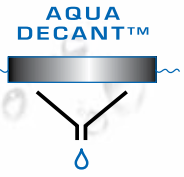




# AQUASYSTEMS INTERNATIONAL NV



AQUA TURBO®  
Aerator/Mixers

AQUA TURBO®  
Mixers

AQUA DECANT®  
Floating Decanter Systems

AQUA TURBO® + AQUA DECANT®  
Combination Systems

AQUA TURBO®  
Floatables + Foam Removal



**Product Overview + Selection Guide**

## AER-AS

Floating Surface Aerator

SCREWPELLER® Technology



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 damage  
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]

SCREWPELLER® Technology



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

SCREWPELLER® Technology



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  
EMOD 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 + unfixed floor-mount only  
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 - virtually zero maintenance

### Range

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

### Configurations

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

## AER-SB(L)

Fixed Bottom Aerator [L = Long diffused channels, optional]



As a bottom 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 and blower versions depending on basin dimensions and oxygen demand.

### Applications

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

### Features

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

### Configuration

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

## AER-AS/MIX-SL

Combination Floating Surface Aerator/Submerged Mixer

SCREWPELLER® Technology



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

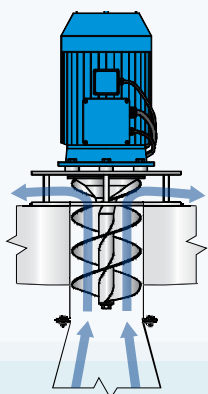
### Range

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

### Configurations

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

## SCREWPELLER® Technology



### What is SCREWPELLER®?

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

### Why is SCREWPELLER® so special?

1. The two-start 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 close to that of a volumetric pump and the gentle action of the sweeping flights minimises damage to delicate flocs.
3. The integral round plate functions as a rotating diffusion



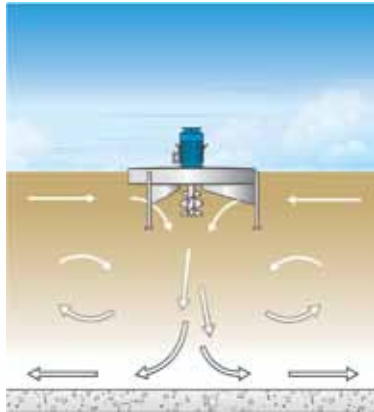
head instantaneously changing the direction of the AXIAL suction flow to a RADIAL discharge flow with minimal hydraulic and frictional losses.

4. The rotating diffusion head reduces thrust 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.

## MIX-AS

Floating Downdraft Mixer - External Motor

SCREWPELLER® Technology



Simple, robust and reliable, general purpose mixer adaptable to all basin configurations and easily repositioned to suit process changes. Open, two-start 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 O<sub>2</sub> transfer  
Simple installation + removal

### Range

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

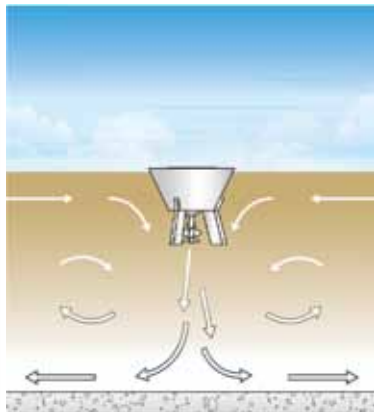
### Configurations

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

## MIX-BS

Floating Downdraft Mixer - Enclosed Motor

SCREWPELLER® Technology



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  
Mixers positioned in aerator spray  
High corrosion applications  
Denitrification + SBR

### Features

Non-clogging, gentle action impeller  
Turbulent 3D radial mixing pattern  
Virtually zero surface turbulence + no O<sub>2</sub> transfer  
Simple installation + removal

### Range

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

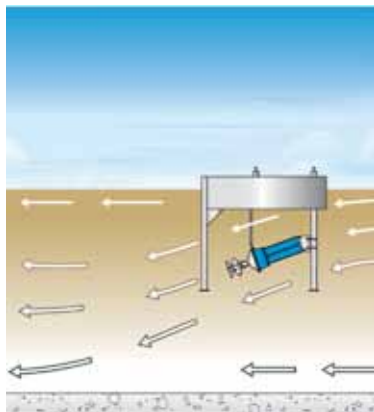
### Configurations

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

## MIX-SL

Fixed or Floating Directional Mixer

SCREWPELLER® Technology



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

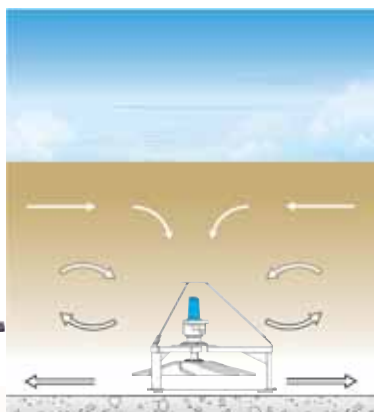
1.5 - 22kW  
4 + 6-Pole Speeds, direct drive  
Submersible motor - IP 68 protection  
AISI 304/316 or other SS

