ClearStream

Water & Wastewater
Treatment Solutions
Municipal & Industrial

20+ YEARS ClearStream

Biological Process Equipment

Quality Equipment: Competitive Price

American Water Works Association

Water Environment Federation
the water quality people

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Sandy, UT 84070

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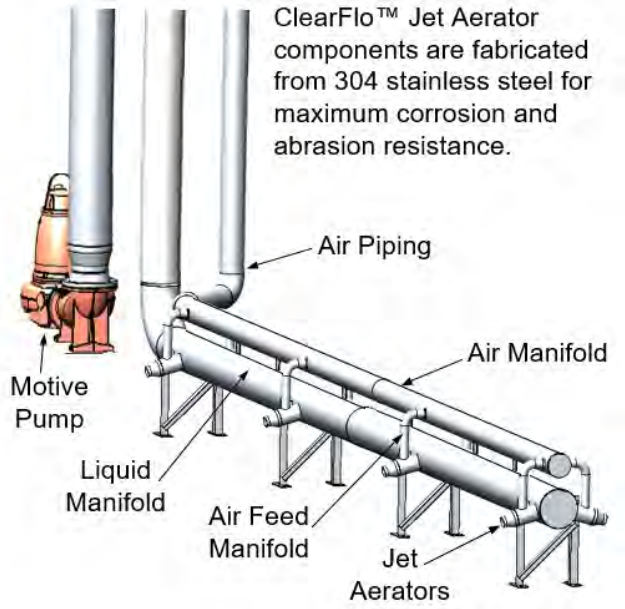
ClearFlo™ Jet Aerators

ClearFlo™ Jet Aeration Systems offer state of the art aeration and mixing for a wide variety of municipal and industrial wastewater and process applications.

Independent control of oxygen transfer and mixing, low installation costs, long life, high clean water transfer efficiency, high "dirty water" transfer efficiency, low maintenance, thermal conservation, and clean operation (eliminates airborne volatiles), make jets the ideal choice for new facilities, as well as upgrades, and process optimization projects.



Jet Aerator Components

Independent Control of Oxygen Transfer and Mixing

Air flow to each jet aerator can be varied from 10 SCFM to 80 SCFM to control oxygen delivery, without affecting mixing; jet systems can be operated ungassed for anoxic mixing. Anoxic mixing improves nutrient removal and settling.

The Highest Oxygen Transfer Efficiency of Any Aeration System in Dirty Water

No Mist, Spray, or Splash

Walkways and Handrails Stay Clean. Odors and Airborne VOCs are Reduced or Eliminated.

Thermal Conservation

Submerged Release of Warm Compressed Air and Lack of Splashing Eliminates Freezing Problems, Even in the Coldest Climates; Allows Year-Round Nitrification/Denitrification.

Low Maintenance

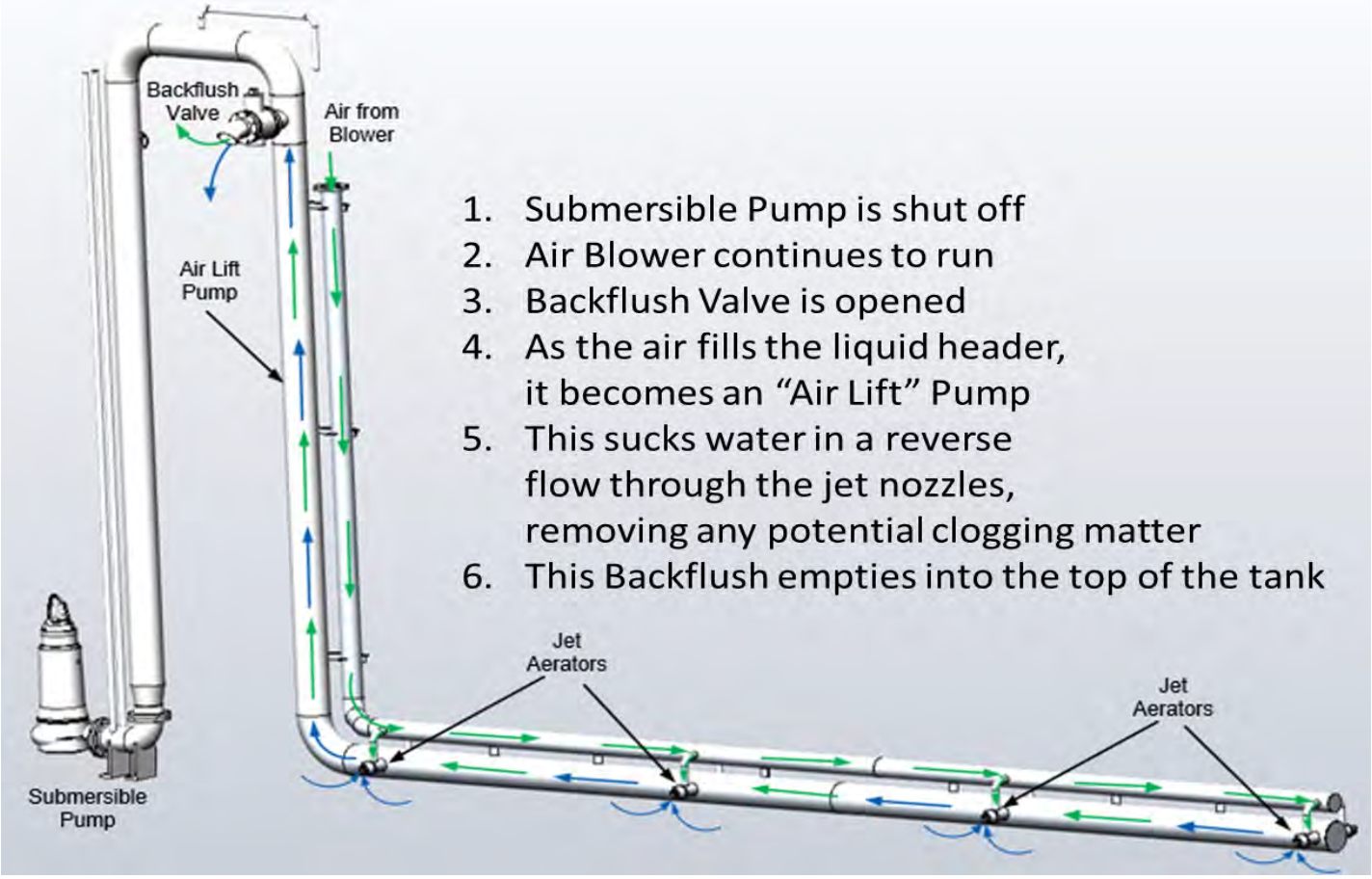
Simple Five Minute Backflushing Operation is the Only Required Maintenance.


