**Aqua Turbo® Aerator/Mixers**

### 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 massive lagoons due to exceptional mixing and oxygen dispersion.

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

**Features**
- High oxygen transfer + dispersion
- Excellent mixing with low floe 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**
- Pontoon mount only
- Vertical operation only
- 1 x Surface drive
- Fixed or variable WL

### AER-F [ES]

**Fixed Surface Aerator [ES = Extended Shaft option]**

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 hole 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 hole 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 micro-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 + pontoon 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 only
- Vertical operation only
- 1 x Submerged 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 only
- Vertical operation only
- 1 x Surface drive
- Fixed or minimal WL variation

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**AER-SB [L]**

Fixed Bottom Aerator [L = Long channel option]

As a bottom mounted aerator and with intensive mixing action it is ideal for deep tanks, moderate to high solids concentrations and also re-suspension of settled solids. 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
- Fibrous, high abrasion + corrosion
- Also ideal for deep tanks + high MLSS

**Features**
- Intensive low energy to volume mixing
- Non-clogging design
- 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**
- Fixed floor-mount only
- Vertical operation only
- 1 x Submerged drive
- Fixed or variable WL - Max 10m

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**AER-AS/MIX-SL**

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

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**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 directly 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 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 maximum 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 the maximum contact time with the liquor therefore allowing the greatest 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.
Aqua Turbo® Mixers

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-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 + O₂ transfer
Simple installation + removal

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

Configurations
Pontoon 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 an explosion proof motor encapsulated in the float, allowing location within the spray of adjacent aerators without damage. Ideal for high foaming, high corrosion, gaseous high flammability applications 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 + O₂ transfer
Simple installation + removal

Range
1.1 - 30kW
4 + 6-Pole Speeds, direct drive
VEM motor - Explosion proof
AISI 304/316 or other SS

Configurations
Pontoon 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 EMOD motor
Robust + compact design - low vibration
Simple installation + removal

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

Configurations
Rail, floor, pontoon 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 + floor-mount only
Vertical operation only
1 x Submerged or surface drive
Fixed or variable WL
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 150 m³/h
- Rectangular - 150 to 3,000 m³/h
- Custom manufacture

**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
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.

FRMD

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 while the MIX-SL is fixed below minimum water level.

Aqua Decant®

AER-GD + MIX-SL + FB

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

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.

MIX-SL

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 FOG levels, which FRED re-entains whilst complimenting the mixing action of AER-SB/L.

AER-SL

AER-AS + AER-SL [Floating]

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 as well as flow generation to prevent quiescent zones.

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.

MIX-SL

AER-FES

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 while the aerators are stopped for denitrification or during seasonal and reduced loadings conditions.
Aqua Turbo® Floatables + Foam Processing

**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 sucked 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 FOG treating biological reactors
- High foaming influent
- Thermophilic reactors
- Biological treatment of animal waste

**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

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

**FRED**  
**Floatables Re-entainment Device**

Radial mixing draws surface FOG 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**
- High FOG + scum conditions
- Viscous + sludge bulking problems
- Grease trap upstream of biological reactor
- SBR

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

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

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

Radial mixing in conjunction with surface flow generated by the submersible pump draws FOG towards the basin centre. A special adjustable scum weir allows a laminar layer of FOG 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 FOG
- Sludge stabilisation + biogas
- SBR

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

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

**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 pontoon connected to the mixer via a self-leveling linkage.

**Applications**
- Removal of bulking + old sludge
- Removal + reuse of FOG
- Sludge stabilisation + biogas
- SBR

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

**Features**
- Adjustable flow rate
- Purpose designed blockage free pump
- Reliable + non-clogging impeller
- Simple installation + removal
European Manufactured Technology - Simple, Robust + Proven

Aquasystems Australasia Limited, New Zealand

Company Profile

Aquasystems Australasia Limited is a registered company incorporated in New Zealand. It is a representative for Belgium based Aquasystems International N.V. product lines covering various Australasian territories. Aquasystems Australasia Limited is totally independent of Aquasystems International N.V. with no commonality of shareholding, directorship or management.

All technical staff employed by Aquasystems Australasia Limited have completed product and application training at the Belgium factory in areas of product selection, sizing, assembly, installation, operation, commissioning, servicing and trouble-shooting.

To ensure local support and after sales service, Aquasystems Australasia Limited also has sales offices in Melbourne and Sydney.

Aquasystems Australasia Limited has successful installations throughout New Zealand and Australia covering a wide variety of industrial and municipal applications.

Aquasystems Australasia Limited is proud to have represented Aquasystems International N.V. since 2003 and looks forward to representing their interests in this part of the world for many years to come.

Aquasystems International N.V., Belgium

Principal Profile

Aquasystems International N.V. is a registered company incorporated in Belgium. It 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 with manufacturing plants at Halle and also Springdale, Arkansas, USA.

The company operates branch offices in the UK, Germany and France and supports a network of international agents and representatives in all major markets.

Founded by Mr. Johny Haegeman in 1975, 2010 marks a milestone for Aquasystems International N.V. celebrating 35-years of innovation and international success. The flagship Aqua Turbo® Model AER-AS Surface Aerator, with its worldwide patented Screwpeller® technology, commenced manufacture 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.