Passavant Geiger

We Build Responsibility

A key component for the Advanced Wastewater Treatment

Passavant® Pile Cloth Filter PCF®

Pile cloth filtration for advanced wastewater treatment

A brand of
Aqseptence Group

Our Solution

Passavant® Pile Cloth Filter PCF®

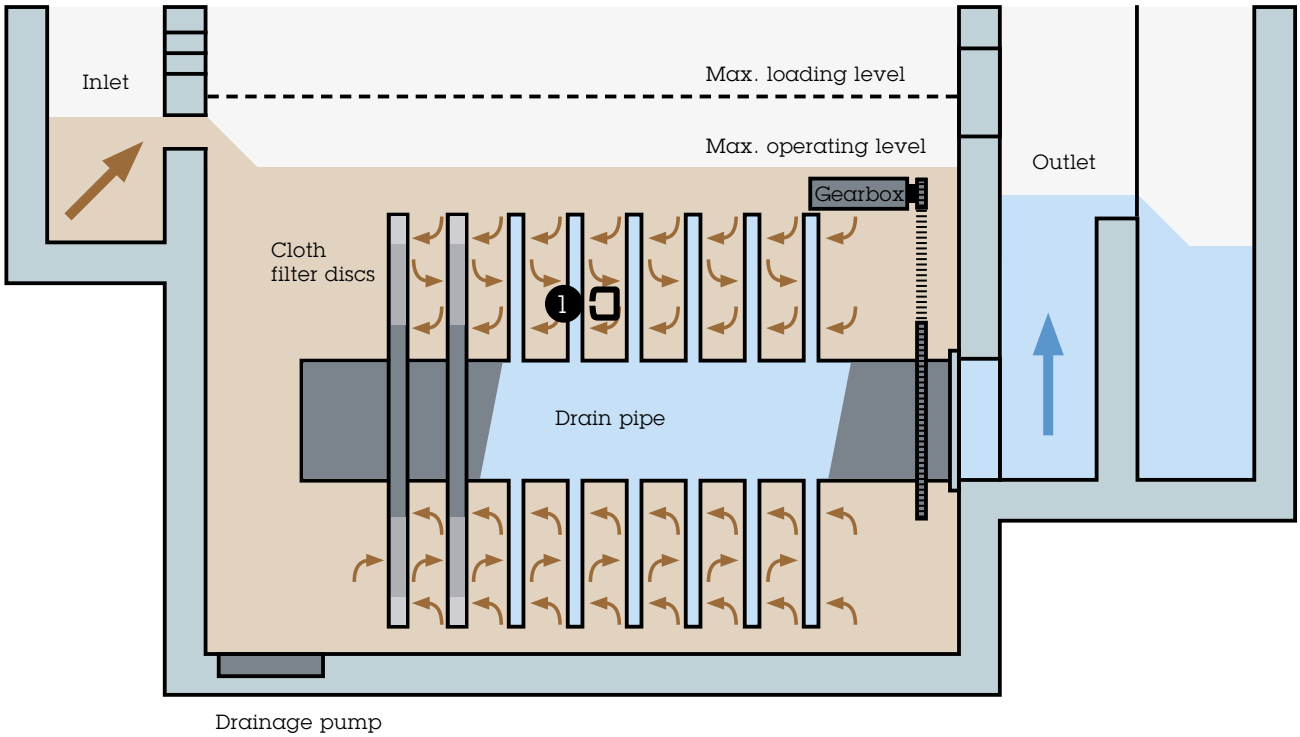
Pile cloths have a depth effect due to the three-dimensional nature of the filtration, and have advantages over conventional technologies, with less space requirement than sand filters but higher retention than classic (two-dimensional) microscreens.

Passavant® PCF® after secondary clarification

Passavant® Pile Cloth Filter PCF®

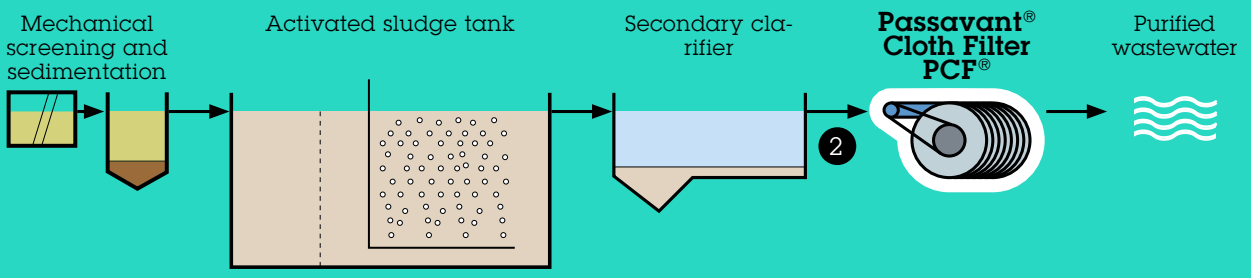
- Continuous operation
- Gravitational filtration easily integrated in existing systems
- Low energy requirement due to little pressure loss (little or no energy required for pumps) as well as low power requirement for drive and backwash pumps
- Optimized filtering surface because of full immersion of filters
- Low maintenance requirements / few peripherals

Principle



A means to reducing the phosphorus discharge values

More strict requirements for wastewater quality with regards to phosphorus elimination or removal of trace substances (e. g. micropollutants) require further methods for cleaning wastewater to supplement conventional chemical-biological treatment



2 Wastewater quality after secondary clarification

1 mg TSS contains (according to DWA-A 131)	mg/l
Carbon	0.8–1.4
Nitrogen	0.04–0.1
Total phosphorus	0.012–0.04

To achieve low total phosphorus values – even with intensive precipitant usage – it is very important to retain suspended (filterable) solids (TSS).