No Mist, Spray, or Splash

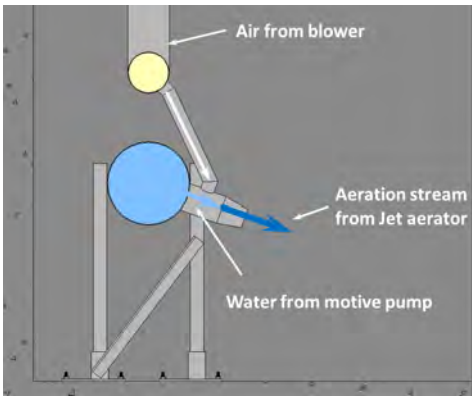

Independent Control of Oxygen Transfer and Mixing

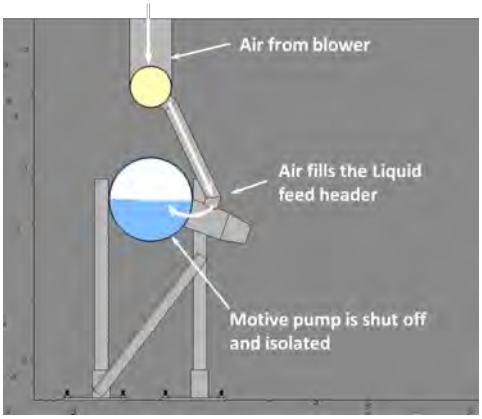
ClearFlo™ Jet Aerators

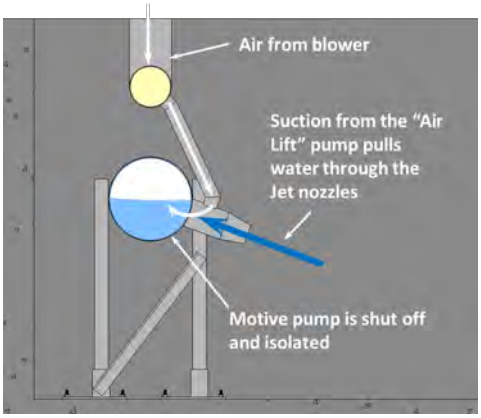
Nozzles can be Backflushed without draining the tank



1. Submersible Pump is shut off
2. Air Blower continues to run
3. Backflush Valve is opened
4. As the air fills the liquid header, it becomes an "Air Lift" Pump
5. This sucks water in a reverse flow through the jet nozzles, removing any potential clogging matter
6. This Backflush empties into the top of the tank







ClearFlo™ Continuous Loop Reactors

ClearFlo™ CLR systems are optimized for a wide variety of applications; from small packaged “bullseye” systems with an oxidation channel wrapped around a ClearStream clarifier for carbonaceous and ammonia removal to large multi-channel systems for reliable and cost effective BNR processes.

