



water solutions
for north america

www.ourh2o.com

Water – Our most precious resource



- Less than 2% of the world's known resources can be used as drinking water.
- Our water comes from our lakes, rivers and groundwater reserves and is transported to municipal treatment plants for treatment
- Everyday we use this water to bathe and shower, to wash and rinse, to cook or drink - transforming our drinking water into “wastewater”.
- The discharge of untreated wastewater contaminates our water ways and ground water reserves.
- New chemicals are introduced into our waste stream everyday from new household cleaners to pharmaceuticals.

The Solution is simple – Onsite Wastewater Treatment

- Decentralized or onsite wastewater treatment is an ecologically and economically feasible solution.
- Treating wastewater where it is generated is a practical solution for individual households, commercial properties, and entire communities.
- Allows for modular and adaptable technologies including the reuse of treated wastewater or rainwater for non-drinking applications.
- Can reduce a household's municipal water consumption by 60%.



2005

Revolutionary Technologies from the Old World



1492

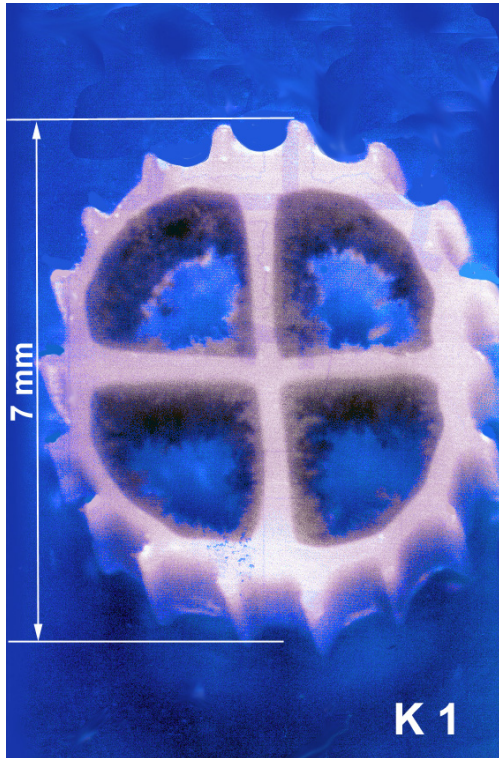
- Incorporated in 2005, the partners combined have well over 100 years in the wastewater industry.
- After failing to find a reliable solution in North America the search for viable wastewater technology took us to Europe.

Introducing WSB® clean : the domestic treatment plant with the High-Tech of a creek

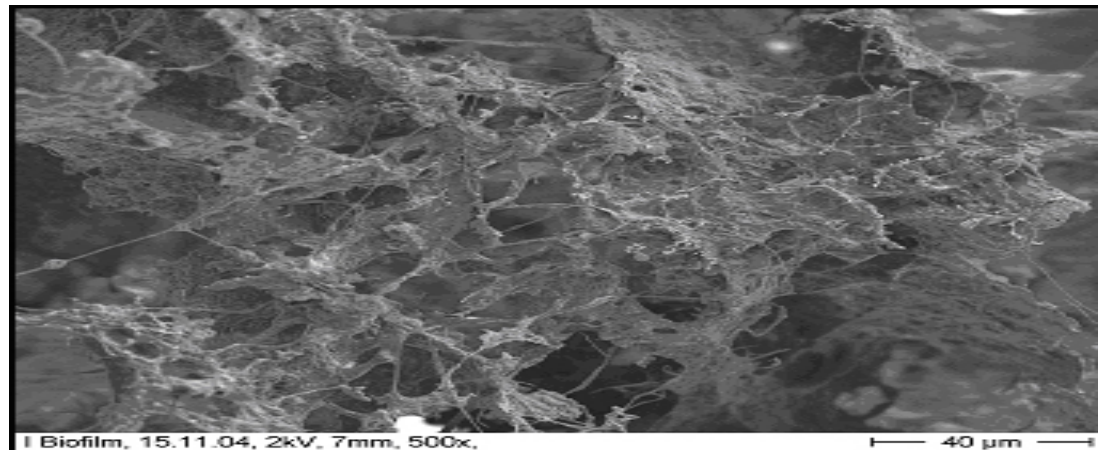


- WSB® = Wirbel Schwebebett Biofilmfahren and translates into as the English **fluidized floating bed biofilm process**.
- Modeled on the natural purification mechanism of a creek
- In Nature, the stones in water are support for the clarifying biofilm consisting of microorganisms that eat away the waste.
- This film is visible on the slippery surface of the stones





- Biofilms are settlements of microorganisms that settle and immobilize onto a surface.
- A slime layer is formed and its called the EPS (Extracellular Polymere Substance).



Biomedia replaces Stones:

- The effectiveness of the system is based on the special properties of the biofilm.
- Instead of the stone or rock in the creek, the WSB clean system uses patented plastic carrier material called “Kaldnes” to provide housing for the microorganisms.
- Just like the fast moving water in a creek, the carrier material has a self-cleaning effect – this ensures the media never has to be changed or cleaned in any way.



