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Breathes life back into water

Technology & Cases

Bio-Aire™ Technology

KEY PRINCIPALS

Making bubbles as small as possible with sound, oscillating airflow and fine bubble diffusers

Increasing the retention time of bubbles in the water by increasing travel time through the system using baffles

Increasing barometric pressure in the unit to improve oxygen transfer efficiency

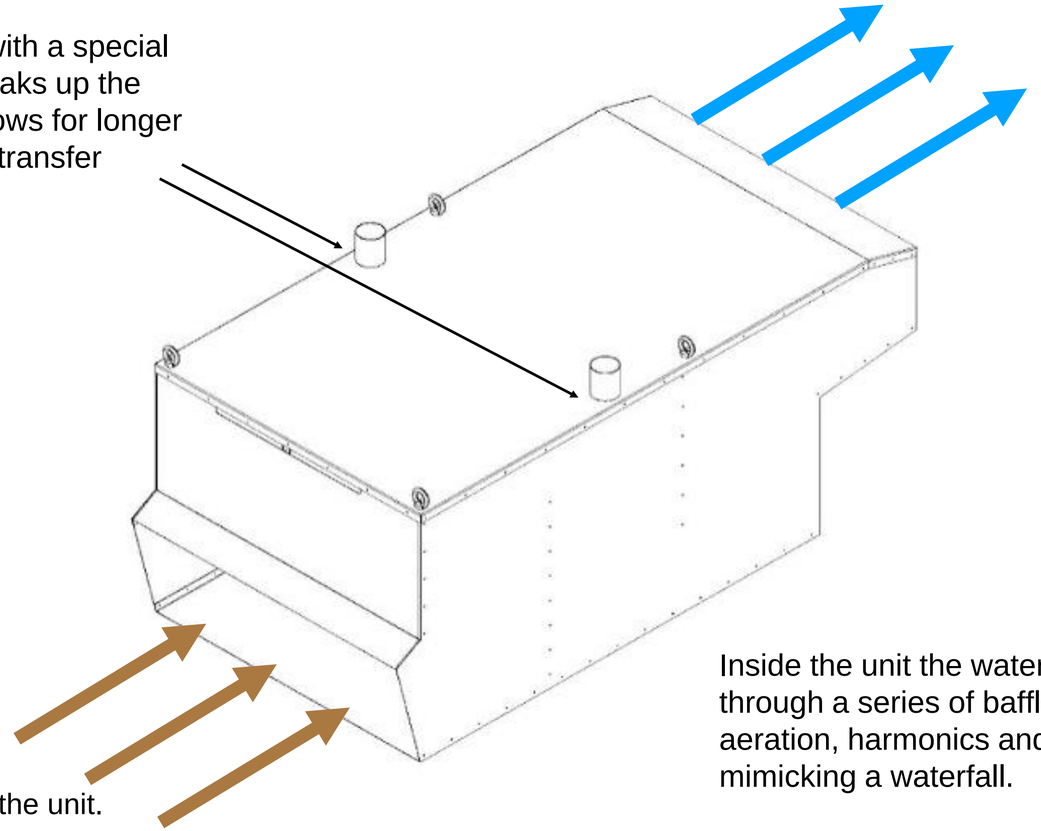
Fixed film Bio Carrier using BIOCHAR as the carrier, 1gram of BIOCHAR = 1000m2 of Area for bacterial growth – this will assist in nutrient removal

All this is achieved with minimal power consumption & maintenance and operation costs!

Proprietary technology

BIO-AIRE's patented design mimics a river’s natural aeration, moving and cleaning ability.

The air supply is oscillated with a special harmonic oscillator. This breaks up the bubbles in the water and allows for longer retention and better oxygen transfer efficiency.



