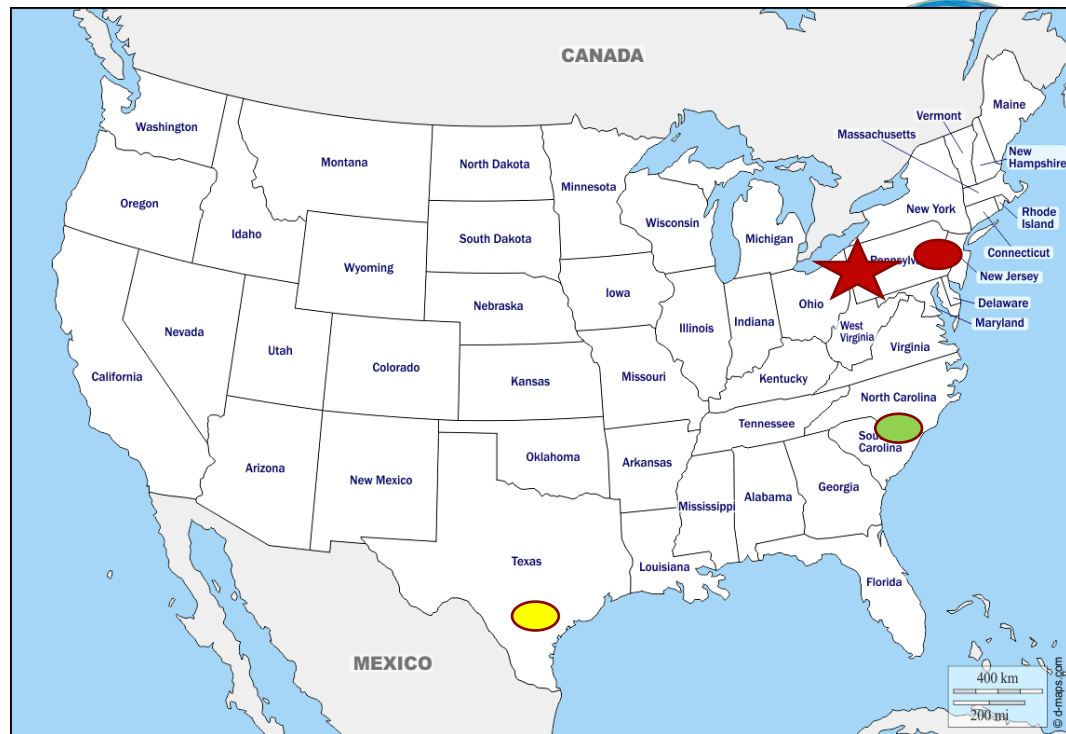
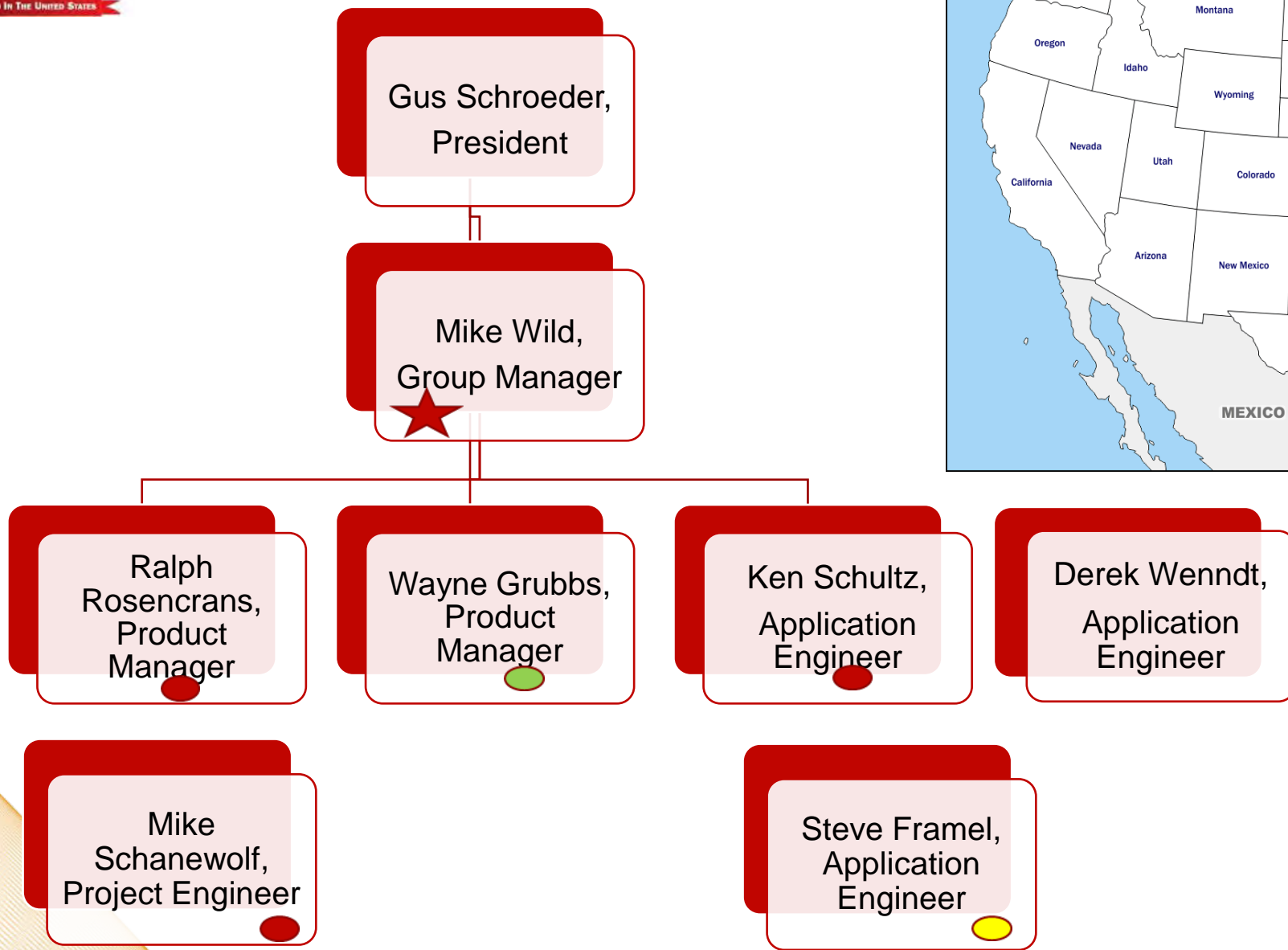


