



AQUA TURBO™
SYSTEMS
Waste Water Treatment Equipment

**Your worldwide partner in aeration, mixing, floating decanters
and foam processing equipment**





The Group Aquasystems is one of the world's leading designers and manufacturers of water and wastewater treatment equipment for industrial and municipal markets. The corporate headquarters is based in Halle, Belgium. The Group has manufacturing plants in Halle, Belgium and Springdale, Arkansas, USA.

The company operates through a network of international agents and representatives in all major markets.

The flagship AQUA TURBO® Model AER-AS Surface Aerator, with its worldwide patented SCREWPELLER® technology, commenced manufacturing in 1984 and is now internationally regarded as the market leader. The Belgium and USA manufacturing plants have comprehensive R&D and test facilities each featuring 300m³ and 1,200m³ test tanks. Every item manufactured undergoes a series of extensive test procedures prior to delivery. The company has gained worldwide recognition by producing simple, well-designed products of the highest quality, which provide proven results, longevity and low maintenance operation.

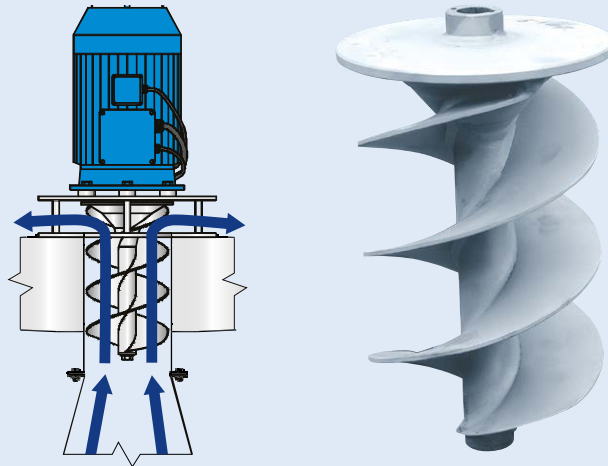
The Engineering and R&D team are continuously working on the further extension and improvement of the AQUA TURBO® product line. This product line also includes submersible aerators, using the unique SCREWPELLER® and decanters AQUA DECANT™ for SBR type activated sludge plants.

The AQUA TURBO® functions as an open pump. The mixed liquor of waste-water and activated sludge enters via the suction cone. The unique AQUA TURBO® SCREWPELLER® pumps the liquid axially up through the cylindrical pumphouse, bends the liquid flow from axial to radial, and ensures that the kinetic energy is transferred to the water surface.

The SCREWPELLER® is designed to transfer the kinetic energy to the water whilst achieving high performance in pumping and oxygen transfer.



SCREWPELLER® Technology



What is SCREWPELLER®?

SCREWPELLER® is a centrifugal impeller using a two-bladed Archimedean helix with a hollow semi-conical core and an integral round plate at the base of the cone. The base end incorporates a hub with a bore and keyway machined to allow direct connection to an electric motor.

Why is **SCREWPELLER®** so special?

1. The two-bladed helix allows perfect balance due to equal distribution of mass and is direct coupled to the motor eliminating support bearings, sleeves and couplings along with all associated maintenance issues.
2. The exceptional pumping efficiency is similar to that of a volumetric pump and the gentle action of the sweeping flights minimises shear to delicate flocs.
3. The integral round plate functions as a rotating diffusion head instantaneously changing the direction of the AXIAL suction flow to a RADIAL discharge flow with minimal hydraulic and frictional losses.
4. The rotating diffusion head reduces trust loadings on the motor bearing by two-thirds and allows the use of standard bearings.
5. The flat discharge trajectory produces a horizontal velocity maximising kinetic energy whilst ensuring exceptionally low splash. The unique operation injects the reintroduced flow to create micro-bubbles and high oxygen distribution whilst reducing odour, aerosols, noise and heat loss.
6. The horizontal injection produces micro-bubbles with a large surface area per unit volume and provides a flow pattern to allow the bubbles to have a long contact time with the liquor therefore allowing a great potential for oxygen transfer.
7. The one-piece impeller is constructed entirely of heavy duty stainless steel for exceptional corrosion, wear and abrasion resistance ensuring a long life and maintenance free operation.

