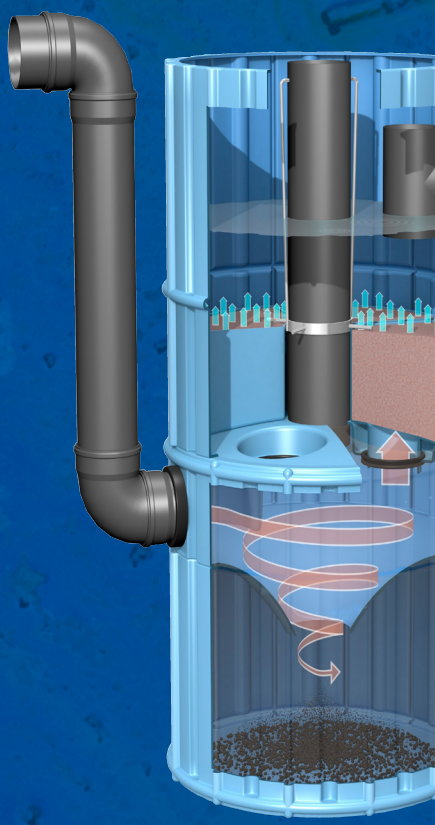
ECOSTORM PLUS 1000

HIGH PERFORMANCE, COST EFFECTIVE STORMWATER TREATMENT SYSTEM

PRODUCT OVERVIEW



SCHLÜSSELBAUER ECOTECHNIC

ecoSTORM PLUS

STORMWATER FILTRATION IS VITAL TO MAINTAINING THE QUALITY OF OUR FINITE WATER SUPPLY.

Ecostorm plus is 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*	

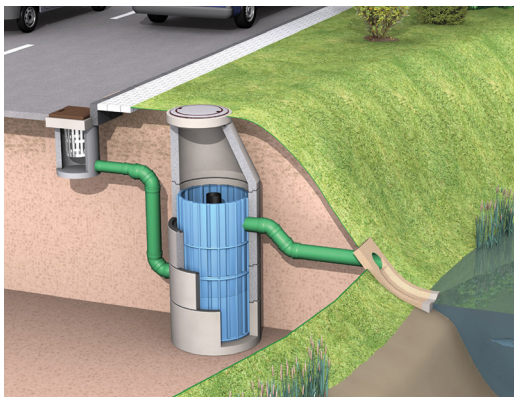
*detailed test reports are available upon request

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 transformations, 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.
- Easy installation saves time and money - single-structure design comes pre-assembled to jobsite, reducing footprint and excavation costs.
- Has undergone extensive laboratory and field-testing with proven results.
- Patented filters can be modified to accommodate various applications and flowrates.

APPLICATIONS

Example: Metal roof run-off



Example: Run-off from highways

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

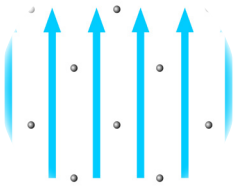
- Surface water run-off from streets, highways and parking lots
- Treatment of run-off from metal roofs (Copper, Zinc and others)
- Upstream to a rainwater harvesting tank
- Industrial manufacturing facilities
- Commercial/retail developments
- Municipal/residential drainage improvements
- Transportation/maintenance facilities
- Water quality improvement of ponds and lakes
- Stormwater run-off from surface areas generating less than 50gpm (3 l/s) treatment flow rate.

SPECIALLY DESIGNED FOR LOW-COST AND EASY MAINTENANCE

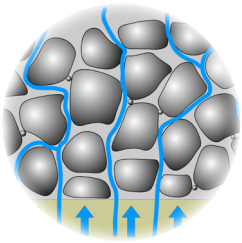
The frequency of sediment removal and filter replacement are dependent on site-conditions and pollutant loads. Sediment, which may contain heavy metals removed during the cleaning process, is disposed either manually or by mechanical suction.

Permeable substrate (PlusFilter) in the Pollution Control Pit are self-cleaning and are expected to remain effective for long periods (up to 2 years) without replacement. However, new filters should be considered at more frequent intervals where pollution loads are heavy. Replacing filters is an easy and inexpensive process.

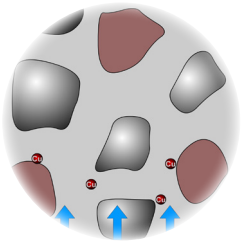
TREATMENT PROCESS



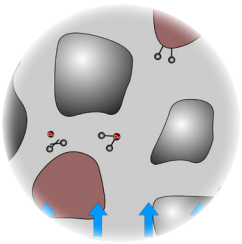
Sedimentation



Filtration



Adsorption



Precipitation

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 filter prevents formation of a film on the lower side of the filter, which might otherwise lead to clogging.

