



# IRYGEN

LEADING YOUR TOMORROW







IRYGEN a subsidiary of genesis water technologies inc of Florida, is a specialised drinking water & wastewater reuse solutions provider serving clients across the Indian sub continent. We specialize in serving industries and water utilities, meeting their water quality challenges through advanced treatment solutions and services founded upon innovation and collaboration.

## **Our Mission**

Our Mission is to design, create and supply innovative sustainable water treatment solutions for drinking water and waste water reuse to combat the effects of climate change and emerging contaminants to ensure access to clean water.

## **Our Vision**

A World with Access to a Safe & Clean Water Supply





## **GWT<sup>™</sup> Process Optimization Engineering Services Water & Wastewater Treatment (Municipal/Commercial/Industrial)**

Many years of experience involved in the designing, engineering and integration of water & wastewater treatment systems provide a foundational platform for the Genesis Water Technologies process optimization consulting engineering services serving our municipal utility and commercial/industrial clients

### **What is Genesis Water Technologies Process Optimization Engineering Services for Water & Wastewater?**

This innovative engineering consulting service is designed around our commercial/industrial & municipal utility clients to assist them in optimizing the treatment of their current water or wastewater treatment systems to reduce costs and meet continually stringent regulatory requirements

In wastewater treatment applications, we optimize and explore options for integrating wastewater reuse into our clients existing process to reduce continued reliance on fresh water sources, meet sustainability goals and reduce costs where the economic benefits are attractive to do so.



## **This process optimization consulting engineering service will help you answer the following questions:**

- 💧 What is my current purification/treatment and solids disposal costs?
- 💧 How can I optimize my treatment process to be more sustainable?
- 💧 How can I reduce my treatment plants energy and chemicals costs?
- 💧 How can risks associated with my system process be minimized and protection of health be optimized?
- 💧 Will optimizing my treatment plant operations enhance treated water quality or enable greater treatment capacity?
- 💧 What would the cost look like for integrating these system optimization recommendations?

## **When should a company or utility engage Genesis Water Technologies for process optimization engineering services?**

- 💧 Commercial/Industrial Companies and Municipal Utilities should engage us for process optimization engineering, in two scenarios
- 💧 Their treatment systems are working fine, however, they want to reduce operating costs, increase treated water output or enhance treated water quality
- 💧 Whenever the clients suspects a possible problem, either because their energy costs have increased due to source water quality differences, or their treated water is not meeting applicable regulatory standards.

## **What are the steps involved in the Genesis Water Technologies Process Optimization Engineering Service?**

There are 5 steps to this process.

- 💧 Introductory Evaluation/Call
- 💧 Start of Optimization Consulting Engineering Service
- 💧 Final Assessment of Plant Optimization
- 💧 Bench Test/Lab Testing (As applicable)
- 💧 Summary Report of Optimization Recommendations/Suggestions



## Introductory Evaluation/Call

- 💧 Characterization of Water Sources (Water Analysis) & Current Plant Configuration Documents
- 💧 Discussion of Scope of the System Optimization
- 💧 Proposal Provided for Process Optimization Engineering Service

## Start of Optimization Consulting Engineering Service

- 💧 Review/Analysis of Current Plant Performance Data (Input/Output Water Quality, Operation Costs)
- 💧 Analysis/Evaluation of Plant Process Drawings
- 💧 Overview of the existing plant process itself via tour, (viewing intake, and existing treatment process in place currently)
- 💧 History/Background of plant, sustainability/reliability, plant operations, source water, permit discharge limits

## Final Assessment of Plant Optimization

- 💧 Complete Assessment of Existing Plant Operations
- 💧 Evaluation of Cost Savings, Performance/Treated Water Quality Enhancements
- 💧 Risk Analysis

## Bench Test/Lab Testing (As applicable)

## Summary Report of Optimization Recommendations/Suggestions

- 💧 Evaluation/Meeting to discuss treatment plant assessment
- 💧 Recommendation of options for system optimization
- 💧 Evaluation of capital costs and financing options

### Goals of the Genesis Water Technologies Process

- 💧 Reducing operating costs
- 💧 Safety concerns
- 💧 Rectify system performance not meeting standards
- 💧 Optimizing system output
- 💧 Meeting sustainability goals

### Client Benefits:

- 💧 Identification of Improvements to Minimize System Failures
- 💧 Meeting Stricter Regulations
- 💧 Increasing the plant output
- 💧 Reducing Operational Cost





## Genesis™ Water Technologies GWT™ Reverse Osmosis (RO) Seawater Desalination

### What is the Seawater RO Desalination Process?

Sea Water Desalination is a process of molecular separation via membrane technology to reduce the dissolved salt and mineral content of sea water to a suitable level for human and animal consumption, industrial and irrigation uses.

The Seawater Reverse Osmosis Process involves three water streams.

- 💧 Sea water intake source
- 💧 Product / Permeate water of low salt content
- 💧 Concentrate water of high salt content

### How does the Seawater RO desalination process work?

- 💧 There are five basic stages to the sea water desalination process
- 💧 Open Intake ocean Water / Coast or Beach Well Feed Water
- 💧 Pre-Treatment – Filtration/ Anti-scalant Dosage  
(Intake Basin Disinfection, Clarification, Filtration, Polishing Cartridge Filtration)
- 💧 Reverse Osmosis Process
- 💧 Post Treatment – Remineralization / Genclean Disinfection
- 💧 Treated Water Storage/ Distribution
- 💧 Reverse Osmosis Brine Discharge To Sea



## **GWT™ Sea Water Desalination Process Advantages**

### Advantages / Benefits

- 💧 GWT as technical partner, has extensive experience in providing process engineering services for sea water reverse osmosis desalination plants that are designed, engineered and custom built based on a specific water analysis provided by the client to meet their specific water needs.
- 💧 GWT sea water desalination modular systems for water utilities as well as commercial/industrial applications utilize advanced energy recovery devices, nano-composite membranes, our unique DLP series nano fiber cartridge filtration and Genclean pretreatment, optimize permeate water quality, and provide higher water production while reducing operational costs and footprint.
- 💧 Lower capital outlay, operating and maintenance cost.
- 💧 GWT sea water desalination RO systems are designed to perform effectively in multiple applications and with varying salt water feed TDS levels from 10,000 ppm up to 42-45,000 ppm for deep well and open intake sources.
- 💧 Solid System Warranty and Technical Support
- 💧 Remote Monitoring/System Consumables Agreements Available

## **GWT™ Sea Water RO Systems High Permeate Water Quality**

- 💧 Essential for High TDS Sea Water Conditions.
- 💧 Typical TDS Level After Treatment < 500 ppm TDS meeting WHO/EPA standards.
- 💧 Treatment process is very effective in the removal of colloidal particles, viruses, dissolved organic ions and inorganic particles

## **GWT™ Seawater RO Desalination Treatment Applications**

- 💧 Drinking Water Utilities
- 💧 Industrial Process Water
- 💧 Decentralized Potable Water for Hotels/Resorts



## **GWT<sup>™</sup> Seawater RO Desalination Water Treatment Client Water Challenges**

We take on immense challenges that matter to our clients

- 💧 Water Treatment Quality Improvement
- 💧 Water Resource Scarcity
- 💧 Regulatory Changes
- 💧 Sustainable Environmental Remediation

## **GWT<sup>™</sup> Sea Water RO Desalination Systems Summary**

GWT process optimization engineering services & sea water desalination systems technology provide a sustainable, cost effective solution to meet your specific drinking or process water needs.

