

BioGill – Our Story



A breakthrough technology in the biological treatment of water



KA FORBES 
Friend for life

The Science behind BioGills

- Microorganisms are nature's premium decomposers and recyclers that grow and consume best in a high nutrient, high oxygen environment.
- BioGill technology delivers this perfect environment
- The Nano-particulate structure of BioGill membranes allows microorganisms to easily colonise the vertical membrane and grow into a dense vibrant biomass.
- The vertical nature of the membranes allows for compact bioreactors that delivers a large membrane area with a high volume treatment capacity.



Ground-Breaking Technology



BioGills are an enclosed biological factory that acts as both “stomach” & “lung” in the cleaning of water.

Patented Nano-Ceramic Membranes™ provide the **perfect** air (high oxygen TRANSFER) & liquid (high nutrient) interface.

Each BioGill delivers a treating biomass 5 to 15 times that of competing biological wastewater treatment systems.

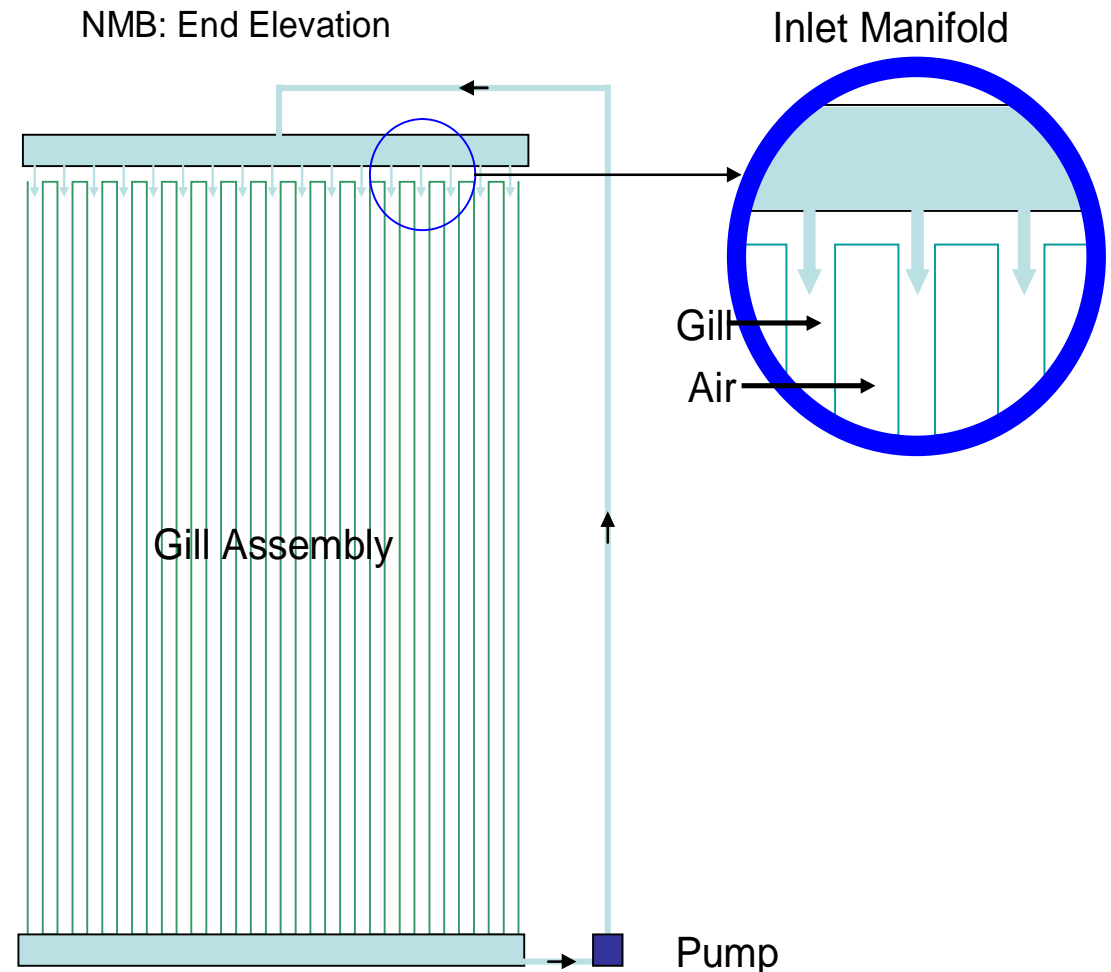


The result: *Accelerated treatment at low cost and low energy.*

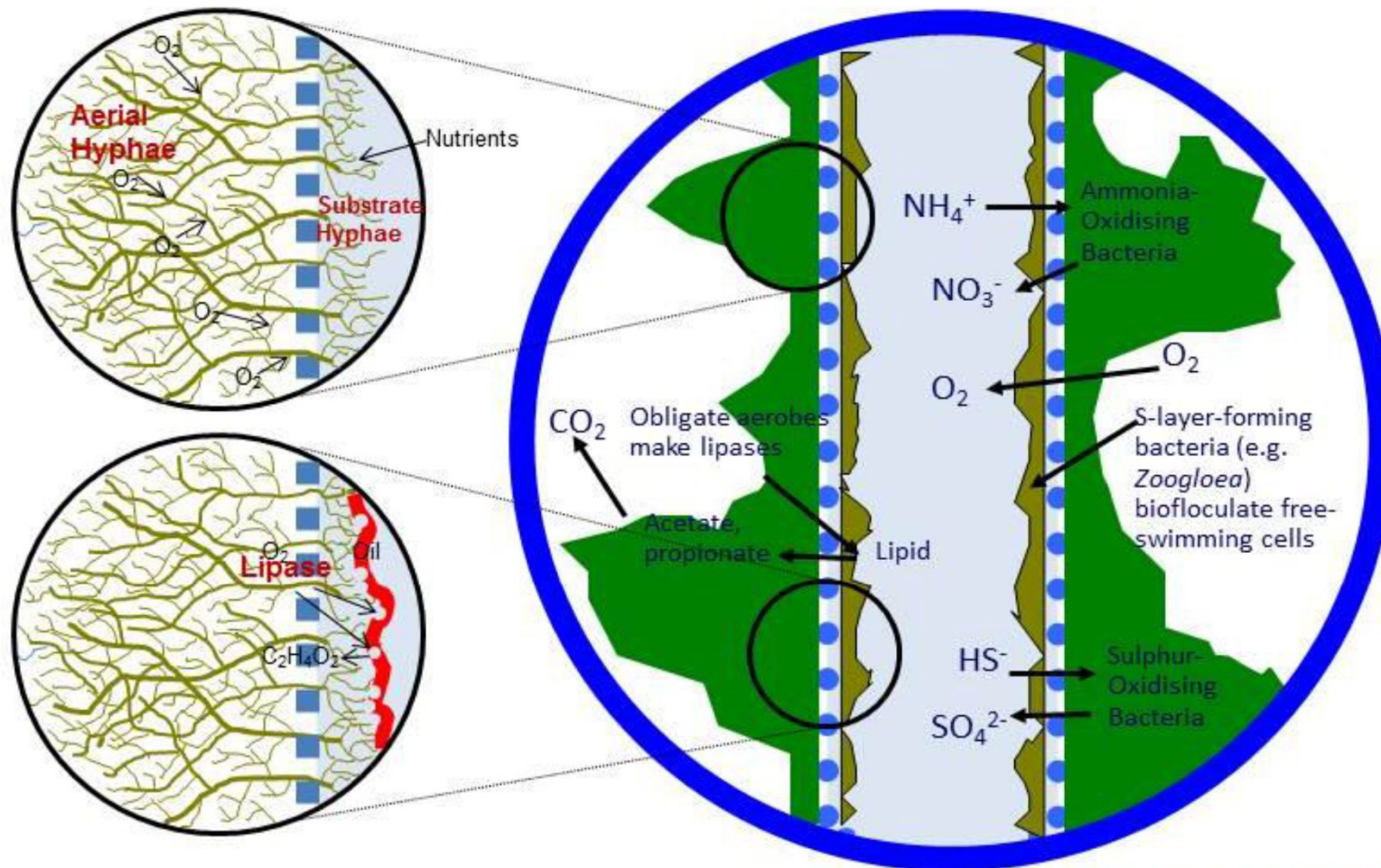
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How BioGills Work

- Nano-Ceramic Membranes (known as “gills”) are formed into a loop pair separated by a spacer to allow for airflow.
- These gills are then compacted vertically in a Treatment Core.
- Wastewater is dispersed over the gills and then gravity-fed through the core.
- Nutrients are quickly removed as wastewater contacts the biofilm on the gills.

