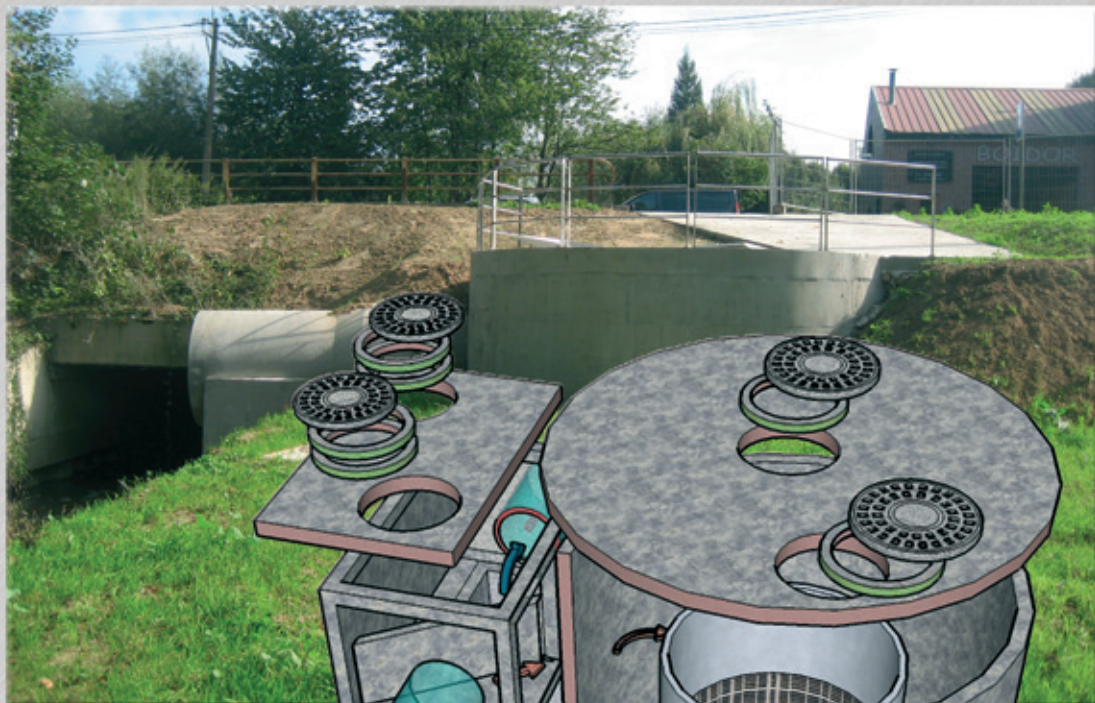




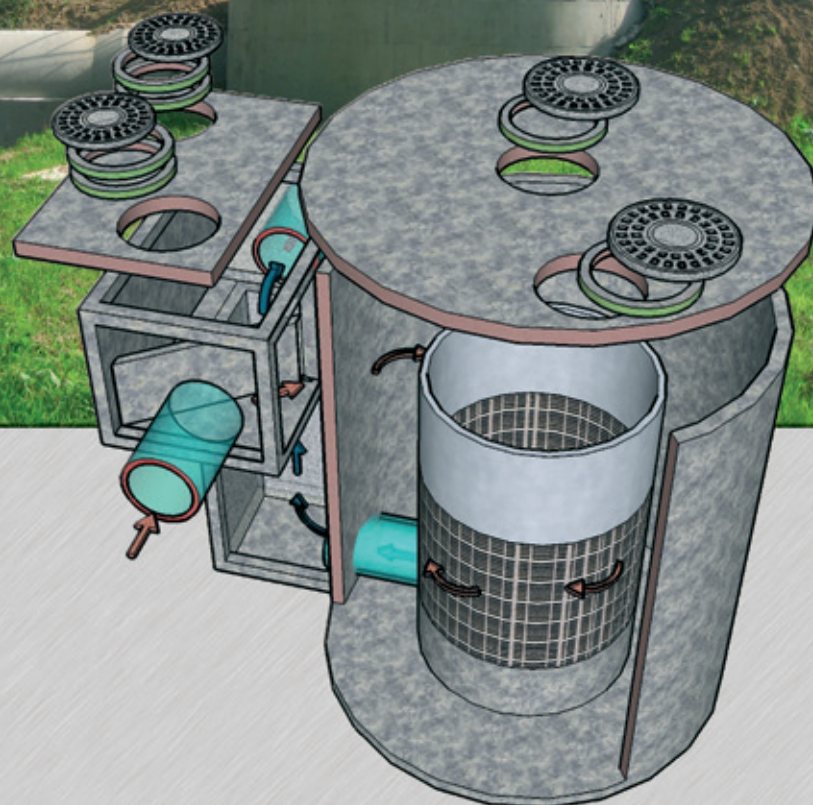
# Steinhardt HYDROTWISTER®

Dynamic Vortex Separator

External Energy-Free Separation  
of Coarse, Suspended and Floating Solids  
in One Compact Structure



patented



Steinhardt®  
Water Technology Systems

dynamic vortex separator  
compact and energy-free

## The Challenge

Packaging, plastics, glass and sanitary items pollute our watercourses. These waste items are derived from the dropping of litter and discharges from sewage overflow structures. Litter accumulates on the highway and adjacent ditches which is then washed into the watercourses during rainfall events.

In addition to the general litter which causes aesthetic problems, the runoff from highways also contains oils and heavy metals which can be free floating or attached to grit particulates.



To maintain high quality water systems, we need to protect them from these sources of pollution.

## The Path

Sedimentation tanks, screen systems and flow dividing systems incorporating baffle plates are commonly used technologies to separate contaminants. These types of technologies are used in differing ways depending upon regional preferences.

The HydroTwister® provides an in-line treatment unit, conveniently sized to nominal manhole sizes. According to the German Society for Water Management, Waste Water and Waste (ATV-DWA) A 112, dynamic separation can be used for combined and rainwater system treatment.

The Steinhardt HydroTwister® vortex separator combines the advantages of the known techniques.

## Four Functions in One Structure

- Debris and Grit trap
- Screen
- Baffle Plate
- Dynamic Separation

The HydroTwister® vortex separator combines 4 treatment methods into one compact system, utilizing vortex energy for non-powered operation and self cleaning of the screen face.

## The Solution

The HydroTwister® consists of a compact circular concrete shaft with a specially designed screen, producing inner and outer treatment zones. The circular screen is manufactured from high quality stainless steel and consists of an upper baffle plate, a central screen area and a drain outlet in the bottom, which routes the treated water back to the discharge pipe / watercourse.