**Process**  
Mike Wild



# **2022 DISTRIBUTOR TRAINING**



# Today's Topics

1. Top MRO Markets Served
2. Low Viscosity Fluids – water, emulsions, coolants
  - A. Coarse Filtration
  - B. Fine Filtration
  - C. Finest Filtration
  - D. Oil Removal
3. Machine Coolants
4. Heavy fuels, oils and lubrication
5. Backwash Treatment/Gravity Filters
6. ConoScreen for high dirt loads
7. High Pressure Filters
8. Gas Filtration
9. Videos



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9. Summary





# Top MRO Markets



## Steel industry

- Filtration of the process water to protect the nozzles and pumps in high pressure descaling
- Water conditioning for cooling blast furnaces and rolling mills
- Emulsion filtration in cold rolling mills



## Paper industry

- Protection of all types of nozzles on paper machines.
- Treatment of fresh water (e.g. river water) to be used for cooling
- Seal water filtration for vacuum pumps



## Oil and gas industry

- Filtration of injection water
- Filtration of cooling and service water
- Filtration of flushing water (pipeline flushing)
- Filtration of seal gas for dry gas seals



## Marine

- Pre-filtration for ballast water treatment systems



### Power plants

- Conditioning of industrial water for generator cooling
- Filtration of seal water to increase the service life of the turbine shaft rotary seals in hydropower stations
- Protection of heat exchangers in thermal power plants



### Automotive industry

- Filtration of cooling lubricants and washing fluids to extend service intervals
- Treatment of cooling and process water for different applications



### Water / waste water conditioning

- Protective filter before membrane systems
- Conditioning of service water in sewage treatment plants
- Increase in service life



### Chemical industry

- Cooling water and waste water filtration
- Filtration of a wide variety of chemicals





### Machine tools

- Improving the quality of cooling lubricants
- Extension of service lifetimes
- Protection of tools, consistent quality of the manufactured parts



### Mining

- Filtration of water for sprinkling the shield and cutting machines
- Treatment of cooling water for mine ventilation
- Protective filtration for water hydraulics underground
- Filters for filtering HFA fluids