AER-AS



Floating Surface Aerator

Axial flow aerator with patented instantaneous radial discharge. World renowned for high aeration efficiency in field conditions due to maximum transfer of kinetic energy to water surface. Installations range from small tanks to large lagoons due to high mixing and oxygen dispersion characteristic.

Applications

Aerated lagoons + basins
Activated-sludge processes
Aerobic digestion processes
MBR + SBR

Features

High oxygen transfer + dispersion
Excellent mixing with low floc shear
No gearbox so low maintenance
Simple installation + removal

Range

0.75 - 200kW
4, 6 + 8-Pole Speeds,
direct drive Draught to suit water level
AISI 304/316 or special SS

Configurations

Floating
Vertical operation only
1 x Surface drive
Fixed or variable WL

AER-F [ES]



Fixed Surface Aerator [ES = Extended Shaft, optional]

Designed for bridge or platform mounting in basins with fixed or minimal water level variation. Can be installed and removed as a fully assembled unit through a space in the platform without draining the basin. The length can be manufactured to suit virtually any platform to water level measurement.

Applications

Aerated basins + tanks
Activated-sludge processes
Aerobic digestion processes
Oxidation ditches

Features

Easy access
Virtually zero maintenance
Spray openings can align with columns
Installed + removed thru space in bridge

Range

0.75 - 200kW
4, 6 + 8-Pole Speeds, direct drive
Draught/extended shaft to suit WL
AISI 304/316 or special SS

Configurations

Fixed bridge/platform mount
only Vertical operation only
1 x Surface drive
Fixed or minimal WL variation

AER-SL



Fixed or Floating Directional Aerator/Mixer

Aspirator aerator featuring a unique impeller and vacuum chamber design drawing air below water level and dispersing as small-bubbles in any chosen direction. Ideal when aeration and directional flow generation are required in a single unit. Multiple mounting options allow use in any basin geometry.

Applications

Directional aeration + mixing
Storage, equalization, contact + stabilization
Nitrification/denitrification
SBR

Features

Independent aeration + mixing [dual speed]
Non-clogging impeller + vacuum chamber
Robust + compact design - low vibration
Simple installation + removal

Range

1.5 - 30kW
2 + 4-Pole + dual speed, direct drive
submersible motor - IP 68 protection
AISI 304/316 or special SS

Configurations

Rail, floor + float mount options
Any operating angle - 0 -180°
1 x Submerged drive
Fixed or variable WL

AER-GS



Fixed Low-Speed Bottom Aerator/Mixer

Totally independent aerator and mixer. Blower operation and frequency can regulate oxygen supply from zero to maximum capacity, whilst retaining full mixing and oxygen dispersion capability, therefore ideal for SBR, MBR reactors. Available as submerged drive or surface drive with extended shaft.

Applications

Activated-sludge + aerobic digestion
Nitrification/denitrification
SBR + MBR - Oxygen regulation
Also ideal for deep tanks + high MLSS

Features

Independent aeration + mixing
High oxygen transfer + dispersion
Intensive low energy to volume mixing
Non-clogging + low bubble coalescence

Range

1.1 - 30kW
10 - 42rpm, geared drive
350 - 3,250m³/h Airflow
AISI 304/316 or special SS

Configurations

Fixed bridge + floor-mount
Vertical operation only
1 x Submerged or surface drive
Fixed or variable WL

AER-GD



Fixed Low-speed Surface Aerator

Specifically designed for fixed mounting to allow impeller immersion to vary in accordance with flow and associated oxygen demand. Maintains aeration efficiency at variable speed. Four impeller options - 4-blade, to induce circulation in oxidation ditches, and 6-blade, for higher efficiency; LH or RH.