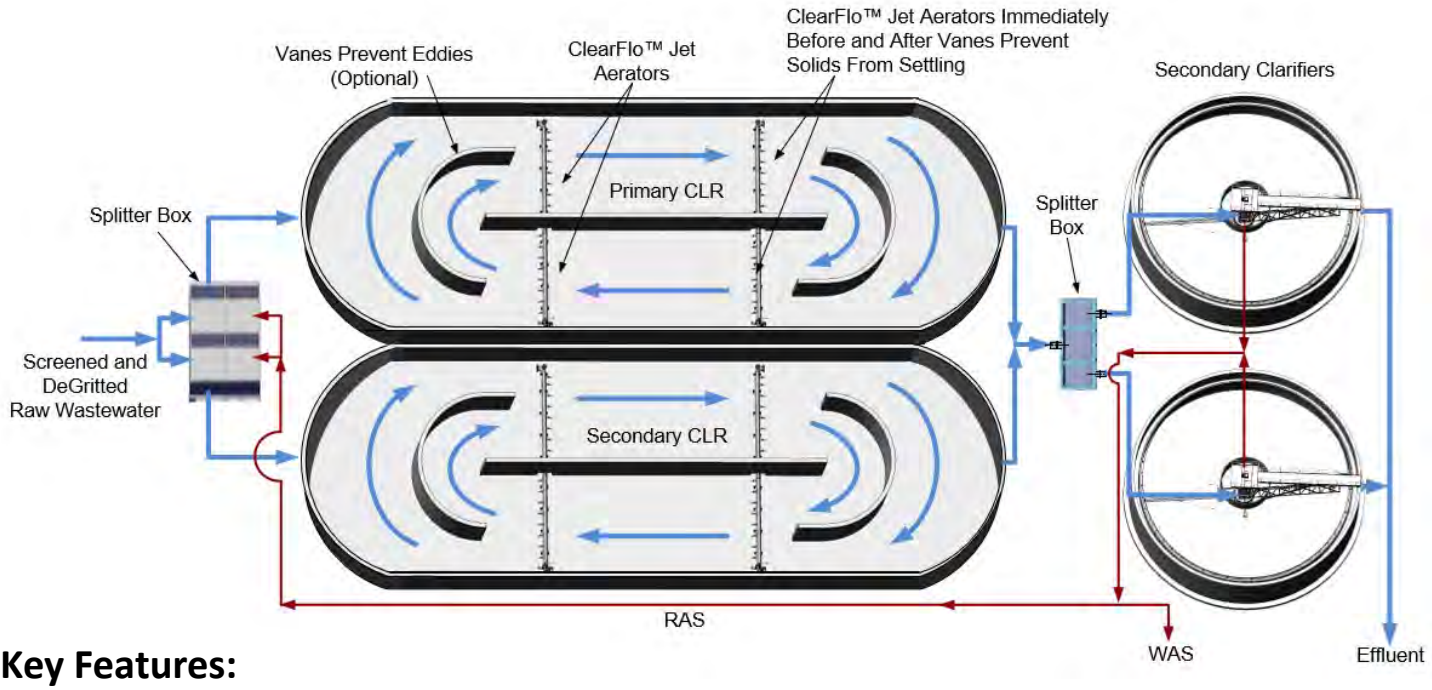
Deeper space-saving basins increase overall efficiency and reduce heat loss during winter operation. Clean operating subsurface jet aeration eliminates mist and spray, lowers maintenance, (no shafts or disks to break, nor expensive gear drives to service), and increases life, making ClearFlo™ CLR Systems the clear choice.

Jet Aerators

Dual Continuous Loop Reactors with Clarifiers

Spiral Blade Clarifier

ClearFlo™ Continuous Loop Reactors



Key Features:

Independent Control of Mixing and Aeration

The ClearFlo™ Jet Aerators operate by means of motive pumps and blowers which inject water and air in separate headers. These flows are controlled separately.

Multiple Configurations

Single Stage—Loops Run Independently

Dual Stage—Loops Run in Series

BNR— Operation with Aerobic and Anoxic Zones

Uniform transport Velocity

Motive Force is at the Bottom of the Basin

Air is Injected at the Bottom for Complete Mixing

Robust Construction

Headers and ClearFlo™ Jet Aerators - 304 SS

In situ Cleaning

Periodic Backflush (Automatic or Manual)

ClearFlo™ Continuous Loop Reactors

No Primary Clarifiers Required	
Travel Time Between Aerators	3 – 4 Mins
MLSS	3,000 – 5,000 Mg / l
Hydraulic Retention Time	24 - 48 Hrs
BOD_5	< 10 ppm
TSS	< 10 ppm
Total N	< 5 ppm
NH_3 - N	< 1 ppm

