

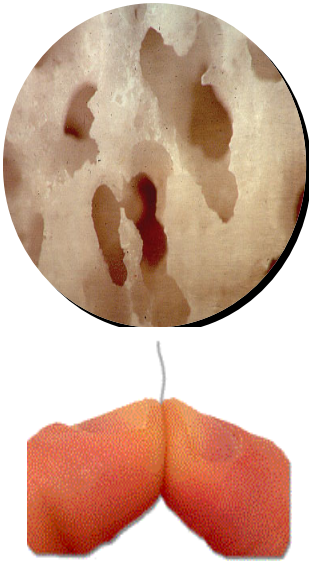
AquaMats®

PROCESS

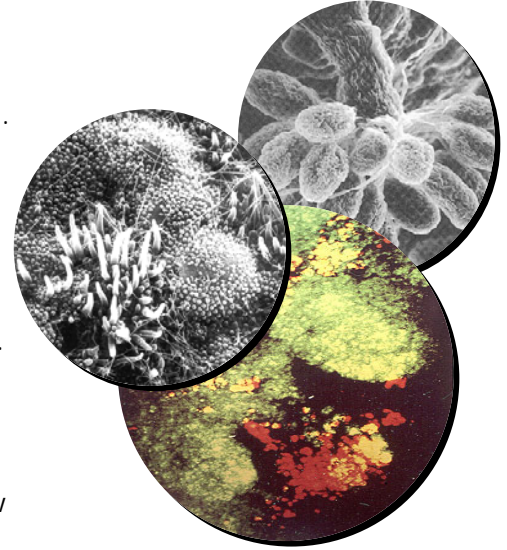
Advanced Ammonia Removal... *By Design.*

In the Lab... *Precision Engineering.*

[below left] 400X photo showing micropore structure of a SINGLE FIBER from an AquaMat... Each AquaMat has millions.



AquaMats® provide a 3D high surface area matrix consisting of fibers and open pore size areas to meet the complex set of conditions required to sustain colonies of nitrifying bacteria. This is vital because most ammonia removal/conversion below a pH of 9.5 is accomplished by colonies of microbes, particularly bacteria of the genus *Nitrosomonas* and *Nitrospira*. Without suitable surface area, naturally occurring communities of nitrifiers are generally flushed through the treatment system. The AquaMats® Process provides vast amounts of surface area in the 1-10 micron pore size range which bacteria require. As a result, high-rate nitrification is consistently achieved in a very wide range of temperature (including below ice cover) and load conditions.



[above right] 10,000X photos showing the complex bacterial communities that inhabit the precision-engineered AquaMats®.

In the Field... *Rapid Deployment.*

AquaMats® are assembled into bio-arrays that combine the necessary surface area with oxygen and circulation patterns to achieve the treatment objectives. AquaMats® upgrades install in months, not years.

[far left] Underwater view of AquaMats®. [below left] Typical AquaMats® bio-array.



Weeks 1-3



Weeks 4-6



Weeks 7-9



Weeks 10-12

[above] 12 week timelapse of AquaMats® colonization

In the End... *Guaranteed Performance.*

Nine times out of ten, existing treatment systems do a poor job of ammonia removal because they are surface area limited. This is especially so for lagoons, where the available area is naturally concentrated on side slopes and the lagoon bottom. Sludge accumulations often further limit the effectiveness of existing lagoon surfaces for ammonia removal. The predictable consequence is low rates of nitrification except in ideal summertime conditions.

Typical AquaMats® upgrades solve this problem by increasing the available surface area for nitrification by a factor of 50 times or more over pre-upgrade conditions. Performance is further enhanced because AquaMats® are vertically suspended in the water to maximize hydraulic contact time and to minimize any surface fouling.

Lagoons have been underdesigned for nearly 50 years but with AquaMats® Process, that's a thing of the past...

Typical Facultative Lagoon Effluent	AquaMats® Process High Performance Lagoon
<ul style="list-style-type: none"> BOD₅ of 25-35 mg/L TSS of 25-35 mg/L NH₃ of 10-12 mg/L TP of 4-5 mg/L 	<ul style="list-style-type: none"> BOD₅ of 10 mg/L TSS of 10-20 mg/L NH₃ of < 1 mg/L TP of 1-2.5 mg/L

When fully installed, AquaMats® Process will guarantee results. In most cases, it achieves 90+% removal with low operating costs, built-in scalability and sludge hauling once every 10 to 25 years.

As the chart above illustrates, in addition to outstanding ammonia removal, an AquaMats® Process installation will also improve treatment efficiency in all common measurement parameters including BOD, TSS, TKN, TP and control of pathogens such as E. coli and Fecal coliform.

We deliver results for customers with complete and fully operational AquaMats® Process installations within months--not years--we back our engineering solutions with guarantees, where appropriate, and, we provide a full five year warranty on AquaMats® products.

AquaMats® Process is already fully permitted in many States and is readily accepted by regulators and design engineers.

With AquaMats® Process the benefits keep on coming.

There is virtually no maintenance or operating cost burdens to AquaMats® once they have been installed for ammonia removal. The engineering of the surfaces discourage excess biofilm development. With AquaMats® microbes do the work naturally.



[above right] Actual final effluent discharge from Laurelville, Ohio WWTP... AquaMats® Process means results.

For more information and case studies, please contact
Meridian Aquatic Technology, LLC (AquaMats®) at (301) 937-1240.

Copyright © 2003 Meridian Aquatic Technology, LLC. All Rights Reserved.
Prices and availability subject to change without notice.

AquaMats® are manufactured under US Patent No.'s 6,060,153, 6,171,686, 6,230,654, 6,244,218 & Patents Pending Worldwide.