We have been designing, manufacturing and installing AquaSTAR™ surface aerators for 37 years (since 1993!)

- **Superior Oxygen Transfer**
- Reliable Performance (More Than 700 Installations)
- **Robust Operation (More Than 25 Years in Service)**

Description

Activated Sludge Aeration

Aquatec Maxcon is one of Australasia's leading suppliers of aeration equipment with 50 years of experience in the treatment of wastewater. We have manufactured more than 700 vertical shaft surface aerators giving us an unequalled installation list. Our firm utilises this unique base to deliver unrivalled experience in the design and manufacture of vertical shaft aerators suited to a wide range of applications.

The AquaSTAR™ is the culmination of a three year research and development effort, decades of field experience and ongoing development resulting in it being optimised for Australasian conditions. Modern computer-aided design has been employed to reduce the power consumption of the AquaSTAR™ while increasing oxygen transfer. Particular attention has been devoted to making the AquaStar effective and highly efficient over a wide range of power intensities. It is suitable for high rate processes as well as low rate applications. All installations are field tested, providing our firm with unrivalled data and experience on transfer efficiencies in climates ranging from the tropics to alpine climates.

Our in-house manufacturing capability has ensured the design is optimised to deliver reliable long term performance. Sophisticated strain gauge testing has been employed to ensure that the AquaSTAR™ delivers robust long term performance despite arduous field conditions. Many installations have remained in service for well over 25 years.

If an aerator operates for 12 hours per day, 4380 hours per year, it will have operated for 109,000 hours over 25

years! Aquatec Maxcon has an AquaSTAR™ operational service history of 10s of millions of hours with our hundreds of installations of AquaSTAR™ surface aerators. We have been designing, manufacturing and installing AquaSTAR™ surface aerators for 37 years (since 1993!).

Design

Design Advantages

The AquaSTAR™ vertical shaft surface aerator is available in a fixed bridge or floating configuration. Both configurations provide suitable access for maintenance and inspection. The floating configuration has a wide footprint and a low centre of gravity ensuring a stable and safe work platform capable of safely carrying all operational and service loads. We have verification and validation results from Oxygen transfer testing conducted on many sites which shows we can guarantee SOTR rates often in excess of 1.6 kg / O_2 / kW h in standard conditions.

Design Advantages

- AquaSTAR™ impeller has a unique patented design to optimise mixing rates and deliver superior oxygen transfer efficiency.
- Suitable for applications ranging from high power and high aeration intensity to low power intensity applications such as lagoons.
- The folded impeller blade profile prevents ragging or fouling, even when used with unscreened wastewater
- Tip speeds of the impeller are less than 7m/s inhibiting shearing of fragile activated

sludge flocs.
- Reliable with minimal maintenance and low long term operation costs

Key Characteristics

Design Features

The design of the AquaSTAR™ impeller has been optimised to deliver not only superior oxygen transfer efficiency, but also the widest turndown range. Oxygen transfer can be reduced to 60% of the design maximum by simply varying the impeller immersion. This can be achieved without adversely impacting the oxygen transfer performance. Adequate mixing is able to be maintained at the lowest impeller operating levels. The impeller performance is also speed sensitive, enabling the use of variable frequency controllers to vary the oxygen transfer for fixed liquid level applications. This also enables the oxygen transfer turndown of variable liquid level installations to be further increased.

The AquaSTAR™ can be fabricated in galvanised or epoxy coated mild or stainless steel to suit the requirements of individual installations. The folded impeller has been designed to minimise welding and hence residual stress to ensure maximum life expectancy. It has eight blades to minimise pulsation, each with an upswept lower section, welded to a central shaft on the underside of the spray deflector disc. The impeller is non-ragging, even when operated in fluid containing fibrous material including unscreened sewage.

Floating surface aerators are subject to substantial dynamic forces which can lead to metal fatigue. Through our extensive research and development programme including extensive strain gauge testing, the AquaSTAR™’s superior design ensures lasting reliability.

The AquaSTAR™’s design characteristics include:

- Even distribution of loads and stresses,
- Connections designed to take full advantage of structural strength of members,
- Optimised weld details to avoid stress concentrations,
- Allows for simple, convenient site assembly and routine maintenance, and
- Carefully selected gearboxes to suit forces generated by the AquaSTAR™.

Additional AquaSTAR™ Options

- Half or full-maintenance platform around the drive assembly
- Adjustable impeller depth for oxygen transfer turn down
- Variable speed for oxygen transfer turndown
- Guide posts and motion dampeners for floating aerators
- Mist deflectors for reducing spray and aerosols
- Guide vanes to provide stable operation i.e. no vortexing in shallow lagoons

- Foam-filled pontoons to prevent ingress of water in the event of rupture

Technical

Materials of Construction

Generic Dimensions

Model Number Index

Operational materials and equipment include:

Floats

- Hot dip galvanised structural steel with or without
- painting
- 316 Stainless Steel
- High density or medium density polyethylene (HDPE/MDPE)
- Fibreglass

Impellers

- Hot dip galvanised structural steel with or without
- painting
- 316 Stainless Steel

Tethering

- Non-floating fixed bridge mounting
- Floating with guy wire tethers and mooring posts
- Floating with tank wall or column mounted hinged access bridge(s)
- Floating with mooring posts fixed to the tank floor and rollers mounted on the floating frame

Ancillary Equipment

- Guide vanes for use in shallow operations or round tanks
- Draft tubes for use in deep operations
- Mist shrouds / splash guards
- Maintenance platforms

We offer a range of aerators: 5.5, 15, 30, 45, 75 and 90 kW. We also do those in between sizes to fit the clients specific bioreactor mixing and Oxygen Transfer needs.

Key Installations

Tumut STP
22kW Aquastars

Cowra STP
30/18.5kW Aquastars

Dora Creek STP
45kW Aquastars

Services

Aquatec Maxcon has 50 years of experience in treating water and wastewater for both municipal and industrial applications. A leader of the water industry, Aquatec Maxcon has introduced a range of innovative process technologies to Australia including the first UASB, IC Reactor, Membrane Bioreactor and Circox Reactor. We have a successful track record in introducing new technologies and have diligently supported their implementation within Australian conditions.

Aquatec Maxcon Pty Ltd is part of the Aquatec Maxcon Group which provides a complete vertically integrated range of in-house services including:

- Design and construction;
- Project management, commissioning and operation;
- Installation and maintenance;
- Steel fabrication, sand blasting and painting;
- Machine and plant automation, system integration, electronic repairs and servicing and SCADA configuration.

Applications

- Treatment of raw sewage
- Activated sludge systems
- Intermittent aeration systems
- Oxidation ditches
- Industrial wastewater
- Chemical oxidation
- Gas stripping

- Open water aeration
- Fish farms
- Aerobic Digestors

Aquatec Maxcon has established and maintains a dedicated service department for scheduled maintainence and breakdown services.

Services Home Page