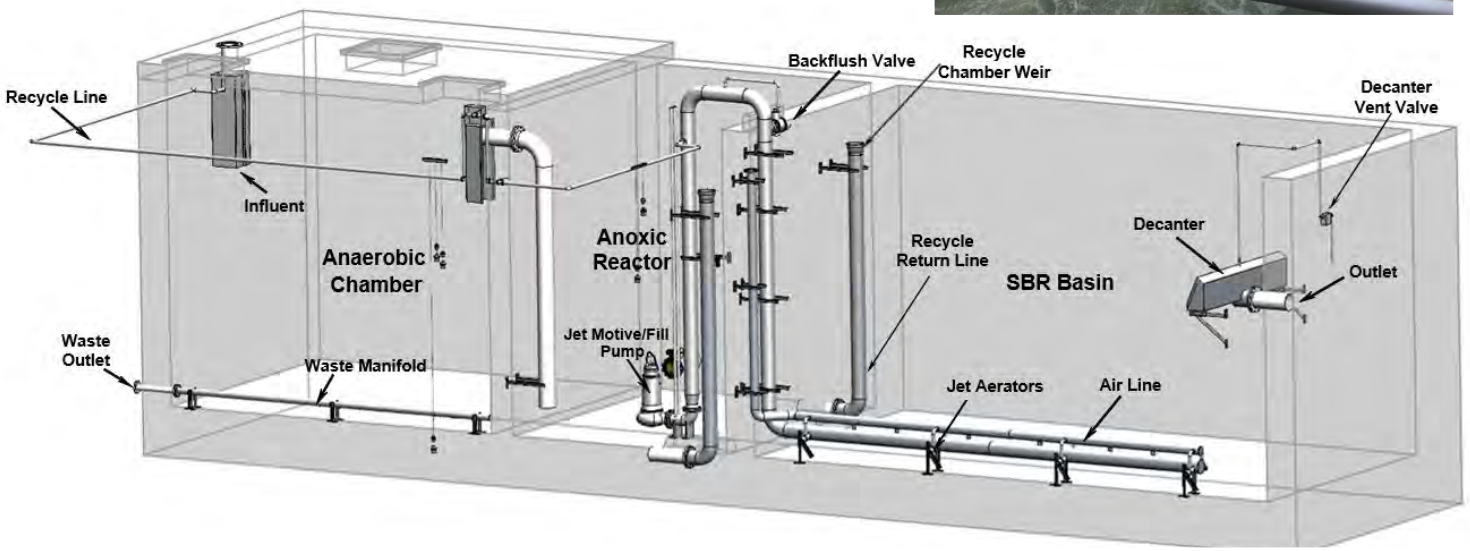
Backflush Header and Valve

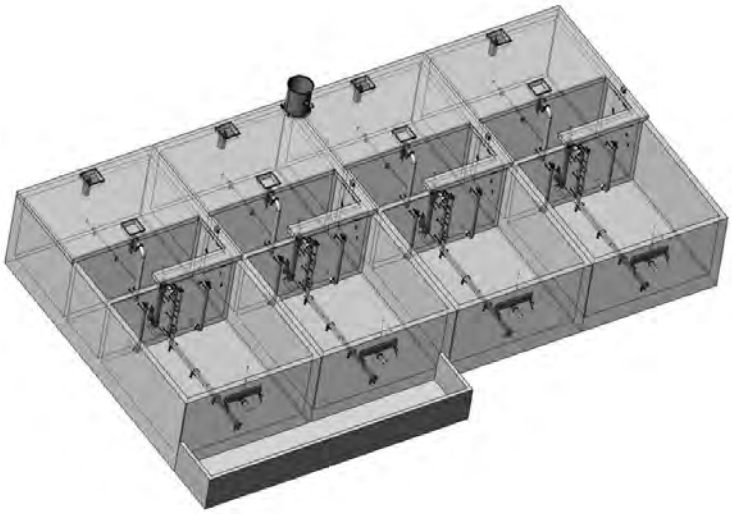
ClearFlo™ Sequencing Batch Reactors

ClearFlo™ SBR systems are optimized for a wide variety of applications; from small packaged single train systems to large Constant Level SBR systems.

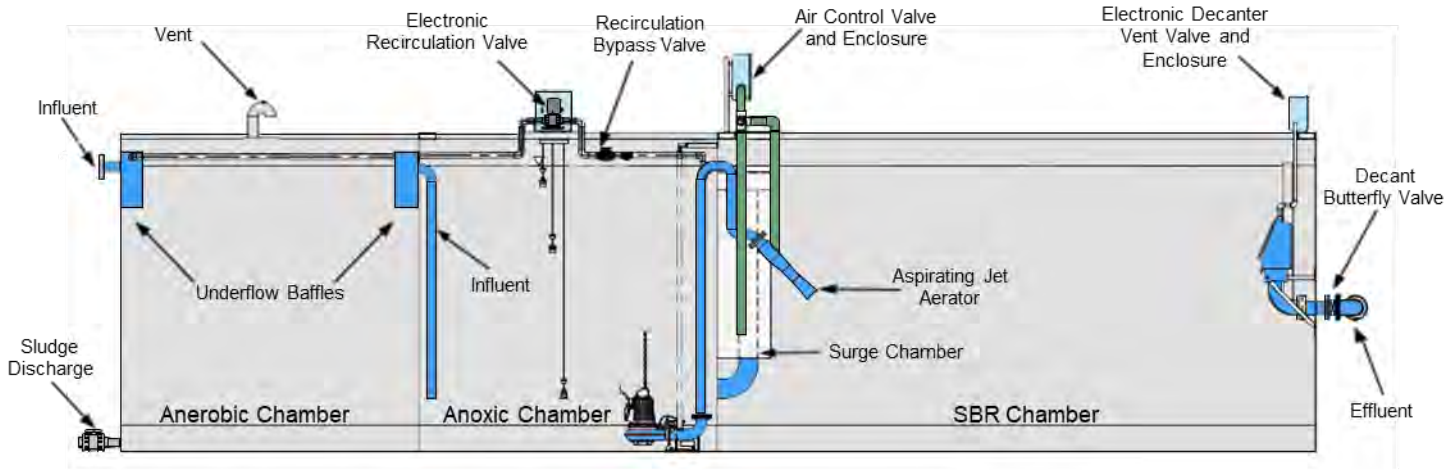
State of the art SBR designs are available to meet the toughest BNR standards.