Passavant® Cloth filtration PCF® following a classic secondary clarifier allows:

- **Superior nutrient removal**
  More thorough nutrient removal of suspended solids not completely removed by conventional secondary clarifiers (see table above).
- **Activated carbon retention**
  Powdered activated carbon (PAC) added to the wastewater for the decolorization of wastewater or the elimination of (polar) trace substances should be sieved out of the wastewater, since its sedimentation is only possible to a limited extent.
- **Microplastic retention**
  Wastewater contains microplastics from various sources, some of which are bound in sewage sludge. Even smaller microplastics can be screened out.
- **Meeting the requirements for water reuse**
  Since many advanced wastewater treatment strategies for wastewater reuse require the absence of solids for efficient implementation, as for example the filtration with granulated activated carbon (GAC).

Functional principle

Microsieving in three dimensions

The waste water flows through the filter cloths from the outside to the inside (precoat filter)

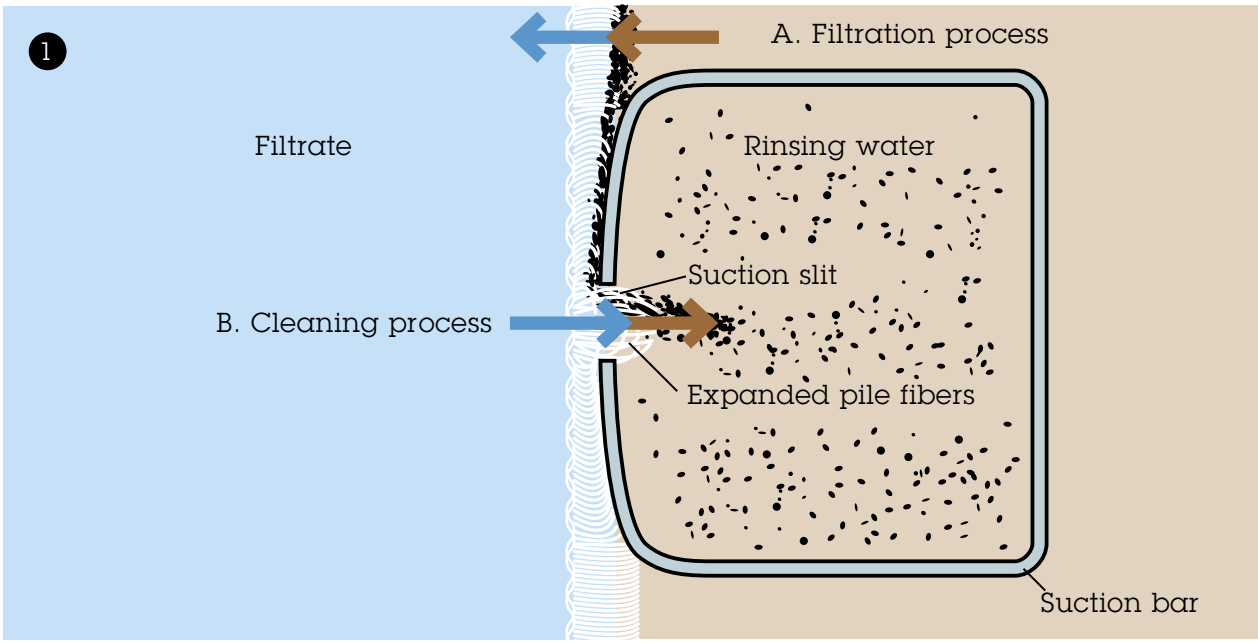
Polyamide pile cloth on polyester fabric

Solids settling in the filter cloth results in a water level build-up that triggers cleansing of the filter cloths when a threshold is reached.

Cleaning is carried out by an external suction unit (the negative pressure is generated by centrifugal pumps) which pulls the filtrate on the outside back from the cloth, causing the fibers to stand up. In this manner the adhered substances can be easily removed (see 1 B.). Disc rotation may be performed in both directions (see page 6).

A particularly sophisticated cleaning concept is used for intensive cleaning, which significantly reduces the maintenance effort compared to the competition.

