- ***High Oxygen Transfer Efficiency***
- ***Intermittent Aeration Application***
- ***Bio-fouling Resistant Platinum Cured Silicon Membrane***

Description

Aquablade Blue

The AquaBlade Blue diffuser is the only entirely Australian manufactured membrane diffuser on the market. It has been proudly developed by Aquatec Maxcon. The AquaBlade Blue diffuser is in the form of a long curved blade rather than a disc or cylinder typical of other membrane diffusers. This unique profile allows the diffuser to achieve greater floor coverage at lower system cost with superior oxygen transfer.

The AquaBlade Blue diffuser has been extensively tested prior to market release. These tests included oxygen transfer rate, corrosion resistance, air pressure and mechanical property testing of all components and whole assemblies. The Aquatec Maxcon diffuser test facility is located at Ipswich. This test facility is dedicated to full scale testing of air diffusers and allows Aquatec Maxcon to confidently design, predict and prove diffuser performance for almost any application. Aquatec Maxcon can now test to 9m water depth.

The AquaBlade Blue consists of a silicon membrane with high elasticity which guarantees the fine slits close when airflow is stopped, even after extended periods of operation. The membrane is also resistant to shrinkage, has a high resistance to tearing and has superior ageing characteristics.

Aquablade L

The AquaBlade L diffuser is an **evolutionary development** of our AquaBlade diffusers, continuing our ongoing programme which commenced more than 20 years ago.

AquaBlade L Benefits:

- Very high oxygen transfer efficiency and low head loss. The unique design has been proven to offer excellent, near constant efficiency over the entire operating range. This reduces the required air flow range compared to other diffuser designs which typically have decreasing efficiency at increasing flow, resulting in even greater air flow requirements.

- The AquaBlade L uses our long term proven silicone rubber membrane technology which has been demonstrated to outperform EPDM and other typical membrane materials. A polyurethane membrane is also available. It shares proven pultruded GRP technology for the diffuser base.

- The AquaBlade L diffuser is typically ?6m long with air supplied from one end. It reduces the number of pipes required, meaning fewer components to handle and less potential points of failure.

- Fed from one end of the diffuser in lieu of the centre, AquaBlade L can be coupled in series for even less piping, further reducing costs, enabling essentially a continuous 12m strip diffuser.

- The top surface has no obstructions which might retain grit or other materials and it self cleans on inflation unlike designs with retaining rings or raised edges. The result is a longer design life due to reduced membrane abrasion.

- Our innovative mounting plate enables the installation or removal of the mount in the desired location where others have to slide along the full length of the installation.

- The unique pultruded GRP base is very strong, enabling a 6m diffuser to require only two supports (4 anchors or bolts) per diffuser, so less time is required for on-site installation, reducing the overall cost of the diffusers.

- There are two installation options. The more economical installation where the diffusers are fixed to the floor and the more flexible option where the diffusers are able to be mounted on ballasted portable frames for removable installations.

- Aquablade L diffusers have a very robust base section which can easily withstand personnel and handling loads while being light enough to be lifted by a single person.

- The diffuser inlet incorporates an integral check valve to prevent backflow in the unlikely event of membrane rupture.

- An automated moisture bleed is provided to allow any accumulated moisture to be removed without operator intervention, thereby reducing labour costs.

- There are no metal components internal to the diffuser, so chemical cleaning is readily achieved.

- The AquaBlade L offers cost reduction by eliminating most associated pipework and the

associated supports.

- Every AquaBlade L diffuser is subject to rigorous quality assurance and tank tested to confirm no leaks are present and the bubble pattern and headloss is within normal range before delivery.

DIFFUSERS IN OPERATION

Design

Design Advantages

- Optimum oxygen transfer efficiency and a lower back pressure with a wide range of airflows. Turn down of 10:1 is achievable. It provides significant cost saving on power consumption compared with other similar diffuser products on the market.
- The specially formulated elastomeric membrane ensures good elastic qualities and long membrane life with high tear strength. Fouling resistance is demonstrably improved.
- The carefully researched slitting profile produces an even, fine bubble pattern over the entire area of the diffuser without bubble convergence.
- Fully factory assembled and individually tested.

Technical

Performance Characteristics

A high transfer rate of oxygen is produced through the optimised profile of the slits and the slitting pattern. When airflow to the diffuser is stopped, these slits tightly close to prevent backflow of mixed liquor.

- The diffuser membrane will not shrink even after years of operation. The special high quality elastomeric material also provides a high resistance to the formation of biofilms especially when compared to other reputable membrane manufacturers.
- Excellent flow versus back pressure characteristics allowing reduced power consumption.
- Typical airflows range from 3 Nm /h.m to 18Nm /h.m with a maximum of 30 Nm /h.m for both fine and coarse pore membranes (see Diffuser Pressure Loss Curve).
- Ease of installation with a fast pipe locking system is incorporated into the design of the AquaBlade Blue diffuser.
- The header pipe requires only one 37mm hole drilled per AquaBlade Blue diffuser. It can then be directly installed without the need for welding or other labour intensive installation activities as with most other diffuser types.
- A retrofit kit has been designed in conjunction with the AquaBlade Blue diffuser to allow each diffuser to be fitted to a range of header pipe networks already installed and in operation with other diffuser types. This enables existing diffusers currently in operation to be replaced at the end of their effective life by AquaBlade Blue diffusers.
- AquaBlade Blue diffuser can be provided and installed on a “fixed to the floor” or “removable” pipework system. The removable system enables a grid of diffusers to be lifted out of service while the remainder of the aeration tank is operating. No drainage of the tank is required and disruption to the process is therefore minimised.

Key Advantages

Key Characteristics

- The membrane has been subjected to an intermittent aeration test where the membrane endured more than 750,000 cycles of aeration, then non-aeration cycles. This test was conducted over a period of six months. The result showed minimal permanent creep when compared to the original membrane.
- The diffuser body is manufactured from a pultruded GRP plate with a curved profile for optimum strength. The body material provides the corrosion resistance necessary for

harsh environments including high H2S levels.

- The curved profile reduces the build up of biosolids on the diffuser body when the airflow is interrupted. This reduces bio fouling which can occur on flat diffusers.
- The diffuser support block is used to mount the diffuser to either a DN100 or DN150 dia pipe or either 100 or 80 SHS. The design of the block incorporates a second back flow prevention mechanism to protect the integrity of the system against the ingress of water.
- The AquaBlade is available in 0.9m, 1.5m, 1.75m or 2.0m lengths. Other custom lengths are available on request.
- The number of AquaBlade Blue diffusers required is only 1/5 to 1/3 of conventional disc diffusers.
- The pipework required for installation of an AquaBlade Blue diffuser is only 1/3 of that for a conventional installation.

Aerobic Digester during Bubble Testing at Thabeban WWTP

Key Installations

Kingaroy WWTP

Oxley Creek STP

Chinchilla STP

Altona STP

Ballina WWTP

Services

Aquatec Maxcon has over 47 years' 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.

Specifically regarding the AquaBlade Blue, we can offer:

- Test tank facility at Ipswich, QLD to validate SOTR design at operational conditions
- On site oxygen transfer testing
- Ongoing service and maintenance

Applications

- Activated sludge systems
- Intermitten aeration
- Oxidation ditches
- Aerobic sludge digestion
- Aquaculture
- Most industrial biological treatment sytems

For non standard duties, membranes are available in other materials including EPDM, nitrile and polyurethane.

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

Services Home Page