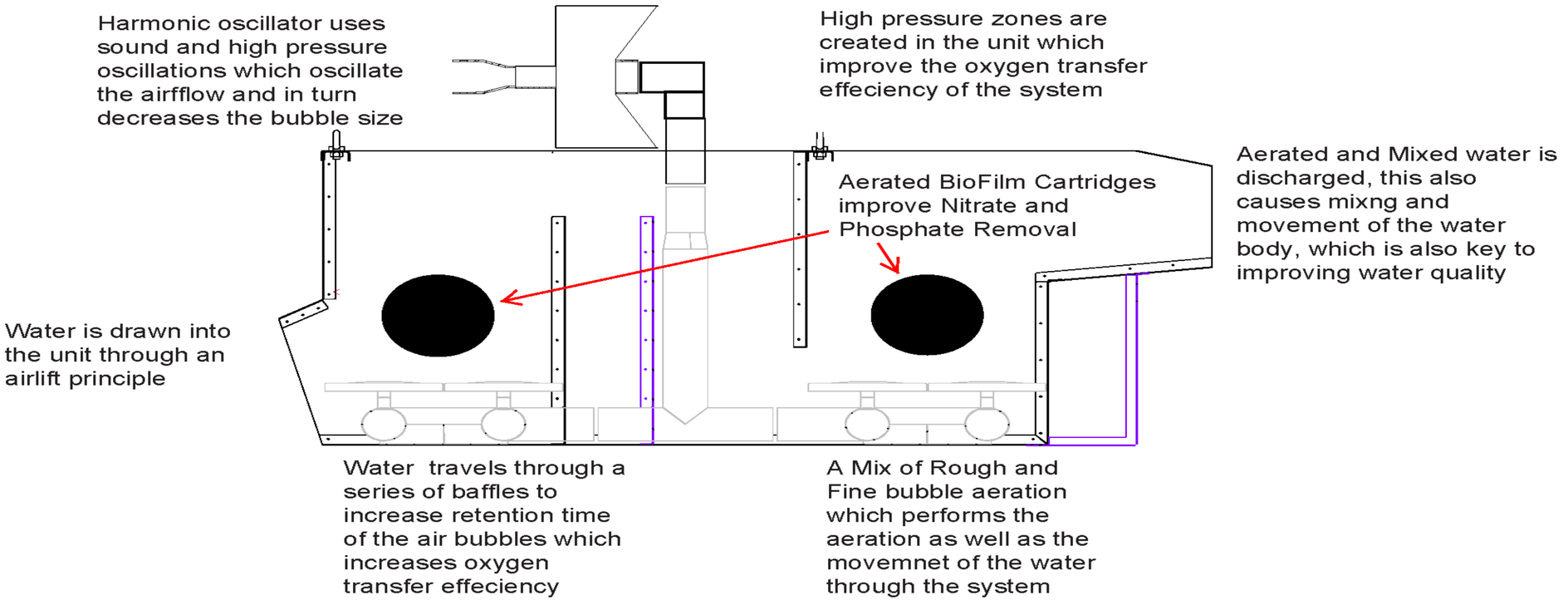
High volumes of aerated water are discharged and create flow similar to a river, which naturally enhances biological action to clean and treat the polluted water source.

Inside the unit the water is mixed and aerated through a series of baffles, fine bubble aeration, harmonics and high pressure, mimicking a waterfall.

Water is drawn into the unit.

Proprietary technology

BIO-AIRE's patented design mimics a river's natural aeration, moving and cleaning ability.