### 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. Easily converted to an AER-GS, independent aerator and mixer, if required. 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

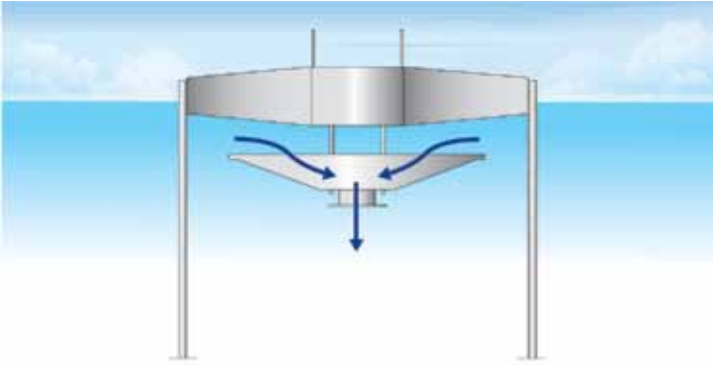
### Configurations

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

# AQUA DECANT® Floating Decanter Systems

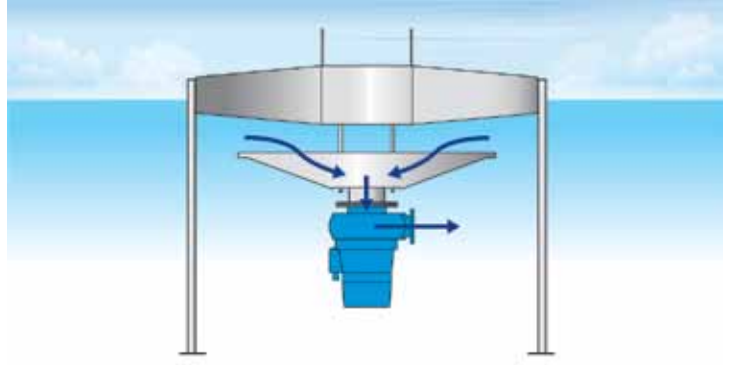
## AD/Gravity

Floating Weir + Permanently Open + Gravity Discharge



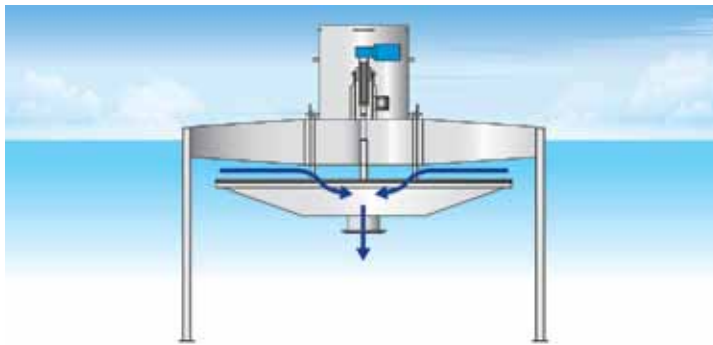
## AD/Pump

Floating Weir + Permanently Open + Pump Discharge



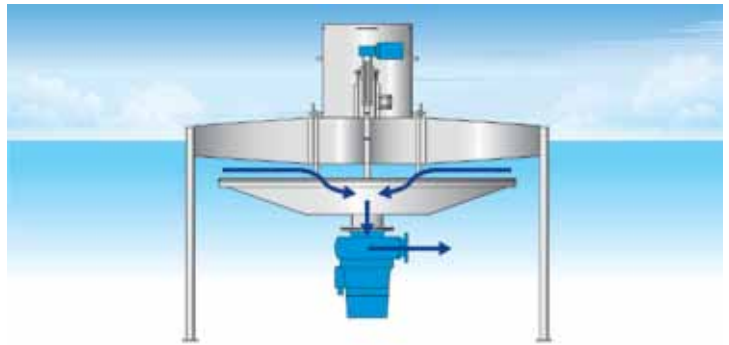
## AD-MC/Gravity

Floating Weir + Mechanically Closing + Gravity Discharge



## AD-MC/Pump

Floating Weir + Mechanically Closing + 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 150m<sup>3</sup>/h  
Rectangular - 150 to 3,000m<sup>3</sup>/h  
Custom manufacture  
AISI 304/316 or special SS

