



AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

OxyStar® Aerators

Operation and Applications of Aspirating Aerators

Presentation Outline

- History of Aspirating Aerators
- Theory of Operation
- Why Aspirating Aerators?
- Applications for Oxidation Ditch Systems
- Applications for Other Treatment Systems
- Installations Profiles
 - Gordo, Alabama
 - Confidential Industrial Mill
 - Heathrow Airport, UK

History of Aspirating Aerators

OxyStar® Aerator

2019

AQUA-AEROBIC SYSTEMS, INC.
Acquires Fuchs Enprotec GmbH



AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company



2018 Over 4,000 references. Worldwide representation.

1990 ATAD-process approved by the US Environmental Protection Agency.

1987 Development of the FUCHS Biofilter.

1982 Leonhard and Martin Fuchs assume management responsibility for the Company.

1977 First "greenfield" wastewater treatment plant, including the FUCHS ATAD-process and FUCHS Spiral Aerators for the activated sludge basin.

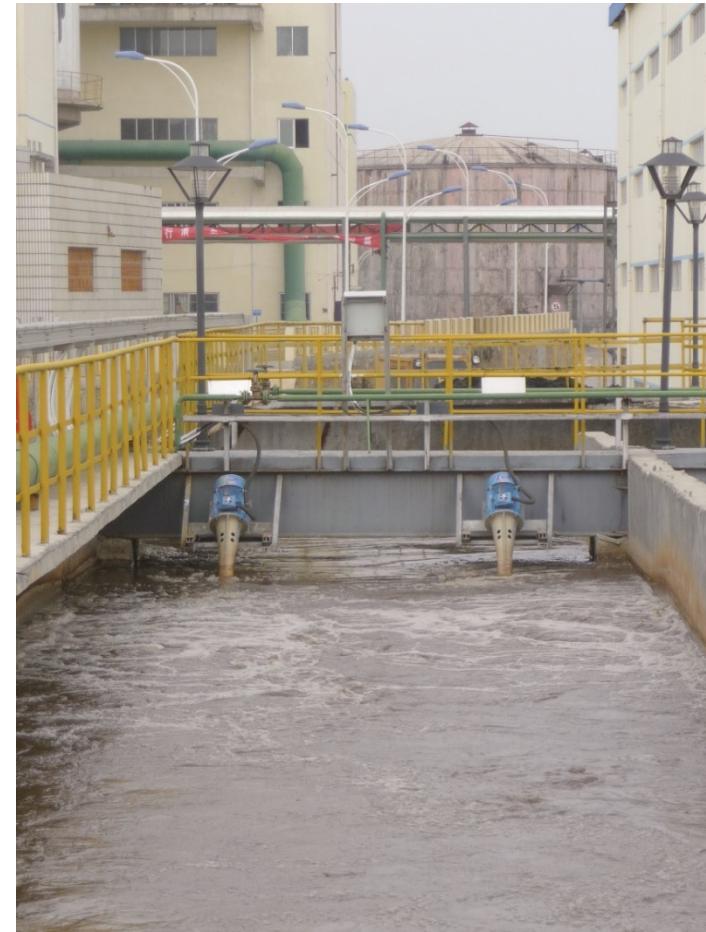
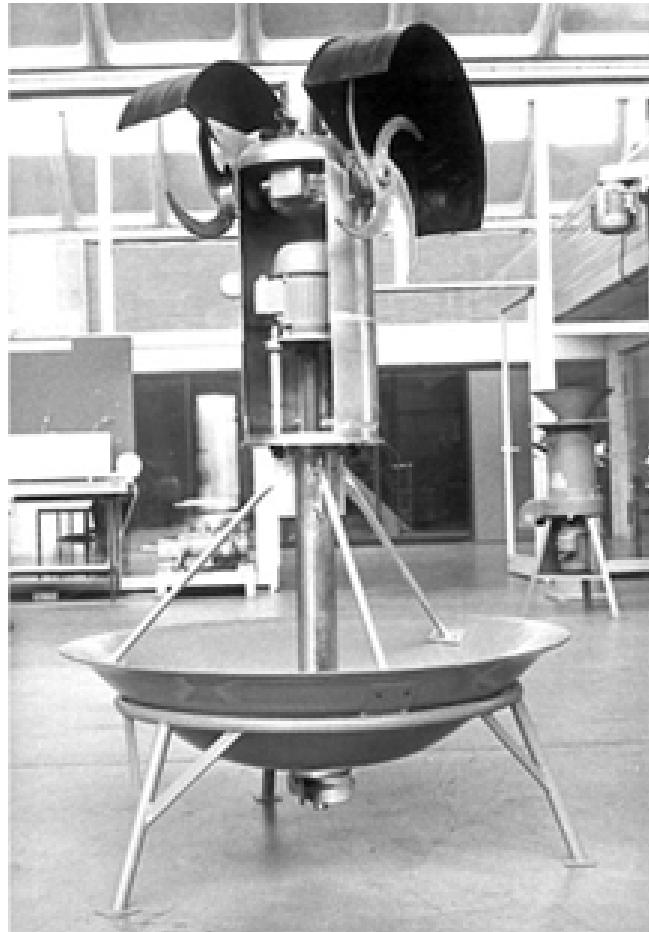
1974 Establishment of Fuchs Gas- und Wassertechnik. Patent for the FUCHS Spiral Aerator.

