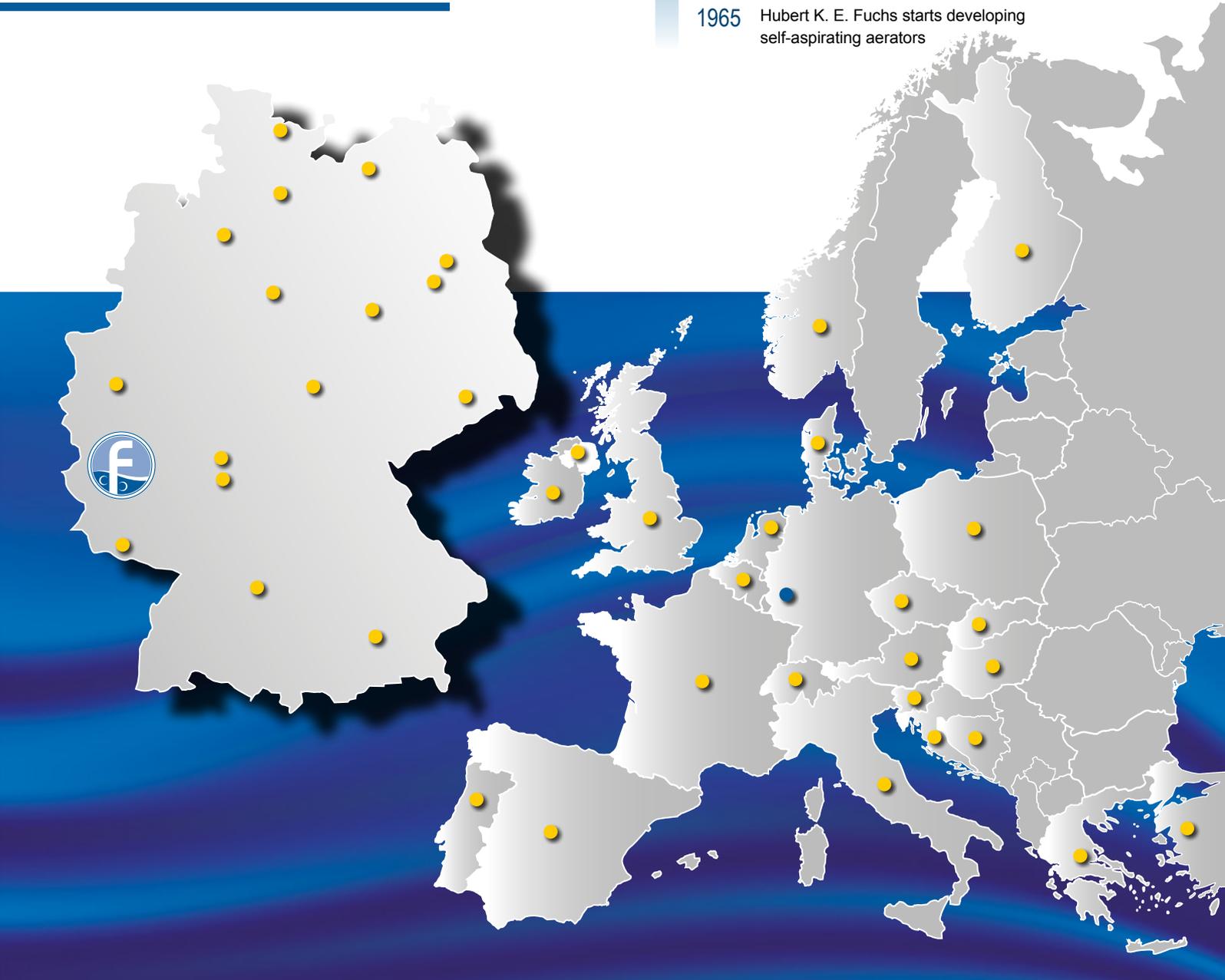
With more than four decades of continuing success and development, FUCHS is reaching out to the future. By advancing proven technologies and developing new processes, by enhancing the expertise and skills of engineers and technicians, and by constantly adapting to the commercial and ecological demands of one of the most rapidly-changing industries, FUCHS is striving to meet future challenges by maintaining its tradition of innovation.