Applications

Ideal for oxidation ditches
Activated-sludge systems with baffles
Aerobic digestion processes
Unscreened plants

Features

High oxygen transfer
Intensive mixing
Easy access
Robust design

Range

1.1 - 160kW
40 - 130rpm, geared drive
4+6 Blade, LH + RH impellers
Epoxy coated MS, SS or FRP options

Configurations

Fixed bridge/platform mount or floating
Vertical operation only
1 x Surface drive
Fixed or minimal WL variation

AER-SB(L)



Fixed Bottom Aerator

L = Long diffused channels, option

As a floor mounted aerator and with intensive mixing action it is ideal for deep tanks, moderate to high sludge concentrations and also re-suspension of settled sludge. Available with or without channels and in self-aspirating with optional hardened impeller and inlets for heavy duty applications

Applications

Activated-sludge processes
Aerobic digestion processes
Also ideal for deep tanks + high MLSS

Features

Self-aspirating
Intensive low energy to volume mixing
Low noise
Simple installation + removal with tank full

Range

1.1 - 110kW, 4-Pole Speed, direct drive
Standard or long channel option Aspirator + blower options
AISI 304/316 or special SS

Configurations

Unfixed floor mount
Vertical operation only
1 x Submerged drive
Fixed or variable WL - Max 10m

AER-AS/MIX-SL



Submerged Mixer Operating

Surface Aerator +
Submerged Mixer Operating

Combination Floating Surface Aerator Submerged Mixer

Separate aerator and mixer motors allow individual or joint operation; ideal for applications requiring oxygen regulation. Joint operation improves overall aeration efficiency, eliminates mixer rails, aligns the impellers on a common axis, to provide complimentary mixing patterns, and reduces mixing energy.

Applications

SBR + MBR
Nitrification/denitrification
Oxygen regulation
Ideal for deep tanks + seasonal loadings

Features

Totally independent aeration + mixing
Low energy mixing
Complimentary mixing patterns
Simple installation

Range

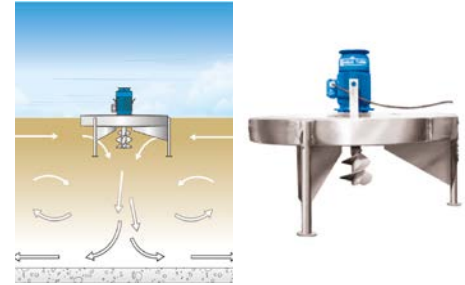
AER-AS - Max. 200kW, direct drive MIX-SL -
Max. 22kW, direct drive
Mixer submergence to suit WL
AISI 304/316 or special SS

Configurations

Floated mount only
Vertical operation only
2 drives - 1 surface/1 submerged
Fixed or variable WL - Max 10m



MIX-AS



Floating Downdraft Mixer - External Motor

Simple, robust and reliable, general purpose mixer adaptable to all basin configurations and easily repositioned to suit process changes. Open, two-bladed helical impeller providing intensive radial, sub-surface mixing pattern with negligible surface disturbance and low power to volume performance.

Applications

General mixing of lagoons, basins + tanks Activated-sludge processes
Extreme water temperature variations Denitrification + SBR

Features

Non-clogging, gentle action impeller
Turbulent 3D radial mixing pattern
Virtually zero surface turbulence +
no O₂ transfer Simple installation + removal

Range

1.5 - 55kW
4 + 6-Pole Speeds, direct drive Standard motor
AISI 304/316 or other SS

Configurations

Float mount only
Vertical operation only
1 x Surface drive
Fixed or variable WL

MIX-BS

**Floating Downdraft Mixer - Enclosed Motor**

Features the same as MIX-AS with the addition of a motor encapsulated in the float, allowing location within the spray of adjacent aerators without damage. Ideal for high foaming, high corrosion and noise sensitive locations.

Applications

High foaming lagoons, basins + tanks
Mixer positioned in aerator spray
High corrosion applications
Denitrification + SBR

Features

Non-clogging, gentle action impeller
Efficient 3D radial mixing pattern
Virtually zero surface turbulence + no O₂ transfer
Simple installation + removal

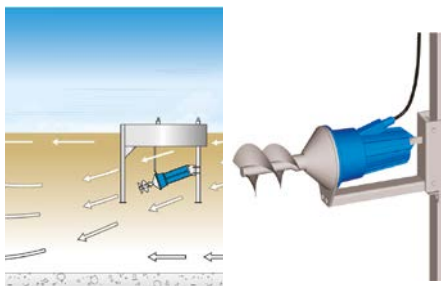
Range

1.1 - 30kW
4 + 6-Pole Speeds, direct drive AISI 304/316 or other SS

Configurations

Float mount only
Vertical operation only
1 x Enclosed drive
Fixed or variable WL

MIX-SL

**Fixed or Floating Directional Mixer**

Multi-purpose, multi-directional, submerged mixer ideal for general mixing and flow generation; adaptable to any basin configuration. Open, two-start helical impeller providing intensive, directional sub-surface mixing pattern with negligible surface disturbance and low power to volume performance.