1971 First aerated lagoons for food industry.

1968 Patent for the FUCHS Centrox Aerator. Discovery of the phenomena of the ATAD-process.

1965 Hubert K. E. Fuchs began with the development of self-aspirating aerators.

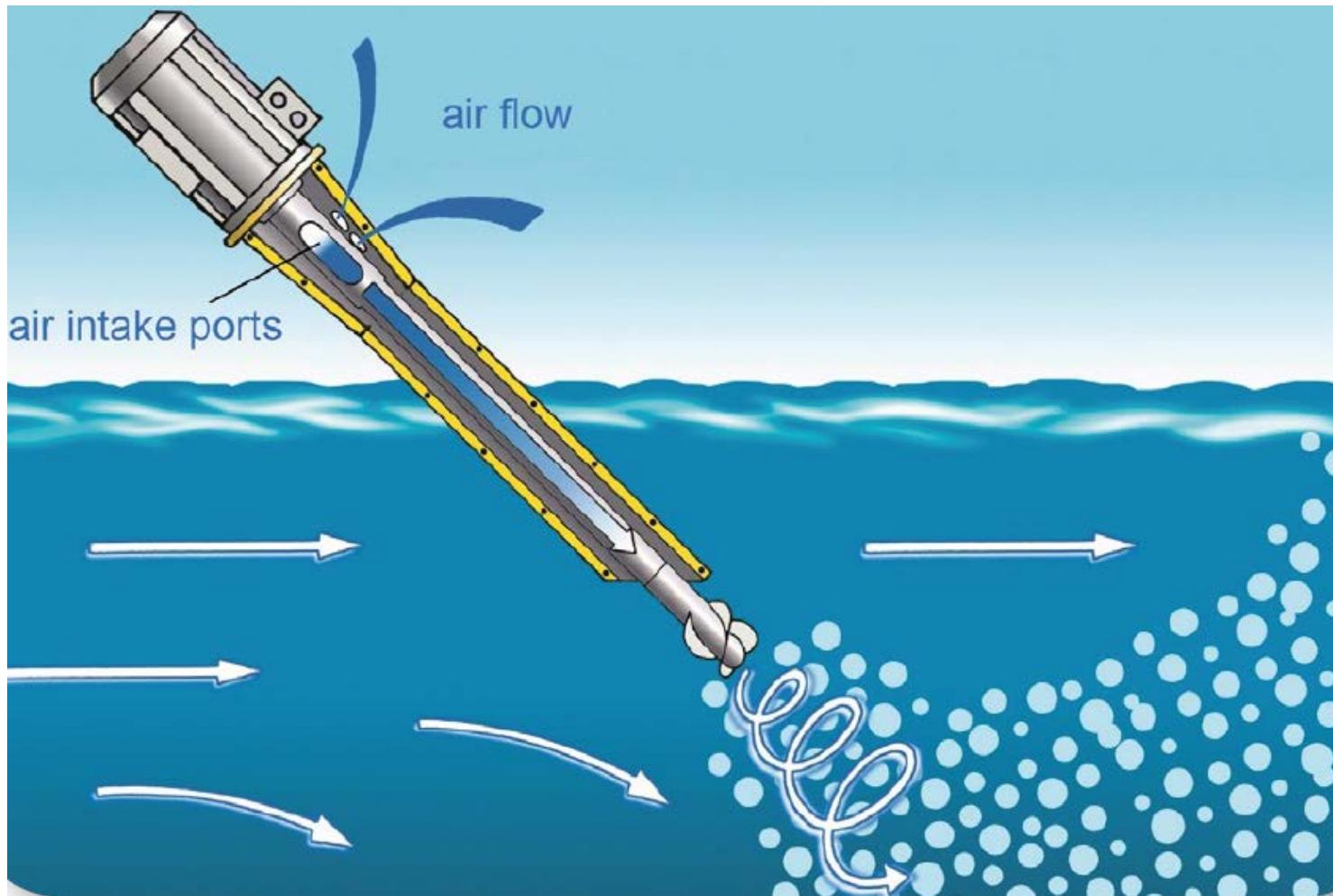
OxyStar® Aerator



We've come a long way since 1965!

Theory of Operation

OxyStar® Aerator



OxyStar® Aerator

Mounting Options

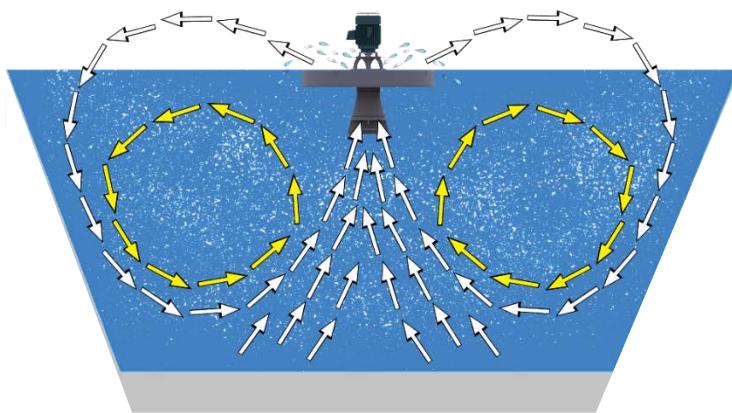


- Fixed Mount