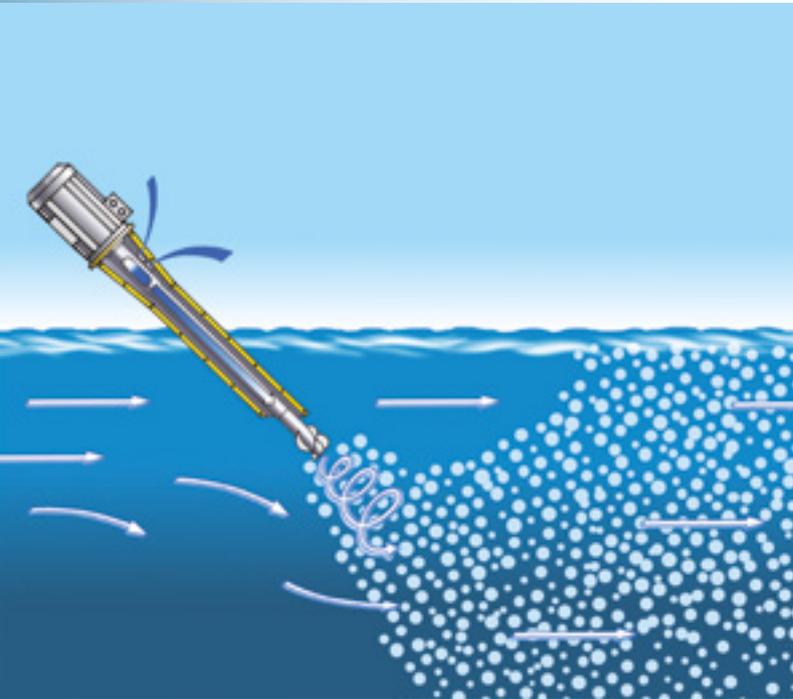


FUCHS headquarters and premises with R&D facilities

- 2020 Handover of the management to Dr. Christian Henrich
Over 4,000 references worldwide
- 2019 Acquisition of FUCHS by Aqua-Aerobic Systems, Inc.
(a subsidiary of METAWATER Co., Ltd)
- 2014 40th company anniversary
- 2010 Company is re-named to FUCHS Enprotec GmbH
- 2005 ATAD AIC: Enhancing biosolids treatment to a new level
- 2015- FUCHS retrofit/expansion of several Thai industrial
2001 estates, one amongst the largest in the world
- 1990 FUCHS ATAD Process approved by US Environmental
Protection Agency
- 1982 Leonhard Fuchs and Martin Fuchs are appointed
to the board
- 1977 First „greenfield“ wastewater treatment plant,
implementing the FUCHS ATAD Process and
FUCHS Aerators in an activated sludge tank
- 1974 Foundation of Fuchs Company. Patent for the
FUCHS Spiral Aerator
- 1971 First aerated lagoons for food industry
- 1968 Patent for the FUCHS Centrox Aerator. Discovery
of the phenomena leading to the ATAD process
- 1965 Hubert K. E. Fuchs starts developing
self-aspirating aerators



FUCHS Aerators



Principle of FUCHS OxyStar Aerators' dual performance: fine bubble aeration and strong directional flow

Fine bubble plume created by FUCHS Spiral Propeller



FUCHS OxyStar® Aerator

The OxyStar Aerator is well-known, being the export version of the original FUCHS Aspirating Aerator, proven in the field for more than 40 years. It embodies the highest quality standard in its class. This outstanding unit with its high aeration efficiency and mixing capability has been designed and adapted to meet the most stringent and challenging requirements of today's international markets. Thousands of applied units worldwide prove the ongoing success of this robust and reliable aerator.

Sophisticated Design

FUCHS OxyStar Aerators are used primarily to aerate and mix activated sludge tanks and wastewater lagoons. The units are designed to provide highest aeration efficiency and mixing capability in their class. All materials are resistant to corrosion, with the immersed parts being made from stainless steel or plastics.

Getting along without gears, immersed seals and immersed bearings – the sophisticated design makes the OxyStar Aerators virtually maintenance-free. High production standards, strict quality management and constant testing ensure the outstanding performance of FUCHS Aerators.