Introducing WSB® clean : the domestic treatment plant with the High-Tech of a creek



How the WSB® clean system works:



Advantages at a Glance

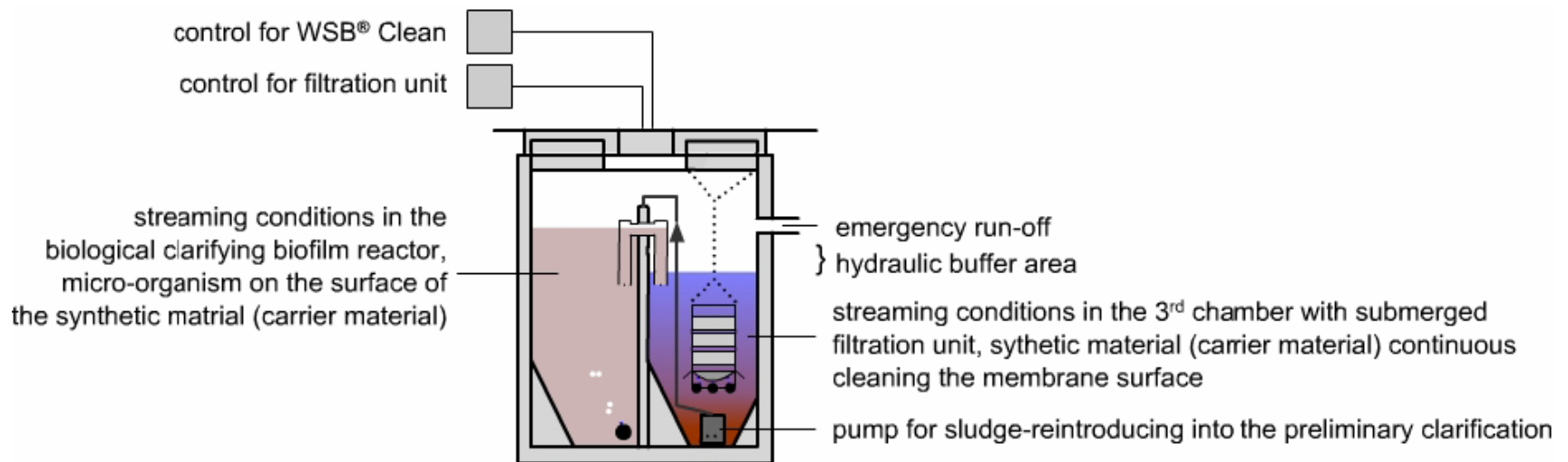


- Reliable Process
- Small footprint and simple to install
- Concise, simple to operate technology
- Designed to handle shock loads and long periods of low load conditions
- Performs even at low temperatures
- Low consumption of electricity
- Media is self-cleaning and never has to be replaced
- Trouble-free and requires minimal maintenance
- No noise and no smell
- Installs to grade and requires no additional landscaping

Introducing WSB® clean with Membrane Filtration Technology



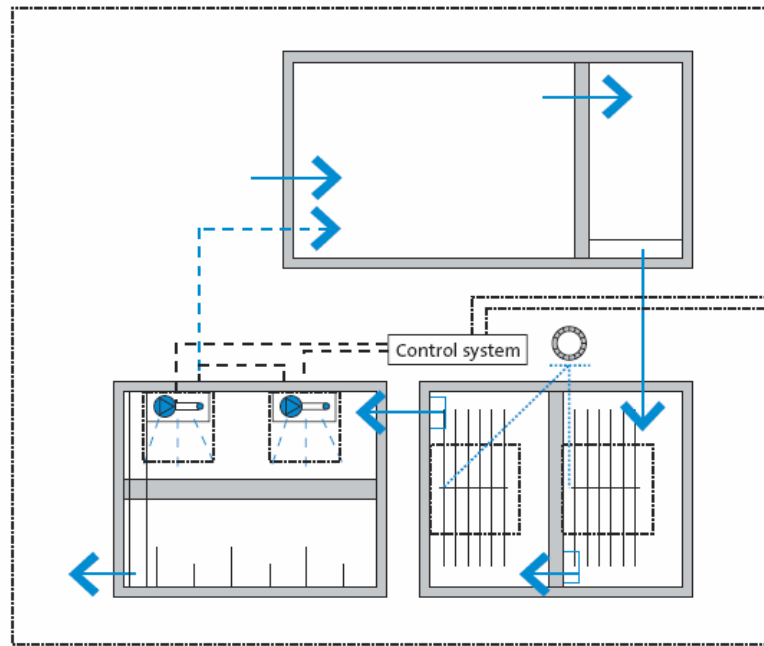
- Filtration unit substitutes the conventional secondary clarifier
- Filtration unit is submerged into the secondary clarification chamber (3rd chamber)
- Filtration unit operates autonomous from the biological reactor allow
- Re-fitting into an existing biological system is possible