These sea water desalination systems utilize advanced energy recovery devices, nano-composite membranes, our unique DLP series nano fiber cartridge filtration and Genclean pretreatment to optimize permeate water quality, and provide higher water production while reducing operational costs and system footprint.

Lower capital outlay, and overall operating & maintenance cost. GWT sea water desalination plants are engineered and optimized to perform effectively in multiple applications and with varying sea water feed TDS levels up to 40 to 45,000 ppm for deep well or open intake sources







## Custom Built Ultrafiltration System Specification Sheet Water Treatment/ Tertiary Wastewater

GWT<sup>™</sup> Ultrafiltration membrane treatment systems are designed and engineered to clean water from a variety of water sources including rivers, lakes, wells, greywater, seawater and tertiary wastewater. Ultrafiltration treated water can be used for drinking water, water reuse and for seawater reverse osmosis pretreatment based on feed water quality.

### Standard Features

- ◆ Excellent filtration performance with ability to achieve high flux rates with minimized fouling
- ◆ High temperature tolerance and chemical resilience to provide effective membrane cleaning
- ◆ Very fine nominal pore diameter (0.02 µm) filtration performance
- ◆ Low fouling membrane modules reduces cleaning frequency
- ◆ Excellent removal efficiency of TSS, turbidity, trace oil/grease, and microbiological contamination
- ◆ Can be periodically back washed to extend operating life by removing the fouling layer on the UF membrane surface.
- ◆ Modular, compact systems are easy to install to minimize the associated civil construction costs.
- ◆ Available in two system configurations (outside-in or inside-out) that are chosen based upon the water analysis of the feed water to optimize system performance and reduce operating costs.
- ◆ Intelligent PLC Operation with HMI



## Optional Features

- Optional Features: Clean In Place System (CIP)
- Pretreatment Systems (Based on Specific Application)
  - **System Crating**

## Inlet Feeding Water Specifications

- Feed Water TSS: Max. 300 NTU Surface Water / 1000 NTU (Wastewater Reuse)
- Optimum Water Temperature: 65 F – 85 F (18-30 C)
- pH range: 3-11
- Hardness: > 1 Grain Per Gallon requires pretreatment
- Chlorine Tolerance: 200ppm for cleaning cycles
- Max. Pressure: 75 psi (5 bar), 20 psi (1.38 bar) transmembrane pressure
- Power: 220/460V/3ph/60hz or 220/400v/3ph/50hz

## Applications

- Municipal Drinking Water for Surface Water & Well Water Treatment
- Seawater Desalination Pretreatment
- Greywater Reuse
- Tertiary Wastewater Reuse (Municipal/Industrial)

**GWT<sup>™</sup> series Ultrafiltration systems are custom designed and fabricated modular systems, built in accordance with the clients feed water source and flow rate requirements**





## GWT<sup>™</sup> SPECIALIZED ELECTROCOAGULATION SYSTEM SPECIFICATION SHEET

### What is GWT<sup>™</sup> Specialized Electrocoagulation Technology?

Specialized electrocoagulation is an electrochemical technique using short wave electrolysis to coagulate and precipitate out large quantities of ionically charged and colloidal contaminants from a water source in one continuous batch operation.

This WT technology utilizes different sets of electrically charged metallic electrodes to accomplish one of the most important physio-chemical reactions used in water & wastewater treatment; coagulation.

Electrocoagulation (EC) offers an alternative to the use of metal salts or polymers and polyelectrolyte addition for the breaking of stable emulsions and suspensions in a water source. The technology removes metals, colloidal solids and particles, and soluble inorganic pollutants from aqueous media by introducing highly charged polymeric metal hydroxide particles.

The distinct economical and environmental choice for industrial, commercial and small/mid size municipal water treatment & waste water treatment applications.



## What can GWT<sup>™</sup> EC technology be used to treat?

- 💧 Total Suspended Solids (TSS)
- 💧 Biological Oxygen Demand (BOD)
- 💧 Heavy Metals
- 💧 Emulsified Hydrocarbons & Related Organics
- 💧 Fats, Oils & Greases
- 💧 Phosphates
- 💧 Among certain others compounds

## Who can benefit from using Specialized GWT<sup>™</sup> EC technology?

Industries that can benefit from the use of GWT EC technology include:

- 💧 Energy Industry (Power & Petrochemical)
- 💧 Oil & Gas Operators for produced water treatment facilities
- 💧 Food & Beverage
- 💧 Industrial (Textile, Paper, Pharmaceutical & General Manufacturing)
- 💧 Hotels/Resorts (Water Reuse)
- 💧 Small/Midsize Towns & Municipalities

## What are the cost benefits in using specialized GWT<sup>™</sup> EC technology and where can it be implemented in a treatment process?

The cost benefits in using GWT<sup>™</sup> specialized C technology are typically significantly less than conventional chemical coagulation when accounting for the labor savings, reduction in sludge and disposal cost as EC sludge passes TCLP tests for non hazardous material disposal. In addition, WT C technology typically provides higher quality effluent post clarification treatment.

GWT<sup>™</sup> EC treatment systems are typically utilized after coarse screen pretreatment and a grit chamber. However, it can also be used in a secondary polishing treatment application for the treatment of heavy metals or other specific contaminants prior to clarification or filtration.