Our proprietary operating strategy enables ClearFlo™ SBR systems to treat flows from zero to 350% of design flow without bypassing or permit violations.





ClearFlo™ Packaged SBR



Anaerobic Chamber

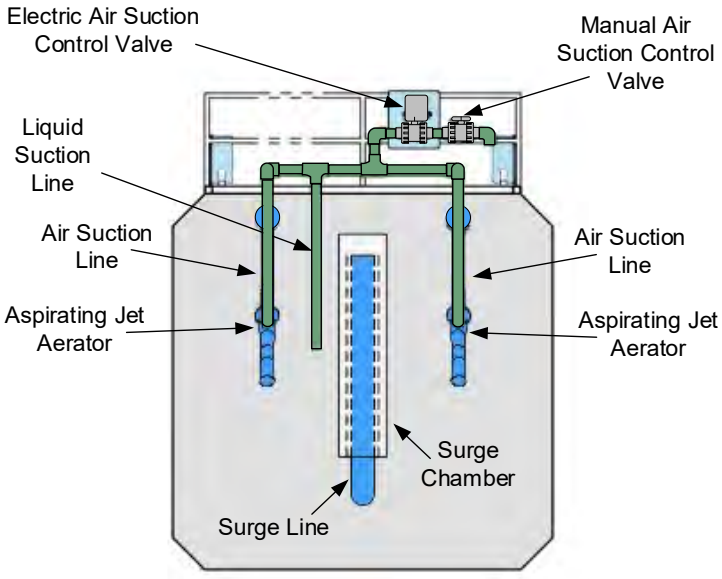
- Flow to anoxic chamber is continuous and the level is constant.
- 65% of solids settle.
- Digestion zone.

Anoxic Chamber

- Acts as flow equalization basin and batch tank.
- Floats are provided for level control.
- Capacity between bottom level and control level is equal to one full SBR batch.

SBR Chamber

- Filled, aerated, and mixed.
- When the anoxic reactor reaches control water level, aeration is discontinued .
- SBR basin settles under quiescent conditions.



Packaged SBR

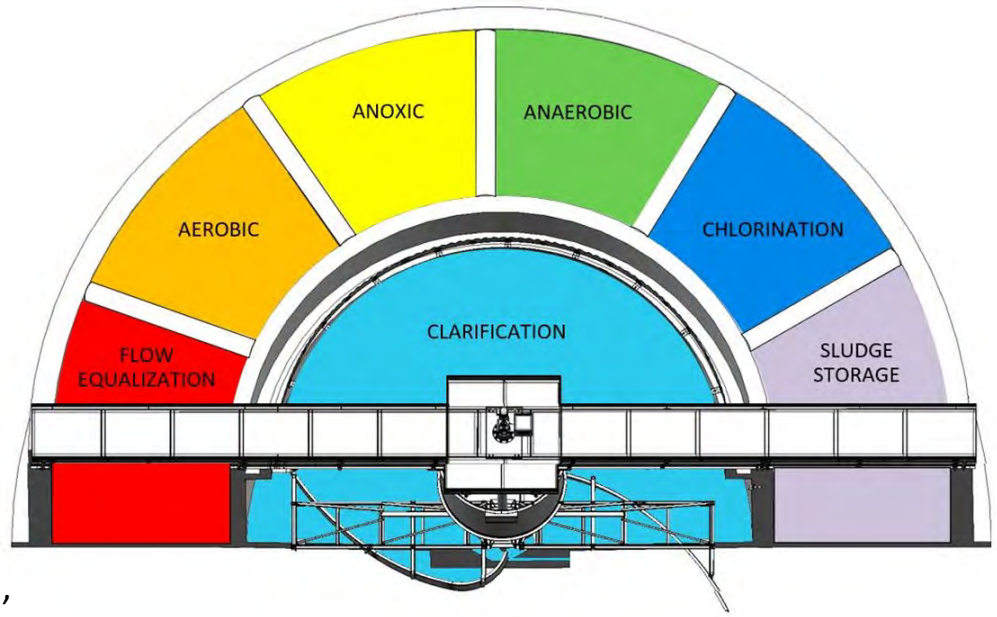
ClearFlo™ Bullseye Bio-Treatment Channel™

An economical design which combines some or all of: equalization, aerobic, anoxic, anaerobic, chlorination, aerobic sludge storage, and central clarifier in a common wall tank, thus reducing footprint, installation and treatment costs. Tanks may be concrete, welded or bolted steel, or stainless steel as determined by site requirements.

