

HYDRODYNAMIC TREATMENT OF RUNOFF WATER

TRITHON[®]

Patented system

CENTRIFUGAL AND MEMBRANE HYDRODYNAMIC SEPARATOR

DEPOLLUTING

ECOLOGICAL

INNOVATIVE

COMPACT

Annual achievements :

98% of TSS

99.9%
of micro-plastics
and floating matters
density <0.93



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➤ Why treat stormwater ?



The sustainable management and treatment of stormwater enables action to be taken on many issues :

- **The preservation and protection of water resources and aquatic environments.** As it falls on the ground, rainfall is loaded with a wide variety of pollutants (nutrients: nitrates and phosphates, organic matter, micro-pollutants, metals, etc.). The more the rain will run off, the higher the concentration of suspended solids and micro-pollutants will be. Therefore, the challenge is to decentralize stormwater management and to treat upstream of an infiltration or a release into the environment.

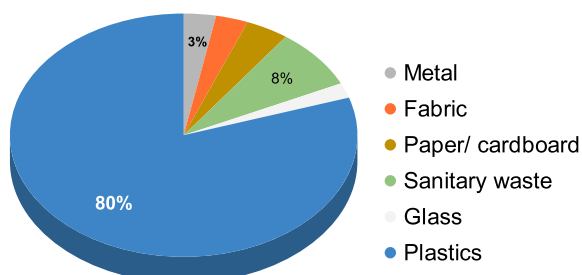
- **Flood prevention and management.** It is now mandatory to limit the sealing of soils by encouraging the infiltration of rainwater as close as possible to its point of fall.

- **Wastewater system performance.** The presence of large volumes of rainwater in the wastewater networks disrupts the operation of the entire wastewater system. (overloading of the network, degradation of the purification performances...)

- **Adaptation of cities to climate change.** Rainwater is a resource for cities. By encouraging the vegetation of urban areas, the formation of heat islands is avoided. Moreover, a sustainable management of stormwater reduces its runoff.

Trithon® is part of a sustainable management of rainwater. It is an ally of alternative methods and can be positioned upstream of an infiltration system or a vegetated valley, for example.

Type of waste counted on the coastline



**80% OF THE POLLUTION
OF THE OCEANS
COMES FROM THE LAND**

➤ Key applications



Installing Trithon® is fighting against the pollution of our cities, our rivers, our seas, our oceans...

The list of applications is wide:

- Parking lots
- Roads and highways
- Car junkyard
- Waste disposal sites
- Airports
- Seaports
- ...

Economical and compact, Trithon® can be easily integrated in networks, according to a decentralized runoff water management.

➤ Creation of a protocol validated by the EU and a technology verified by the ETV

When the Trithon® project was established, SIMOP wanted to test its concept to validate the objectives set for the treatment of runoff water. In collaboration with The Scientific and Technical Center for Building (CSTB), the SIMOP design office has carried out a survey and studied existing protocols.

Several organizations (German, American, Canadian...) have tested technologies with different protocols. The test results are rarely comparable. The experts were able to observe the weaknesses and the discrepancies with reality:

- Work in concentration rather than in mass balance
- Very low flow rates (< 50% of the device size)
- Very high input concentration (>1000mg/L)
- Sampling of a few liters, not representative.

In order to develop an environmentally effective runoff water treatment, it was necessary to draw up a new protocol that would be able to evaluate the performance of our product under real conditions.

The SIMOP research department created a protocol which, completed by the CSTB, was validated by the European Authorities.

The Trithon technology has been submitted to the ETV, the European program in charge of checking the performances of innovative environmental technologies.

To expect a certification it is necessary to :

- Have an ecological and innovative technology
- Have its performance verified by an independent third party
- Determine the veracity of the claims through appropriate testing
- Establish quantifiable and measurable claims.



Déclaration de Vérification de Technologie Environnementale ETV Environmental Technology Verification

Technologie: Séparateur hydrodynamique centrifuge et modérateur TRITHON	
Numéro d'enregistrement: V00201000	
Numéro d'enregistrement CSTB: 171 - 2000009 - 04 10	
Date de délivrance: 18/01/2005	
Organisme de vérification	Responsable
Nom: ETV Direction Energie et Environnement Division: Surveillance, Évaluation	Nom: ETV
Contact: Corinne MULLER	Contact: Bernard Pierre MICHEL
Adresse: 200 Route des Landes - 92100 Collos (SENE-SAINT-DENIS) CEDEX FRANCE	Adresse: 10 rue Schœlcher 92000 SAINT-DENIS (SEINE-SAINT-DENIS) FRANCE
Téléphone: +33 (0)1 83 38 98 00	Téléphone: +33 (0)1 83 38 98 00
Contact: etv@etv.fr	Contact: bernard.pierre@etv.fr
Internet: http://www.etv.fr	Internet: http://www.etv.fr
Organisme de vérification 	Le Directeur Développement Energie ETV

**TRITHON IS
RECYCLED
&
RECYCLABLE**



SEE ETV



TRITHON® : what performances ?