## Services Offered

- 💧 Lab/Bench Treatability Testing Services with Validation by Third Party Lab

## Systems

- 💧 These systems are modular systems designed based on the treatment application.
- 💧 Typical flow rates from 10 gpm (50 m<sup>3</sup>/d) - 2500 gpm (13,500 m<sup>3</sup>/d)



## Advantages

- Can be controlled via process automation for simpler operations
- Compact System Solution Footprint
- Quick reaction rates via continuous batch operation to optimized reaction time
- Optimized for multi-contaminant removal in one process from a water stream
- Removes/Breaks emulsified contaminants
- Reduced OPEX costs including labor input costs & sludge disposal costs
- Pretreatment for Membrane Systems for Water Reuse Applications

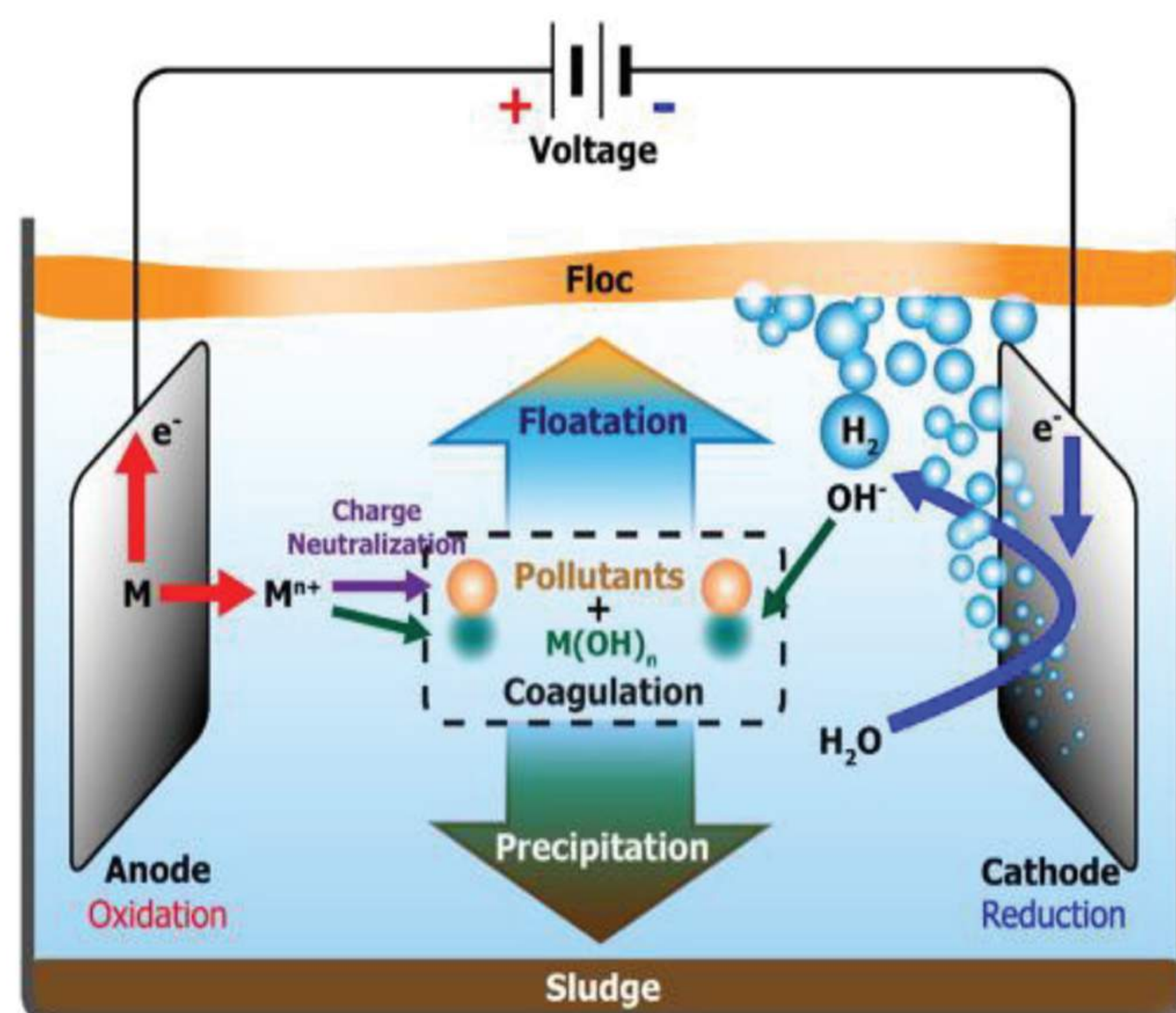
Contaminant	Specialized EC	Chemical Coagulation	Sedimentation Itself
Total Suspended Solids (TSS)	96-99% Reduction	80%-90% Reduction	50-70% Reduction
BOD	60-98% Reduction	50-80% Reduction	25-40% Reduction
Bacteria/ Coliforms	95-99.9% Reduction	80-90% Reduction	25-75% Reduction
Heavy Metals	93-99% Reduction	80% Reduction	0-25% Reduction

### Table with Typical Testing Results Specialized Electrocoagulation

In addition to beside chart, typical removal efficiencies for:

In addition to above chart, typical removal efficiencies for:  
 Fat, Oil, Grease (FOG): 93-99% reduction  
 Water from Sludge: 50-80% reduction  
 Phosphates: 90-93% reduction

GWT<sup>™</sup> innovation in water(r)





