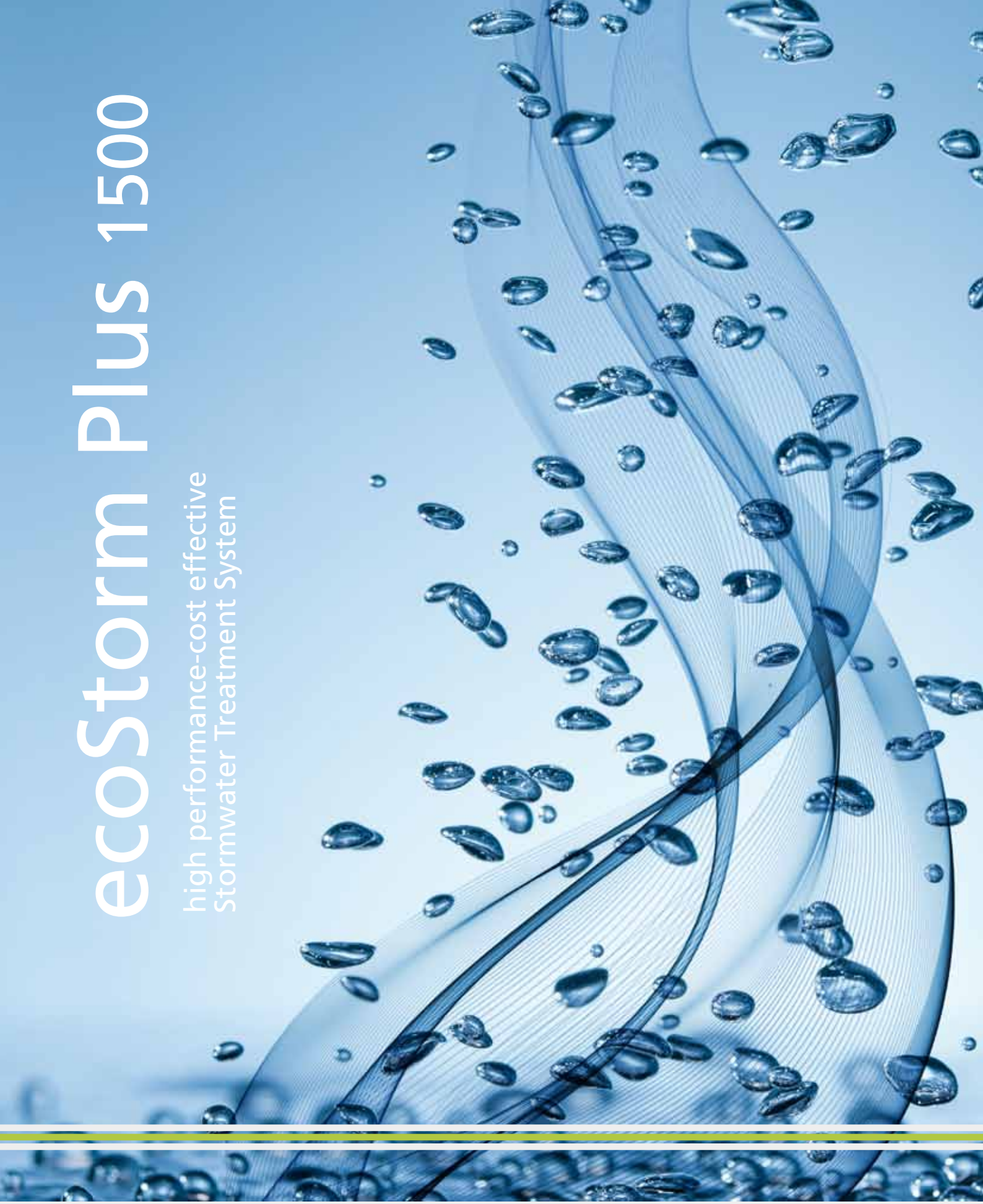
ecoStorm Plus 1500

high performance-cost effective
Stormwater Treatment System



For the removal of sediments, heavy metals and nutrients.