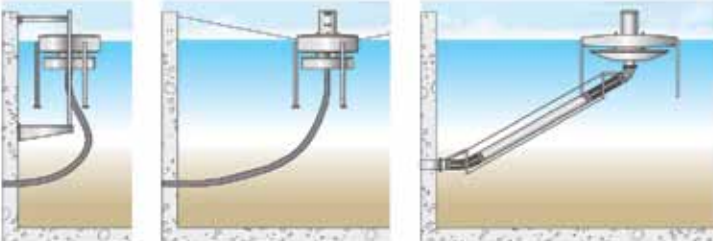
### Features

Minimal sludge blanket disruption  
Adjustable flow  
Avoids discharge of floatables  
Simple design + installation

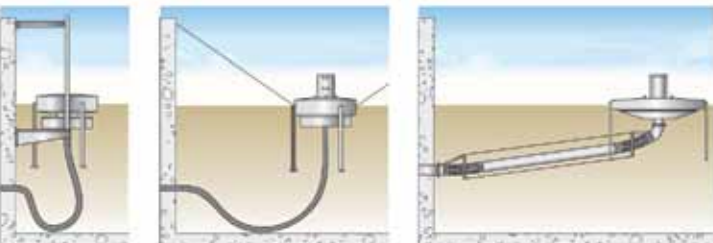
### Configurations

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

### Configuration Options at High Water Level

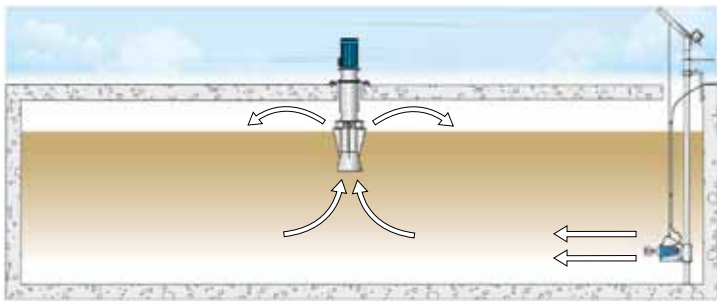


### Configuration Options at Low Water Level



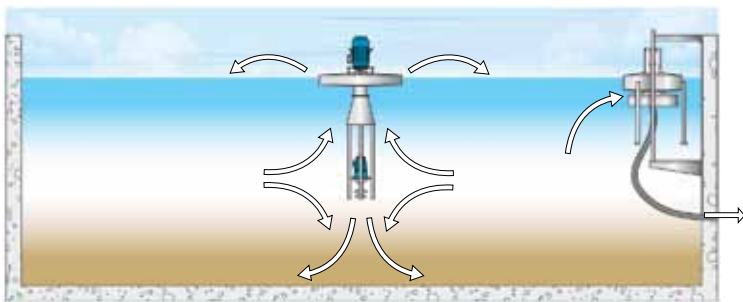
# AQUA TURBO® + AQUA DECANT® Combination Systems

## AER-FES + MIX-SL [Fixed]



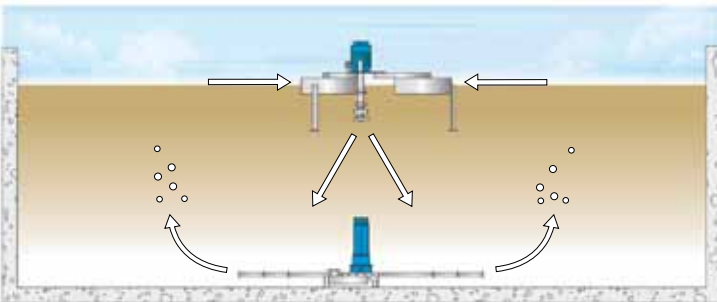
**AER-FES** and **MIX-SL [fixed]** are ideal for low and high loadings in tanks with fixed water level or minimal variation. For low loadings **AER-FES** and **MIX-SL** can operate alternately to save energy. For high loadings and high MLSS **MIX-SL** maintains complete mix to ensure solids remain in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