Applications

Directional mixing + flow generation
General mixing of lagoons, basins + tanks
Activated-sludge processes
Denitrification + SBR

Features

Non-clogging, gentle action impeller
High quality, low maintenance motor
Robust + compact design - low vibration
Simple installation + removal

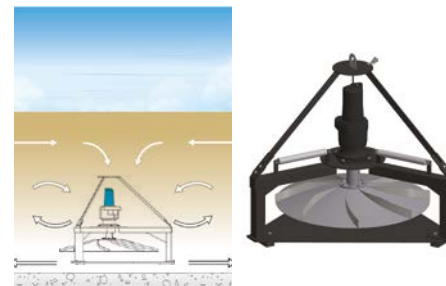
Range

1.5 - 22kW
4 + 6-Pole Speeds, direct drive
Submersible motor - IP 68 protection
AISI 304/316 or other SS

Configurations

Rail, floor, float mount options
Any operating angle - 0 –180°
1 x Submerged drive
Fixed or variable WL

MIX-GS

**Low-speed Bottom Mixer**

Exceptional mixing performance in both low and high solids concentration. Intensive, low-energy, 360-degree mixing pattern and totally non-clogging impeller. Available as submerged drive or surface drive with extended shaft.

Applications

High efficiency mixing of basins + tanks
Activated-sludge processes
Denitrification + SBR
Also ideal for deep tanks + high MLSS

Features

Intensive low energy to volume mixing
Totally non-clogging design
Low noise
Robust design - low maintenance

Range

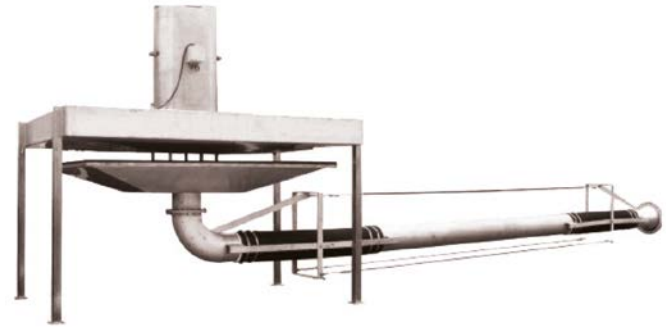
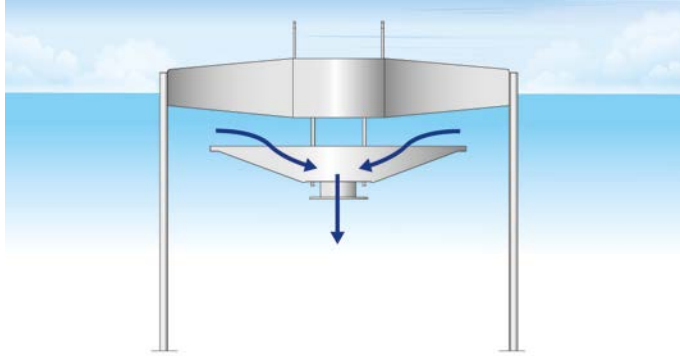
1.1 - 30kW
10 - 42 rpm, geared drive
Stub shaft + extended shaft options
AISI 304/316 or special SS

Configurations

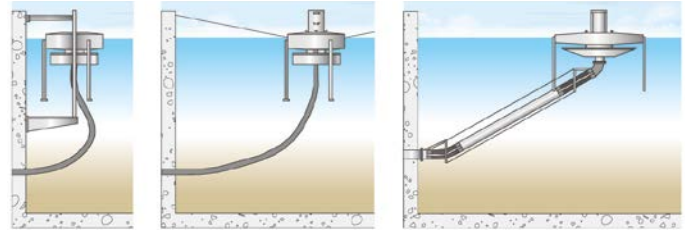
Fixed bridge + floor-mount
Vertical operation only
1 x Submerged or surface drive
Fixed or variable WL