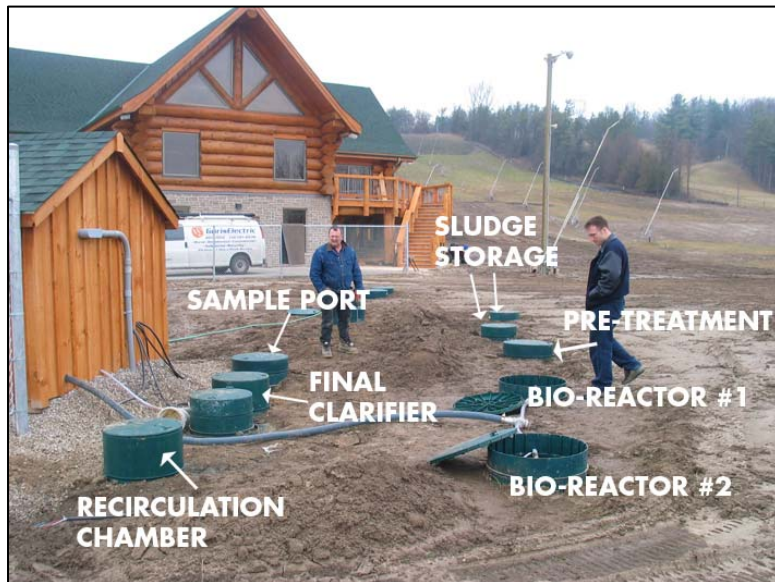
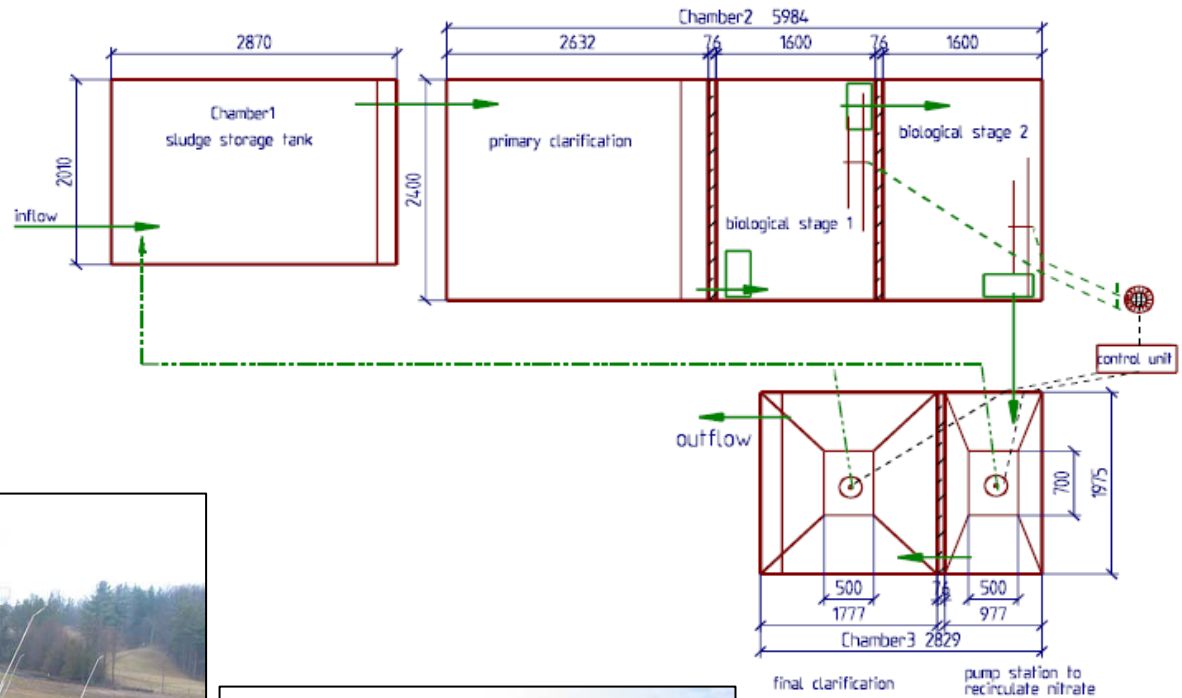
Introducing WSB® Clean Pro



- The Biofilm technology for larger wastewater treatment plants.
- Systems are designed to meet project specific requirements (capacity, wastewater characteristics, effluent requirements)