 - Easy to access
 - Requires bridge/platform
 - Requires constant water level

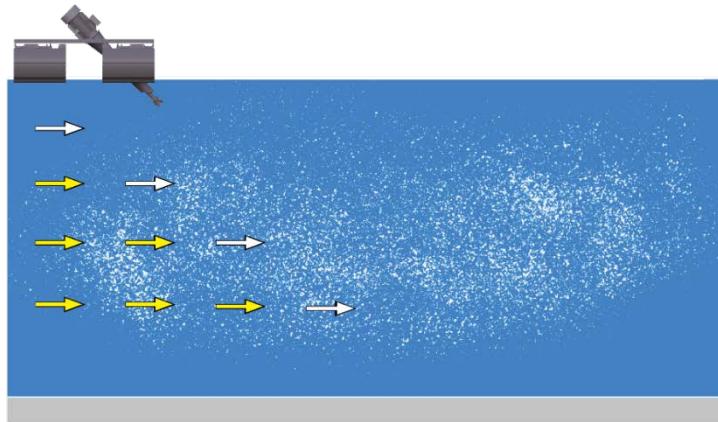
- Float Mount
 - Easy to access
 - Held in place by pivot arm
 - Fluctuates with water level

Product Comparison – Flow Patterns

Conventional Aerator



Aspirating Aerator



- Toroidal (Circular pattern)
- Ideal for round/square basins

- Linear pattern
- Ideal for channels and shallow basins

Why Aspirating Aerators?