FREYTECH INC.

ecoStorm plus

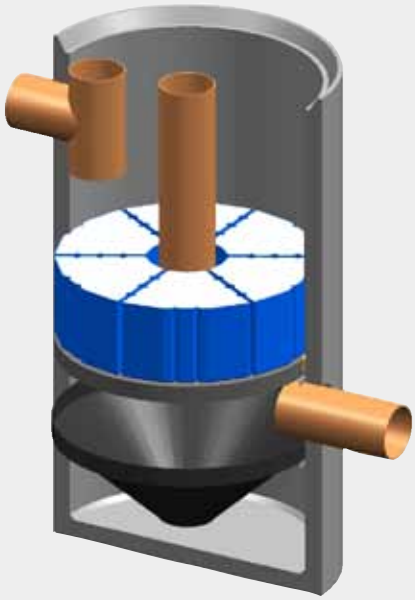
Version 1.2.2.20

Stormwater Filtration is vital to maintaining the quality of our finite water supply

Freytech presents ecoStorm plus, an affordable stormwater filtration system designed to remove sediments, heavy metals and nutrients.
Surface water runoff contains significant concentrations of heavy metals and other soluble pollutants. Structural Stormwater treatment systems are effective in removing sediments, but do not remove solubles such as heavy metals and nutrients (phosphates
and nitrates).

By using various physical and chemical processes, the ecoStorm plus Filtration System effectively AND affordably removes BOTH solids and dissolved substances, including:

- Heavy metals (zinc, copper, lead, cadmium, chromium, nickel)
- Hydrocarbons (mineral oils, polycyclic aromatic hydrocarbons)
- Nutrients such as phosphorous and nitrates



Removal Efficiency*
Removal efficiencies for all relevant pollutants far exceed both North American and European Standards for stormwater run-off.

Total Suspended Solids (TSS)	>95%
Zinc (Zn)	>80%
Lead (Pb)	>95%
Copper (Cu)	>90%
Hydrocarbons	>98%
Phosphorous	>70%
Nitrates	*
Arsenic	**

* detailed test reports are available upon request
** please contact Freytech Inc. for arsenic filtration

See why ecoStorm plus is the most cost effective stormwater filtration system on the market, setting new standards for stormwater regulatory requirements

- In addition to filtration, the system utilizes chemical transformation, precipitation and sorption (ion exchange) to remove a variety of pollutants (heavy metals, hydrocarbons) from stormwater
- More effective and affordable than conventional filters utilizing stainless steel, activated carbon or zeolithes
- Upstream sediment removal combined with self-cleaning filters reduces maintenance intervals and costs
- Has undergone extensive laboratory and field-testing with proven results

ecoStorm plus is ideal for new construction or retrofit applications including:

- Parking lots
- Treatment of run-off from mining operations
- Industrial manufacturing facilities
- Commercial/retail developments
- Municipal/residential drainage improvements
- Transportation/maintenance facilities
- Water quality improvement of ponds and lakes
- Well water

ecoStorm plus Treatment Process

All ecoStorm plus units are equipped with a central overflow and maintenance pipe to handle peak flow rates and allow access to the sediment storage chamber. While ecoStorm plus is typically designed for gravity treatment of stormwater drainage, it has the flexibility to accommodate other methods of pollutant delivery. The patented substrate can be modified to accommodate various applications and flowrates.

Sedimentation

Sediments are removed from stormwater by gravitation and trapped in the base section of the ecoStorm plus unit. A small amount of sediment will accumulate temporarily on the lower surface of the filter (PlusFilter). The design of the ecoStorm plus system allows self cleaning.

Filtration

Vertical filtration in the pollution control pit and constant immersion in water of the PlusFilter prevents formation of a film on the lower side of the filter, which might otherwise lead to clogging.

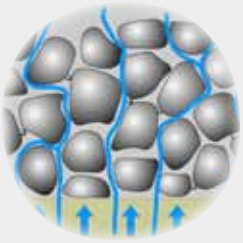
Adsorption

Pollutants like hydrocarbons and dissolved heavy metals are adsorbed by the modified porous filter material.

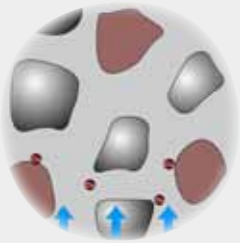
Chemical precipitation

The PlusFilter buffers the pH of the stormwater, which is typically acidic, hence promoting precipitation and accumulation of dissolved substances. The fine pores of
the filter allow water to seep slowly through the media providing greater opportunity for interaction between water and the alkaline composition of the filter.