Design & Installation Examples

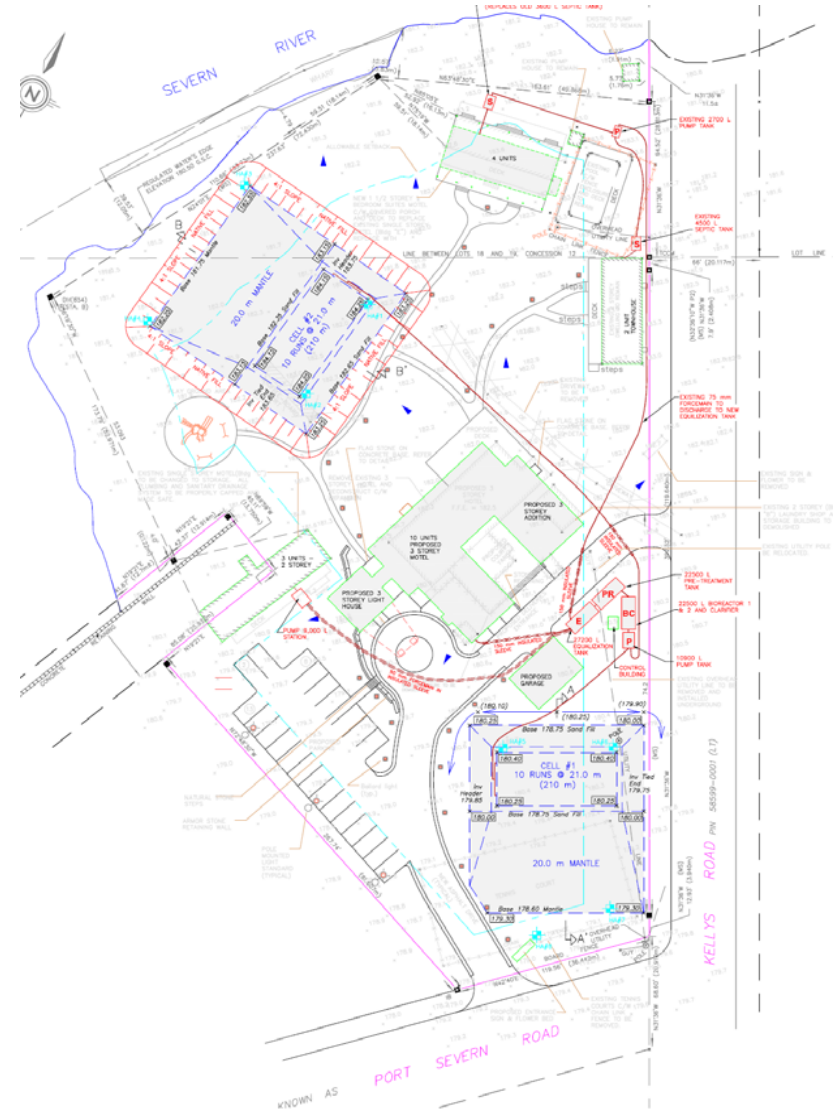
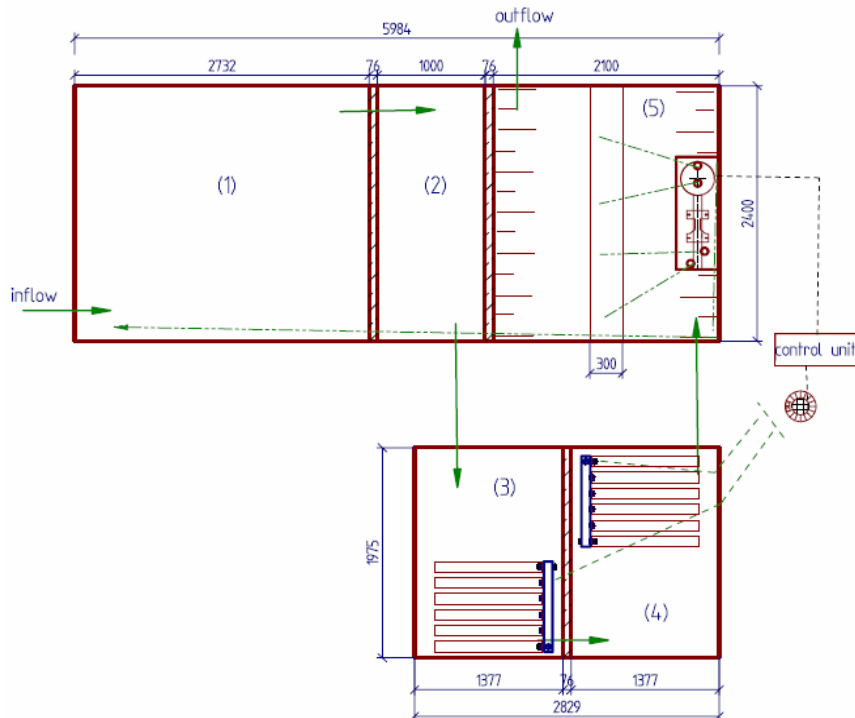