OxyStar® Aerator

- Three bladed spiral propeller
 - Maximizes aspiration and oxygen transfer
 - Maximizes mixing velocity
 - More efficient than brush rotors
- Installed in almost any basin geometry
- Simple to install in existing basins
- Subsurface aeration - no aerosoling or misting



OxyStar® Aerator

- Three moving parts
- No submerged bearings or seals
- Ideal for replacing oxidation ditch rotors



Applications for Oxidation Ditches

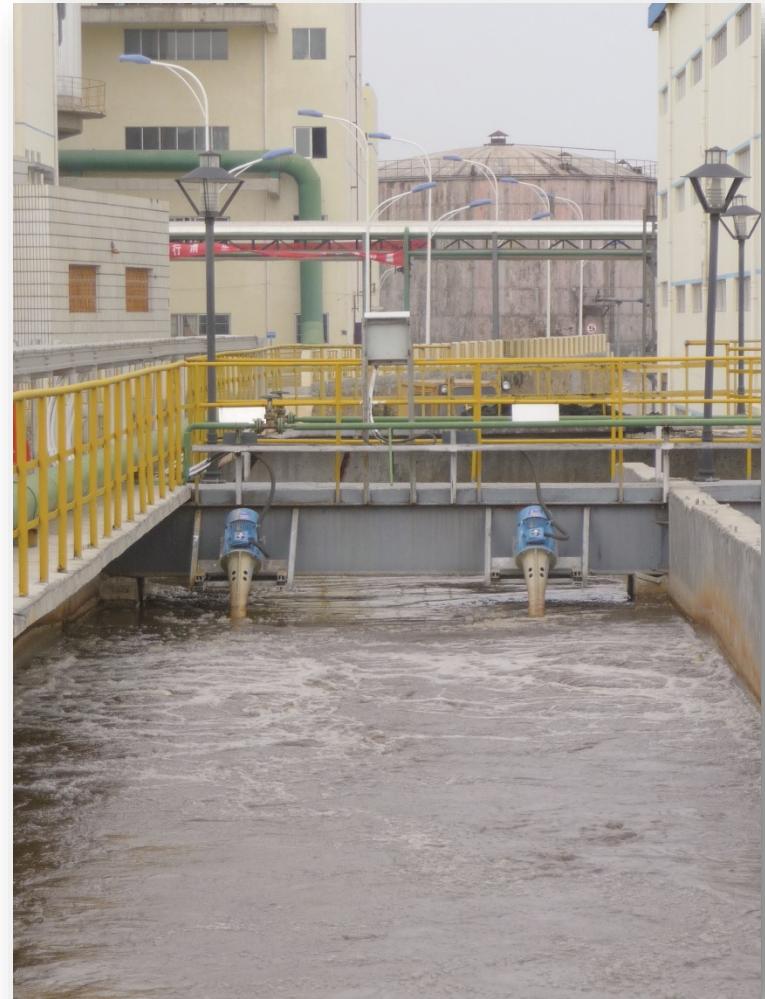
Applications for Oxidation Ditches

- Most commonly used in oxidation ditch systems
- Often installed for one of three reasons:
 - Increasing treatment capacity
 - Replacing less reliable mechanical aerators
 - Upgrading systems for denitrification



Expanding Oxidation Ditches

- Ditch capacity can be expanded by:
 - Increasing loading
 - Decreasing SRT and increasing F/M ratio
 - Adding additional aerators to meet O₂ demand
- Double treatment capacity without infrastructure changes!
- Typically secondary clarification limits expansion.



Retrofitting Oxidation Ditches

- OxyStar® Aerators can replace these units easily!
- Easy installation – can be done online
- Three moving parts, minimal maintenance
- No gearboxes or submerged seals
- Can be installed in almost any basin



Applications for Other Treatment Systems

Aerobic Lagoons



- Ideal for aerating/mixing large volumes
- Easily upgraded to expand treatment capacity

Equalization Basins



Aerobic Digesters



Conventional Activated Sludge



Installation Profiles

Installation Profile

Gordo, Alabama Municipal Oxidation Ditch



Installation Profile

Heathrow Airport



Installation Profile

Industrial Sugar Mill





AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

OxyStar® Aerators

Operation and Applications of Aspirating Aerators