AD/Gravity

Floating Weir + Permanently Open + Gravity Discharge

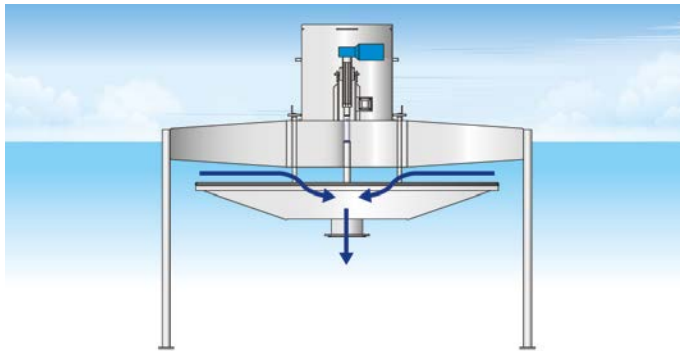


Configuration Options at High Water Level

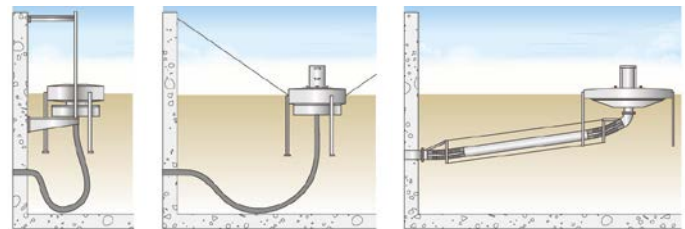


AD-MC/Gravity

Floating Weir + Mechanically Closing + Gravity Discharge

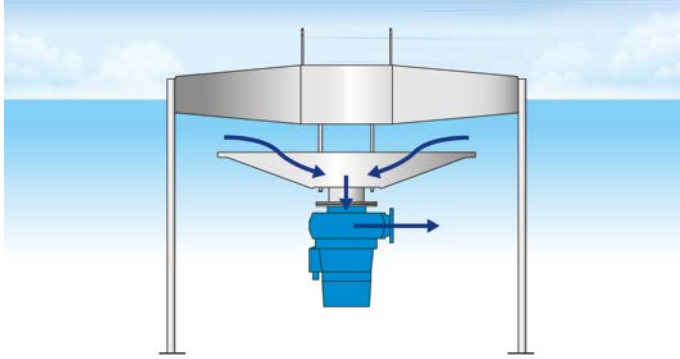


Configuration Options at Low Water Level



AD/Pump

Floating Weir + Permanently Open + Pump Discharge



Discharges subsurface laminar layer of clean water without disturbing the sludge blanket or floatables. Gravity and pump options are available with mechanical actuation to close the weir during aeration and mixing phases preventing wastewater or activated sludge entering the discharge pipe.

Applications

Sequential Batch Reactors
Sludge settling tanks
Sludge thickeners
General decanting

Range

Circular - 10 to 150m³/h
Rectangular - 150 to 3,000m³/h
Custom manufacture
AISI 304/316 or special SS

Features

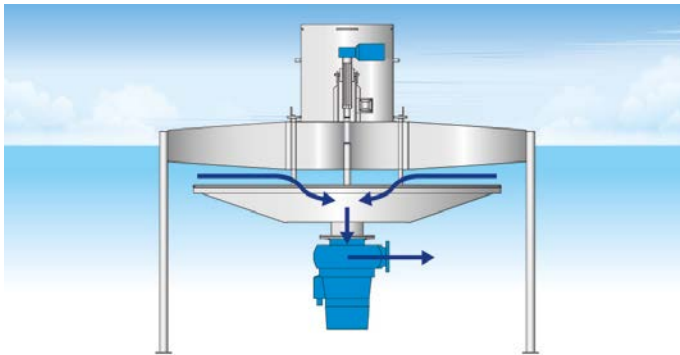
Minimal sludge blanket disruption
Avoids discharge of floatable
Simple design + installation

