Chatoyer Water

Innovative Water Solutions

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WELCOME TO CHATOYER WATER SOLUTIONS...

...ANYWHERE IN THE WORLD

Chatoyer Water Solutions is an Australia-based engineering and design group with current projects in Australasia, South-East Asia and Africa.

Chatoyer Water Solutions is committed and able to provide technical and service support anywhere in the world.

For further information, please visit **www.chatoyer.com.au**

NO SITE TOO REMOTE

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Chatoyer Water Solutions

proudly presents

THE TURBO BIO-REACTOR (TBR)
EFFECTIVE WASTE WATER TREATMENT

The TBR is designed to treat large volumes of waste water within a small system size offering a unique opportunity for clients in remote locations and/or with limited space.

Modular units provide for increases in capacity with minimal system interruption to existing plants.

CONVENTIONAL WWTP > > > > > > > > > > > TBR PACKAGED WWTP

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TABLE OF CONTENTS

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CHATOYER TBR: A VERY BRIEF SUMMARY OF KEY BENEFITS (WHAT)

Chatoyer's Turbo Bio Reactor provides clients with:

- A complete solution in waste water treatment
- Minimal footprint – Standard unit lengths in 20' and 40' container sizes
- Enhanced Biological process
- Effective for domestic, industrial and commercial sewerage
- Systems also provide options for reuse applications for irrigation or recycling
- Minimal sludge disposal requirements
- Can be easily relocated
- Suitable as standby units during existing plant upgrades

TBR MODULAR SYSTEM INSTALLATION

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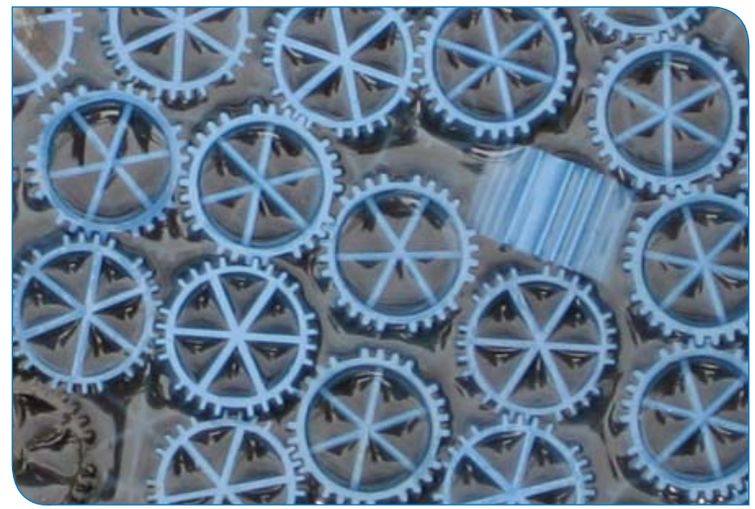
CHATOYER TBR:
A VERY BRIEF SUMMARY OF CHARACTERTISTICS (HOW)

- Considered to be next generation in advanced biological treatment process
- Provide greater efficiency than that of conventional treatment systems
- Produces high quality effluent
- Can include nutrient removal within the packaged unit
- Provides a more stable operation
- Reduces operator time involvement due to the stability of the system
- Minimal operator interface



TBR BIO-MEDIA

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INTRODUCING: BIOLOGICAL WATER TREATMENT SYSTEMS

In conventional systems, bacteria are suspended in the water mass and with adequate retention time will multiply sufficiently to break down the organics.

The Chatoyer Turbo Bio-Reactor incorporates an additional bio-media within the bioreactor tank which allows for a greater population of bacteria to be produced within the same size tank, thereby substantially reducing the retention time for the same volume of water to be treated.

The Advanced Turbo Bio-Reactor also provides for nutrient reduction within the same unit, providing substantial reduction in nitrogen and phosphorous discharges from the system.

SYSTEM OVERVIEW

The main principle behind the TBR system is that incorporates a continuously operating and non-cloggable bio-media within the bio-reactor.

In simplistic terms, the bio-media are specifically designed floating elements with a high surface area that allow the active bacteria to substantially increase in population within the bio-reactor tank.

The bio-film that is created around each individual open structured element protects the bacterial cultures from influent changes and operating excursions shocks.

This provides a more stable environment and optimal conditions for the bacteria cultures to multiply and thrive, making the system very robust and able to treat a larger volume than conventional systems with a smaller footprint.

BIO-MEDIA IN ACTION

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KEY BENEFITS OF CHATOYER'S TBR INCLUDE

Efficiency

With a greater population of bacteria contained in a bio-reactor tank, the system can break down organic wastes at a much greater rate than conventional systems thereby reducing the overall system footprint.

Operation

Simple operation combined with minimal operator interface.

Shock loads

As the biological load increases the Turbo Bio-Reactor is able to handle shock loads due to the greater population of bacteria within the system.

Sludge settlement

The system is designed to provide a greater efficiency in sludge settlement with the clarifier design based on lamellar tube settlers. These tubes provide greater efficiency in a smaller area than conventional settlement clarifiers.

Effluent quality

The system is designed for reduction of organics in the waste water and to consistently meet discharge requirements.