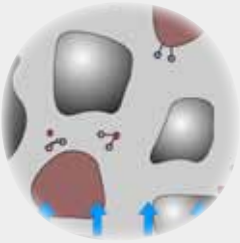
Sedimentation



Filtration



Adsorption



Precipitation

Specifically designed for low-cost and easy maintenance

The frequency of sediment removal and filter replacement are dependent on site-conditions and pollutant loads. Sediment, which may contain heavy metals removed during the cleaning process, is disposed either manually or by mechanical suction.

Permeable substrate (PlusFilter) in the Pollution Control Pit is self-cleaning and is expected to remain effective for up to 5 years depending on pollutant loads. However, replacement filters should be considered at more frequent intervals where pollution loads are heavy. Replacing filters is simple and quick.

ecoStorm plus filter

ecoStorm plus 1500 technical data

ecoStorm plus 1500 filter (Item no. 103656)

Flow rate: 22l/s (348 GPM)
Drainage Area: 1000m²
Set of 6 filter cartridges per ecoStorm plus 1500
Housing made of polyethylene and stainless steel
Connecting tube: DN200
Weight: 420kg (925 lbs) per unit

ecoStorm plus 1500 hydrocyclone (Item no. 103657)

Material: polyethylene
Inner diameter: 400mm
Height: 410mm
Weight: 18kg (40 lbs)

ecoStorm plus 1500 concrete tank (not supplied)

Pipe dimensions: DN 200mm (8")
Min. head pressure: 250mm
Internal diameter of concrete tank: 1500mm
Min. access opening: 625mm

ecoStorm plus 1500 filter support plate (not supplied)

Height: 100mm
6 circular openings (d=226mm) for filter units
6 compression gaskets DN200
1 centric circular opening (d=341mm) for maintenance pipe
1 compression gasket DN300

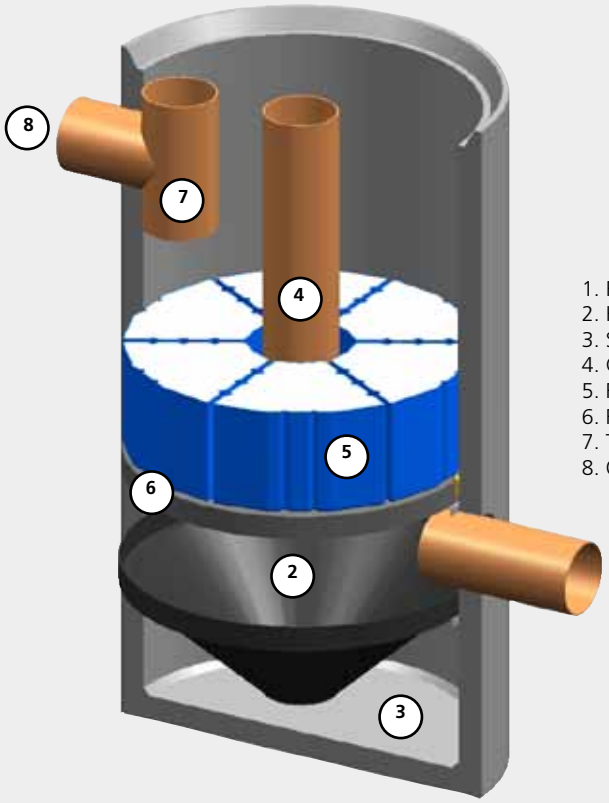
ecoStorm plus 1500 working principle

1. The rainwater from the connected area is fed into the base section of the filter housing. The tangiential inlet generates a radial flow pattern.

2. The hydrodynamic separator converts turbulent waters into a radial laminar flow pattern, generating particle sedimentation, particularly of the sand fraction.

3. This takes place over an inlet to the lower section of the filter shaft. The sediment is retained in a sediment storage chamber below the separator. The sediment trap can be withdrawn for cleaning, and has an integral cleaning port to the side to ease dirt removal, (see 4).

4. In the central section of the filter housing is the actual filter. The filter element filters out the fine materials in an up-flow process and dissolved materials are precipitated and adsorbed. The filter is backwashed from above. When exhausted the filter is easily replaced.



1. Rainwater Inlet
2. Hydrocyclone
3. Sediment collection chamber
4. Cleaning port for sediments
5. Filter Element
6. Filter Support Plate
7. T-Outlet pipe
8. Outlet to storm sewer or soakaway system

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