- 16,000 Litres per day WWTP
- Tertiary Treatment w/ nitrate removal

Design & Installation Examples

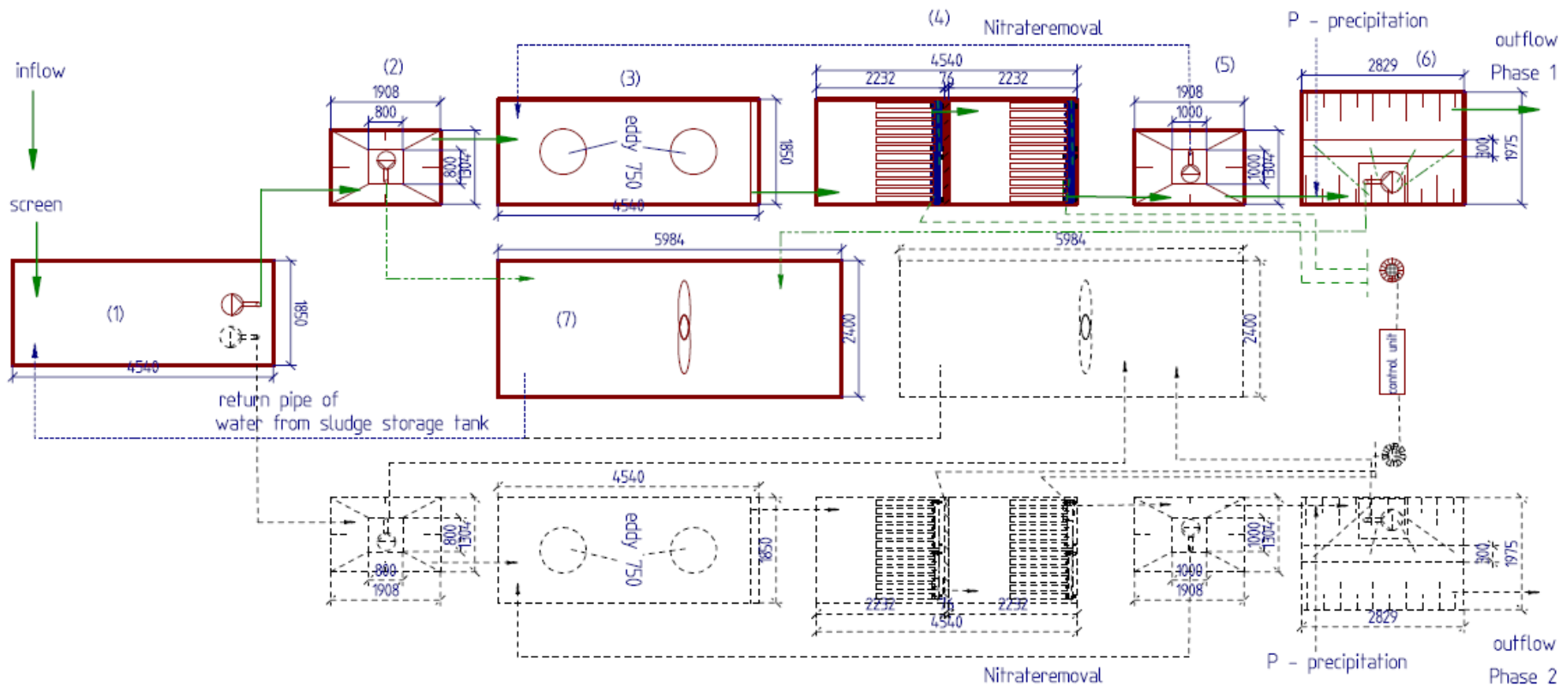


- 17,600 Litres per day
- BOD < 10 mg/l



Design & Installation Examples

- Golf Course Clubhouse and Golf Villas
- Phase 1: 50,000 L & Phase 2: 50,000 L
- Tertiary Treatment with Nitrate and Phosphorus requirements



Advantages at a Glance



- Reliable Process
- Smallest footprint available for commercial wastewater treatment
- Concise, simple to operate technology
- Customized to meet the demands of any project
- Exceptional performance
- Low consumption of electricity
- Media is self-cleaning and never has to be replaced
- Trouble-free and requires minimal maintenance
- Cost Effective
- Adaptable technology for upgrading or retrofitting existing plants

Introducing Rainwater Harvesting



- The collection and storage of rainwater from roofs has been going on since ancient roman times.
- Europeans have been utilizing rainwater systems with great success for the past 15 years and around 100,000 new systems are installed every year.
- Nature delivers an abundant supply of rainwater directly to your property.
- Our houses already have a built-in collection system (roof, gutters, down pipes) which delivers the water to ground level.
- We now just have to divert the flow and store it
- It just makes sense!

Domestic Uses for Harvested Rainwater



- Flushing toilets
- Washing Cars
- Doing Laundry – soft water saves detergent and prolongs life of appliances
- Watering lawns and gardens
- Topping up the pool



Introducing the 4 Cleaning Steps



1. Cleaning Step Filter



The first cleaning step in the rainwater system is the filter. The rainwater flows from the roof to the filter. Here dirt particles and debris are separated from the water. The cleaned water flows to the tank. The dirt is washed to the infiltration area or soak-away pipe with a small amount of rainwater. All rainwater filters have stainless steel inserts, which are easy to remove and easy to clean. Their many different working principles and connection possibilities allow for their use in many different installation situations, with the advantage of very low maintenance.

2. Cleaning Step Calming Inlet



By using an underground tank, the water is stored in dark and cool conditions. Here the second cleaning step takes place. In the water column, any fine residual particles settle to the bottom of the tank. The rainwater Calmed Inlet prevents any disturbance of this sedimentation layer. At the same time the Calmed Inlet ensures that oxygenated water is introduced to the lower levels of the stored water in the tank. This oxygen rich water prevents anaerobic conditions from forming in the storage tank and ensures that the water stays fresh.

3. Cleaning Step Overflow siphon



Any particles that are lighter than water (e.g. flower pollen) float slowly to the water surface. The expertly designed Overflow Siphon, with a skimmer effect, removes this floating layer. The regular overflow from the storage tank is important to get the optimum water quality. It prevents souring of the water. The floating layer could otherwise build up over time, and so reduce oxygen diffusion at the water surface, which in turn could lead to anaerobic conditions in the tank.

4. Cleaning Step Floating pump intake



The Pump Intake floats at all times, suspended just below the water surface where the cleanest water lies. From this position the water is extracted by the pump. A ball float, filled with air, suspends the intake, which has a further filter and a check valve.