Technical Specifications

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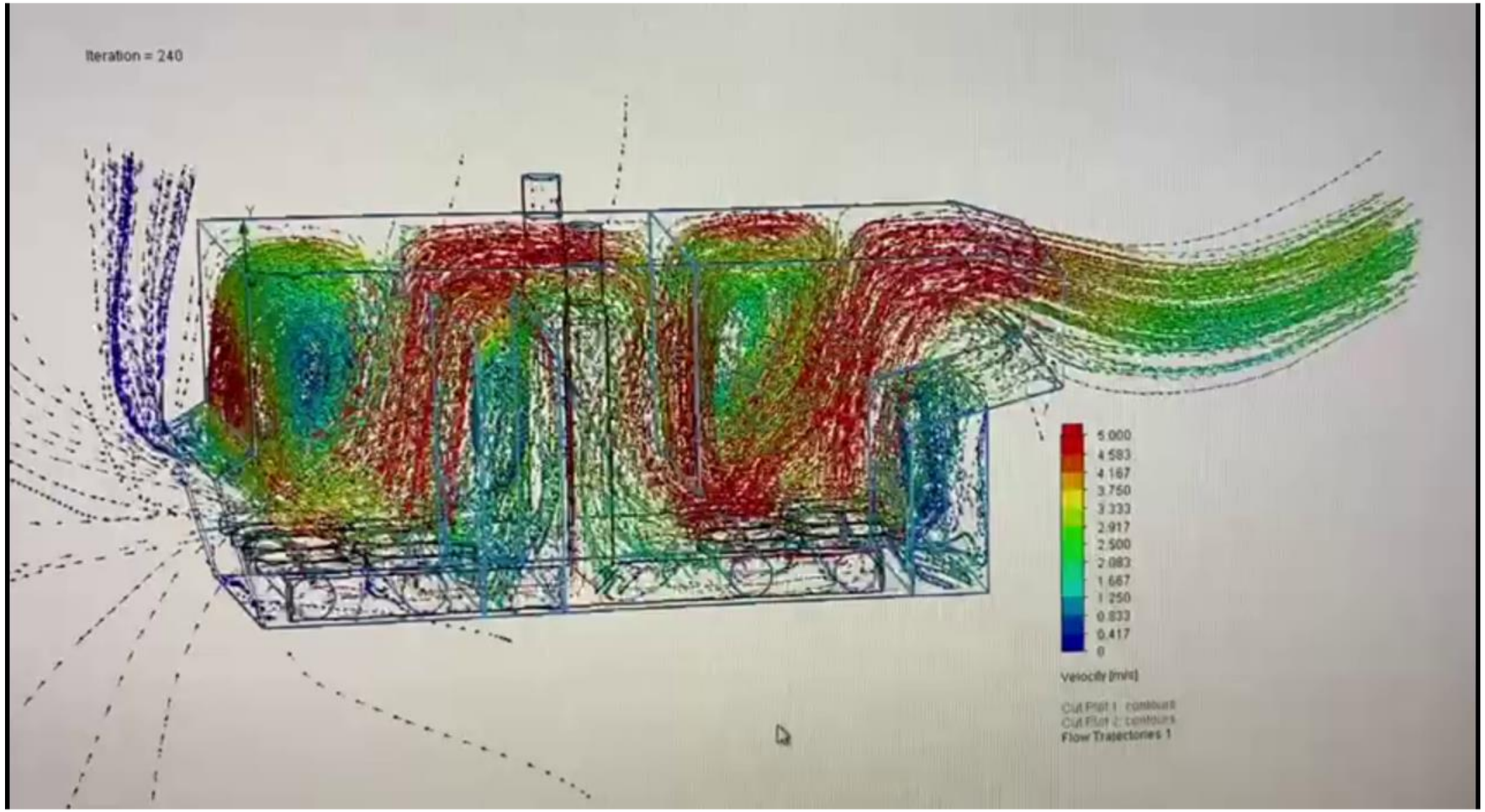

