

## Hydro MicroScreen™ vs. Primary Clarification

Hydro MicroScreen™ Significantly Reduces Footprint with Equal or Better Performance



Large primary clarifiers



Small footprint Hydro MicroScreen™ system

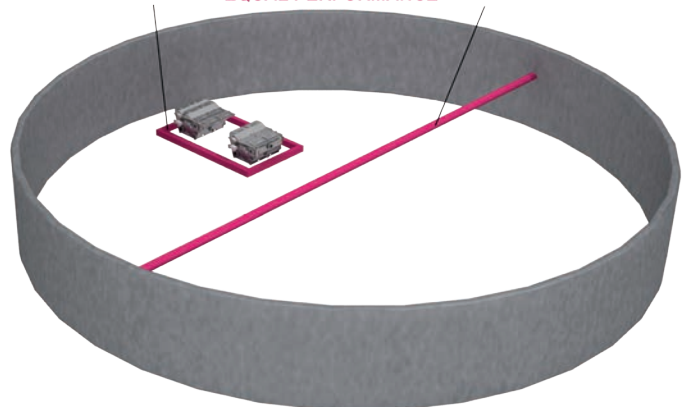
Primary Clarifier Characteristics		Hydro MicroScreen™ Characteristics
1.5 to 2.5 hours detention time	<b>Design</b>	Sized based on screen porosity and inlet concentration
50-70% TSS Removal 25-40% BOD Removal Removes settleable solids and scum	<b>Performance</b>	30-80% TSS Removal 20-60% BOD Removal 30-40% FOG Removal Removes settleable solids and scum
Very large	<b>Footprint</b>	Small (typically 1/10th of Primary Clarifier)
Drive motor and sludge pump > 7.5 kW even on small diameter units	<b>Power</b>	5 kW or less per unit
2-12% TS	<b>Solids/Sludge Concentration</b>	2-4% TS directly off screen 30-50% TS with dewatering
Pumping, thickening and dewatering	<b>Further Sludge Processing</b>	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 utilising the actual settling velocity of material to be removed.

Two MS-80 Hydro MicroScreen™ (15 m² footprint) **EQUAL PERFORMANCE** 20 m (65') Primary Clarifier (308 m² footprint)



Relative sizes of Hydro MicroScreen™ and 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 µm	81%	58%
	160-190 µm	60%	41%
	300-340 µm	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 customised to meet application and site requirements.



Primary clarification system

## Benefits

As the Hydro MicroScreen is typically **half the cost, 90% smaller and uses 50% less power** than conventional primary clarifiers, microscreening for primary treatment reduces project costs and footprint in addition to reducing energy requirements.

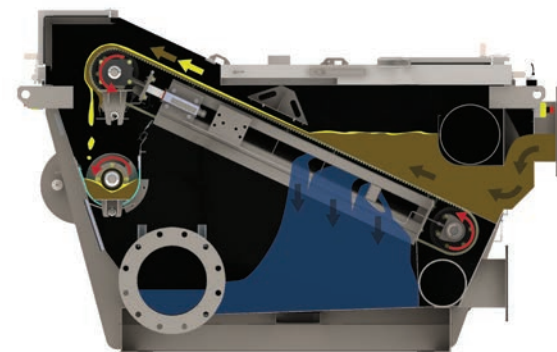


Hydro MicroScreen™ - a small footprint replacement for primary clarifiers

Visit [hydro-int.com/hydro-microscreen](http://hydro-int.com/hydro-microscreen) or call 01275 878371 to discover how the Hydro MicroScreen could save your plant money!

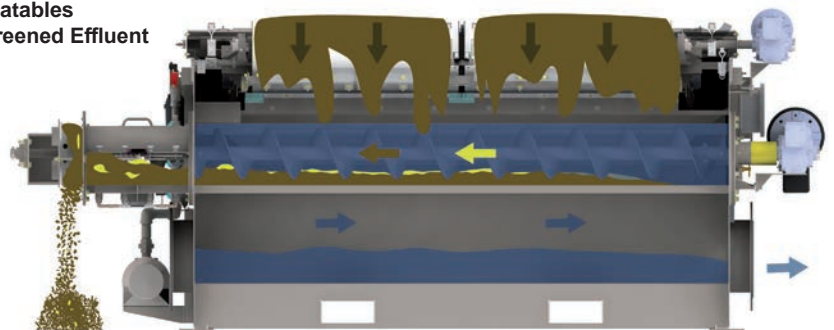


Hydro MicroScreen™ rotating belt reduces BOD and gets more TSS



Side View - Screening Operation

- Raw Influent
- Floatables
- Screened Effluent



Back View - Dewatering Operation