1. Cleaning Step – Filter

3. Underground Filter



Volume Filter VF1

For roof areas up to 450 metres square high level of filtering efficiency, which is independent of flow rate. Continuous filtering of dirt particles, frost resistant and low maintenance. Filter insert is easily removed for cleaning. The stainless steel filter has a mesh size of 0.65 mm.



Volume Filter VF1 + Telescopic extension

For roof areas up to 450 metres square high level of filtering efficiency, which is independent of flow rate. Continuous filtering of dirt particles and frost resistant. Self cleaning and low maintenance intervals. Filter insert is easily removed for cleaning. The stainless steel filter has a mesh size of 0.65 mm. Height is 470mm.

Extension tube for direct installation in the ground in a depth of up to 750mm. diameter is 500mm. Extension tube has locking lid included which supports pedestrian loading.



1. As water arrives, the level builds up and is equally distributed across the cascade.
2. Pre-cleaning through the cascades. Largest dirt particles are led across the primary filter cascades directly to the infiltration area.
3. Pre-filtered water then flows over the secondary filter sieve (mesh size 0.65mm). Due to the special mesh structure of the sieve, any dirt washes directly into the infiltration area which means that the filter is self cleaning with very low maintenance.
4. Cleaned water goes to the cistern
5. Dirt goes to the infiltration chamber.

1. Cleaning Step – Filter

2. In Tank Filter



Patronen Filter PF

Rainwater filter for roof areas up to 150 metres square. For installation within rainwater tanks. Due to the inclined angle of the filter sieve and its very smooth surface structure the dirt is rinsed into the infiltration chamber and the filter itself is very low maintenance. Filter cartridge mesh in stainless steel within plastic housing. Mesh size of filter cartridge is 1.70 x 0.70 mm. Retro-installation of backwashing device is possible. Small height difference of 66mm between rainwater inlet and wastewater outlet



Zisternen Filter ZF

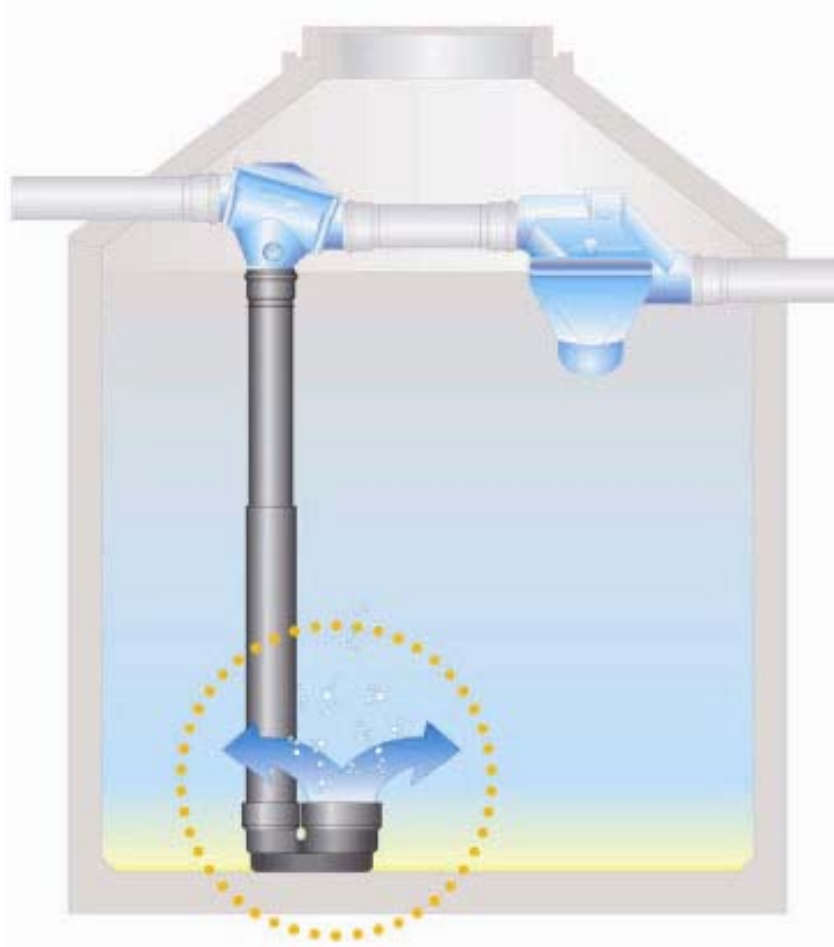
For roof areas up to 150 metres square. Two step cleaning system. The first coarse filter mesh protects the second, finer mesh by removing larger leaves and particles. Retro-installation of back washing device is possible. The height difference between rainwater inlet and outlet into the wastewater outlet is just 117mm. Mesh size of filter cartridge 1.70 x 0.70mm.



Sinus Filter SF

Rainwater filter for roof areas up to 150 metres square. Ideal for conversion of existing tanks, because Sinus Filter has no height difference between the rainwater inlet and the wastewater outlet. This filter can be retro-fitted with a 3P back washing device. Inlet and outlet diameter is 110mm. Mesh size of filter cartridge is 1.70 x 0.70mm.