## GWT™ Self Cleaning Centrifugal Filtration Solutions

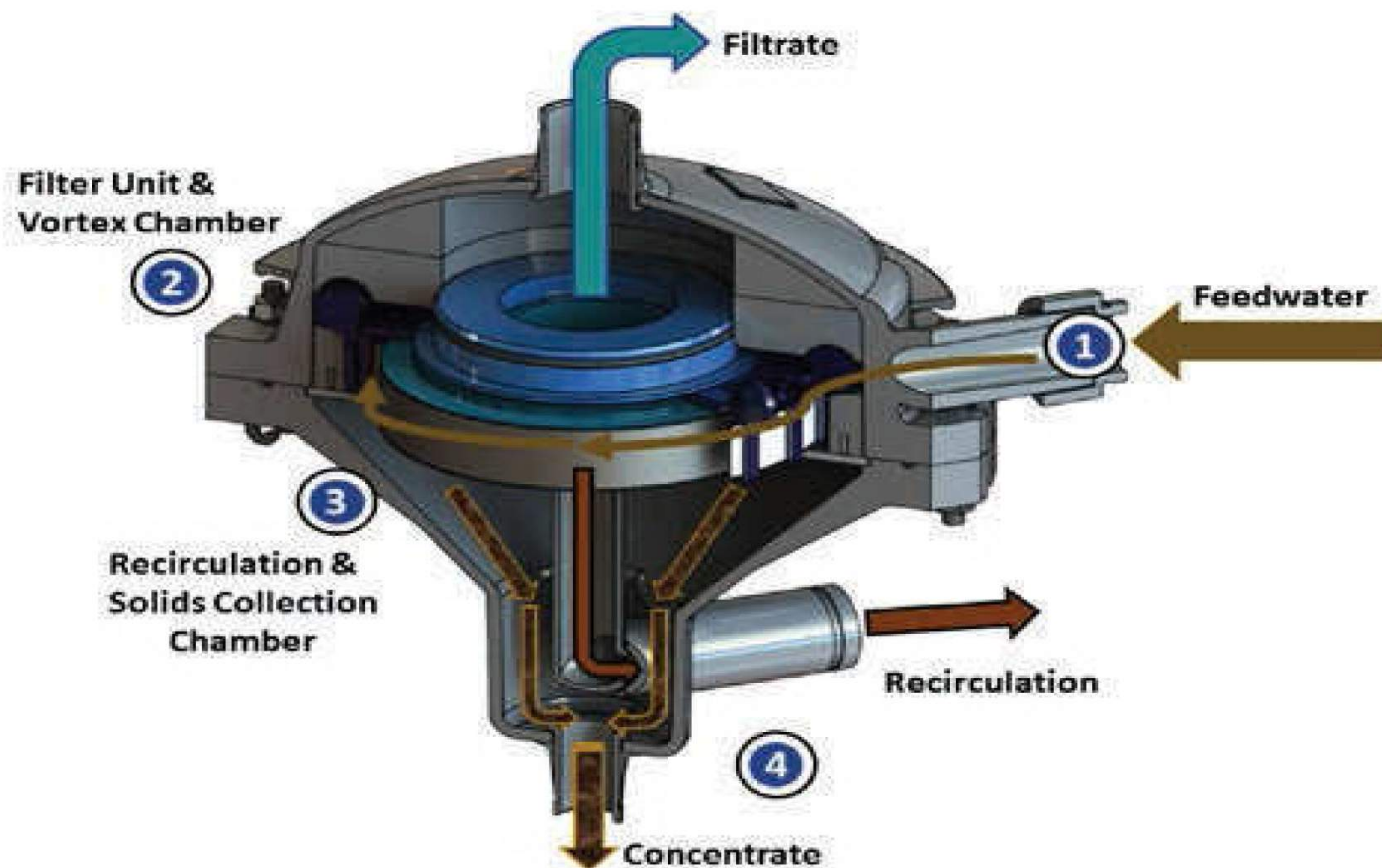
GWT™ Series Self Cleaning Centrifugal filtration solutions incorporate tequatic technology for efficient separation of high total suspended solids (TSS) in liquids.

These systems are designed to be capable of handling TSS levels of up to 10,000 mg/l in the presences of fibers, fats/oils, and greases with filtration performance removal down to 15-20 micron. Modular systems can be manifolded for higher flow rates.

Designed to meet the specific and unique challenges of industrial and municipal clients requiring a solution to treat high TSS levels with no backwashing cycle.

System provides savings in OPEX costs due to the significant reduction of downstream chemicals and consumables for secondary/tertiary treatment systems.

### GWT™ Self Cleaning Centrifugal Filtration Solution How Does It Work





## Self Cleaning Centrifugal Filtration Solutions Client Water Challenges

We take on immense challenges that matter to our clients

- 💧 Water Treatment Recycling and Reuse
- 💧 Water Resource Scarcity
- 💧 Regulatory Changes
- 💧 Sustainable Environmental Remediation

### Summary

GWT series Self Cleaning Centrifugal Filter Solutions are integrated with tequatic technology. They are capable of handling up to 10,000ppm TSS (total suspended solids).

These systems can effectively separate suspended solids from water in the presences of fibers, fats, oil, and greases to meet the clients needs for high TSS removal with no risk of clogging.

These systems are modular with high flow rate capability based on system manifolding with filtration removal efficiency capabilities to 15-30 micron.

These systems effectively reduce OPEX cost through reduced discharge fees, and decreased chemicals/consumables usage costs associated with protecting downstream treatment solutions. The self cleaning centrifugal filtration system solutions are included in our IWRS and DWRS water reuse systems which can be typically integrated into existing industrial and decentralized domestic wastewater treatment processes.





## Anthracite Filter Media Specification Sheet

Genesis Water Technologies, Inc. - Anthracite Filtration Media is selected for its high quality. This anthracite filtration media is produced from a superior vein of coal in PA. The filtration media conforms to AWWA B100 specifications and NSF standards. The Anthracite filter media is packaged in (1) cubic foot bags or 1 ton supersacks.

### Available Anthracite Filtration media sizes: All standard sizes

Size(Inches)	Size(millimeters)
Size # 1	.60-.80
Size # 1 1/2	.85-95
Size # 2	1 70-4 00
Size # 3	4.00-6.30
Size # 4	6.30-11.20
Size # 5	11.20-17.50
Uniform Coefficients Available: 1.3, 1.4, 15, 1 7	

### Custom Sizes Available:

- Anthracite media is process specific; for more information call (877)267-3699.
- Packaging: Available in (1) cubic foot bags – 52 pounds per ft<sup>3</sup> or (1) ton supersack
- Bulk Packaging: Pallet Quantities – (50 cubic foot) per pallet
- Genesis Water Technologies, Inc. offers technical advice on filter media selection for your specifications





## Coconut Shell Carbon Filter Media Specification Sheet

Genesis Water Technologies, Inc. - Anthracite Filtration Media is selected for its high quality. This anthracite filtration media is produced from a superior vein of coal in PA. The filtration media conforms to AWWA B100 specifications and NSF standards. The Anthracite filter media is packaged in (1) cubic foot bags or 1 ton supersacks.

### Typical Physical Properties Specifications

Activity CCL4 (ASTM 3467) min.	60%
Total Surface Area (BET), mig	1100 - 1150 mg/g
Iodine Number, min. (ASTM D4607-94)	900 - 1150 m <sup>2</sup> /g
Apparent Density(ASTM 2864) g/cm <sup>3</sup>	0.48-0.50
Abrasion No., min. (AWWA B 604/74)	85
Hardness (ASTM 3802) min.	99.0%
Particle Size Larger than No. 8, max. Smaller than No. 30, max	8x30 US Mesh 5% 5%
Ash, max. (ASTM D2866-94)	3%
Moisture as packed, mis. (ASTM D2867-99)	2.0%

### STANDARD PACKAGING: 27.5lb (12.5kg) POLYLINE POLYPROPYLENE BAGS. 1100lb (500kg) SUPERSACKS

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# GWT NatZeo™ Filtration Media Product Application Data Sheet

Around the world there is an increasing need for environmentally safe methods of providing high-quality drinking water and for the treatment of a wide range of commercial, industrial, and municipal water contamination and air pollution issues.

