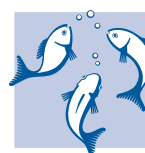




**Featuring Optifiber
PES-14-DW[®]
pile cloth media**

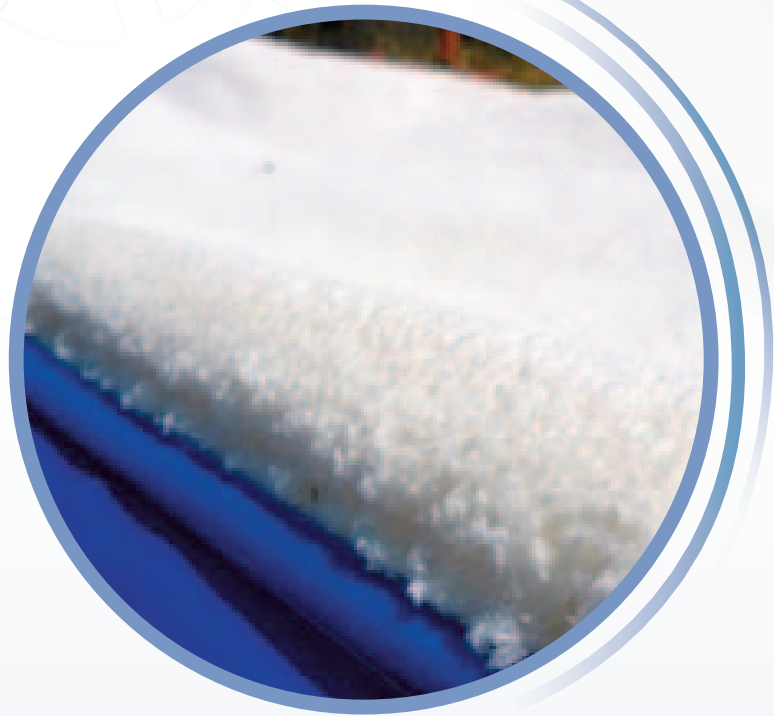


Drinking water treatment, Surface water pre-filtration Featuring Optifiber PES-14-DW® pile cloth media

Pile cloth media filtration can be used as a resilient pre-filtration solution to address the problems associated with algal blooms occurring in water extracted from surface water sources. MECANA pile cloth media filtration (PCMF) systems can be used as an economical and an efficient pre-filtration stage in the treatment of surface water to produce drinking water or process water.

The system utilizes the disk configuration and the exclusive OptiFiber PES-14-DW® pile cloth filtration media, to effectively filter algae, surface water particles and suspended solids without the use of chemicals.

Used as a pre-filtration process, PCMF can handle a wide range of flows in a fraction of the space required for conventional granular media filters. The PCMF technology and the OptiFiber PES-14-DW® cloth have been **approved for use with drinking water in the UK.**



Application to surface water pre-filtration:

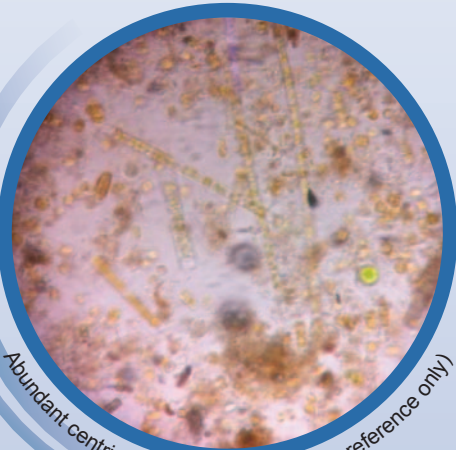
One challenge in drinking water production with surface water from reservoirs or rivers is the removal of low density suspended solids and algae. In the context of climate change, droughts may impact reservoir water quality and result in more prolonged and severe algal challenges. **An affordable chemical-free alternative** to traditional processes such as sand filtration and DAF can be provided by pre-filtration with pile cloth media. PCMF is capable of removing a wide range of algae typically responsible for seasonal algal blooms, from diatoms and other unicellular algae in spring to filamentous types such as *Melosira* more common in the summer.