FUCHS OxyStar Aerator on floats

Unlimited Flexibility

FUCHS OxyStar Aerators can be mounted on sturdy and strong floats or by means of highly adaptable mounting brackets. Using these versatile but simple modes of installation, OxyStar Aerators can be installed in almost any tank or lagoon configuration, ensuring proper aeration and mixing.

FUCHS Centrox Aerator

The FUCHS Centrox Aerator meets the specific needs of certain sites. A vertical shaft and a specially designed propeller create a vertical flow pattern, thus aerating large volumes of water, sewage or sludge.

The Centrox Aerator can be mounted on sturdy floats or by means of a highly adaptable mounting bracket. This widens the range of possible applications from large wastewater lagoons to deep or enclosed activated sludge tanks.

Combining Successes

By combining the strong directional flow of OxyStar Aerators with the vertical flow pattern of Centrox Aerators, the opportunities for maximizing aeration and mixing efficiency are virtually unlimited. The combination of these two distinct aeration principles provides FUCHS engineers with the perfect tools for customizing a bespoke solution to each client's needs.

FUCHS Centrox Aerator on floats



Municipal Wastewater



FUCHS OxyStar Aerators on floats adapted to an oxidation ditch

Activated Sludge Plants

The heart of almost all municipal wastewater treatment plants is the activated sludge process. The activated sludge process uses nature's biological processes to remove nutrients and pollutants from wastewater in a controlled environment and on a much more efficient scale than it occurs in natural bodies of water. The most critical requirement of the activated sludge process is the presence of oxygen.

Fulfilling the need

Providing this fundamental element requires both efficient aeration and mixing. FUCHS Aerators excel in providing both in ideal combination.

FUCHS OxyStar Aerators replacing inefficient locally made aerators





Aerated wastewater lagoon system in southeast Europe (70,000 p.e.)

Aerated Lagoons

Not only in developing countries local settings require sturdy and flexible solutions. The treatment of municipal wastewater in well-designed aerated lagoon systems is not only amongst the most economically and ecologically effective methods but also absolutely reliable and easy to operate.

OxyStar Aerators are ideal to this near to nature treatment process.

Technology for better results

Providing broad and defined flow patterns in combination with optimal oxygen transfer and mixing leads to outstanding results. Thus, not only lagoon systems but also lake and river aeration are optimized.

FUCHS OxyStar Aerators for river oxygenation in front of fresh water works (Thailand)



FUCHS Aerators are renowned for their quiet-running operation (Germany)



Industrial Wastewater



FUCHS OxyStar Aerators provide reliable and robust aeration in a highly-corrosive industrial environment

Managing tasks

FUCHS Aerators are outstanding for a wide range of industrial applications. The corrosion-resistant design and use of high-quality materials ensure consistently high performance.

Versatile applications

FUCHS Aerators excel when it comes to treating industrial effluents from food processing – like dairies, vegetable and fruit processing, breweries, sugar mills, slaughterhouses etc. – as well as pulp and paper industry, textile and leather industry, petro-chemical industry, mining industry and many others.

Aeration and thorough mixing with FUCHS OxyStar Aerators (sugar mill, China)



Neutralization of alkaline wastewater in a textile factory (India) with FUCHS Centrox Aerators utilizing flue gas from the power plant





Treatment of paper mill effluent with
FUCHS OxyStar Aerators (southeast Europe)

Valuable Experiences

With decades of experience in the treatment of industrial wastewater, we know how to adapt the application of OxyStar Aerators to meet any industry's requirements. From sugar or pulp and paper industry to the difficult petro-chemical tasks, FUCHS Aerators benefit from the extensive knowledge gained from numerous applications since their first introduction in the 1970ies.

Treatment of petro-chemical effluent in
a large lagoon system (Great Britain)



Retrofits



FUCHS OxyStar Aerators in an emergency application (municipal WWTP, Great Britain)

Retrofit for sludge stabilization in a converted storage tank (France)



Versatile and Adaptable

FUCHS equipment is used extensively to retrofit existing plants. One of the major issues of today's plants is the need to meet changing requirements and treatment objectives as well as to adapt to new processes. Due to the virtually limitless versatility of FUCHS Aerators and their installation, there is a solution for almost any challenge. A major advantage of FUCHS retrofits is the fact that existing tanks or lagoons can be used. This minimizes the investment cost.