NatZeo™ is an inorganic micro porous alumino-silicate material with many unique filtration properties including a high cation exchange capacity (CEC). GWT NatZeo™ media is a cost effective, environmentally safe solution for the filtration of both water and wastewater treatment.

## Physical Properties

Density (lb/ft<sup>3</sup>): 50-55  
Bed depth (inches/cm):  
24-48in / 61-122cm  
Color: Grey-Green  
Particle Size:  
14x40 (.41-1.41mm)



## Conditions of Operation

- Service flow (gpm/ft<sup>2</sup>) PV: 12-18 gpm/ft<sup>2</sup> (700-1050 m<sup>3</sup>/m<sup>2</sup>d), GV: 4 gpm/ft<sup>2</sup> (233 m<sup>3</sup>/m<sup>2</sup>d)
- Backwash flow (gpm/ft<sup>2</sup>):  
PV: 13-17 gpm/ft<sup>2</sup> (762.5 m<sup>3</sup>/m<sup>2</sup>d - 992 m<sup>3</sup>/m<sup>2</sup>d), GV: 13-17 gpm/ft<sup>2</sup> (762.5 m<sup>3</sup>/m<sup>2</sup>d - 992 m<sup>3</sup>/m<sup>2</sup>d)
- Filter Bed Depth: 36in / 92cm for optimal filtration (depending upon flow rate)
- Freeboard: 50%-55% of bed depth
- Pressure Vessel Filtration Bed Expansion: 30-40%
- Gravel Underbed Required in PV configuration, in GV configuration underdrain will need to be
- configured with smaller apertures than media particle size if no underbed is used to minimize media loss.
- Media will need to fully soak prior to initial backwash (12-24 hours)

## Optional Air Scour

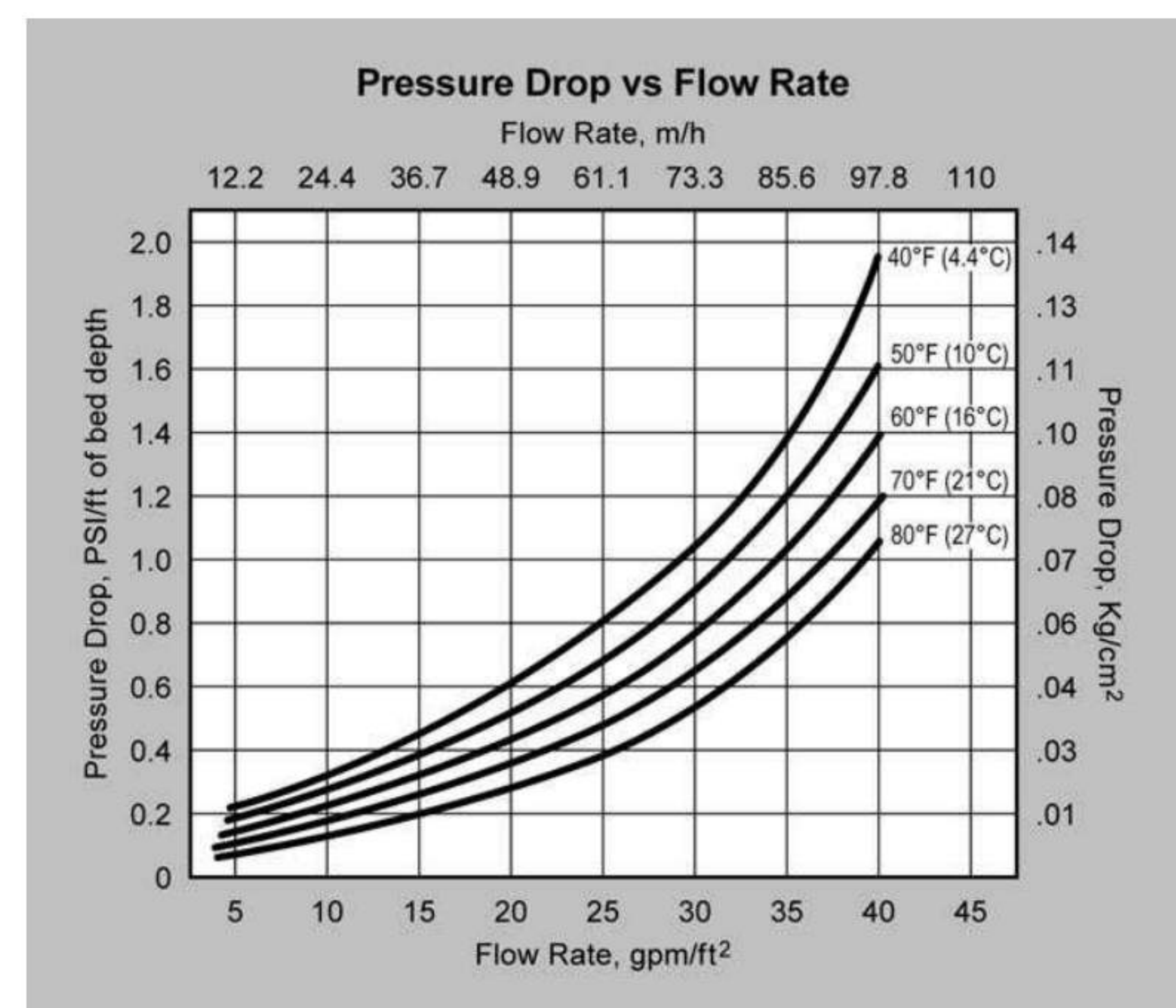
- Use 2 to 3 scfm/sq.ft. air @ 90 psi with 3 to 5 gpm/sq.ft. water backwash (@77°F/25C)



## Typical Backwash Flow Requirement vs. Water Temp

Flow	79 F (26C)	69 F (21C)	59F (15C)	49F (9C)	39F (4C)
US gpm/ft <sup>2</sup>	22.2	19.9	17.1	14.7	12.5
M/h	54.4	48.3	42	36.1	30.7

Based on filtration bed expansion of 40%



## Typical Pressure Drop vs. Flow Rate

### Applications:

#### Water Treatment:

- Turbidity Reduction to 3-5 micron for water filtration systems
- Removal of heavy metal cations, certain hydrocarbons and other contaminants including bacteria
- Can be used as a direct replacement media for sand or multimedia filtration systems
- with up to 2.8x sediment loading capacity

#### Waste Water Treatment/Pollution Control:

- Waste water ammonia removal in municipal/industrial waste water
- Pollution Control – media can increase biological activity, reduce nutrient levels, cut sludge volume and odors, reduce ammonia and BOD levels in ion exchange columns or bed effluent, can be back flushed and regenerated, with ammonia recovered for fertilizer, increases sewerage plant capacity and life cycle.