2. Cleaning Step - Calmed Inlet



Calmed Inlet

Calmed Inlet 125mm/110mm provides a calmed inlet for rainwater in the storage tank. Prevents disturbance of settled sedimentation layer and oxygenizes the lower level of water .



2. Cleaning Step - Overflow



Overflow Siphon Mono

Overflow siphon with rodent and odour barrier, with skimming effect on tank water surface from sloped inlet slots



Overflow Siphon Duo

Overflow siphon duo is installed between the filter and the tank. Overflow is inside the rainwater tank.



Overflow Siphon Uno

overflow siphon uno with screw threaded union connector. Ideal for installation in plastic tanks.



1. As the tank water level rises, the water flows over the skimmer siphon inlet into the infiltration soak-away chamber. Any floating pollen particles are literally sucked by the skimmer openings..
2. The surplus water with the pollen is led out of the rainwater tank. Outlet 110mm.
3. An odour trap is provided by the siphon.
4. Connection filter side for 110mm pipe (3P overflow siphon duo).
5. Rodent entry is prevented, due to the slim slots.

2. Cleaning Step – Floating Filter



Floating Pump Intake

For the extraction of the cleanest rainwater from the storage tank. Connects to suction pipes 25mm and 32 mm.

- Floating ball, diameter 15cm
- Filter inlet sleeve, mesh width 1.2mm
- Check valve, 25mm and 32mm
- Connection spout 25mm and 32mm

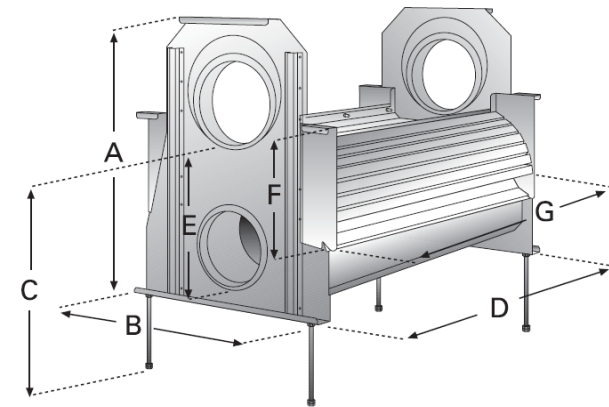
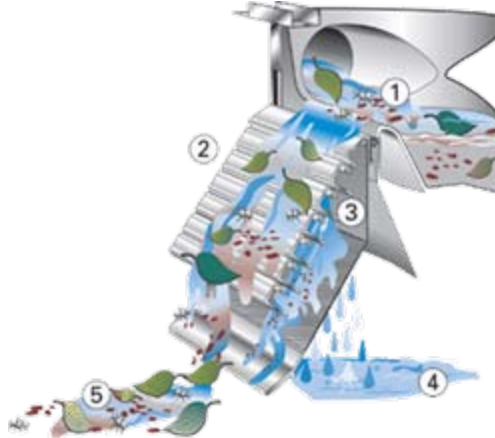


Submersible Pump Base

Housing to fix a submersible pump on the bottom of a rainwater tank and to connect a floating pump intake.

- Floating ball, diameter 15cm
- Filter inlet sleeve, mesh width 1.2mm
- Check valve, 25mm and 32mm
- Connection spout 25mm and 32mm

Commercial Rainwater Filters

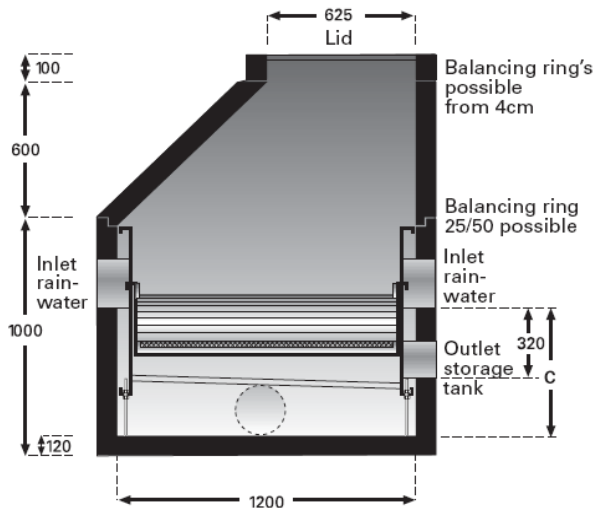


Filter	Inlet Rain-water	Outlet to sewer	Outlet to storage tank	A in mm	B in mm	C in mm	D in mm	E in mm	F in mm	G in mm	Mesh Size	min. Ø manhole	max. water flow rate	Maximum Roof Area
VF2 P107	1 x DN200	1 x DN200	1 x DN150	670	540	525	390	325	275	320	490 my	1000	25,5 l/sec	1150 m ²
VF3* P108	2 x ** DN200	1 x DN200	1 x DN150	670	540	525	980	325	275	880	490 my	1200	33,0 l/sec	1500 m ²
VF4 P109	2 x ** DN250	1 x DN250	1 x DN150	670	540	575	980	325	275	880	490 my	1200	51,5 l/sec	2300 m ²
VF6 P110	2 x ** DN250	1 x DN250	1 x DN200	670	540	575	980	325	275	880	490 my	1200	70,5 l/sec	3200 m ²