### Plastics industry

- Polymer melt filtration

### Further applications

- Water pre-filtration for snow-making equipment
- ... and much more

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# Work and protection filtration

## ■ The pre-filtration

is a decisive step in the multi-stage

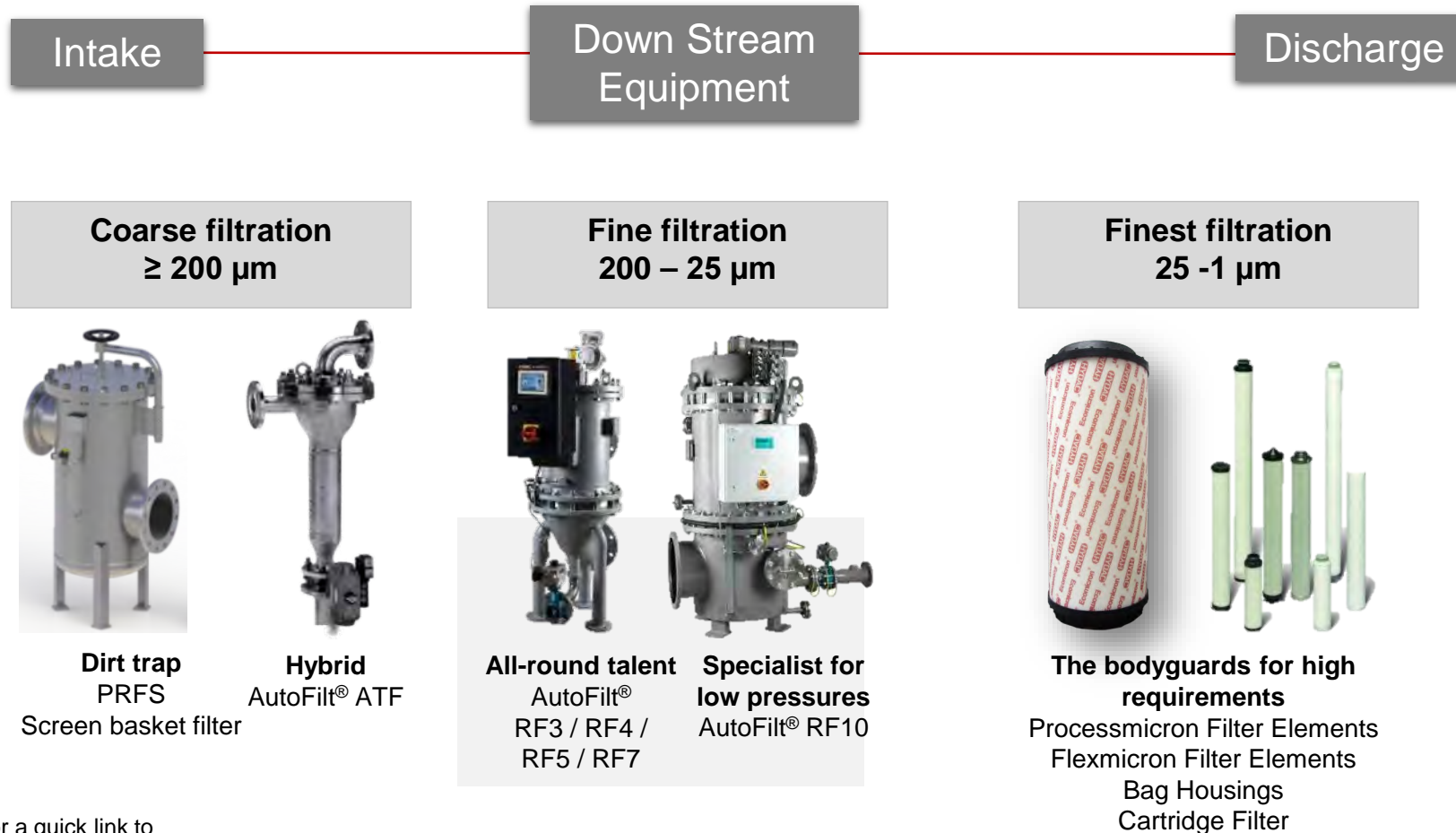
- water treatment process.  
→ It has a significant influence on the economic viability of the main processing and after-treatment.