## AER-AS/MIX-SL + AQUA DECANT®



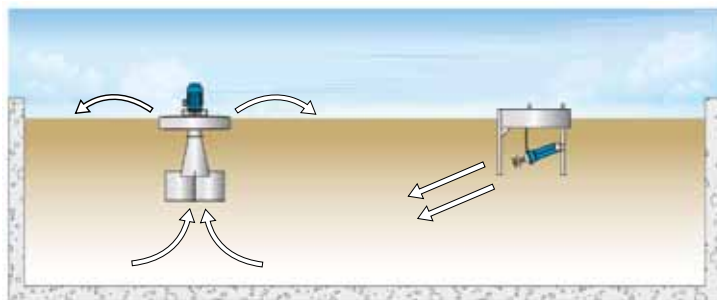
**AER-AS/MIX-SL** and **AQUA DECANT®** is the most common and simple SBR configuration with the **MIX-SL** mounted beneath the **AER-AS**. This improves aeration efficiency, eliminates mixer rails, aligns the axes to provide complimentary and improved mixing patterns, whilst reducing mixing energy.

## AER-SB/L + FRED



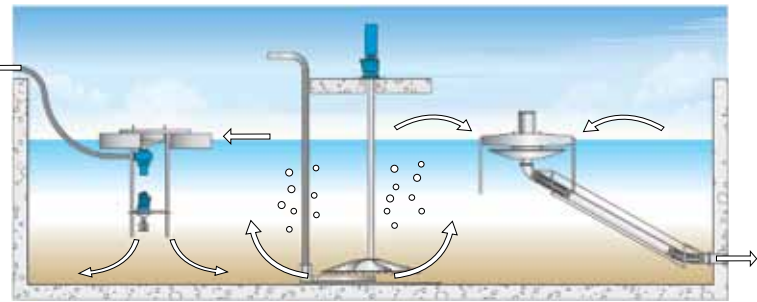
One application for **AER-SB/L** is processing of animal waste because as a bottom aerator, with intensive mixing, it has exceptional ability to keep high solids concentrations in suspension. The waste type creates high foam levels, which **FRED** re-entrains whilst complementing the mixing action of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

## AER-AS + AER-SL



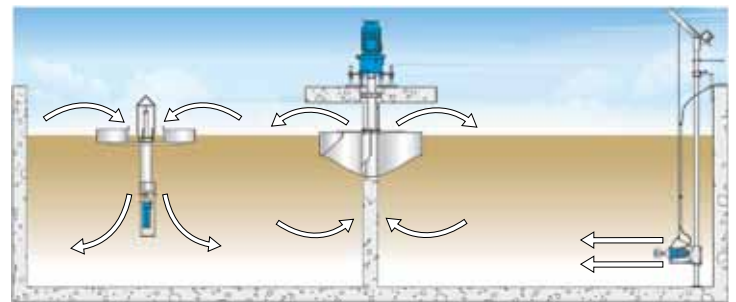
The **AER-AS** and **AER-SL [Floating]** combination is ideal for large lagoon systems with relatively low loadings and/or seasonal load fluctuations. As a directional aerator **AER-SL** provides horizontal velocity to assist oxygen dispersion and also flow generation to prevent quiescent zones.

## AER-GS + FRMD + AQUA DECANT®



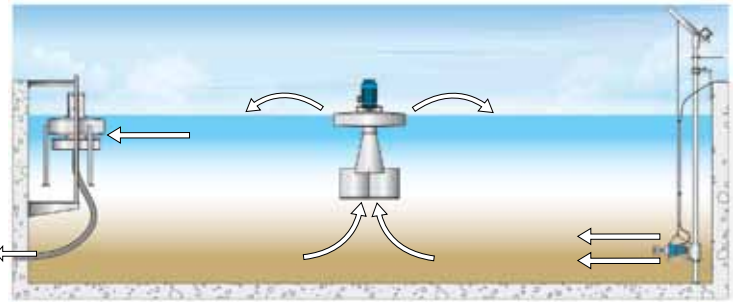
**AER-GS** is ideal for SBR applications due to its infinite oxygen regulation with no reduction in mixing efficiency. **AQUA DECANT®** discharges clean water from under the water surface. **FRMD** removes any bulking sludge or floatables, which can build up on the surface of some SBR systems.