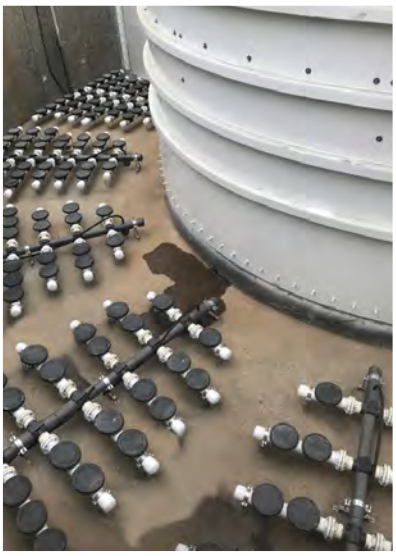
The biological and other functions are contained in the outer sections, while the clarifier, including scum skimmers, is contained in the center of the tank.

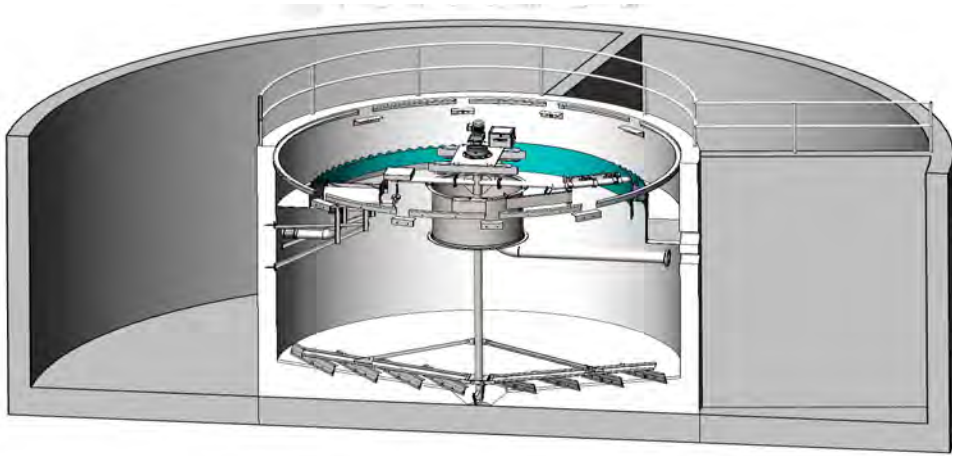
The clarifier may also include segmented blades, spiral blades, or a suction header for sludge removal. In addition, the drive mechanism can be either a shaft or cage drive and the tank include a partial or full bridge.

This range of choices allows for the best design for any particular application.



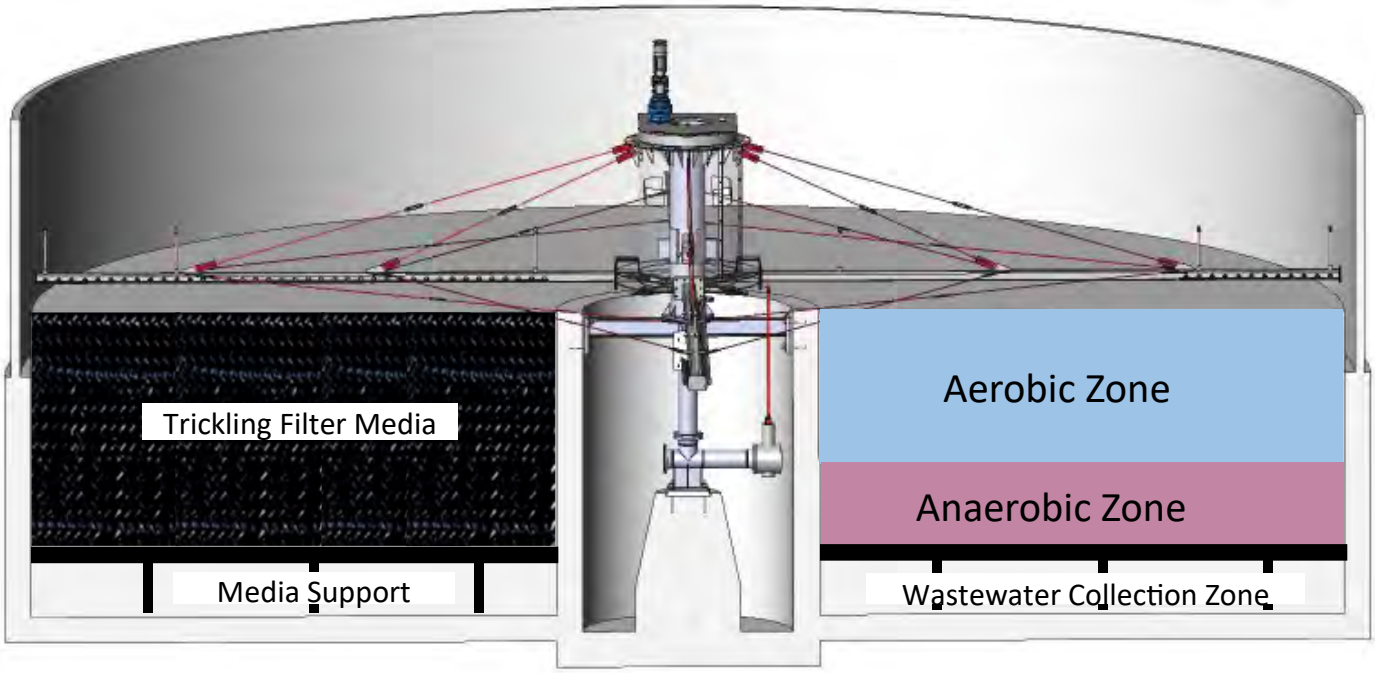
Provides the Full Spectrum of Treatment Options in a Single Unit