- As a rule, a variety of methods can be used for water treatment.

Click for more info



...click on the product image for a quick link to the product!



# The dirt and rock trapper process screen basket filter PRFS



Coarse filtration  
 $\geq 200 \mu\text{m}$



## Product description

- Screen basket filter – also available as double filter
- Used as coarse filter, bypass filter or pre-separator

## Screen basket technology

- Screen basket insert with bracket
- Wire mesh: 25 to 1000  $\mu\text{m}$
- Wedge wire: 50 to 3000  $\mu\text{m}$
- Perforated plate: 3000 to 10000  $\mu\text{m}$

## Product advantages

- High filtration efficiency
- Easy to operate
- Robust filter materials – ideal for long-term operation
- Cleanable filter materials
- Low operating costs
- Particles cannot enter the clean side when changing the basket  
 - also available as a change-over duplex filter

Specifications	
Nominal size	DN 50 – DN 700
Qmax	16,000 gpm
Filter finenesses:	25 – 10000 $\mu\text{m}$



# The Hybrid AutoFilt® TwistFlow Strainer ATF



Coarse filtration  
≥ 200 µm



## Product description

- Coarse separation by centrifugal force with guaranteed filtration ratings
- 2-stage operating principle
  1. Centrifugal separation  
→ tackles high contamination loads
  2. Conical filter element  
→ guarantees the filtration rating

## Filter element technology

- Depending on the specific weight, even particles < 100 µm are separated effectively
- Wedge wire: 200 to 3000 µm
- Optional SuperFlush non-stick coating

## Product advantages

- No carry-over of contamination to the clean side
- - Suitable for wide variability in the quality of untreated water
- Consistent quality of filtrate
- Also available as skid solution for high flow rates

Specifications	
Nominal size	G1" – DN 200
Qmax	1800 gpm
Filter finenesses:	Depending on the particle characteristics and conditions of use





Several ATFs can be arranged in parallel switching for the management of large-sized volumetric flows

Complete, automatically functioning filter station

Continuous separation of solids from water and water-like media



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# The all-rounder AutoFilt® RF3 / RF4 / RF5 / RF7

Fine filtration  
200 – 25 µm

## Product description

- Self-cleaning automatic filter
- Vertical version (AutoFilt® RF3 / RF4 / RF5)
- Horizontal version (AutoFilt® RF7)
- Compact version (AutoFilt® RF4)
- Economy version up to 200 µm (AutoFilt® RF5)

## Filter element technology

- Conical filter elements
- Wedge wire: 50 to 3000 µm
- SuperMesh wire mesh: 25 to 60 µm

## Product advantages

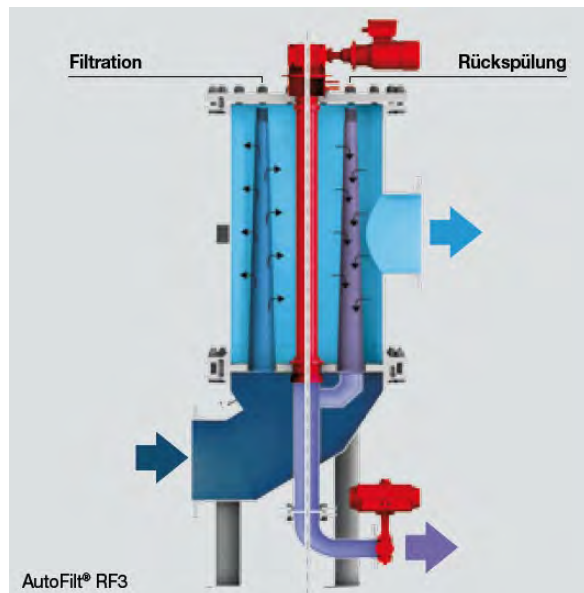
- Automatic back-flushing reduces operating costs
- Isokinetic filtration and back-flushing provides greater efficiency
- Variable flange positions
- Numerous material and control variants
- No interruption of the filtrate flow during back-flushing
- Proved its worth over a thousand times



Specifications	
Nominal size	G1" – DN 900
Qmax	33,0000 gpm
Filter finenesses:	25 – 3000 µm

