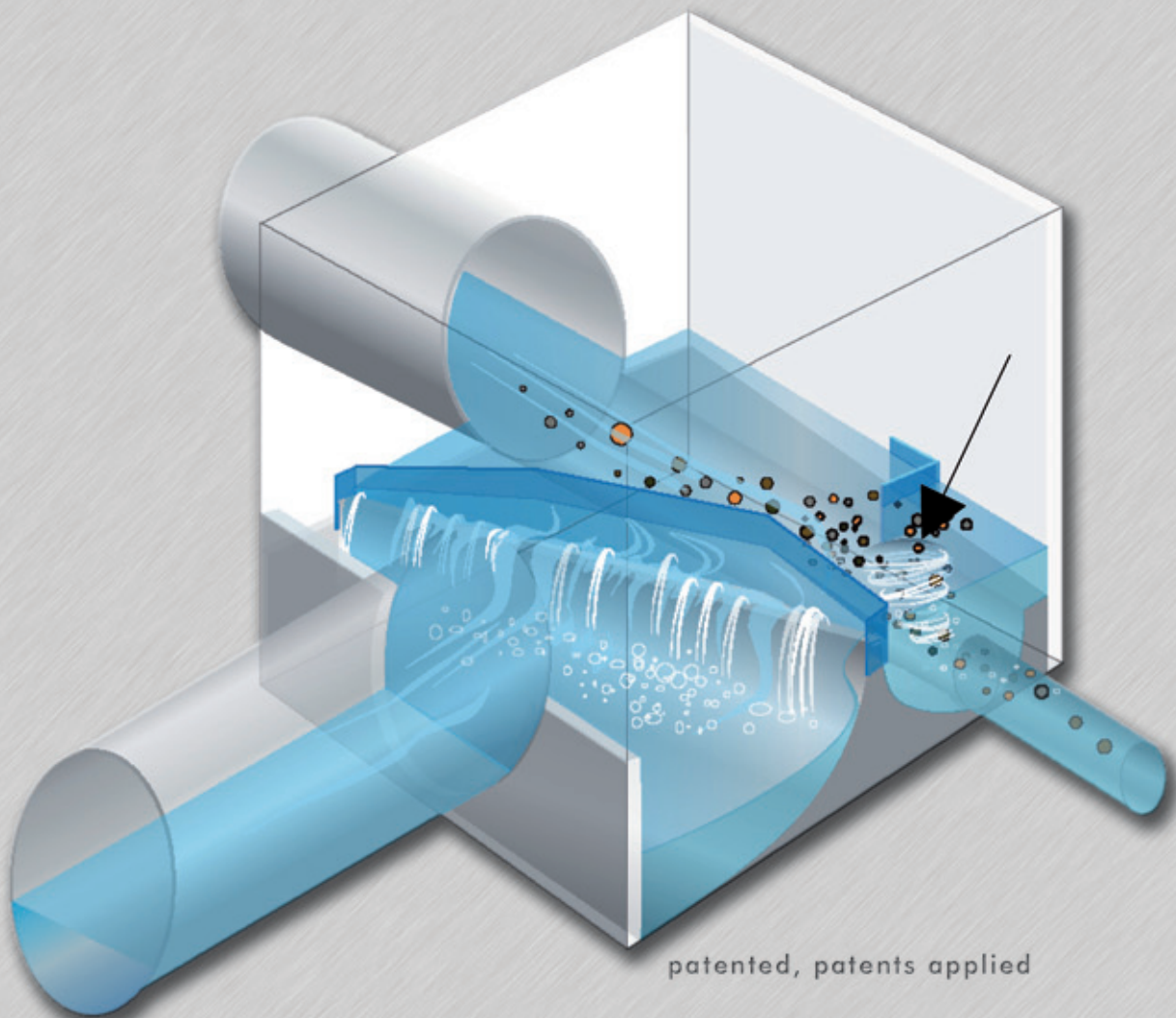


**NEW**

**Steinhardt®**  
**HYDROSPIN**

Floatables removal

External energy free removal  
of floatables at overflows



**Steinhardt®**  
Water Technology Systems



## Floatables removal

### Complex of problems

Overflow events within a sewer system can pollute receiving waters with floatables and suspended solids, for example plastics, papers, sanitary articles. This is evidence of insufficient cleaning of the combined sewage at CSO's.

Fixed scum-boards are standard equipment of sewer network overflows according to DWA ATV A-111 and are used to retain floatables.