#### Radioactive Water Treatment:

- Nuclear cooling and waste water treatment of Cesium and Strontium and site remediation/decontamination



## Water Treatment:

- Turbidity Reduction to 3-5 micron for water filtration systems
- Removal of heavy metal cations, certain hydrocarbons and other contaminants including bacteria

## Aqua Culture / Fishing Industry:

- Fish Hatchery water treatment
- Ammonia control
- Biofiltration media

## Mining:

- Gas/Odor Removal
- Absorption and Retention of certain dangerous heavy metals and oils in mining waste water

## Industrial Oil/Gas Applications:

- Absorbents for oils/hydrocarbon in water and oil spills

## BENEFITS & ADVANTAGES

- Cost-effective replacement for sand, garnet & multimedia
- Lower pressure drop for a given flow rate (gpm/ft<sup>2</sup> or m<sup>3</sup>/m<sup>2</sup>/d)
- High CEC (cation exchange capacity) for ion exchange of charged contaminants (dissolved metals, sodium, ammonia)
- Highest solids loading reduces backwash interval frequency and consumption of backwash water
- Superior filtration performance at high flux rates
- All natural, environmentally safe product
- Low Density media reduces shipping and handling costs





## GWT Zeoturb<sup>™</sup> bio-organic liquid flocculant

GWT advanced ZeoTurb<sup>™</sup> liquid is a unique advanced bio-organic liquid flocculant.

This product is an environmentally safe treatment solution for the flocculation and clarification of potable water, process water, storm water and wastewater applications.

This treatment product is used in both water utilities and industries for the reduction and removal of inorganic and organic particles including sediment, algae, dyes, and trace heavy metal reduction and removal.

ZeoTurb<sup>™</sup> liquid replaces (alum), and other synthetic polymer chemistry and commodity metal salt type products such as polyamide, ferric and polyaluminum chloride (PAC), providing a solution that does not introduce additional chemicals, salts or metals in the water system.

This product is a biodegradable environmentally safe product that can typically be land applied or disposed of in a landfill passing all TC. GWT<sup>™</sup> Zeoturb liquid flocculant can provide multiple advantages for water utilities, industrial facilities, and for storm water treatment. The ease of monitoring dosing rates, allows water utilities, storm water agencies, and industrial facilities to obtain a quick return investment.



## SUSTAINABLE, NON-TOXIC, SCALABLE, GREATER TREATMENT EFFICIENCY

### Conditions of Operation

#### Treatment Process

- 💧 The Zeoturb<sup>™</sup> liquid flocculant solution is injected into drinking water, wastewater or stormwater using a GWT chemical feed dosing system or an existing chemical feed dosing pump system with an automatically proportionally adjusted dosage to maintain treatment efficiency with treatment dosage ranging from 30ppm and higher based on source water quality and field adjusted accordingly.
- 💧 This product can be mixed into solution using an inline static mixer or a mechanical mixer with post filtration to remove flocculated solids.
- 💧 Lab jar testing & pilot testing services are available for validation of application dosage rates.

#### Treatment Process



**Drinking Water**



**Wastewater**



**Stormwater**

### Zeoturb<sup>™</sup> Liquid Flocculant Benefits:

- 💧 Greater Clarification Efficiency with Lower Post Treatment TDS levels versus traditional coagulants.
- 💧 Lower Application Dosages Rates versus Synthetic and Metal Treatment Coagulants/Flocculants with up to 50-60x lower treatment rates.
- 💧 Increased Filterability of the Flocculated Particles
- 💧 Lowers Suspended Solids/Turbidity levels faster than synthetic polymers and metal coagulants
- 💧 Reduces Solids Generation Volume post treatment
- 💧 Environmentally Friendly and Non Toxic with the ability of sludge solids to be land applied or safely disposed in a typical landfill without restrictions.

### Product Packaging:

- 💧 Zeoturb<sup>™</sup> liquid flocculant solutions is available in 275 gal (1039 L) totes.

### Typical Shelf Life:

- 💧 12 months shelf life for maximum performance.

### Storage Requirements:

- 💧 Store at room temperature, out of direct sunlight. Keep away from children.

### Certifications:

- 💧 NSF 60 certification. Ingredients are FDA Generally Recognized As Safe (GRAS) Compliant



# How can the Genclean advanced oxidation treatment solutions be used in different applications?

## Water & Wastewater Utility Treatment Systems

- 💧 Pre-oxidant to lower organic load, biofouling control & removal
- 💧 Effluent treatment without generation of disinfection byproducts
- 💧 Oxidation of emerging contaminants and recalcitrant pollutants

## Cooling Towers & Systems

- 💧 Control scaling & corrosion
- 💧 Eliminates bacteria and microbiological fouling
- 💧 Removes sulfuric acid in wet scrubbers

## Power Generation

- 💧 It can be used to reduce greenhouse gases in wastewater streams (CO<sub>2</sub>, SO<sub>x</sub>, and NO<sub>x</sub>)
- 💧 It can be used to improve heat transfer rates for cooling towers
- 💧 Removes microbiological biological growth

## Oil/Gas Refining & Produced Water

- 💧 It can be used in wet scrubbers to remove hydrogen sulfide
- 💧 Disinfectant & Advanced Oxidation of produced water
- 💧 Removes trace oil emulsion from produced water

## Wastewater Treatment Systems

- 💧 It is effective at removing all pathogens while being an environmentally friendly product
- 💧 Does not create toxic byproducts when reacting with organic matter
- 💧 It will help improve and maximize the disinfection system
- 💧 Very effective in reclaimed water treatment processing
- 💧 Longest residual protection among other oxidants currently available

## Fruit & Vegetable Processing Industry

- 💧 Eliminates Listeria, E. Coli and other bacterias on contact
- 💧 Removes pathogens and pollutants on the surface of vegetables, fruits, meat, frozen food & seafood
- 💧 Quicker process, higher safety & hygiene
- 💧 Increases transit & shelf life
- 💧 Reduces transit spoilage



## Dairy Industry

- 💧 Raw water treatment
- 💧 Centralized & local process water treatment
- 💧 Clean-In-Place
- 💧 Surface & equipment sanitation
- 💧 Bottles, Cans, Tank cleaning process
- 💧 Removes biofilm from process lines
- 💧 Extends residual protection
- 💧 Increases shelf life