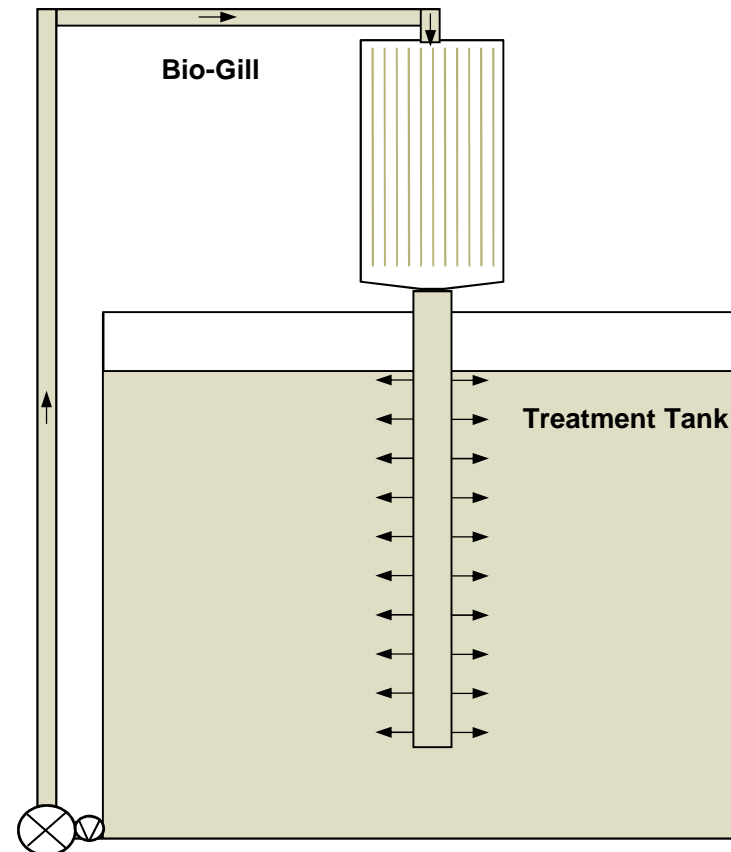


How BioGills work



Commercial Advantages

- Low operating costs
- Low energy consumption
- Long system life, reliable & durable membrane
- Low maintenance
- Simple to operate
- Cost effective to install
- Silent with reduced odour
- Self-optimising biology



BioGill - IP Protection



Application No.	Country
P 06 01 05050	Argentina
2005243606	Australia
2566841	Canada
200580020449.3	China
05739899.2	Europe
179311	Israel
04458/CHENP/06	India
2007-516879	Japan
2012-47931	Japan
2006-7026646	Republic of Korea
PA/a/06/013421	Mexico
551783	New Zealand
200607993-3	Singapore
11/569201	USA
2006/09979	Rep. South Africa



Working Parameters



Temperature:

Bacterial Biomass	20-35 °C
Fungal Biomass	15-25 °C
(Yeast is similar to Fungal Biomass)	
Mixed Biomass	20-30 °C

pH:

For BOD removal	6.5-8.0 (preferred is 7.0±0.5)
For Nitrogen removal	7.0-8.0

Low temperatures reduces BOD or nitrogen removal considerably.

Once BioGills start working they generate enough heat to raise the temperature of gills by 2-5 °C depending upon the metabolized carbon or nitrogen.

BioGill membranes can be seeded with selected organisms for selected contaminant removal like yeast for “phosphorus” removal.

Applications



SEGMENTS	VALUE PROPOSITIONS	RESULTS
INDUSTRIAL	Small footprint Low cost Performance	Over a 24-hour period, BOD can be reduced up to 92%.
SEWAGE	Small footprint Low cost High performance Low energy	Up to 96% BOD removal and up to 76% Nitrogen Removal.
AQUACULTURE	High performance Low Cost Low Energy	Removes waste nutrients including ammonia. Reduces water exchange, and improves water quality.

Design

We have taken this Australian-designed technology and re-designed it to create a product form of BioGill that is:

- **Modular**
- **Scalable**

The “smarts” of the BioGill is the “gill”. This can be loaded into any sized-system – from the smallest units (fish tank) right through to large industrial projects.



Manufacturing

BioGill controls the manufacturing of the “gills”.
(100,000M² can fit into a shipping container).