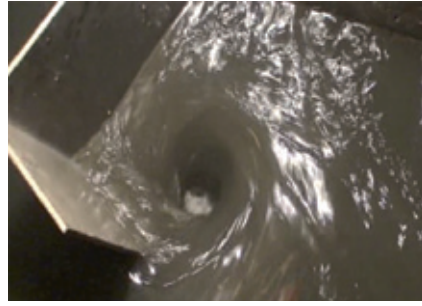
Often the floatables are sucked underneath the scum-board to the overflow. That happens at rising water levels after heavy rain because of the strong turbulences and at dropping water levels because of the collected floatables in the overflow chamber. The shoreline of the receiving water is often polluted with clearly visible dirt and debris.



### The Path

Bar- and brush screens are a very effective solution for retaining floatables and suspended solids within the sewer and allowing the debris to be transported to the wastewater treatment plant.

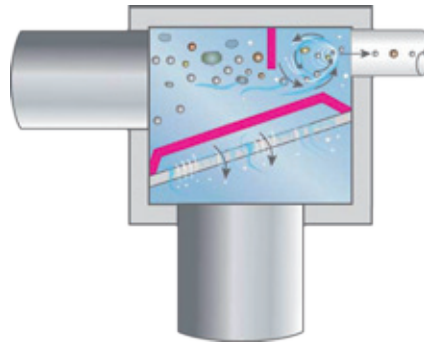
Stressed budgetary situations often delay such investments. Screening machinery is highly effective but also expensive, because the size must match the maximum possible load. The HydroSpin® Floatables Removal sets the benchmark with a new working principle. During the whole rain event all floatables are continuously drawn into the continuation sewer and on to the WWTP by an artificially generated vortex.



HydroSpin in action

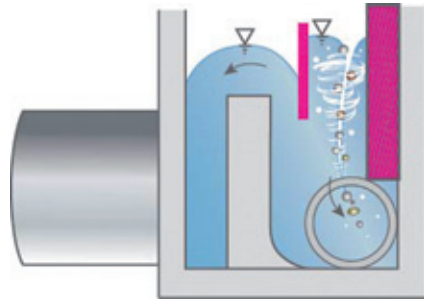
### The System

The HydroSpin® Floatables Removal consists of the chamber components: Inflow, outflow and overflow. The system components are: combined guide- and scum-board, adjustable vortex plate and flow optimized vortex area.



Plan view overflow chamber

The rotational energy for the artificial vortex is supplied by the out flowing combined water to the WWTP. For creating the artificial vortex the vortex plate must be positioned such that there is a flow optimized vortex area.



Side Weir Overflow structure cross section

### Section overflow chamber

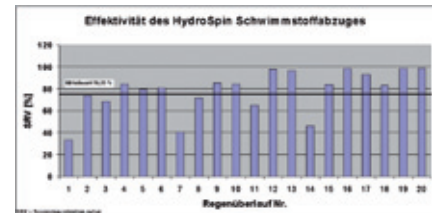
Installing the vortex plate generates a water level differential between inflow and vortex area. Thereby the floatables are continuously guided along the "guide- scum-board combination" to the vortex chamber and are sucked into the vortex through the outlet pipe directly to the WWTP. The

"guide- scum-board combination" has a double function, It is scum-board according to (ATV A-111) and simultaneously a guiding plate for the floatables.

The HydroSpin® Floatables Removal uses only hydraulic effects to operate. It works continuously when the water level reaches the designed point and prevents accumulation of floatables that could have been discharged to the receiving water.

The HydroSpin® Floatables Removal is virtually maintenance free, the continuous vortex provides a self cleaning effect. Its continuous removal of floating debris assists in the prevention of blocking due to the build up of high levels of particles.

The simple retrofit of existing chambers with HydroSpin® Floatables Removal increases the quality performance and enables a better protection of the connected surface waters. Data analysis from Japan proves that up to 78% of the floatables and suspended solids can be removed from the overflow using HydroSpin® Floatables Removal. (Nakamura et al., 2010)



The knowledge of the hydrodynamic interrelation in between guide-, scum-board, vortex plate and vortex area is essential for the performance. For that reason the hydrodynamic design should be done by Steinhardt Engineers. 1000 installations already operate successfully.

### Advantages

- Continuous floatable removal
- Works also with partial impound
- Counteracts debris accumulation
- No electric power used. Water powered vortex
- High removal rate
- Best environment protection with minimal cost
- Can be retrofitted
- No moving parts
- Virtually maintenance free