Flow = 4 to 3 m / s

Technical Specifications

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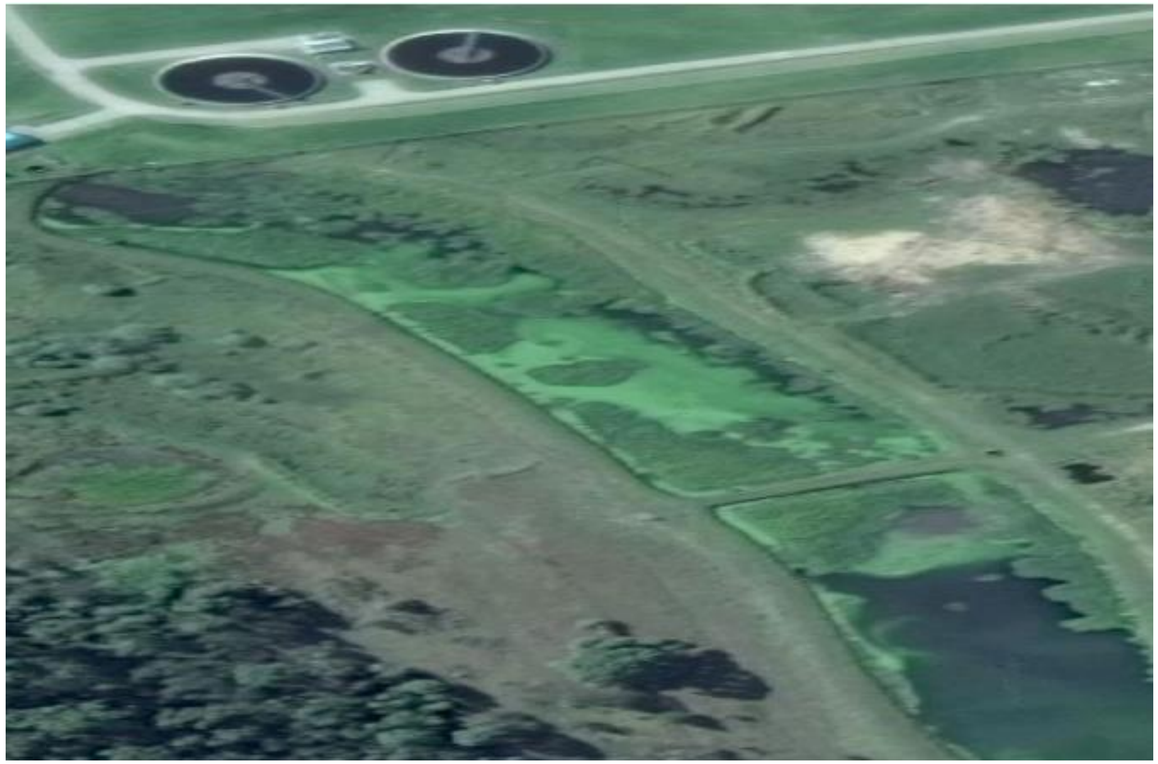
TECHNICAL DATA SHEET		DATE:		06 October 2020
		3kw	**6kw**	
POWER CONSUMPTION	*RATED*	3	6.0	KW
AIR SUPPLIED TO AERATOR		250	500	M3/HOUR
SOTR				
(OXYGEN TRANSFER RATE)				
KG OF O2 PER HOUR PER UNIT		13.74	27.47	KG/HOUR
KG OF O2 PER 24 HOUR CYCLE		329.66	659.31	KG / DAY
SAE				
(AERATION EFFECIENCY)-(kgO2/KWhour)				
SAE		4.58	4.58	KG02 / KW HOUR
MIXING EFFICIENCY				
LITRES OF WATER MIXED PER KW				
LITRES MOVED PER HOUR		950 400	1 425 600	LITRES / HOUR
LITRES/KW		316 800	237 600	LITRES / KWH

Bio-Aire™ Case Studies

Test Case Validation

Gwaing WWTW

Before



After

Gwaing WWTW

Ammonia -94%

16.6 mg/l

0.985 mg/l

Below the 6 mg/l discharge limit

Phosphates -81%

12.7 mg/l

2.41 mg/l

Below the 10 mg/l discharge limit

Suspended Solids -99%

152 mg/l

1 mg/l

Below the 25 mg/l discharge limit

Chemical Oxygen Demand -94%

293 mg/l

17 mg/l

Below the 75 mg/l discharge limit

Albertinia WWTW

Nitrates – down 80%

Before

After

Langebaan WWTW

Nitrates Down 80%

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Before

After

About us

Khubeka Construction is a Civil & Building Company established in June 2001. We specialise in construction of water retaining structures, sewage and water treatment works. During 2016 while constructing a waste treatment works, we saw a need for a cost effective and efficient water aeration system, from 2016 to 2019 we developed our unique water treatment system and in 2020 began commercialising and selling the units.

Bio Aire was borne out of seeing an inherent need to develop a water treatment system for the South African environment, although we designed our system for the harsh South African conditions it is also well suited for use worldwide.

Many of the current treatment systems are too complicated to operate, are power intensive and are prone to costly breakdowns and maintenance, which in most instances leads to water treatment systems not being used correctly or not being used at all.

Bio – Aire is unique in that it is cost effective, efficient, easy to operate and deploy and can be maintained and operatedat an 80% reduced cost versus similar systems.

We are currently a Level One BBBEE Contributor.

Mark Rennie
- Designer of Bio Aire
- Contracts Manager

Irwin Ross
- Water Retaining Structures, Wastewater Works Specialist
- Contracts Manager

Gareth Rennie
- Water Retaining Structures, Wastewater and Water Works Specialist
- Contracts Manager

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Thank You