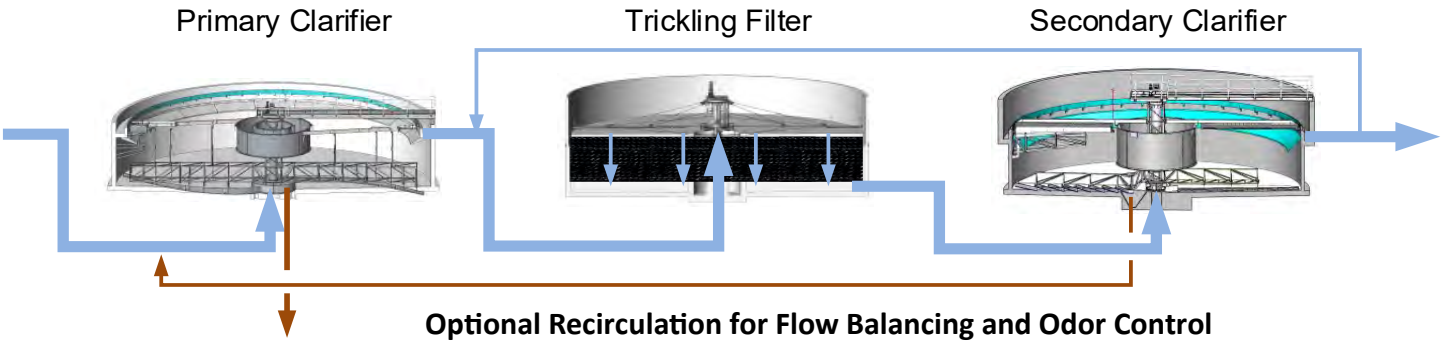
ClearFlo™ Trickling Filter Distributors

Trickling Filter Configuration



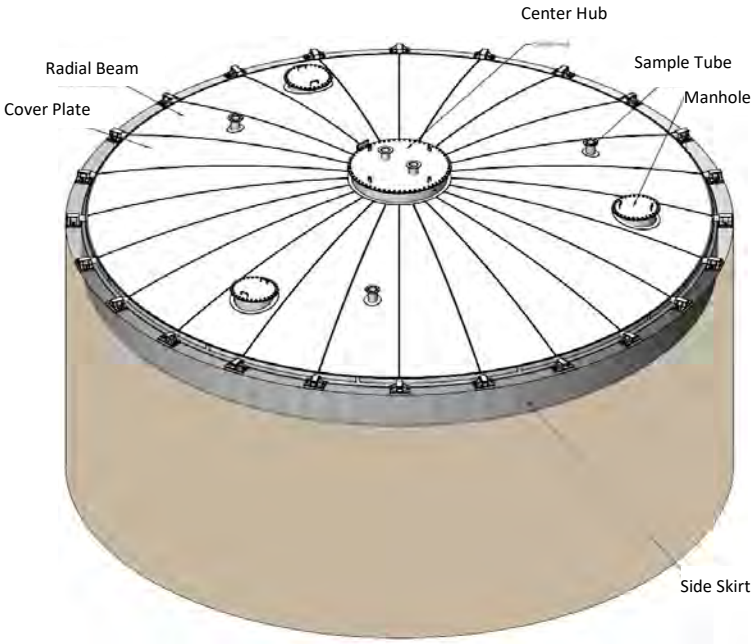
ClearStream distributors are either mechanically or hydraulicly driven. Speed-control allows normal operational speeds ranging from 4 to 10 minutes per revolution. More importantly, the speed-control distributor allows a regular (daily or weekly) "flushing" speed that slows the distributor to more than 60 minutes per revolution. This flush of the media is recommended for optimum performance of the unit.