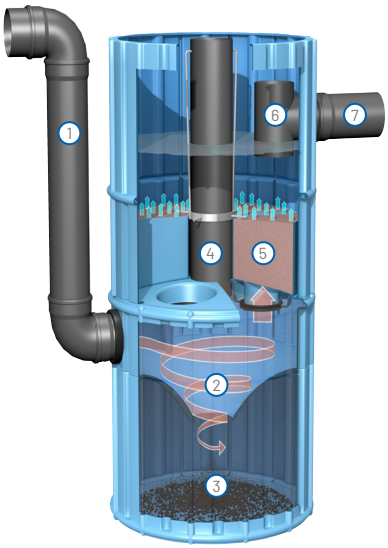
Adsorption

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

Chemical precipitation

The filter 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.

WORKING PRINCIPLE



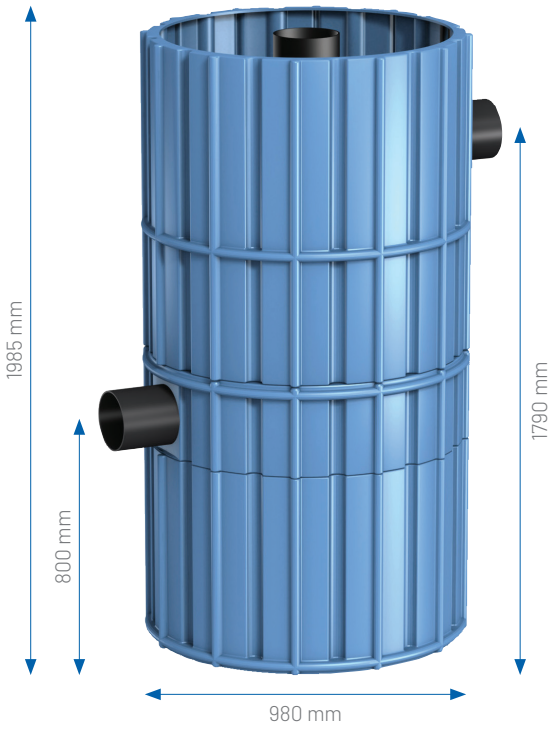
1. Rainwater Inlet
2. Hydrodynamic Separator
3. Sediment collection chamber
4. Cleaning port for sediments
5. Filter Element with overflow pipe and removal handle
6. T-Outlet pipe
7. Outlet to storm sewer or soakaway system

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 easy dirt removal.
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 absorbed. The filter is backwashed from above. When exhausted the filter is easily exchanged.
5. The filter element is easily pulled up and removed from the shaft housing.

Parameter	Unit	Non metal roof		Copper roof		Zinc roof		Parking lot, residential street		main road, distributer		Aims of LAWA	drinking water	See-page	ecoStorm plus
		from	to	from	to	from	to	from	to	from	to	permissi-ble limit	permissi-ble limit	control value	Aim
Physico-chemical paramters												90-Perzentil			
Electr. conductivity	[uS/cm]	25	270	25	270	25	270	50	2400	110	2400	-	2500	-	<1500
pH value	[-]	4,7	6,8	4,7	6,8	4,7	6,8	6,4	7,9	6,4	7,9	-	6,5-9,5	-	7,0-9,5
Nutrients															
Phosphorous (Pges)	[mg/l]	0,06	0,5	0,06	0,5	0,06	0,5	0,09	0,3	0,23	0,34	-	-	-	0,2
Ammonium (NH_4)	[mg/l]	0,1	6,2	0,1	6,2	0,1	6,2	0,0	0,9	0,5	2,3	-	0,5	-	0,3
Nitrate (NO_3)	[mg/l]	0,1	4,7	0,1	4,7	0,1	4,7	0,0	16,0	0,0	16,0	-	50,0	-	5)
Heavy metals															
Cadmium (Cd)	[µg/l]	0,2	2,5	0,2	1,0	0,5	2,0	0,2	1,7	0,3	13,0	1,0	5,0	5,0	<1,0
Zinc (Zn)	[µg/l]	24	4880	24	877	1731	43674	15	1420	120	2000	500	-	500	<500
Copper (Cu)	[µg/l]	6	3416	2200	8500	11	950	21	140	97	104	20	2000	50	<50
Lead (Pb)	[µg/l]	2	493	2	493	4	302	98	170	11	525	50	10	25	<25
Nickel (Ni)	[µg/l]	2	7	2	7	2	7	4	70	4	70	50	20	50	<20
Chromium (Cr)	[µg/l]	2	6	2	6	2	6	6	50	6	50	50	50	50	<50
Organic substances															
polynuclear aromatic hydrocarbons (PAK)	[µg/l]	0,4	0,6	0,4	0,6	0,4	0,6	0,2	17,1	0,2	17,1	-	0,1 (6 comp.)	0,2	<0,2
mineral oil type hydrocarbons (MOTH)	[mg/l]	0,1	3,1	0,1	3,1	0,1	3,1	0,1	6,5	0,1	6,5	-	-		<0,2

Legende | critical parameter, treatment necessary | treatment maybe necessary not generally | no critical parameter

TECHNICAL DATA



Rainwater filters complying with DIN 1989-2, Type B.

ecoStorm plus 1000 traffic (item no. 103085)
Drainage Area: 750 m^2
Slightly polluted traffic areas (side streets, staff car parks, yards)