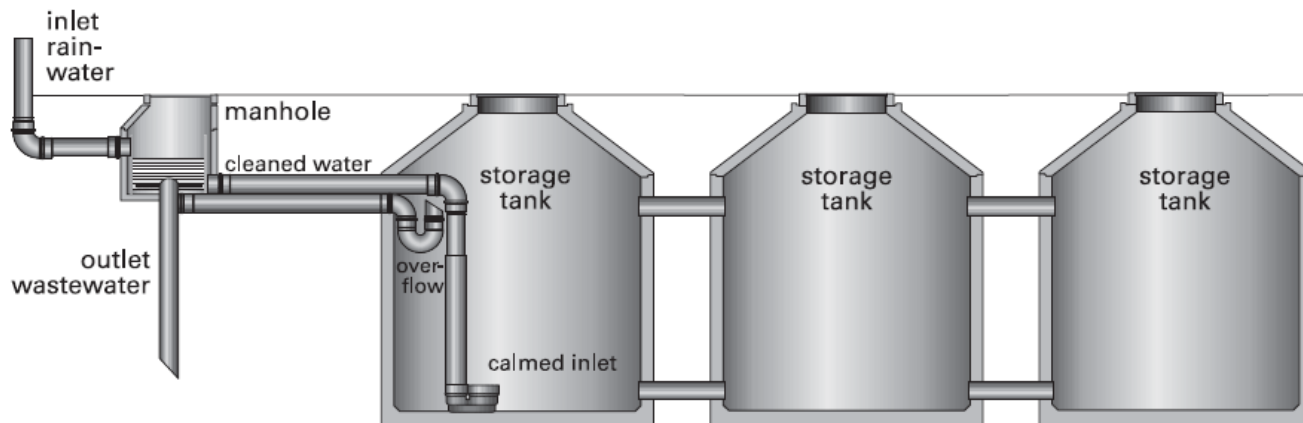
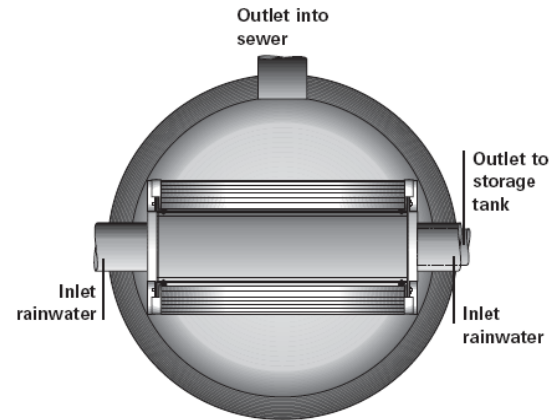
Commercial Rainwater Filters



Sideview



Overview



Advantages of Rainwater Harvesting



- Conserves drinking water and reduces bills
- Reduces potable water without loss of comfort
- Collects up to 95% of annual rainwater
- Low maintenance
- Self cleaning filters require less maintenance
- Sustainable
- Flood protection and sewer network relief
- Groundwater / drinking water replenishment
- More efficient washing, saving up to 50% on detergent
- Increase life span of washing machines
- No better water for garden and plant irrigation
- Saves all the energy and carbon consumed in the production of treated water
- Positive expense for any building

- *Credit 6.1 (1 point) – Stormwater Management*
 - Limit disruption and pollution or natural water flows by managing stormwater runoff
- *Credit 6.2 (1 point) – Stormwater Management – Treatment*
 - Limit disruption of natural water flows by eliminating stormwater runoff, increasing on-site infiltration and eliminating contaminants

Solution:

- Rainwater Harvesting would reduce the stormwater runoff and combined with porous paving would help to manage all water created by impermeable surfaces

LEED Potential Credits – Water Efficiency



- *Section 1.1 & 1.2 (1 point each) – Water Efficient Landscaping*
 - Limit by 50% (1 point) or eliminate (1 additional point) the use of potable water for landscape irrigation
- *Section 2.0 (1 point) – Innovative Wastewater Technologies*
 - Reduce generation of wastewater and potable water demand, while increasing the local aquifer recharge
- *Section 3.1 & 3.2 (1 point each) – Water use reduction by 20% & 30%*
 - Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems



- **Solution to achieve 5 points:**
 - Decentralized wastewater treatment when combined with Rainwater Harvesting allows for:
 - The elimination of potable water for landscape irrigation
 - All wastewater to be treated on site and to be re-used for non potable applications
 - Rainwater can be either:
 - Treated to potable standards to reduce potable water demand by up to 90%
 - Used for non potable applications, reducing potable water demand by 50%

- By substantially exceeding the requirements in the water efficiency section of the LEED Rating System, Innovation points could be garnered for:
 - **Rainwater Harvesting** – reducing stormwater runoff on-site by 100% and reducing mains potable water demand by 50-90% (20-60% above the highest standards)
 - **On-site wastewater treatment** – eliminates the burden on municipal wastewater systems and treats all wastewater on site for potential re-use on site

Questions?



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