



Quality Equipment: Competitive Price

## Trickling Filter Rotary Distributors





## Typical Operating Parameters

Trickling Filter Application	Organic Loading lb/kcf/day	Wastewater Strength	Removal	Media Selection
Roughing Filter	100-220	High	40 - 80% cBOD Conversion	Vertical Flow or Mixed Media with Large Flutes
Carbon Oxidizing Filter	20-60	Medium	15 - 30 mg/l BOD <sub>5</sub>	Cross Flow Media with Large Flutes
cBOD & Nitrification Filter	5-15	Low	BOD <sub>5</sub> < 10 mg/l NH <sub>3</sub> -N < 3mg/l	Cross Flow Media with Large Flutes
Nitrification Filter	N/A	Very Low	0.5 - 3 mg/l NH <sub>3</sub> -N	Cross Flow Media with Medium or Small Flutes

## Trickling Filter Features

1. Simple, reliable, biological process.
2. Suitable in small areas without room for land intensive treatment systems.
3. Effective in treating high concentrations of organics depending on the media type.
4. Resistant to Shock Loads and Toxins. Not a mixed system, toxin affects localized. Recycle averages out shock loads.
5. Appropriate for small to medium sized communities
6. Rapidly reduce soluble BOD<sub>5</sub> in applied wastewater.
7. Waste sludge easy to dewater, primarily sloughed off bio layer.
8. Settles and dewateres better than activated sludge
9. Efficient nitrification units.
10. Durable components—Low Maintenance
11. Low Energy requirements, do not typically require blowers

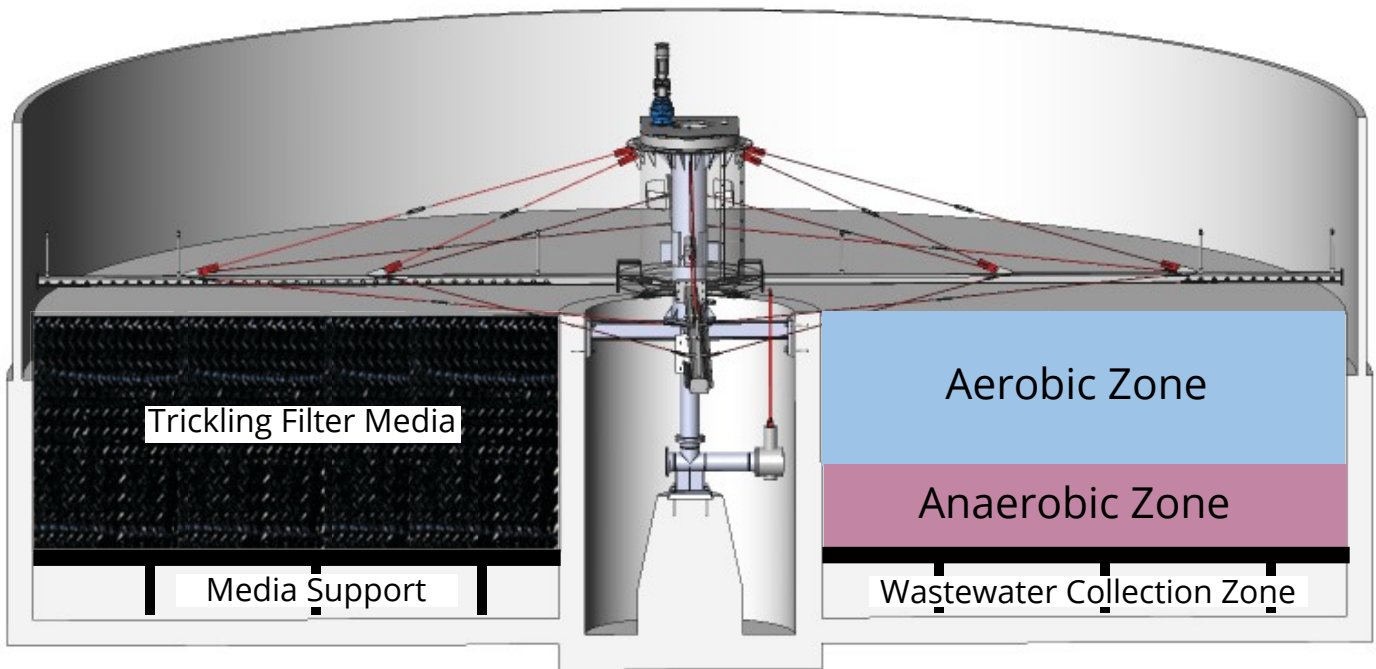


Trickling filters can use a wide range of medias: rocks, gravel, slag, ceramic media, plastic media or other.