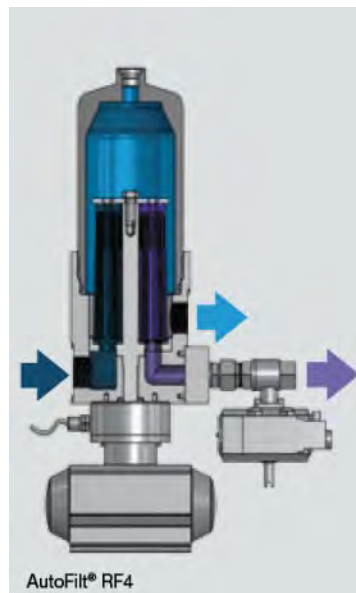






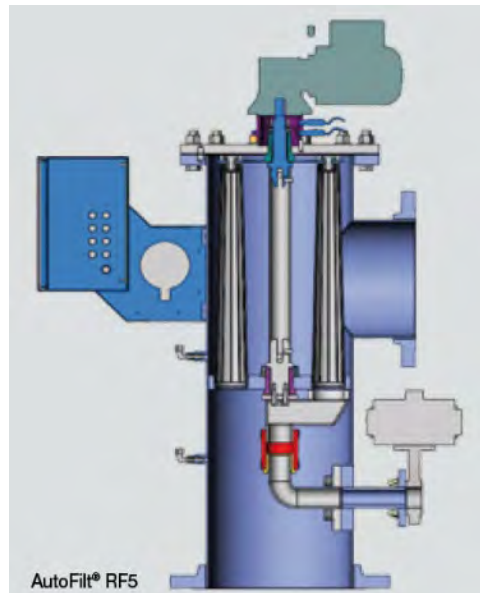
AutoFilt® RF3

→ The all-rounder – proved its worth over a thousand times



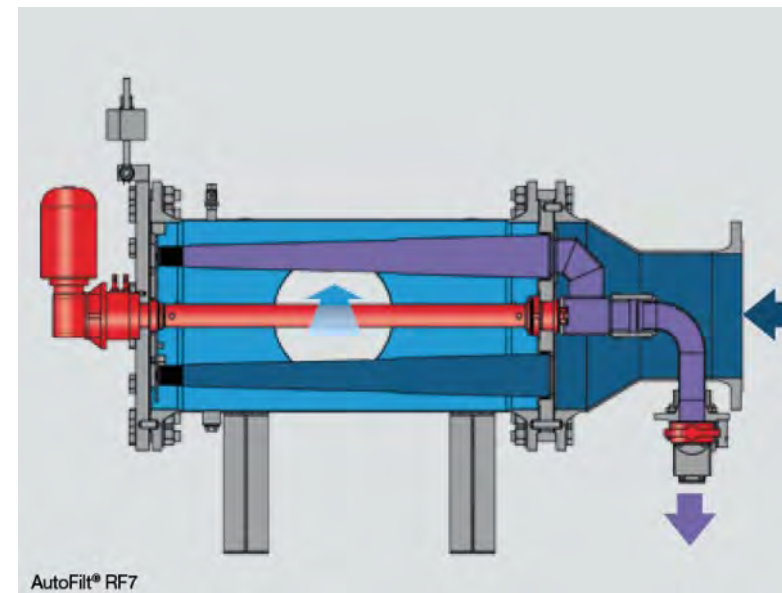
RF4

→ Compact for low flow rates



RF5

→ Economy with vertical inlet



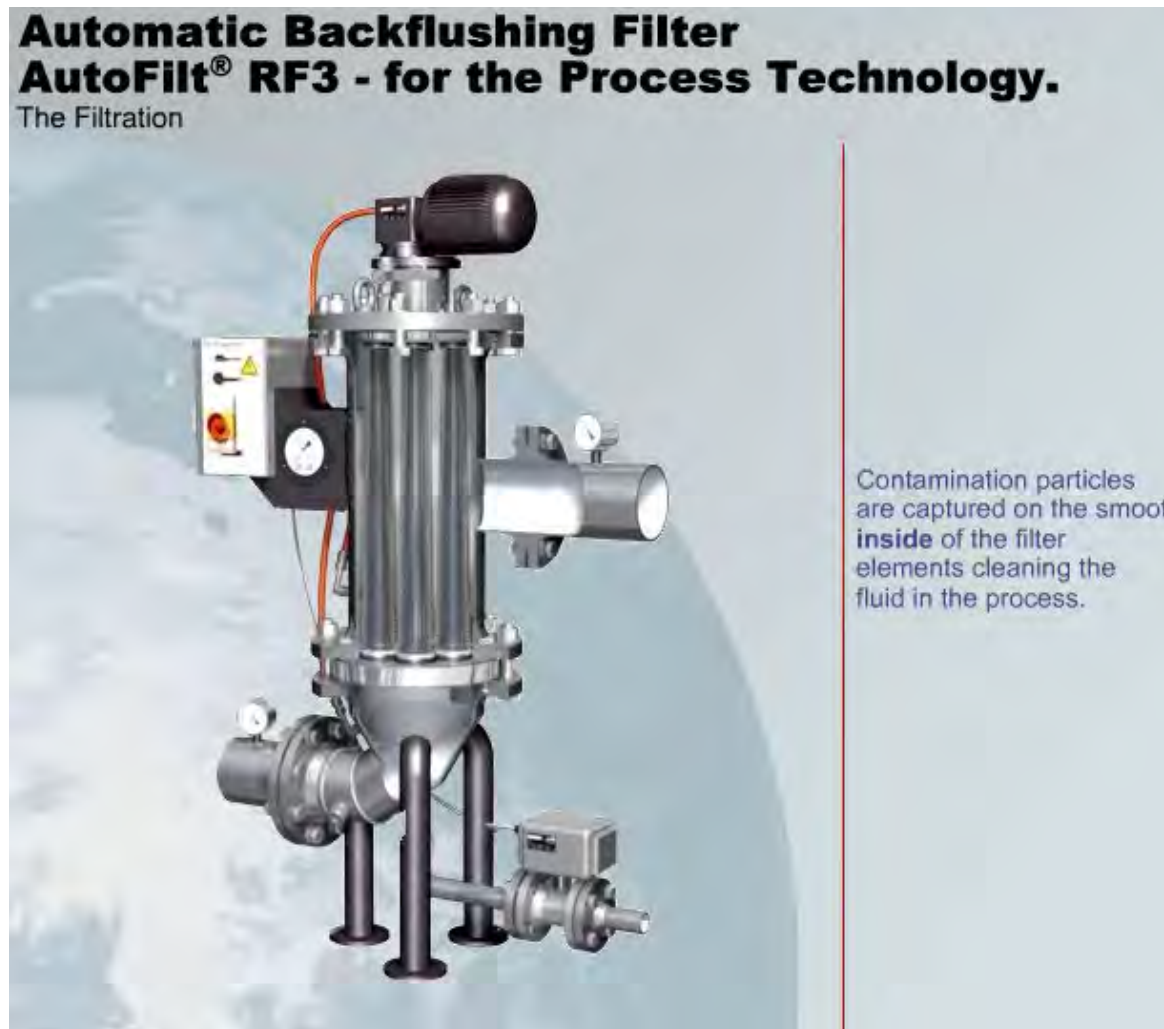
RF7

→ Horizontal design saves space

# Filtration AutoFilt® RF3 / RF5 / RF7

## Filtration:

- The medium flows through the filter elements from the inside to the outside.
- In the process, particles are deposited on the smooth inside surface of the filter elements.
- As the level of contamination increases, the differential pressure between the contaminated and clean side of the filter increases. If the pressure loss reaches the differential pressure trigger point, back-flushing starts automatically.