Australia: Membrane production, Design + Engineering

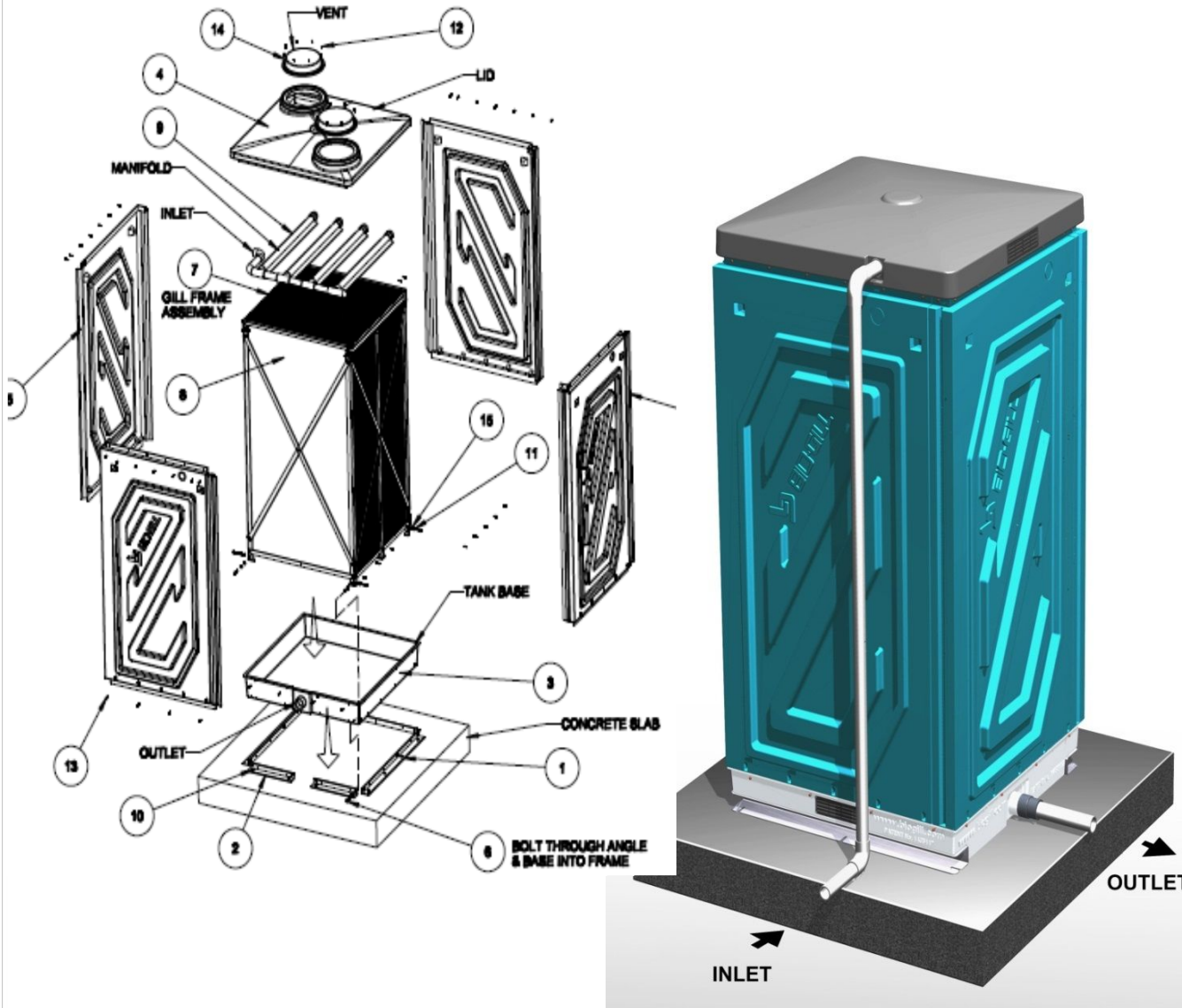
China: Plastic housing + Spacers

India: Stainless Steel Frames

Components can be delivered direct to site with assembly anywhere in the world.



Product

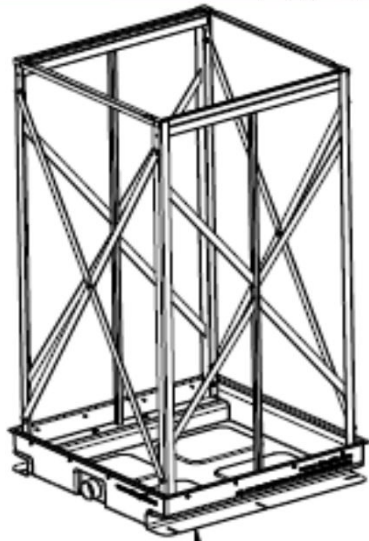


Designed & engineered for global distribution;

Low cost
component manufacturing
Compact shipping
Simple installation
Moving to complete plastic units to **reduce weight.**

Product

	1 x BioGill Housed	1 x BioGill, Un-housed	4 x 4 configuration = 16 un-housed for industrial site
Footprint	1150 mm* 1150mm	1060mm * 1060mm	4800mm * 4800mm
Membrane M ²	246m ²	246m ²	3936m ²
Height	2420 mm	2100	2100



BioGill ideally placed for future



Trends in wastewater treatment

Regulations driving onsite treatment for industry

Increase in demand for effective biological treatment

Low cost & low energy solutions for developing Asian countries

Government push to decentralise waste treatment

Upgrading of aging infrastructure in developed countries

Project Gallery



1 Australia - Industrial



2

Manila - Sewage



3 Fiji – Resort and Tourism



4

Vietnam Aquaculture