Treated effluent is able to be further treated to be re-used for toilet flush and irrigation water. Emits minimal odor and sludge.

The design of the system provides for minimal sludge production as it is recycled within the system thereby reducing the volume of sludge discharged from the system.

Nutrient reduction

The Advanced Turbo Bio-Reactor also provides for nutrient reduction within the same unit, providing substantial reduction in nitrogen and phosphorous discharges from the system.

With the addition of anoxic zones and chemical dosing systems, the plants can be designed to meet whatever local discharge limits apply for the reduction of nitrogen and phosphorous.

Multi-usage systems

The systems are designed to treat both industrial influent and domestic sewerage.

Site location

Standard treatment systems can be designed for use indoor on commercial building applications, or placed permanently outdoors.

Compact size

Treatment plant sizes are based on actual measurements of the waste stream to be treated in respect of hydraulic load suspended and dissolved organic material, and the applicable local effluent discharge requirements.

Integrated turn-key solution

Delivered as one packaged plant. Valves and pipes are pre-assembled with central up-front location of all controls.

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SYSTEM REMOVAL PARAMETERS

The Turbo Bio-Reactor is able to provide effective waste water treatment by removing the following parameters:

Biological Oxygen Demand (BOD5)

This is reduced by the biological reaction of bacteria breaking down organic matter in the waste water.

Total Suspended Solids (TSS)

This is reduced by sedimentation of the sludge and/or filtration depending on the levels to be achieved.

Total Nitrogen (TN)

Total nitrogen removal is based on biological treatment by both aerobic condition (nitrification) and anoxic condition (de-nitrification).

(Anoxic condition is water that contains minimal oxygen.)

Total phosphorus (TP)

Total phosphorus is reduced by chemical precipitation or biological treatment.

Faecal Coliforms (FC)

These bacteria are reduced by biological treatment, combined with chlorination and/or UV disinfection.

HIGH QUALITY EFFLUENT

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COMPARISON OF CHATOYER PACKAGED SYSTEM

ITEM DESCRIPTION	TBR	Conventional system
Shock loading to the system	Can handle larger shock loadings.	pH of the anaerobic system can be disturbed with high laundry loads during low flow periods. Any disturbances will require immediate operator attendance and monitoring.
Installation requirements	Minimal footprint. Depending on EPA requirements, can be sited on a prepared bunded pad.	Requires large footprint and potentially major civil works.
MLVSS design levels	8,000 - 10,00ppm	2,000 - 3,000ppm
Bio-media	Advanced geometric bio-media design and aeration pattern ensures greater bacteria population and non clogging of media.	No bio media.
Hydraulic design	System hydraulically balanced. Loss of power will not generate overflows in the system.	
Sludge transfer pumps	All pumps maintain positive head. Easily serviced and interchangeable.	Generally negative head pumps. Require access to tanks removal for service and replacement.
Spillages	System integrated within a single unit. Hydraulic balanced.	Potential for spillage between individual tanks and pipework.
Operator interface.	Minimal attendance requirements.	Full time operator.
Relocation	Easily able to be relocated	Not possible due to major civil works
Ordour	Minimal ordour	Anaerobic rotting causes major ordours

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SYSTEM STANDARD DISCHARGE VALUES

Flow rate	Design m³ rate per day as determined
Temperature	Ambient
pH	6 – 8
TSS	< 30 PPM
BOD	< 20 ppm
Faecal Coliforms	<1000cfu/100ml (standard system)
Total Nitrogen	Design parameters to be confirmed
Total Phosphorous	Design parameters to be confirmed

Treatment plant sizes are based on actual volume of the waste stream to be treated in respect of hydraulic load suspended and dissolved organic material, and the applicable effluent discharge requirements.

Packaged Treatment Plant solutions that can provide the following

- Discharge water able to be re-used for toilet flush and irrigation
- System capable of consistently meeting discharge requirements
- Emit minimal odor and sludge
- Delivered as a packaged plant. Valves and pipes are pre-assembled with central up-front location of all Controls
- Automatic operation
- Faecal Coliforms, Nitrogen and Phosphorous discharge levels can be designed to suit specific applications

PLEASE CONTACT CHATOYER FOR FURTHER DETAILS ON A SYSTEM SUITABLE FOR YOUR SPECIFIC REQUIREMENTS.

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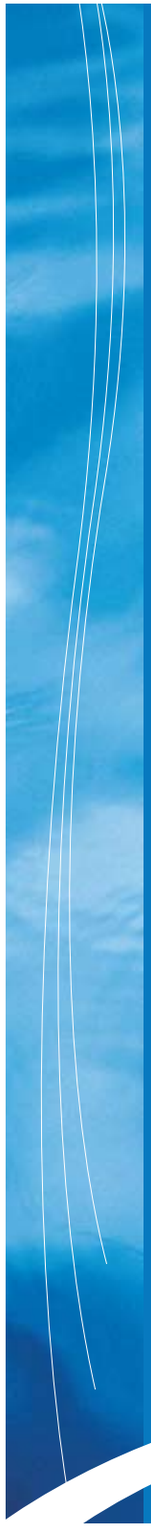

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