## Fisheries & Aquaculture Industry

- 💧 Oxidation of organic matter with no disinfection byproducts
- 💧 Precipitation of dissolved matter
- 💧 Microflocculation of organic matter
- 💧 Destabilization of colloidal matter
- 💧 Oxidizes ammonia
- 💧 Eliminates odor

## Fisheries & Aquaculture Industry

- 💧 Oxidation of organic matter with no disinfection byproducts
- 💧 Precipitation of dissolved matter
- 💧 Microflocculation of organic matter
- 💧 Destabilization of colloidal matter
- 💧 Oxidizes ammonia
- 💧 Eliminates odor

## Industrial Wastewater Treatment Industry

- 💧 Color reduction, odor reduction
- 💧 Reduces organic impurities, COD, BOD, heavy metals, colloids, etc.
- 💧 Enhances coagulation, flocculation, biological treatment, filtration systems
- 💧 Protects membranes and extends life of ultrafiltration & RO systems
- 💧 Water recycling/reuse & environmentally friendly

## Hotels, Resorts, Hospitality Industry

- 💧 It can remove pathogens and contaminants in washing water for vegetables, fruits, meats, seafood
- 💧 Very powerful and Taste acting oxidant to control microbiological contaminants in cooling towers.
- 💧 Genclean can control and maintain pools of bacteria, cysts, viruses, algae in hotel pools, resorts, etc.



## Pools & Aquatic Fountains

- 💧 Reduce pollutants in water pools and fountains, including viruses, bacteria, cysts and algae with one solution
- 💧 Sustainable solution NSF certified, elimination of risks for health associated with swimming in chlorinated water, including irritation of the the skin, eyes and lungs.

## What is Genclean™ advanced oxidation disinfection solution and what is it used for?

A non-toxic, advanced oxidation (AOP) formula of minerals chelated with oxygen and stabilized in an aqueous water solution It is a viable option in industries and applications requiring a solution to challenging situations where high level effective sanitization and oxidation is required. It has 2x the oxidation capability of chlorine (bleach) and almost 1.5x the oxidation capability of ozone, hydrogen peroxide, and similar non chlorine solutions as measured by oxidation reduction potential.

Genclean™ is a product of a chemistry that is effective in a wide pH range, and it does not require external catalyst activation. This solution provides long residual disinfection, and it does not need a large capital investment or highly trained technicians.

It has a shelf life of 6 months. Genclean™ is available in tote & drum containers for commercial/industrial & water utility chemical feed applications.

This product family has NSF/ANSI 60 certification and is US FDA GRAS compliant, approved for water & wastewater oxidation treatment, disinfection, biofilm control, bactericide, biocide, scale and corrosion.





## Sustainable Water Treatment Solutions

Mining, Power Generation, Oil & Gas Petrochemical Industry

### Specialists in Modular & Custom Built Water and Waste Water Treatment Solutions

Genesis<sup>™</sup> Water Technologies designs, engineers, optimized water treatment solutions for process water, produced water & waste water reuse. We also provide specific process optimization consulting services for existing water & wastewater treatment system processes, serving the specialized needs of power generation, oil & gas exploration, mining and petrochemical industries in the US and across the world.

We have the expertise and global reach in association with our local rep partners to provide these specialized solutions to leading power, mining, petrochemical, and oil/gas companies to optimize water management, maintain regulatory compliance, and alleviate problems associated with water scarcity.



## For applications including:

- 💧 Process Water
- 💧 Waste water Treatment & Reuse
- 💧 Produced/Flow back Water Treatment



## Our Solutions Offer You:

- 💧 Process Optimization for Water Management
- 💧 Modular Design for Environmental Footprint Reduction
- 💧 Lower Operating & Maintenance Costs
- 💧 Simple Integration into existing and new facilities
- 💧 Regulatory Compliance

Genesis Water Technologies provides maximum flexibility and value for our clients in the USA and around the world to assist them in dealing with environmental compliance issues and the challenges associated with water scarcity.

## Serving our clients specific needs

### Specialized Technologies include:

#### Water & Wastewater Treatment:

Advanced Oxidation EOX & Genclean-Ind)  
Zeoturb<sup>™</sup> Bio-Organic Liquid Flocculant  
Specialized Electrocoagulation  
Mbio MBBR Biological Treatment  
Self Cleaning Centrifugal Filtration

#### Tertiary Treatment (Membrane Processes):

Ultrafiltration  
Reverse Osmosis Desalination

#### Specialized Services:

Process Optimization Engineering Consulting Services

Genesis Water Technologies provides technical support agreements and system consumables agreements for our water & wastewater treatment solutions including:

- 💧 Filtration medias (Anthracite, NatZeo<sup>™</sup>, Activated Carbon)
- 💧 RO/UF Membranes







## **Sustainable Water Treatment Solutions**

**Agriculture & Irrigation  
Food & Beverage Processing**

### **Specialists in Modular & Custom Built Water and Waste Water Treatment Solutions**

Genesis<sup>™</sup> Water Technologies designs, engineers and commissions optimized modular water treatment solutions for process water and waste water reuse. We also provide processing optimization consulting services for existing water & wastewater treatment system processes.

We have the expertise and global reach to provide these specialized solutions and services to agriculture/growers and food & beverage companies to optimize water management, maintain regulatory compliance and alleviate problems associated with water scarcity.



## For applications including:

- 💧 Ingredient Process water
- 💧 Waste water treatment and reuse



## Our Solutions Offer You:

- 💧 Process Optimization for Water Management
- 💧 Modular Design for Environmental Footprint Reduction
- 💧 Lower Operating & Maintenance Costs
- 💧 Simple Integration into existing and new facilities
- 💧 Regulatory Compliance

Genesis Water Technologies provides maximum flexibility and value for our clients in the USA and around the world to assist them in dealing with environmental compliance issues and the challenges associated with water scarcity.

## Serving our clients specific needs

### Specialized Technologies include:

- 💧 Zeoturb™ Bio-Organic Liquid Flocculant
- 💧 Ultra filtration
- 💧 Reverse Osmosis Desalination for high salinity
- 💧 MBBR Systems with GWT AB Aeration Technology
- 💧 Specialized Electrocoagulation & EOX
- 💧 Disinfection Genclean™

### Specialized Services include:

Process Optimization Consulting Services

Genesis™ Water Technologies also provides technical support agreements, system spare parts and annual consumables agreements for our water & wastewater treatment solutions including:

- 💧 Filtration Media (Anthracite, NatZeo™ & Activated Carbon)
- 💧 RO/UF Filter Membranes







## **Sustainable Water Treatment Solutions**

**Industrial Water Treatment  
(Pharmaceutical / Textile / Pulp & Paper / Manufacturing)**

### **Specialists in Modular & Custom Built Water and Waste Water Treatment Solutions**

Genesis<sup>®</sup> Water Technologies proven industrial process water, water reuse and waste water treatment solutions are designed, engineered and built to exceed established regulatory requirements, serving clients in the pharmaceutical industry, textile industry, pulp and paper industry and manufacturing industries across the world.