Configurations

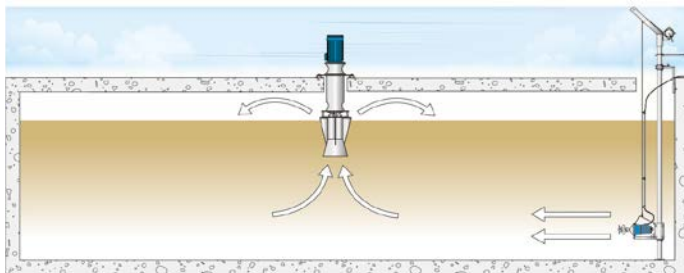
Flexible hose + mooring cables with springs
Flexible hose + guide rails
Hinged discharge pipe
Telescopic discharge pipe

AD-MC/Pump

Floating Weir + Mechanically Closing + Pump Discharge

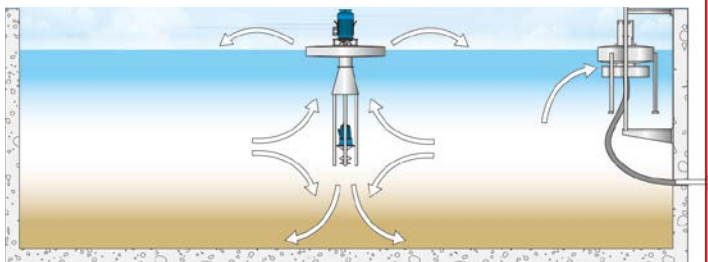


AER-FES + MIX-SL (fixed)



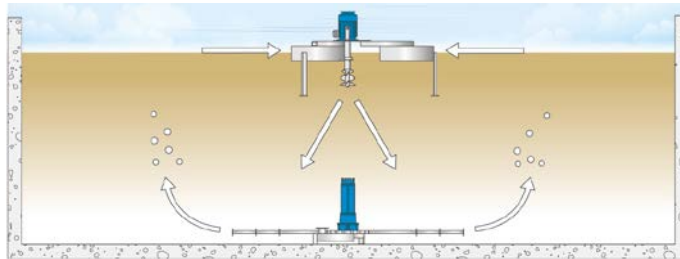
AER-FES and **MIX-SL [fixed]** are ideal for low and high loadings in tanks with fixed water level or minimal variation. For low loadings **AER-FES** and **MIX-SL** can operate alternately to save energy. For high loadings and high MLSS **MIX-SL** maintains complete mix to ensure solids remain in suspension.

AER-AS / MIX-SL + AQUA DECANT™



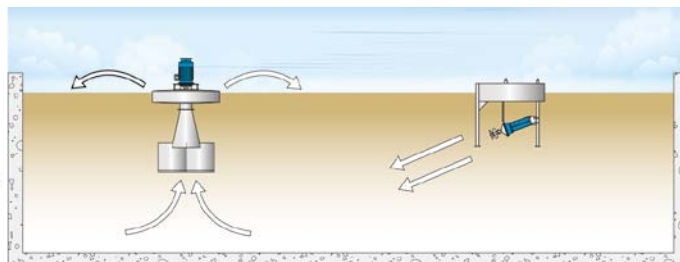
AER-AS/MIX-SL and **AQUA DECANT™** is the most common and simple SBR configuration with the **MIX-SL** mounted beneath the **AER-AS**. This improves aeration efficiency, eliminates mixer rails, aligns the axes to provide complimentary and improved mixing patterns, whilst reducing mixing energy.

AER-SB/L + FRED



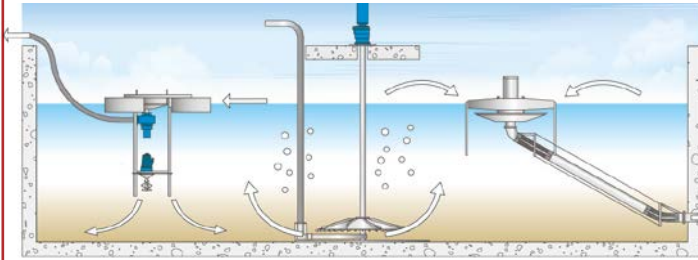
One application for **AER-SB/L** is processing of animal waste because as a bottom aerator, with intensive mixing, it has exceptional ability to keep high solids concentrations in suspension. The waste type creates high foam levels, which **FRED** re-entrains whilst complimenting the mixing action of **AER-SB/L**.