## AER-GD + MIX-SL + FB



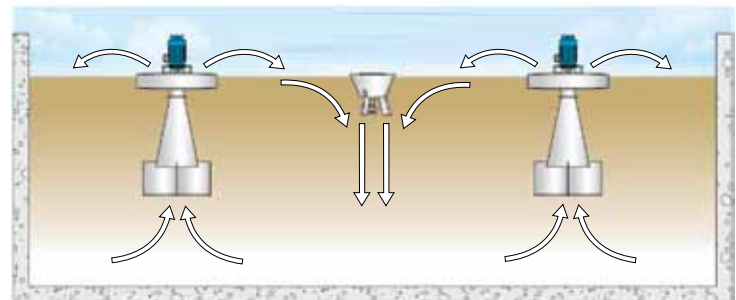
**AER-GD** is specifically suited to oxidation ditches due to its high oxygen transfer and because it produces circulation. **MIX-SL** units operate as both flow generators and mixers to maintain minimum floor velocity and mixing conditions. **FB** breaks and re-entrains foam, which can form on the surface.

## 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.

# AQUA TURBO® Floatables + Foam Processing

**FB**

Foam Breaker

SCREWPELLER® Technology



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

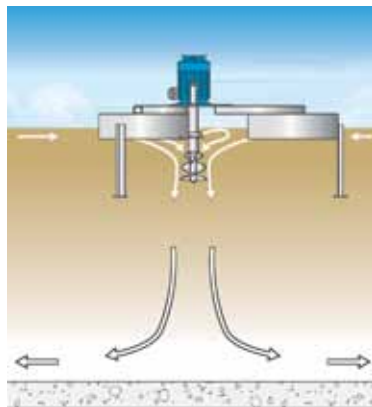
**Configurations**

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

**FRED**

Floatables Re-entrainment Device

SCREWPELLER® Technology



Radial aspiration and mixing draws surface foam towards 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-Pole Speed, direct drive
- 2 + 3 Float options
- AISI 304/316 or special SS

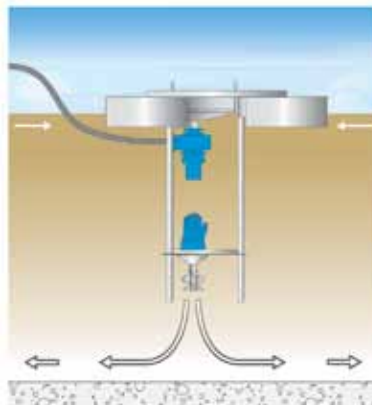
**Configurations**

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

**FRMD/MIX-SL**

Floatables Removal Device + Submerged Mixer

SCREWPELLER® Technology



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 + biogas
- SBR

**Features**

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

**Range**

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

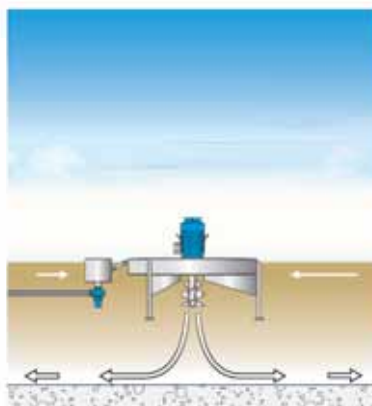
**Configurations**

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

**FRMD/MIX-AS**

Floatables Removal Device + Floating Downdraft Mixer

SCREWPELLER® Technology



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**

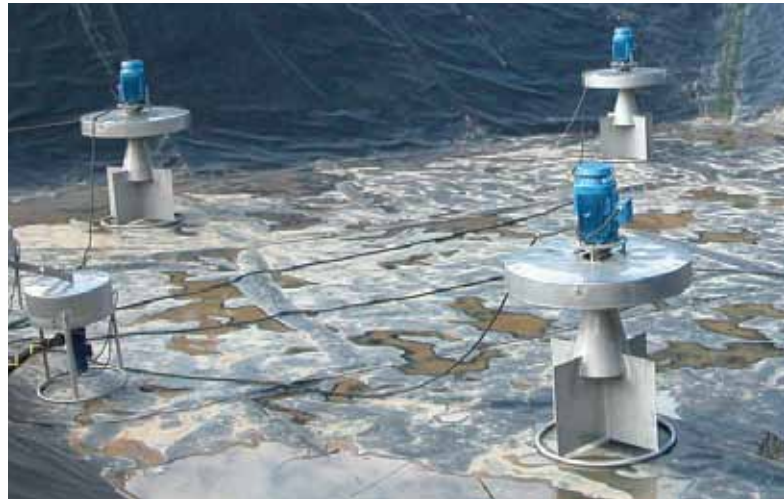
- Adjustable flow rate
- Purpose designed blockage free pump
- Reliable + non-clogging impeller
- Simple installation + removal

**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



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