We have the expertise and global reach to provide these specialized solutions to leading industrial companies to optimize water management, maintain regulatory compliance, and alleviate problems associated with water scarcity.



## For applications including:

- 💧 Process Water
- 💧 Waste water Treatment & Reuse



## Our Solutions Offer You:

- 💧 Process Optimization for Water Management
- 💧 Modular Design for Environmental Footprint Reduction
- 💧 Lower Operating & Maintenance Costs
- 💧 Simple Integration into existing and new facilities
- 💧 Regulatory Compliance

Genesis Water Technologies provides maximum flexibility and value for our clients and local partners around the world to assist them in dealing with environmental compliance issues and the challenges associated with water scarcity

## Serving our clients specific needs

### Specialized Technologies include:

#### Raw Water Treatment

- 💧 Specialized Electrocoagulation
- 💧 Primary Filtration
- 💧 ZeoTurb Bio-Organic Liquid Flocculant

#### Tertiary Treatment (Membrane Processes)

- 💧 Ultrafiltration
- 💧 Reverse Osmosis Desalination

#### Secondary Treatment

- 💧 Mbio MBBR Biological Treatment
- 💧 Advanced Oxidation Process (EOX & Genclean-Ind)

#### Specialized Services

- 💧 Process Optimization Consulting Services

Genesis Water Technologies provides technical support agreements and annual consumables agreements for our water treatment solutions including:

- 💧 Filtration medias (Anthracite, NatZeo<sup>™</sup>, Activated Carbon)
- 💧 Membranes  
Genclean<sup>™</sup>Ind & Zeoturb<sup>™</sup>







## **Sustainable Water Treatment Solutions**

**Drinking Water, Sea Water Desalination  
Domestic Wastewater and Humanitarian/Relief Mobile Water Treatment**

### **Specialists in Modular & Custom Built Water and Waste Water Treatment Solutions**

Our proven municipal water & wastewater treatment solutions are designed and engineered to meet or exceed US EPA and World Health Organization (WHO) standards for drinking water and waste water applications serving federal agencies, municipal utilities and communities.

Our specialized process optimization consulting services enable water utilities to optimize existing treatment processes to enhance treated water quality, optimize operational costs, and meet continuously changing regulatory requirements.

We have the expertise to provide these specialized solutions to municipal utilities and governmental organizations throughout the world to alleviate problems associated with water scarcity and drinking water/waste water related health issues including water borne disease.



## For applications including:

- 💧 Potable Drinking Water
- 💧 Domestic Waste water treatment



## Our Solutions Offer You:

- 💧 Modular Design for Environmental Footprint Reduction
- 💧 Lower Operating & Maintenance Costs
- 💧 Simple Integration into existing and new facilities
- 💧 Regulatory Compliance

Genesis Water Technologies provides maximum flexibility and value for our clients working with our local partners across the US and worldwide to assist these clients in dealing with environmental regulatory compliance issues, water quality issues, and the challenges associated with water scarcity.

## Serving our clients specific needs

### Specialized Technologies include:

#### Drinking Water Technologies:

Reverse Osmosis Desalination  
(Sea Water & Deep Well Sources)  
Ultrafiltration  
ZeoTurb Bio-Organic Liquid Flocculant  
Disinfection (Genclean-Muni AOP)

#### Secondary Treatment

GWT<sup>™</sup> Mbio (MBBR) Treatment Technology  
Disinfection (Genclean-Muni AOP)  
ZeoTurb<sup>™</sup> Bio-Organic Liquid Flocculant  
GenFos Liquid Coagulant  
(Phosphate Reduction)

#### Specialized Services

Process Optimization Engineering Services

Genesis Water Technologies provides technical support agreements and system consumables agreements for water & wastewater treatment solutions including:

- 💧 Filtration medias ( Anthracite, NatZeo,<sup>™</sup> Activated Carbon )
- 💧 RO/UF Membranes







## **Sustainable Water Treatment Solutions**

**Hotels/Resorts  
Commercial Properties**

### **Specialists in Modular & Custom Built Water and Waste Water Treatment Solutions**

Genesis<sup>™</sup> Water Technologies proven drinking water, gray water reuse, waste water treatment solutions and process optimization consulting services that are developed, designed, and engineered to exceed established regulatory requirements, serving hotels & resorts and sustainable LEED certified commercial properties across the world.

We have the expertise and global reach to provide these specialized solutions and services to leading hotel chains and management/development companies to optimize water management, maintain regulatory compliance, and alleviate problems associated with water scarcity.



## For applications including:

- 💧 Drinking Water Deep Well Desalination
- 💧 Grey Water Treatment & Reuse for irrigation and non potable applications
- 💧 Advanced Waste Water Treatment



Genesis Water Technologies provides maximum flexibility and value for our clients and local partners in the USA and around the world to assist them in dealing with environmental compliance issues and the challenges associated with water scarcity.

## Serving our clients specific needs

### Specialized Technologies include:

#### GWT Drinking Water Technologies:

- 💧 Deep Well Seawater RO Desalination
- 💧 Ultrafiltration
- 💧 Disinfection (UV & Genclean™)
- 💧 Zeoturb Liquid Bio-Organic Flocculant

#### Specialized Services

- 💧 Process Optimization Engineering Services

Genesis Water Technologies provides technical support agreements and system consumables agreements for our water, grey water & wastewater treatment solutions including:

- 💧 Filtration medias ( Anthracite, NatZeo™, Activated Carbon )
- 💧 RO/UF Membranes

## Our Solutions Offer You:

- 💧 Process Optimization for Water Management
- 💧 Modular Design for Environmental Footprint Reduction
- 💧 Lower Operating & Maintenance Costs
- 💧 Simple System Integration into existing and new facilities
- 💧 Regulatory Compliance

#### GWT Waste Water Treatment Technologies:

- 💧 Mbio Moving Bed Bioreactor (MBBR)
- 💧 Filtration Systems (Centrifugal & Backwash)
- 💧 Specialized Electrocoagulation
- 💧 Disinfection (UV & Genclean™)
- 💧 Tertiary Filtration (Water Reuse)

#### GWT Grey water Treatment Technologies:

- 💧 Filtration Systems
- 💧 Specialized Electrocoagulation
- 💧 UV / Genclean







## Contact:

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