Supplementary Aeration

The steady growth of communities, changing loads of connected industries and the adoption of new treatment objectives can alter the design criteria and thus the corresponding oxygen demand considerably. FUCHS Aerators fill this gap and provide additional oxygen to meet any shortcomings. Due to the highly versatile mounting systems, FUCHS can retrofit tanks or lagoons of nearly any shape or size. Moreover, retrofit can take place without taking the existing tank out of operation.

Sewage sludge stabilization

Changing loads or treatment objectives can negatively influence the sewage sludge age and lead to insufficient stabilization. FUCHS solves this problem with its unique Centrox Aerator, which can be installed efficiently in existing tanks. This is a simple way to upgrade, means to stabilize sewage sludge at a minimum effort and investment.



Replacing Aeration Systems

The ongoing maintenance and operational costs of old aeration systems is a major issue for many existing treatment plants. FUCHS' range of versatile aerators has been used in hundreds of plants worldwide to replace existing aeration systems.

Almost every shape and size of tank or lagoon can be accommodated. The replacement takes usually place without interrupting the operation of the plant.

The only noticeable change is the positive effect on maintenance and operational costs, and the increase in aeration and mixing efficiency.

FUCHS OxyStar Aerators replace old surface aerators (China)

Replacement of rotors by FUCHS OxyStar Aerators (Thailand)

FUCHS OxyStar Aerators meet the oxygen deficit of an inadequate aeration system (Paper mill, Malaysia)



FUCHS ATAD Process

Class A Biosolids

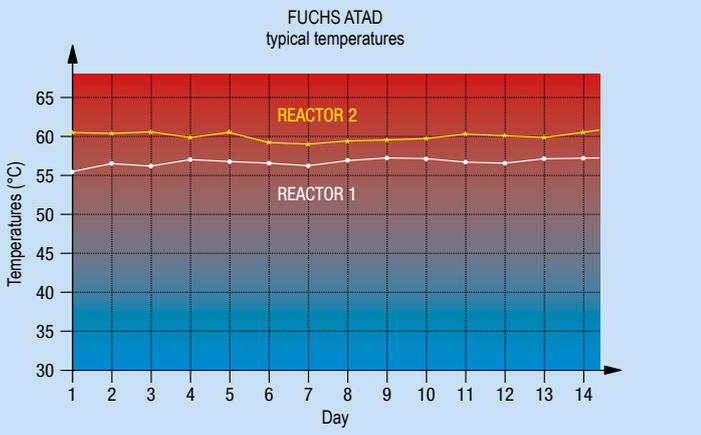
Today, sewage sludge is no longer regarded as waste - requiring disposal. By subjecting it to the right treatment, the immense fertilizer value of its components can be unlocked – and, as a result, classified as Class A Biosolids (US EPA 503).

FUCHS ATAD

The FUCHS Autoheated Thermophilic Aerobic Digestion (ATAD) process turns sewage sludge into valuable Class A Biosolids.

The ATAD process simultaneously disinfects and stabilizes sludge.