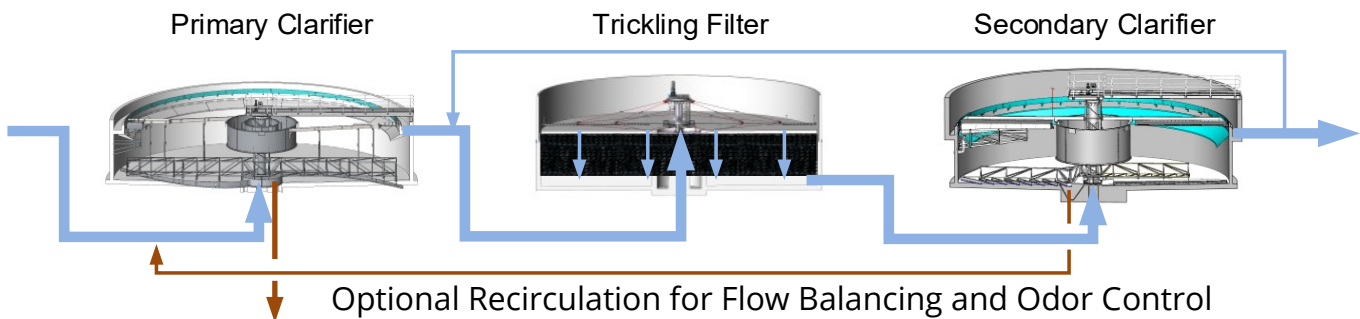


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## Trickling Filter Configuration



## Typical Trickling Filter Flow Diagram



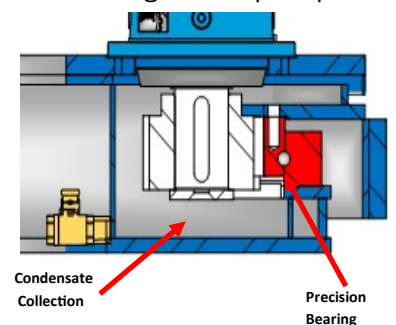
ClearStream distributors are either mechanically or hydraulically driven. Speed-control allows normal operational speeds ranging from 4 to 10 minutes per revolution. More importantly, the speed-control distributor allows a regular (daily or weekly) "flushing" speed that slows the distributor to more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

## Drive Description

- ◆ Low speed, direct coupled gear drive
- ◆ Totally encased with oil bath.
- ◆ Center column mounted with external drive ring attached to drive cage.
- ◆ Designed for a wide range of output speeds.



**No Lower Bearing Required**  
Pinion Bearing oversized, eliminates need for a lower bearing.  
Reducer has a 1.25 service factor to handle radial loads.

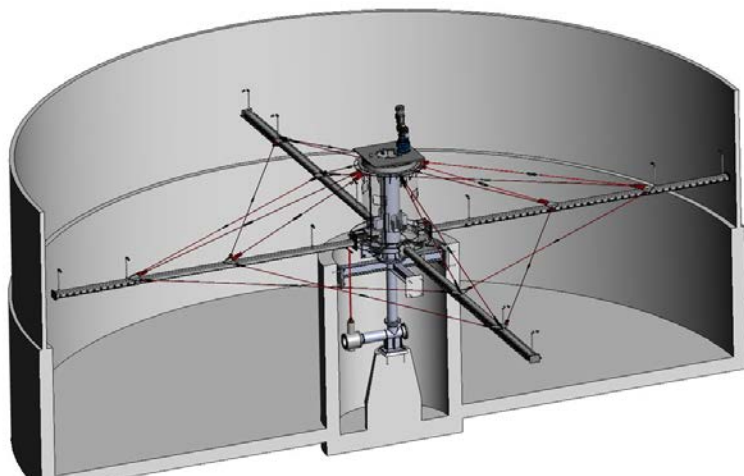




## Trickling Filter Rotary Distributors



ClearStream produces a 3D model of every unit which we manufacture. These models are extremely valuable to ensure proper fit up. In addition, these models can be a useful tool for operators training and understanding of the unit design and operation. ClearStream provides these 3D models as well as the means for clients to view and manipulate these models at their own site or offices. This affords operations and maintenance personnel with a unique opportunity to “preview” the unit prior to any planned maintenance.



### FEATURES

- ◆ Precision main gears and bearings allow for a more robust drive unit as opposed to cast iron strip liner drives, which can have inclusions that will weaken the gearing and housing. Design life for **PRE** Drives is a calculated L10 life in excess of 100 years as the standard.
- ◆ Hydraulic torque control, measured by the reaction of the rotation of the upper gear housing, offers a more accurate measurement of torque, along with eliminating the use of worm gears or mechanical overload devices, which can both seize up over time.
- ◆ Planetary and Helical speed reducers allow for high efficiency designs, which in turn can reduce power consumption, thus saving the plant money in electricity costs.
- ◆ Elimination of the use of a lower pinion bearing, which is common failure point in competitors’ drive units.
- ◆ Available On-site Turnkey Inspection, Repair, and Replacement Services.
- ◆ Standard components save time and money.
- ◆ 5 year Standard Warranty on Precision Bearing Drives (less motors and paint)



Water & Wastewater Treatment Solutions  
Municipal, Industrial, Power & Mining