Disc cloth filter Typ PPC

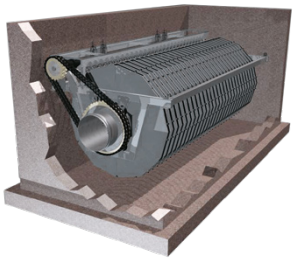


Filtration (A.) and cleaning (B.), through backwashing with filtrate and suction) can take place simultaneously

Designs

Plastic and stainless steel for high corrosion resistance

Horizontal designs



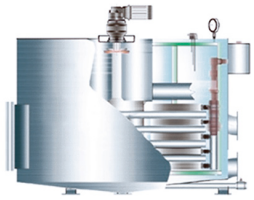
Example in concrete tank

Cloth filters are most commonly arranged on a horizontal shaft

PCF®-PEC
- up to 24 discs
  (max. 120 m² filter area suitable for approx. 40,000 PE)
- Backwashing by means of pumps, each assigned to two or more discs

PCF®-PPC
- up to 32 discs
  (max. 160 m² filter area suitable for approx. 54,000 PE)
- Backwashing by means of a pump (+replacement unit), selection of the discs to be cleaned is carried out by pneumatic valves.

Vertical design

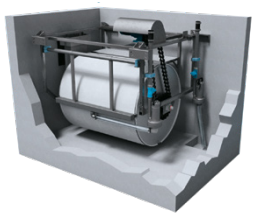


Example in steel tank

A vertical arrangement is available for smaller applications

PCF®-PECV
- up to 6 discs
- (max. 30 m² filter area suitable for approx. 10,000 PE)
- Backwashing by means of pumps that are assigned to two or more discs.

Drum filter



Example in concrete tank

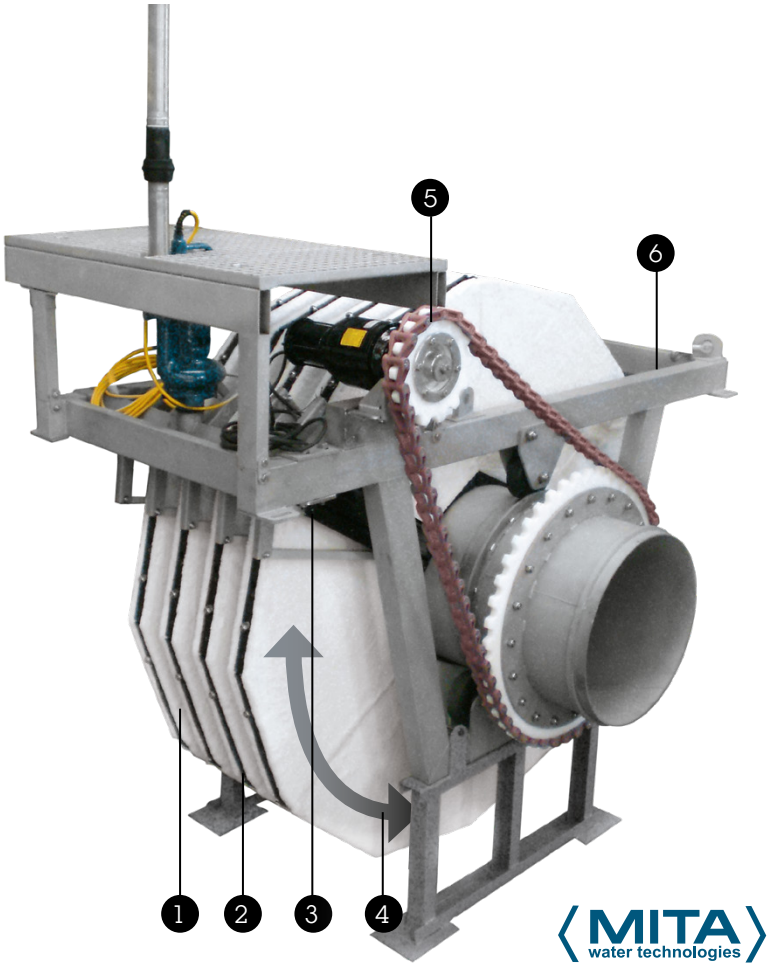
For the smallest applications, an alternative design as a drum filter can be chosen

PCF®-TF
- Drum with different diameters
  (max. 6 m² filter area suitable for approx. 2,000 PE)
- Backwashing by means of one pump per drum

Filter area in m²	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
PCF®-TF	2–6																
PCF®-PECV		10–30															
PCF®-PEC		10–120															
PCF®-PPC		10–160															

TF, PECV, PEC and PPC are also available as a steel container version (abbreviation VM).

Design



1. Polyamide fibers on polyester carrier
2. The fabric carrier consists of a glass fibre reinforced polypropylene mesh
3. Suction device made of low-wear plastic
4. Clockwise or counterclockwise rotation ensures effective cleaning and low backwash volumes
5. Drive chain, motor gearbox housing, pins and sprockets on the filter shaft made of high-quality plastic
6. All metal structures made of stainless steel (AISI 304 or 316)

Example MITA Water Technologies S.r.l Typ PCF® 4/20 PEC

Scope of supply

- Control panel
- Sensors
- GRP cover (optional)
- Pile fabric replacement cloths with different permeability (optional)
- Passavant® dosing technology (optional)

Numerous cloth filter units have been supplied by MITA Water Technologies S.r.l. in the last decades. Experience indicates that pile cloths last at least 5–7 years before replacement under normal operating conditions.

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