Pipe dimensions: DN 200 mm (8")
Number of Filter segments: 4
Housing material; Weight: Polyethylene; 86 kg
Replacement filter; Weight: 34 kg/ segment

ecoStorm plus 1000 metal (item no. 103603)
Drainage Area: 650 m^2
Roofs made of uncoated metals (copper, zinc, lead)

Pipe dimensions: DN 200 mm (8")
Number of Filter segments: 4
Housing material; Weight: Polyethylene; 86 kg
Replacement filter; Weight: 66 kg/ segment

ecoStorm plus 1000 roof (item no. 103349)
Drainage Area: 1000 m^2
Roofs without a significant proportion of uncoated metals (<50m^2)

Pipe dimensions: DN 200 mm (8")
Number of Filter segments: 4
Housing material; Weight: Polyethylene; 86 kg
Replacement filter; Weight: 34 kg/ segment

ecoStorm plus 1000 heavy traffic (Item no. 103214)
Drainage Area: 500 m^2
Highly polluted traffic areas (car parks in front of supermarkets, main roads, HGV access roads)

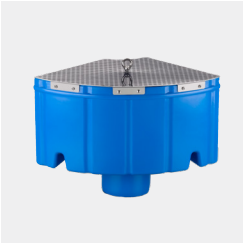
Pipe dimensions: DN 200 mm (8")
Number of Filter segments: 4
Housing material; Weight: Polyethylene; 86 kg
Replacement filter; Weight: 54 kg/ segment

ecoStorm plus 1000 Flow Rates:
Maximum hydraulic flow rate (bypass): 35 l/s
Maximum filtration flow rate: 12 l/s

REPLACEMENT FILTERS

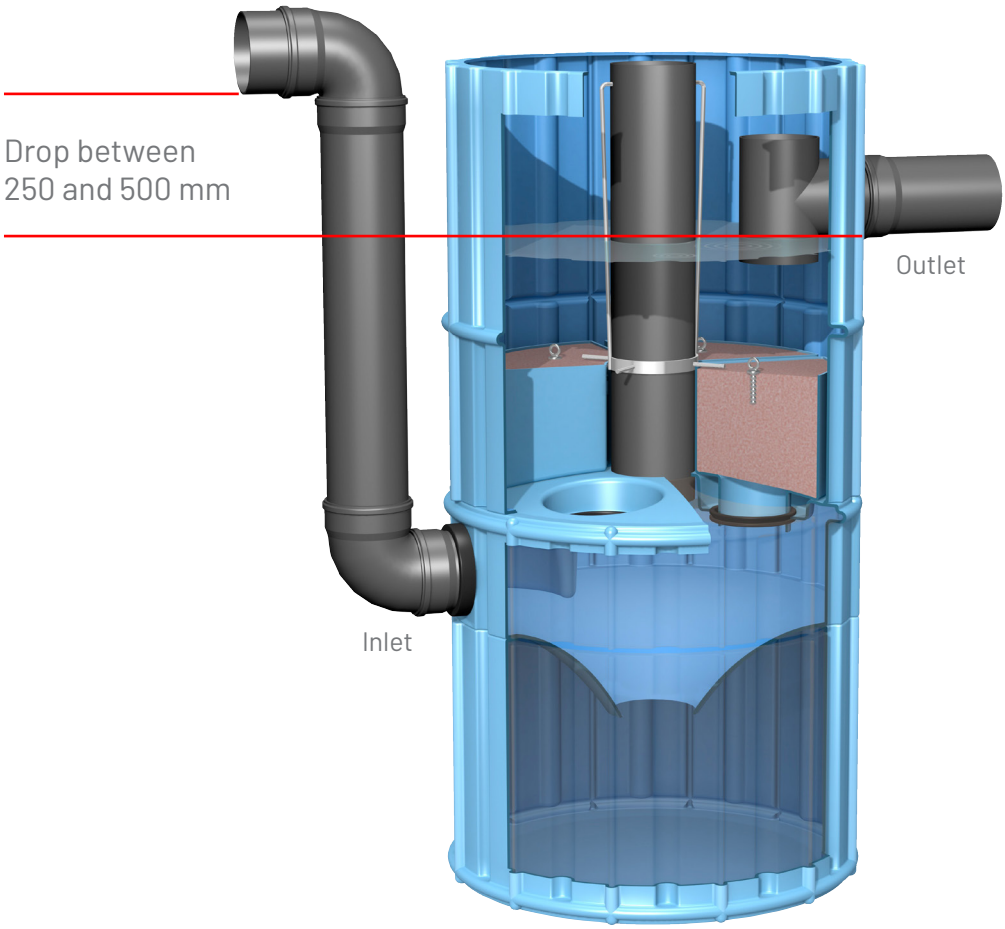
The ecoStorm plus 1000 filter elements should be checked every 2 years and should be changed if necessary.

Filter element
Heavy Traffic + Metal



Filter element
Roof + Traffic

INSTALLATION INSTRUCTION



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