➤ Operating principle

By combining **natural settling with centrifugal force**, Trithon® **traps solid particles**. Placed against the selective walls, they are directed to the sludge storage compartment.

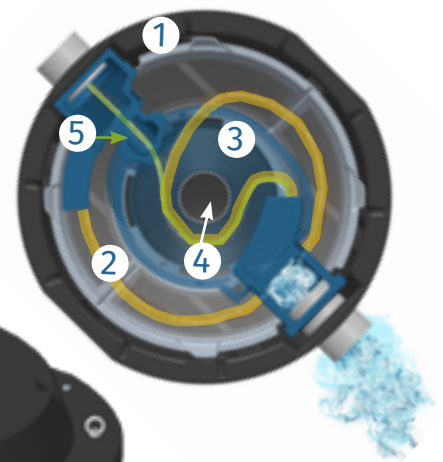
The treatment is also carried out by **separating the floating matters (light liquids and solids of density <0.93)**.

Trithon® is composed in a concentric way :

- ➊ an external zone separated from the treatment compartments by **selective walls**,
- ➋ a 1st compartment through which the flow penetrates tangentially into the system,
- ➌ a 2nd finishing compartment,
- ➍ a central access tube to the sludge storage area (for control and emptying).

➎ Trithon® is also equipped with an **overflow management device** which allows a **partial treatment in case of high flow** (between 100 and 125% of the nominal flow).

➏ A technical platform is installed on the top of the device and allows maintenance.



Total Suspended Solids

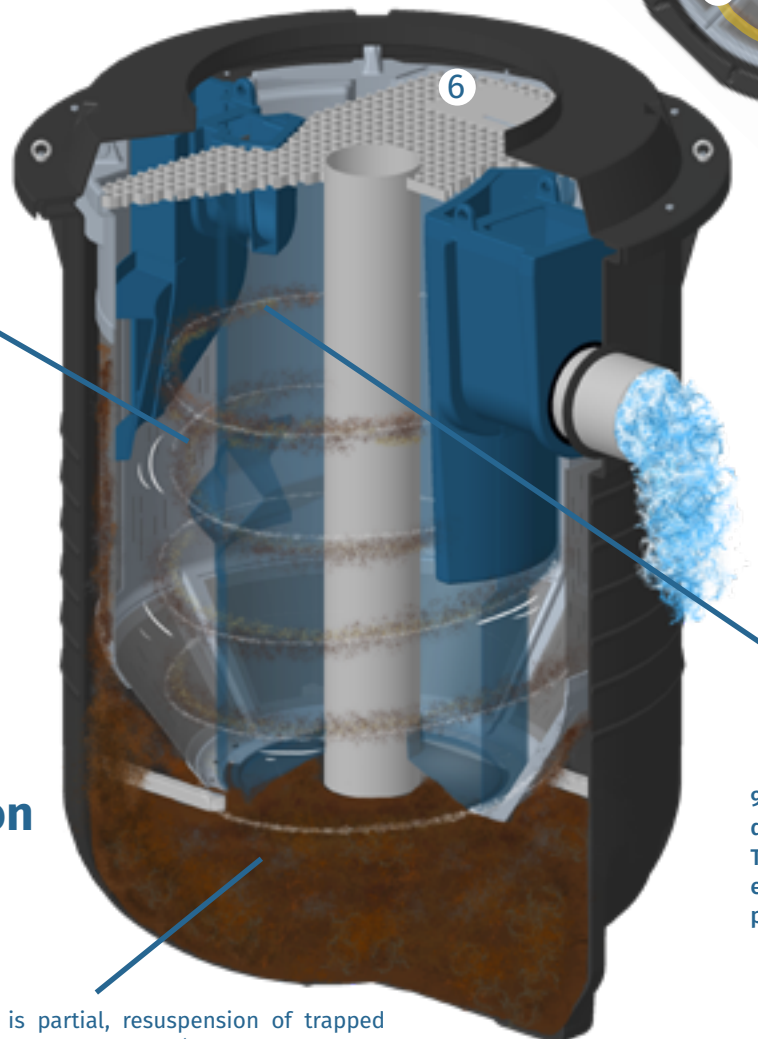
Trithon® is capable of trapping up to 98% of TSS (annual average).

