



# PRODUCT SHEET

## GRAVITY SCREEN FILTER

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Our GraviFilter is a highly efficient gravity (non-pressurised) screen filter with an integral, continuous cleaning mechanism (self-cleaning). It is used for the removal of suspended solids from water. It is effective in the removal of soft, fibrous and organic solids and it operates efficiently in process systems with higher solids loads. GraviFilter offers extended flow intervals with limited operator intervention.

## Applications

The GraviFilter is installed in process lines to remove macro- and micro-solids from suspension, specifically where there is a higher solids load and where the solids are soft, organic or fibrous. GraviFilter applications include the following:

### 1. Pre-Filtration:

- For membrane separation processes
- For treatment processes on potable water- and sewage wastewater plants
- For treatment processes on industrial process water plants

### 2. Final Filtration

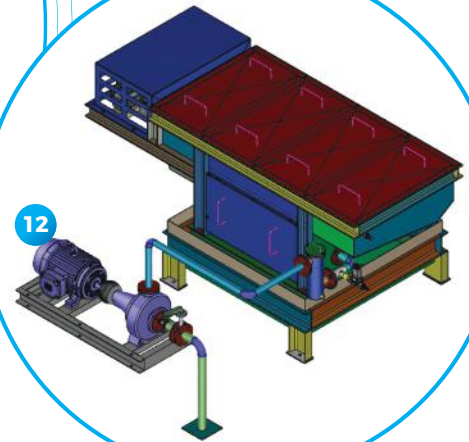
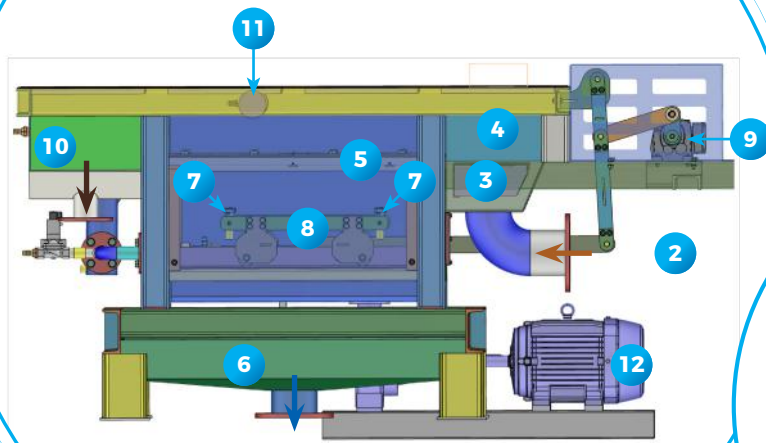
- To protect water spray systems or equipment
  - Water Spray Systems
    - Dust suppression
    - Irrigation
    - Filter presses
  - Equipment Protection
    - Pump glands (gland service water)
    - Measuring and metering equipment
    - Heat exchangers
- Removal of solids from water for general purpose plant re-use

## Industries

The GraviFilter is used extensively in all industries where water forms part of the process and where macro- and micro-particles need to be removed from suspension. These include:

- **Industrial Process Water**
  - Agricultural and Horticultural
  - Automotive
  - Brewing & Distilling
  - Food & Agri Processing
  - Nuclear
  - Pulp & Paper
  - Power Generation
  - Quarrying
  - Rubber Processing
  - Textiles
- **Mining**
- **Mineral Processing**
  - Steel Processing
- **Potable Water and Sewage Wastewater**
- **Petrochemicals**
  - Refining
  - Pharmaceutical
  - Plastics
- **Oil and Gas**





## How it Works

The GraviFilter consists of:

- Flow control
- Inlet and balancing sections
- Filtration screen and clean water sump
- Self-cleaning mechanism including high pressure pump and drive motor
- Waste sump

The flow of dirty water into the GraviFilter must be regulated. Control can be by control valve or by a dedicated feed pump. Controls can be implemented to activate and de-activate the filter based on availability of dirty water or based on the level of the clean water sump.

Dirty water is introduced to the GraviFilter via the dirty water inlet (2). A baffle plate (3) calms the water as it enters the balancing chamber (4) where the water is evenly distributed across the width of the screens.

As the water flows onto the screens (5), it falls under gravity into the clean water sump (6) underneath the screens. From the clean water sump the filtrate can flow under gravity into a reservoir from where it can be distributed to service. Solids that are larger than the screen apertures are retained on the screen surface.

Reciprocating spray nozzles (7), mounted on a trolley (8), are situated directly below the screens, facing upwards. The reciprocal movement of the nozzles is activated by a small electrical motor and gearbox (9), or a pneumatic cylinder.

The spray nozzles receive a continuous supply of clean, filtered water, typically drawn from the filtrate reservoir and delivered by a high pressure pump (12) or by the main system pumps. The nozzles spray upwards through

the screen and lifts the retained solids from the screen surface back into the path of the forward flowing water.

A set of top spray nozzles are mounted on a bar (11) above the screens that spans the width of the screens. The same high pressure pump (12) that provides filtrate to the reciprocating spray nozzles (7) also supplies the top spray nozzles.

Any solids remaining on the screen are periodically blasted off into the waste sump (10) with these top spray nozzles. Flow to the top spray nozzles (11) is controlled by a solenoid valve. Duration and frequency of the pulses can be set.

The actions of the reciprocating spray nozzles (7) in conjunction with the top spray nozzles (11) constitute the integral, continuous cleaning function. The re-use of filtered water to feed the integral cleaning mechanism results in minimal water loss.

The benefit of gravity filtration is that you avoid the danger of permanent blockage or damage to the screens. The unforced filtration process also prevents the breaking up of flocculated particles and organic matter.



## PPC Ltd – De Hoek Factory, Western Cape, South Africa

PPC Ltd uses raw river water for plant process water. High pressure pumps deliver the water to the plant. Suspended solids in the raw water damages the high-pressure pumps and block spray nozzles on the plant. Suspended solids consist of organic detritus (decomposing leaves, bark fibers), pebbles, grit and sand. These types of solids are best removed by gravity filters (not pressure filters).

PPC installed a **GraviFilter (Model VA4, 250µm, 100m<sup>3</sup>/h)** at the extraction point at the river. The filter provides efficient, non-pressurized, gravity filtration that is ideally suited to filter **organic, soft and fibrous** suspended solids. Pump maintenance costs and downtime attributed to blocked nozzles decreased.



### Testimonial

*'We are very satisfied with the results of installing this GraviFilter. It is self-cleaning with very low maintenance. It is durable and operates unattended for extended periods.'*

Pieter van den Heever – PPC Ltd – De Hoek Factory

## Industrial Laundry – Cape Town, South Africa

An Industrial Laundry in Cape Town recycles their process water. The treatment plant includes **prefiltration**, DAF, final filtration and membrane separation (UF / NF) stages. Lint is a significant component of the suspended solids in the process water. It interferes directly with the efficiency of the membrane separation processes and will debilitate the process if not removed.

**Lint** can not be removed efficiently with pressure filters and it blocks manual gravity screen filters within minutes. The client installed a **GraviFilter (Model VA1, 130µm, 10m<sup>3</sup>/h)** as the prefilter in their treatment process. The GraviFilter provides efficient filtration and allows optimal functioning of the downstream processes. The integral self-cleaning mechanism ensures long, uninterrupted filter runs. **GraviFilters** are designed for the efficient removal of soft, organic and fibrous suspended solids from process water.



 **SUPERIOR**  
FILTRATION

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