AER-AS + AER-SL



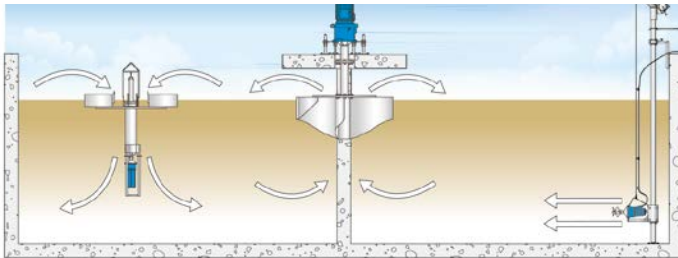
The **AER-AS** and **AER-SL [Floating]** combination is ideal for large lagoon systems with relatively low loadings and/or seasonal load fluctuations. As a directional aerator **AER-SL** provides horizontal velocity to assist oxygen dispersion and also flow generation to prevent quiescent zones.

AER-GS + FRMD + AQUA DECANT™



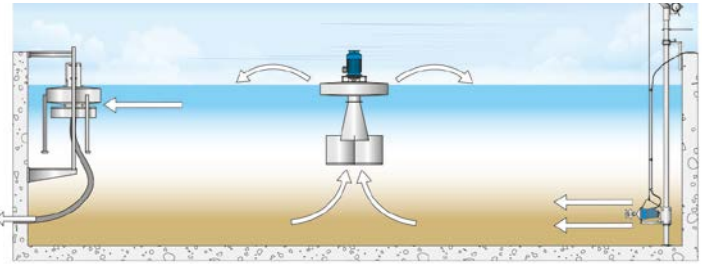
AER-GS is ideal for SBR applications due to its infinite oxygen regulation with no reduction in mixing efficiency. **AQUA DECANT™** discharges clean water from under the water surface. **FRMD** removes any bulking sludge or floatables, which can build up on the surface of some SBR systems.

AER-GD + MIX-SL + FB



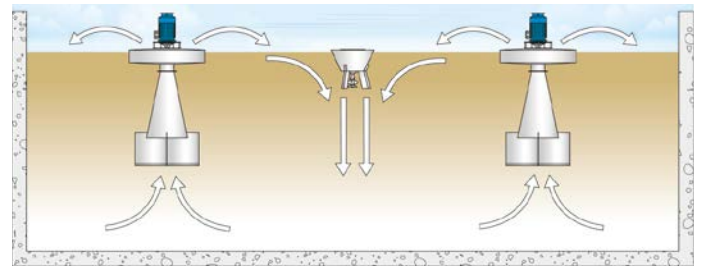
AER-GD is specifically suited to oxidation ditches due to its high oxygen transfer and because it produces circulation. **MIX-SL** units operate as both flow generators and mixers to maintain minimum floor velocity and mixing conditions. **FB** breaks and re-entrains foam, which can form on the surface.

AER-AS + MIX-SL + AQUA DECANT™



This aerator, mixer, decanter combination, in selected quantities, is a traditional SBR system providing all equipment required for each phase of the SBR process. The floating **AER-AS** and **AQUA DECANT™** rise and fall with water level variations whilst the **MIX-SL** is fixed below minimum water level.

AER-AS + MIX-BS



MIX-BS assists **AER-AS** to provide complete mix conditions in large or deep basins as well as improving overall aeration and mixing efficiency. The mixer also keeps solids in suspension whilst the aerators are stopped for denitrification or during seasonal and reduced loadings conditions.



FB



Foam Breaker

To assist bio-digestion **FB** aspirates and breaks high volumes of foam forming on the surface of some biological and thermophilic reactors. Foam is drawn into the volute where the degassing tube allows air to vent to atmosphere and liquid to re-entrain. Nothing is discharged from the basin.