The pre-treatment of raw water is an important step in the multi-stage water treatment process, since it impacts crucially on the operating efficiency of the main treatment and after-treatment processes further downstream. Inadequate retention of solid particles such as algae in suspension during pre-treatment results in:

- Reduced service times of fine filters and membranes downstream
- Increased maintenance costs as a result of shorter service intervals
- Increased energy consumption
- Reduced process reliability
- Increased operating costs
- Reduction in works capacity

Using PCMF solution in the pre-treatment of surface water treatment ensures:

- Improved service life of downstream processes
- Lower maintenance costs as a result of longer service intervals
- Lower energy consumption
- Lower water losses
- Increased process reliability
- Reduced operating costs

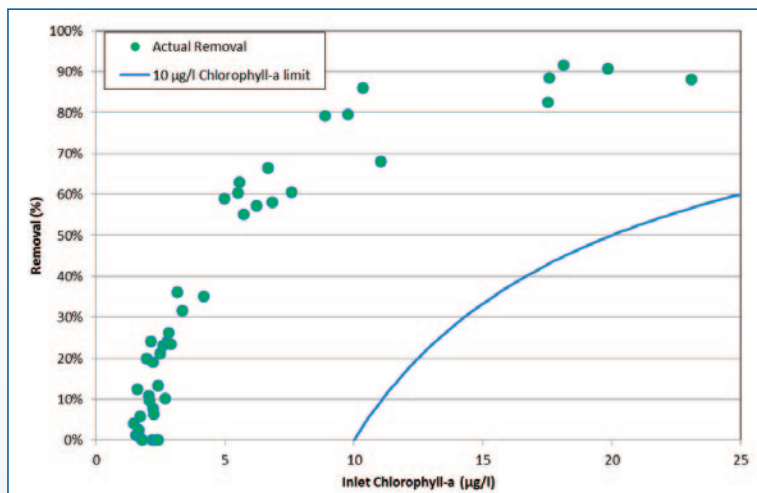


Abundant centric diatoms (Images are for reference only)

Chemical-free achievements

Background: almost 4 years of pilot trials performed with Thames Water at two sites: Coppermills AWTW in East London and Walton AWTW in West London.

- Removal of pennate and centric diatoms, small unicellular algae
- Chlorophyll-a: >80% removal during periods of algal challenge, chlorophyll-a <10 µg/l 95%ile
- Turbidity: >80% removal during periods of algal challenge, turbidity: <2.0 NTU 95%ile
- Backwash volume typically below 1% of the forward flow (in comparison, RGF is at least 3-5%)
- Footprint loading rate of 40 m/h equivalent



Pilot trials at Walton AWTW (West London), Thames Water, May-October 2017

Filtration mode

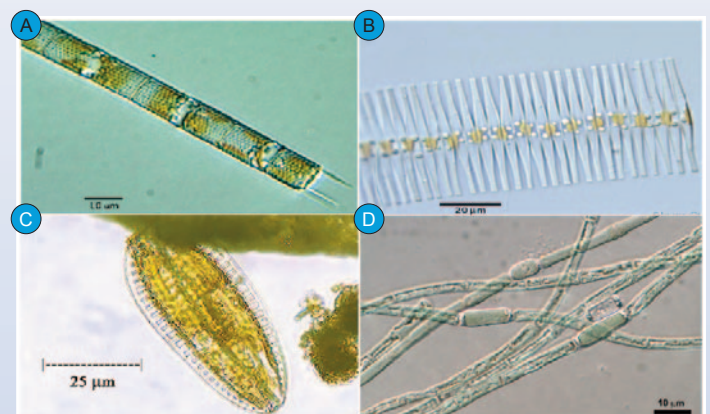
- Surface water flow enters the filter by gravity
- Stationary cloth media disks are completely submerged
- Solids deposit on the outside of the cloth media forming a cake as filtrate flows through the media
- Tank liquid level rises as head loss increases due to the collection of particles
- Filtrate is collected in the hollow center tube and discharged over an effluent weir
- Heavier solids settle to the specifically designed hopper-bottomed tank

Backwash mode

- Accumulated solids are removed by backwashing at a pre-determined liquid level or time.
- Backwash shoes directly contact the cloth media and solids are removed by suction using a backwash pump
- Disks rotate slowly and several disks are backwashed at a time
- Filtration is not interrupted
- Backwash water is directed to dirty water handling facilities (buffer tanks, thickening)

Solids wasting mode

- Heavier solids which settle to base of the tank are collected in the hopper and removed on an intermittent timed basis using the settled sludge pump
- Solids are pumped to dirty water handling facilities



Examples of algae present in Walton inlet: (A) *Aulacoseira (Melosira) granulata* is a filamentous diatom and has cylindrical cells linked together by spines. (B) *Fragilaria* colonial diatom. (C) Pennate diatom. (D) *Aphanizomenon* blue-green algae. (Images are for reference only)

Over 50 years of experience

Altogether there are today over 3000 cloth media filters totalling over 100'000 m² of filtration area, operating in more than 1500 different treatment plants worldwide!

Suitable installation and reference list are available on request.

Mecana offers:

- Field Trials
- Engineering
- Installation supervision
- Spares in stock for rapid response
- Service, Repair, Maintenance
- 10 years spare parts delivery guaranteed



 **MECANA**
A Metawater Company

OptiFiber[®]
Pile Cloth Media