No resuspension of trapped particles

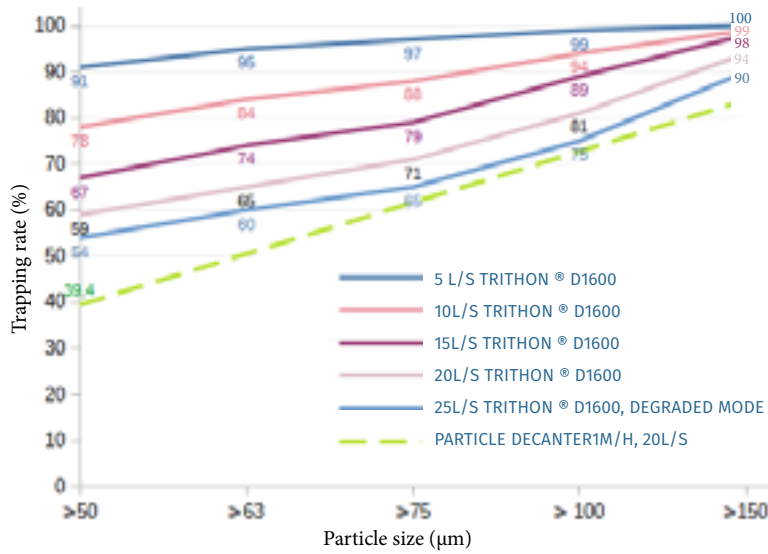
At peak flow, when treatment is partial, resuspension of trapped particles is almost zero. (<1 point on the efficiency)

Floating matters and microplastics

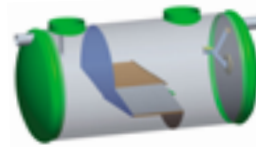
99.9% of floating matters with density <0.93 are trapped by Trithon®. The latter allows an excellent retention of microplastics.



Exceptional instantaneous performance



For superior performance, Trithon® is 3.7 times more compact than a particle decanter



Volume of silt storage: 18,4m3
Size: Ø 1900 mm
Length: 6500mm



Volume of silt storage: 4,94m3
Size: Ø 1600 mm
Height: 2460mm

Tests performed for a flow rate between 1 to 20l/s then, in partial treatment up to 25l/s.
At a flow rate of 5l/s, 100% efficiency on particles ≥150µm and 91% efficiency on particles ≥50µm.

A remarkable annual return...

...On TSS

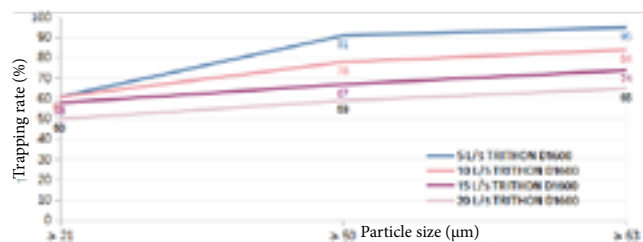
Using the instantaneous performance, an **annual performance** was calculated to simulate the reactions of the device over a **chronicle of rainfall** (different types of rain that follow one another).

Cumulative particle size fractions	Extrapolation of annual trapping performance
≥50µm	76%
≥63µm	82%
≥75µm	85%
≥100µm	92%
≥150µm	98%

and micro-pollutants

Micro-pollutants such as hydrocarbons, PAHs, phthalates and metals are adsorbed onto fine particles (< 63 µm).

Current devices (e.g. filtration) are only able to treat a part of the fine particles if the feed rate is low (< 1 l/s). Trithon's innovation, on the other hand, ensures for a high flow rate (20 l/s), a trapping of 50% of the particles from 21 µm. **Precision and performance go hand in hand with this device.**



The Trithon® range

SIMOP offers a range of products that can treat from 1 to 25l/s. Thanks to the extrapolation method, the same performances are ensured for each device of the range:

Reference	Diameter (mm)	Flow range	Peak flow	Trapping volume	Storage of floating matters	Height (mm)
TRITHON3/15	1300	1 à 12 l/s	15 l/s	240 L	375 L	2060
TRITHON5/25	1600	1 à 25l/s	25 l/s	725 L	615 L	2470

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10 RUE RICHEDOUX
50480 SAINTE-MÈRE-EGLISE
FRANCE

simop@simop.fr

+33 (0)233 958 800

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