

Hydro MicroScreen™ vs. Primary Clarification

Hydro MicroScreen™ Significantly Reduces Footprint with Equal or Better Performance



Primary Clarifiers



Hydro MicroScreen System

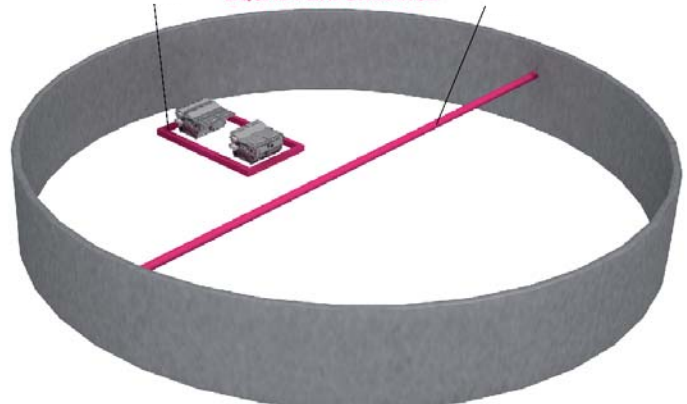
Primary Clarifier Characteristics		Hydro MicroScreen™ Characteristics	
1.5 to 2.5 hours detention time	Design	Sized based on screen porosity and inlet concentration	
<ul style="list-style-type: none"> · 50-70% TSS Removal · 25-40% BOD Removal · Removes settleable solids and scum 	Performance	<ul style="list-style-type: none"> · 30-80% TSS Removal · 20-60% BOD Removal · 30-40% FOG Removal · Removes settleable solids and scum 	
Very large	Footprint	Small (typically 1/10th of Primary Clarifier)	
Drive motor and sludge pump > 10 HP even on small diameter units	Power	7 HP or less per unit	
<ul style="list-style-type: none"> · 2-12% TS 	Solids/Sludge Concentration	<ul style="list-style-type: none"> · 2-4% TS directly off screen · 30-50% TS with dewatering 	
Pumping, thickening and dewatering	Further sludge processing	None when supplied with dewatering components	

Considerations for Designing Primary Clarification Processes

Primary clarifiers are widely used to remove TSS and BOD as a function of detention time and concentration. Typically larger, more slowly biodegradable solids settle and are removed as sludge. Fine, slowly setting solids and dissolved solids remain in suspension, depending on detention time, and are contained in the effluent.

Basin performance is impacted by short circuiting, hydraulic stability, temperature and wind effects. Normally, primary sedimentation tanks are designed to provide 1.5-2.5 hours of detention based on average flow, safety factors are recommended in cold climates to ensure performance. Performance is a function of detention time and concentration and typically assumes empirical constants rather than utilizing the actual settling velocity of material to be removed.

Two MS-80 Hydro MicroScreen™ (160 ft² footprint) **EQUAL PERFORMANCE** 65' Primary Clarifier (3,320 ft² footprint)



Relative Sizes of Hydro MicroScreen & Primary Clarifiers (With Equivalent Performance)

Verified Lab Results

Typical (Design vs. Measured) Removal		% Removal	
		TSS%	BOD
Primary Clarifier	<i>Typical design*</i>	50-70%	25-40%
Hydro MicroScreen	<i>Tested screen sizes</i>		
	105 micron	81%	58%
	160-190 micron	60%	41%
	300-340 micron	38%	26%

* Metcalf & Eddy 2013

How it Works

The Hydro MicroScreen uses a physical barrier to separate liquids and solids, rather than settling velocity and detention time therefore it **reduces particulate TSS, BOD and FOG much more quickly and in a significantly smaller footprint than primary clarification**. Filtered effluent contains a higher ratio of readily biodegradable (soluble) to total BOD which is important to biological processes. Particulate BOD is typically settled in a primary clarifier and removed as waste sludge. Any BNR process benefits from microscreening as the particulate BOD the screen removes does not affect the F:M ratio associated with the BNR process.

The Hydro MicroScreen is available with a wide range of screen openings allowing removal rates to be customized to meet application and site requirements.



Primary Clarification System

Benefits

As the Hydro MicroScreen is typically **half the cost, 90% smaller and uses 80% less power** than conventional primary clarifiers, microscreening for primary treatment reduces project costs and footprint in addition to reducing energy requirements.

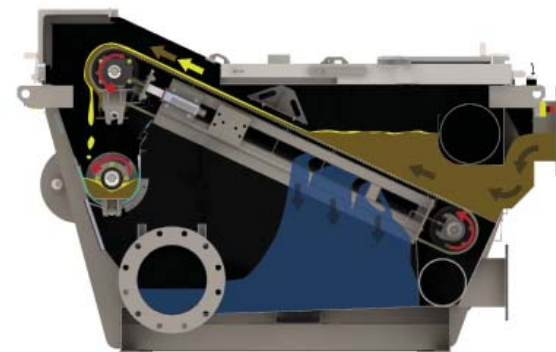


Hydro MicroScreen - Small Footprint Replacement for Primary Clarifiers

Visit hydro-int.com/MicroScreen or call 866.615.8130 to discover how the Hydro MicroScreen will save your plant money!

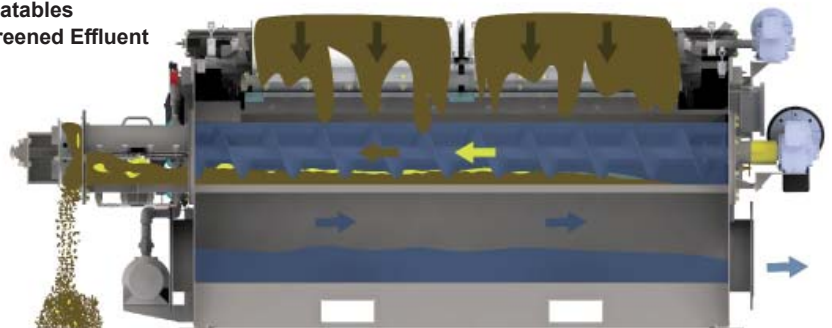


Hydro MicroScreen Rotating Belt Reduces BOD and Gets More TSS



Side View - Screening Operation

- Raw Influent
- Floatables
- Screened Effluent



Back View - Dewatering Operation