Rainwater flows are directed in a circular motion around the outer treatment chamber, this flow passes tangentially to the screen. The screen permits water to pass through, but due to centrifugal forces, the grits and other particulates are driven to the outer concrete wall and downwards to the contamination trap area. Suspended solids of greater size than the screen aperture will be reliably retained.

The vortex flow carries debris around the outer chamber, with the heavier particles sinking to the bottom debris trap, and the lighter, floating particles retained within the floating solids chamber.



The cleaned water that flows through the sieve screen enters the

inner chamber and exits the unit via the outlet drain (see cover picture). The patented HydroTwister® is designed as a hydro dynamic separator. In addition, different screen apertures are available to match flow and treatment targets. This unit can be installed in either in-line or off line configurations. Advanced automation and monitoring and automated debris removal are available options. Our team at Steinhardt are looking forward to support your projects.

## Performance

For the treatment of a particle diameter of e.g.  $d > 2.5$  mm the following performance values can be achieved:

Outer shaft diameter	Maximum flow rate
1800 mm	max. approx. 80 l/s
2300 mm	max. approx. 160 l/s
2800 mm	max. approx. 350 l/s
Further particle diameters and flow rates upon request	

- **Coarse contaminations** ( $> 2.5$  mm): approx. 99 % efficiency
- **Suspended solids** ( $> 400 \mu\text{m}$ ): approx. 99 % efficiency
- **Free hydrocarbons:** approx. 95 % efficiency

## Advantages

- Hydro-dynamic solid/liquid separation
- Gravity separation
- Energy-free, powered by vortex flow
- Self-cleaning effect due to vortex flow
- Integrated baffle plate
- Integrated coarse material trap area
- Integrated sieve screen
- Compact small flow-dividing structure with treatment
- High performance
- Variable design adapted to the environment
- High reliability
- Simple and quick installation
- Planning support