Typical Trickling Filter Flow Diagram



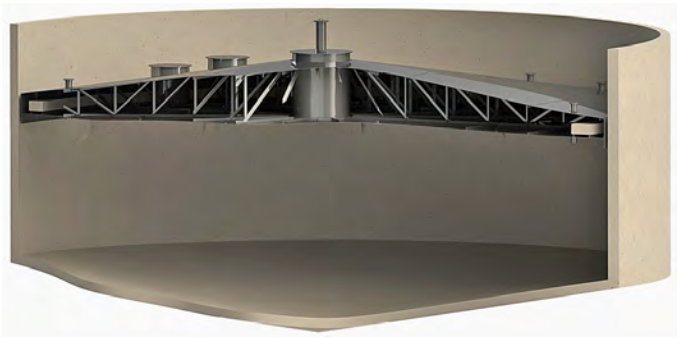
ClearStream Provides a complete Line of Digester Covers

Fixed Beam Digester Cover

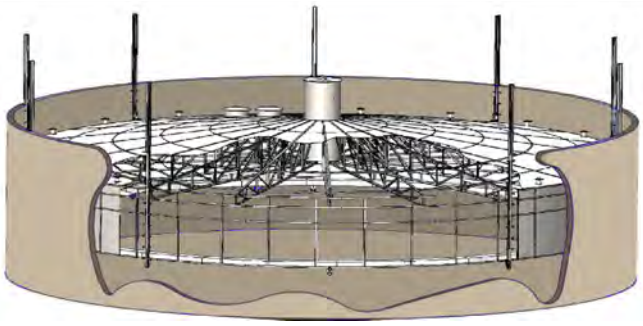


Gasholder Beam Digester Cover

Buoyant Floating Truss Digester Cover



Gasholder Truss Digester Cover



Dual Membrane Covers

Tank Mounted

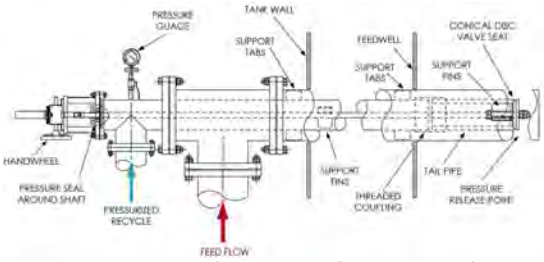
Slab Mounted

Dissolved Air Flotation (DAF)

Dissolved Air Flotation units can be used in water and wastewater applications to clarify lighter solids with a SG close to that of water, as well as thicken solids from other processes prior to further dewatering and / or digestion. The drive is mounted on the walkway or column. The drive turns a structural torque tube or shaft, which in turn rotates the solids removal mechanism.

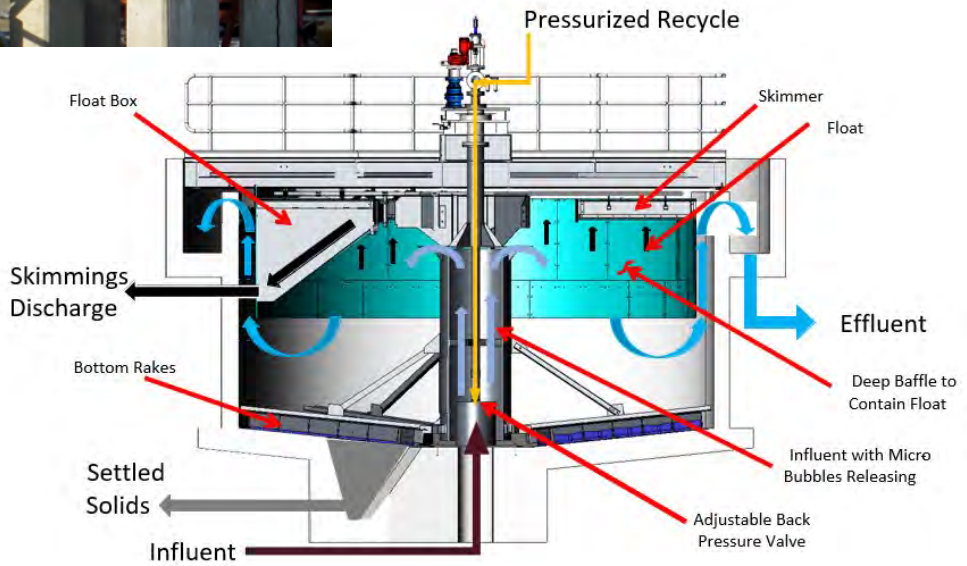
ClearStream Dissolved Air Flotation units can be installed in a variety of tanks including concrete, anchor channel, or elevated tanks. This makes our design well suited for retrofit or upgrade installations.

All units are 3D modeled to ensure proper fit up.



Pressure Release Valve Detail

In some Dissolved Air Flotation units, the inlet feed comes up through the bottom center. In these cases, the pressure relief valve is mounted vertically to ensure complete mixing of the stream with the dissolved gas and the raw influent.



Rectangular DAF Units

1. Typically ship fully shop-assembled.
2. Can include integral coagulation and flocculation chambers.
3. Lower installed costs.
4. Can fit in narrow space i.e., between buildings / other equipment.
5. Internals can be installed in a rectangular concrete basin.

ClearStream Process Equipment