Hydro-Jet® Screen

Award winning **non-powered, self-cleansing** screening technology.

Product Profile

The Hydro-Jet® Screen is a self-activating, self-cleansing, CSO screening system with no moving parts and no power requirements. A compact device with high hydraulic throughput, the Hydro-Jet® Screen is perfectly suited for small to medium size CSO sites.

Advantages

- No moving parts or power requirement.
- Self-activating.
- Self-cleansing.
- Low headloss.
- Removal of all material greater than 6 mm in two directions.
- Small footprint.
- Low capital and life cycle costs.
- Minimal maintenance.

Applications

- Floatables control for CSOs and collection systems.
- New CSO facilities.
- CSO retrofits.
- Remote treatment sites.

How it works

Dry weather flows pass through the Hydro-Jet® Screen chamber (red arrow) via the dry weather channel and continue downstream to a treatment plant (brown arrow).

During wet weather events, the flow increases as runoff drains into the combined sewer system. The water level in the dry weather flow channel rises as a flow control limits the flow passed through the continuation flow outlet to the treatment works.

Once the dry weather flow channel is full the excess spills over the weir wall and flow passes through the angled self-cleansing screen. Screenings are captured on to the top of the screen.

As the water level under the screen rises to the crest of the siphon the pocket of air trapped between the water surface and the screen creates a scouring, backwash mechanism. Debris is lifted off the screen and carried down to the screenings return channel, which is returned to the continuation flow (brown arrow) via the screenings return Hydro-Brake® Flow Control.

The siphon breaks, discharging the screened effluent (blue arrow) to the receiving water. As the siphon is designed to discharge more than passes over the screen weir, the water level over the screens is drawn down until air is introduced to the siphon when the cycle starts again.
Design

The Hydro-Jet® Screen is typically designed for a loading rate of 200 l/s/m². Other parameters include:

- Design inflow rate.
- Design pass on flow to treatment.
- Design spill flow.
- Design maximum top water level in main channel.
- Maximum acceptable top water level in screenings return chamber.
- Maximum acceptable top water level in siphon discharge chamber.

Flow Control

The screenings return Hydro-Brake® Vortex Flow Control is an integral part of the Hydro-Jet® Screen system and is essential to the efficiency of the backwash cycle.

The average flow rate through the screenings return Hydro-Brake® Flow Control is in the order of 7.5 l/s.

Design Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Screening Panels</th>
<th>Treatment Flow Rates (l/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>1-3</td>
<td>0 - 450</td>
</tr>
<tr>
<td>L-Shaped</td>
<td>&gt;3</td>
<td>&gt;450</td>
</tr>
</tbody>
</table>

Configurations

- **Rectangular configuration** for small sites.
- **L-shaped configuration** for larger sites.

Maintenance

The Hydro-Jet® Screen design incorporates a hydraulically operated siphon that regulates the self-cleansing dynamic backwashing system.

The Hydro-Jet® Screen should be visually inspected after the first two spill events and twice a year thereafter.

After a spill event the screen should be at least 50% clear of debris. If excessive debris is observed, downstream surcharge is likely. The screen should be hosed down and steps should be taken to reduce the top water level in the downstream sewer network.