Applications

- High foam treating biological reactors
- High foaming influent
- Thermophilic reactors
- Biological treatment of animal waste

Features

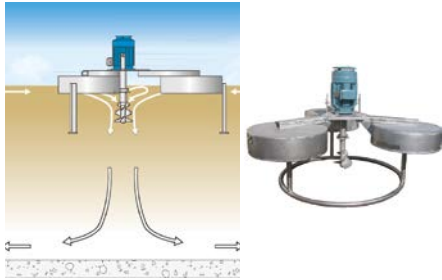
- Blockage free + high flow volute
- Unique air/liquid separation + discharge
- Reliable + non-clogging impeller
- Simple installation + removal

Range

- 1.5 - 15kW, submersible motor - IP 68
- 4, 6 + 8-Pole Speeds, direct drive
- 2 + 3 float options
- AISI 304/316 or special SS

Configurations

- Fixed + float mount options
- Vertical operation only
- 1 x Submerged drive
- Fixed or variable WL options

FRED**Floatables Re-entrainment Device**

Radial aspiration and mixing draws floatables the centric downdraft flow of the dual-action impeller where the homogenization phase allows re-entrainment with the biological process. **FRED** prevents settlement and crust formation as well as mixing the entire basin. Nothing is discharged from the basin.

Applications

Viscous + sludge bulking problems
Grease trap upstream of biological reactor SBR

Features

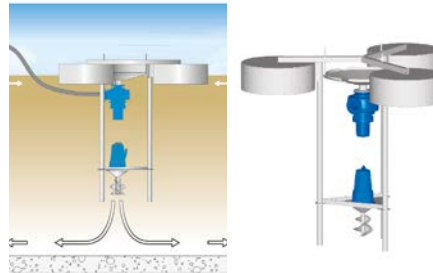
Special dual-action impeller
Excellent mixing performance
Reliable + non-clogging design
Simple installation + removal

Range

1.1 - 22kW
4-6 Pole Speed, direct drive
2 + 3 Float options
AISI 304/316 or special SS

Configurations

Float mount only
Vertical operation only
1 x Surface drive Fixed or variable WL

FRMD/MIX-SL**Floatables Removal Device + Submerged Mixer**

Radial mixing in conjunction with surface flow generated by the submersible pump draws foam/scum towards the basin centre. A special adjustable scum weir allows a laminar layer of foam/scum to enter the pump intake for discharge from the basin. Non-contaminating so ideal for disposal and reuse applications.

Applications

Removal of bulking + old sludge
Removal + reuse of scum
Sludge stabilisation
SBR

Features

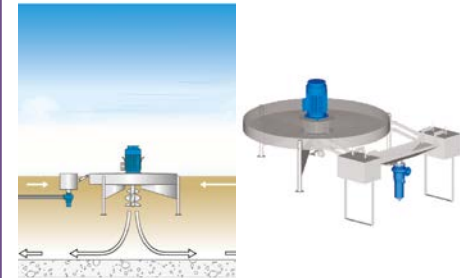
Adjustable flow rate
Purpose designed blockage free pump
Reliable + non-clogging impeller
Simple installation + removal

Range

1.5 - 22kW, submersible motor - IP 68
4 + 6-Pole Speeds, direct drive
Multiple pump flow rate options
AISI 304/316 or other SS

Configurations

Float mount only
Vertical operation only
1 x Submerged drive + pump
Fixed or variable WL

FRMD/MIX-AS**Floatables Removal Device + Floating Downdraft Mixer**

Features the same as **FRMD/MIX-SL** but designed to allow operation at low water level by positioning the special adjustable scum weir beside the mixer rather than above it. The weir and submersible pump are mounted on an independent float connected to the mixer via a self-leveling linkage.

Applications

Removal of bulking + old sludge
Removal + reuse of scum
Sludge stabilisation + biogas
SBR

Features

Adjustable flow rate
Purpose designed blockage free pump
Reliable + non-clogging impeller
Simple installation + removal

Range

1.5 - 55kW
4 + 6-Pole Speeds, direct drive
Multiple pump flow rate options
AISI 304/316 or other SS

Configurations

Pontoon mount only
Vertical operation only
1 x Surface drive + Submerged pump
Fixed or variable WL





AQUA TURBO®
Aerator



AQUA TURBO®
Mixers



AQUA DECANT®
Floating Decanter Systems



AQUA TURBO®
Combination Systems



AQUA TURBO®
Floatables + Foam Removal



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