

PFS Municipal

PFS Municipal is an water treatment system for Municipal Wastewater Treatment Facilities. Using enzyme technology it is capable of removing a large range of pharmaceutical residues and other organic pollutants from effluent water. The system delivers high removal rates at low costs compared to other technologies.

SYSTEM EFFICIENCY

The advanced enzymatic filtration provides high removal rates at very low costs.



High degradation rate

The enzymatic activity reaches removal rate up to >90% for targeted organic substances



A broad spectrum

Our enzyme repository ensures a very efficient system which easily adapts to new developments in detection and process.



No energy consumption

Due to its flow through system PFS requires no energy usage to be fully functional as it relies only on gravitational force.



Future advancements

Improvements are applied to all existing systems to allow for immediate integration of best available technology.

FILTER CHAMBER

The filter chambers can be installed in series or parallel, in separate processes or in a module.

Chamber valves

Filter valves



High flowrate

A standard Module (flexible) can handle a high flowrate of up to 8 000m³ per 24h



Number of units

The number of units to be installed is based on the volume of effluent water from the facility.

FILTER MATERIAL

Unsurpassed enzyme immobilization without compromising flowrate



Filter matrix

The chambers hold the filter material which immobilise enzymes on the surface



Recyclable material

The filter is a silica based material which is recyclable and rechargeable material. This can reduce overall resources



Immobilised enzymes

The highly specialized filter material and the advanced technology used in the PFS has resulted in an unsurpassed enzyme immobilization with the highest possible enzymatic activity

INSTALLATION & MAINTENANCE

Easy installation with the safest possible maintenance.



Individual maintenance

All chambers can be disconnected separately which allows for excellent run-time and total system safety



Filter treatment

The chambers are emptied for maintenance or refilling of new filter material



Safest system available

PFS is the safest system available and adds no additional safety measures to existing protocols.



Short start-up timeframe

The system is quickly installed by its plug-and-play design and requires no complicated adjustments



Maintenance plan

A customized maintenance plan is established for every installed system.

COST MODELL

The standard cost model is based on minimum installation of 1 module (which is designed for a flowrate of 10 000 m³/24h



Preparation for installation

The WWTF's existing infrastructure decides the total costs for preparing the site for placement of



Number of PFS-Modules

The numbers of modules to be installed is calculated based on historic and coming flow-rates



Total Operational Costs

Its compact size and the plug-and-play design makes it feasible to install at any location.



Low cost maintenance

Easy and safe maintenance with no hidden costs.



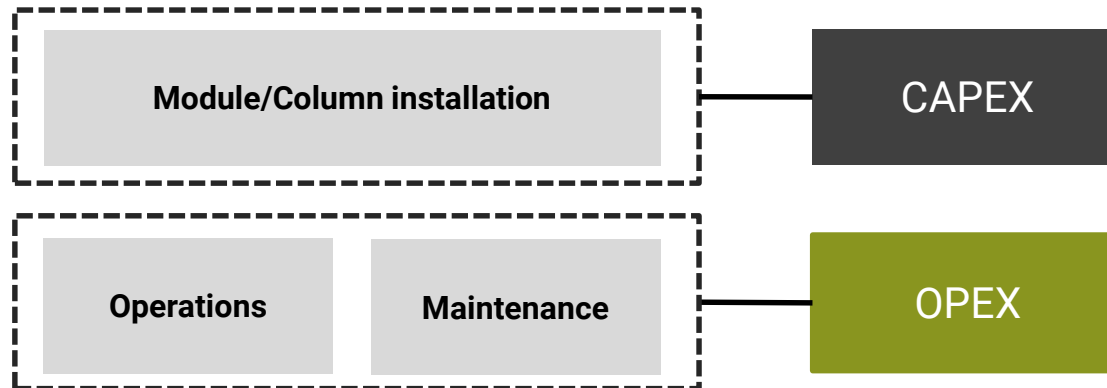
TECHNICAL DATA SHEET

Technical data and information regarding one PFS-module

Subject/Area	Description/Information	Data
Average removal rate*	PFS secures high removal and flexibility due to its patented technology. The standard installation procedure ensures that the system is adapted to the process.	Above 80%
Module measurements	The measurements of one module which includes 10 filter chambers. The system can be scaled to fit the exact flow in the facility and the installation is fully flexible in size of model and column installations	2780x4220x2210 (mm, HxLxW)
Flowrate capacity	The combination of high enzymatic efficiency and the filter material the standard PFS module can handle a high flowrate	Up to 8 000 m³ per 24h
Maintenance space	The module is designed to be very compact and easily maintained. By adding space to the width of the module it will provide a very comfortable maintenance access.	1250 mm per column
Optimal temperature range	The system is fully functional in various temperature-ranges and is designed according to the specific needs from facility and the process water. The temperature range given should be seen as the optimal temperature range. Upwards temperature usually increases the removal rate.	10-25 °C
Hydraulic height loss	By using the inherent flow-rate efficiently the system only need a small vertical drop from inflow to outflow.	~400mm
Need for pumps	The system does not need pumps to be fully operational and ensures guaranteed removal rate. PFS uses the existing flow in the facility. Dependent on site specific parameters and existing infrastructure pumps may be needed.	No pumps needed
Energy usage	Due to its design PFS does not require any energy to be fully functional. Flowrate sensors or control systems are also installed, but the yearly energy consumption of these is very low.	Usage, < 0.5 kWh
Control system	PFS uses industry standard flow-rate sensors and control which makes it highly adaptable to any control systems.	Any/Flexible
Subsequent purification	The enzymes catalytic effect ensures a controlled degradation of the compounds and removes the need to add additional purification steps as reported for other technologies such as Ozone.	None

PRICING MODEL

Pricing is divided into two major areas; Module/Column Installation and Operation/Maintenance (Final installed solution)



TYPICAL COSTS (EUR)

Subject/Area	Description
Module/Column installation	The columns/modules are at costs and the existing site is the deciding
Operation/Maintenance	The total Operating costs mainly consist of the filter changes and controls. This is finally calculated based on the final design of the installed system.

Subject/Area	PFS
Installation costs CAPEX (EUR)	10 000 – 50 000 or based on the existing facility
Annuity CAPEX (EUR/year)	~450*
Total operational costs (EUR/m3)	0,04 – 0,08**

*Annuity costs are based on , period = 20 (years), Interest rate = 4 %

** The total operational costs are calculated based on the Standard Module and can sometimes vary dependent on the nature of the installation.

FULL SERVICE SOLUTION

Subject/Area	Description/Information
Full Service Solution	With standard system installation the customer will be offered a full service solution within the total operational costs for PFS.
Changing filter material	The exchange of the filter material can be carried out in-house or through a service organization according to the maintenance plan.
Operating and monitoring	PFS is easily calibrated to your existing control- and monitoring system without any further adjustments.
PFS Quality control	Quality controls of the entire system is outlined in the established maintenance plan.

CONTACT US

Use PFS to remove any harmful organic compound in wastewater flow



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