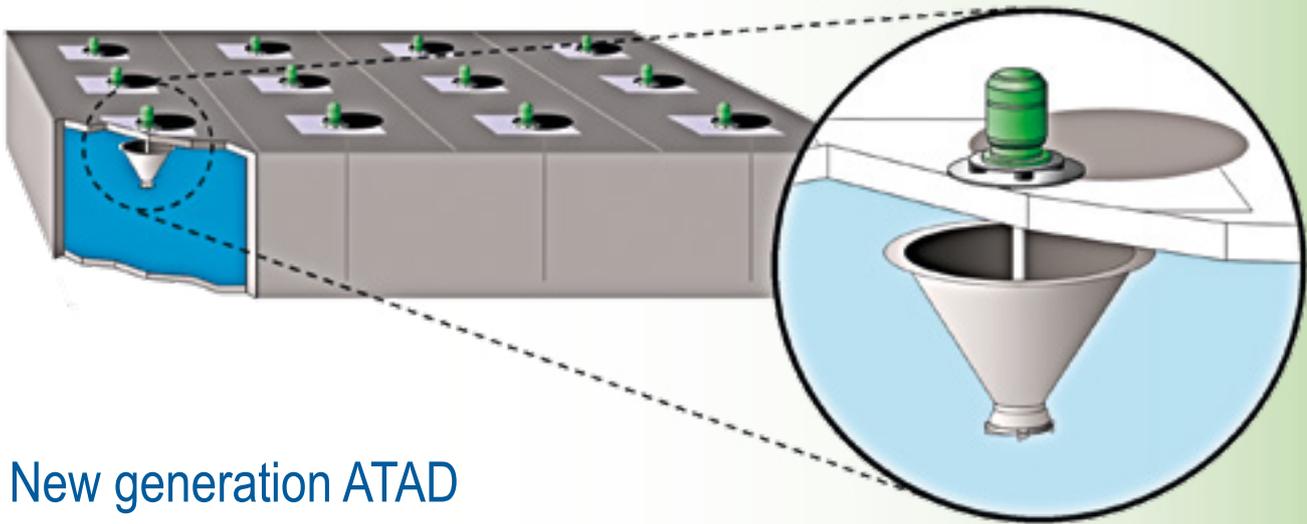
Operating temperatures in the thermophilic range (~55°C/ 130°F) lead to short retention times of only 7 to 9 days. This considerably reduces footprint, energy consumption and investment cost.



Disinfection and stabilization due to thermophilic temperatures

FUCHS ATAD is characterized by small reactors and low energy consumption





New generation ATAD with Centrox Aerator

One job one machine
FUCHS Centrox Aerator

FUCHS latest ATAD innovation is featuring the FUCHS Centrox Aerator.

It offers multiple benefits:

- Aeration, mixing and foam control combined in one unit
- Applicable for almost all sizes
- Ideal for retrofitting existing tanks

24 hours creating value
FUCHS ATAD AIC™

Focus on the whole picture FUCHS ATAD AIC™

FUCHS' Advanced Integrated Concept ATAD AIC™ raises the biosolids to the next level by considering the whole sludge line. Result:

- Improved heat balance and oxygen supply
- Virtually odour-free operation
- Remarkably enhanced dewatering

Based on more than 40 years of experience and ongoing innovations FUCHS' main goal is to meet future challenges in the interest of our customers and to the best of nature.



ATAD for industrial sludge and manure



Industrial sludge
pilot plant for trials available

Animal manure and fat sludge
FUCHS Centrox Aerator



Why only municipal sludge?

Sludge from the food processing industry can well be treated in ATAD systems; the sludge contains no significant heavy metals and other contaminants and can be used for land application, fertilizing and soil improvement. The organic sludge is easily degradable and heats up autothermally to disinfection temperatures.

Pilot tests were successfully run with sludge from dairies, potato and pet food processing. After pilot testing FUCHS has successfully designed and built full-scale ATAD systems for a dairy, a potato processing factory and a paper mill.

Pilot plants are available for rental and operation by the customer. Alternatively, FUCHS runs entire pilot tests with experienced personnel on site.

Manure – a valuable fertilizer

Indeed, the deep roots of the ATAD process did grow from animal manure treatment. In the 1970ies Mr. Hubert K. E. Fuchs observed strong autothermal effects when aerating of animal manure.

In the following years multiple scientific studies proved that ATAD converts animal manure to biosolids; most likely the best fertilizer for the benefit of nature.



That's your way to a Clean Solution!

The Equipment

Aerators

- OxyStar Aerator
- DualStar Aerator
- Centrox Aerator
- AeroStar Aerator

Mixers and Agitators

- TurboStar Mixer
- FlowStar Agitator

ATAD Equipment

- OxyStar Aerator
- Centrox Aerator
- Foam Controller

The Applications

- Municipal Wastewater
- Industrial Wastewater
- Activated Sludge Plants
- Aerated Lagoons
- Nitrification/Denitrification
- Aeration of Rivers and Lakes
- Balance and Equalization Tanks
- Neutralization of Alkaline Wastewater
- Mine Water Treatment
- Leachate and Landfill Lagoons
- Biosolids Treatment
- ATAD-process (Autothermal Thermophilic Aerobic Digestion)
- ATAD AIC™ (Advanced Integrated Concept)
- Liquid Composting of Manure
- Odour Control



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