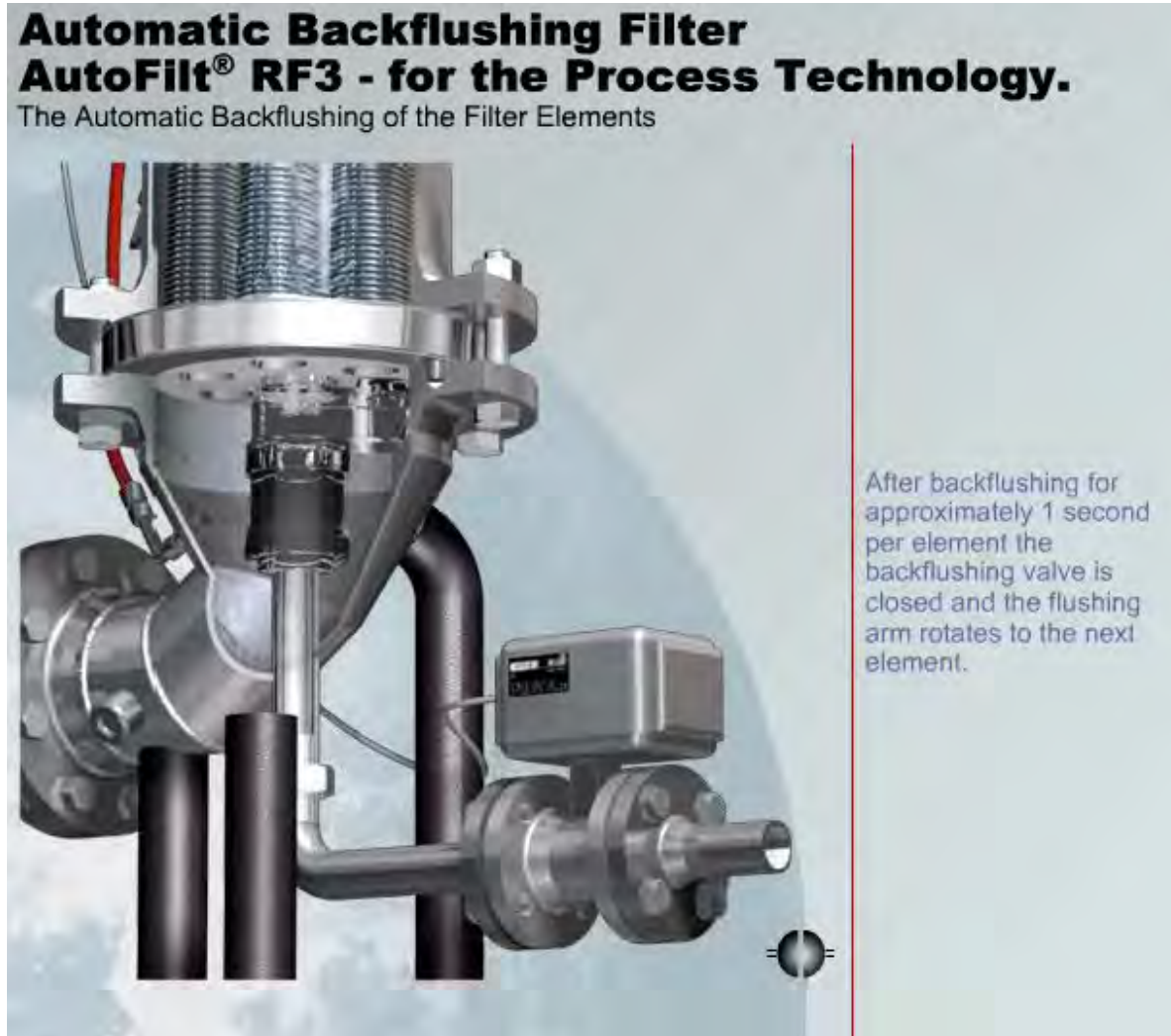




# Backflushing AutoFilt® RF3 / RF5 / RF7

## Back-flushing:

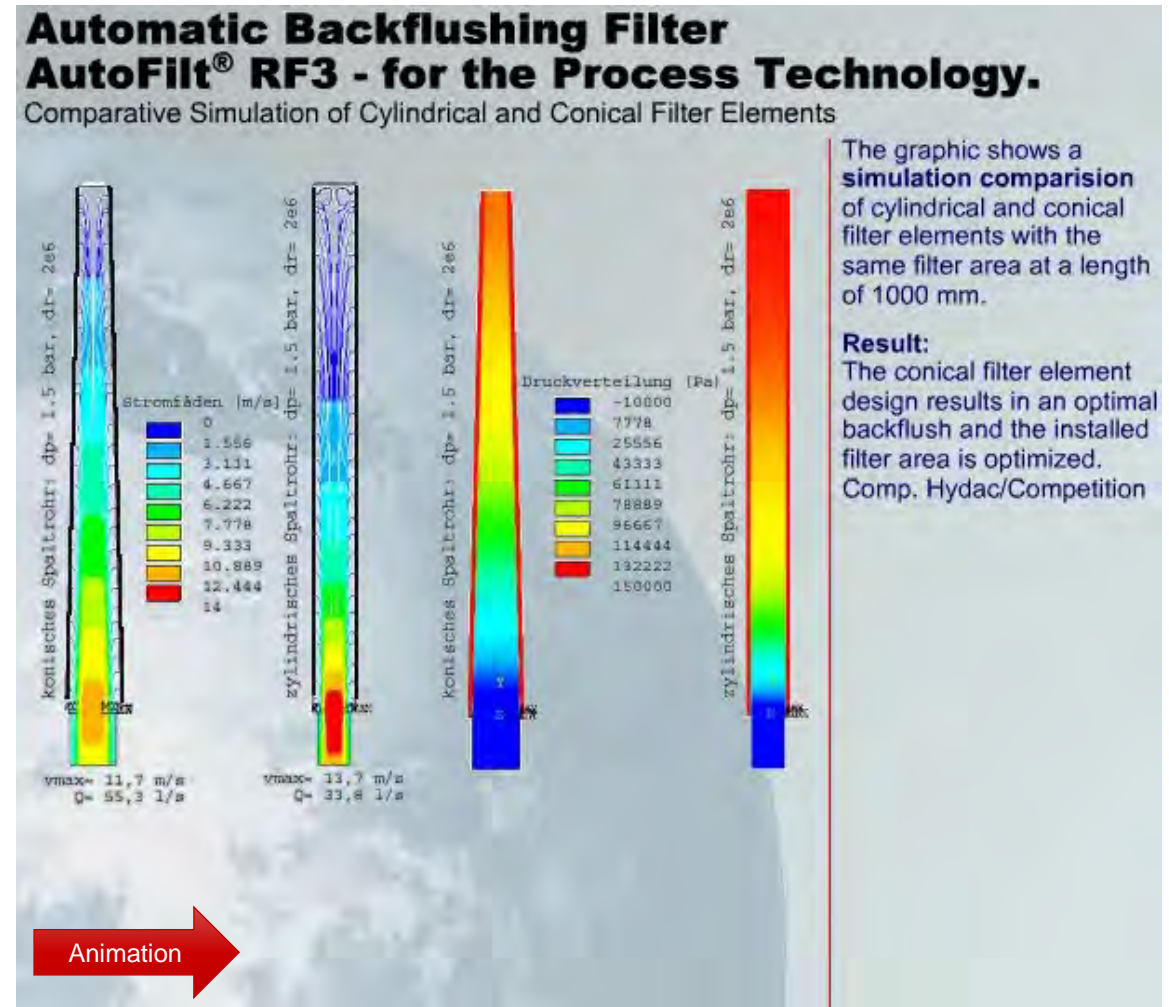
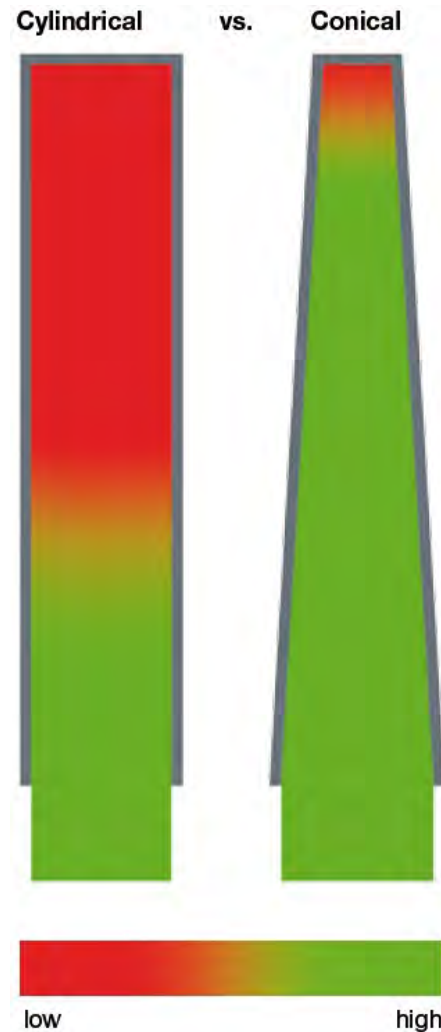
- The gear motor rotates the flushing arm under the filter elements to be cleaned.
- The back-flushing valve is opened.
- The pressure drop between filtrate side and back-flush line flushes a small amount of the filtrate back through the contaminated filter elements.
- The contaminant particles deposited on the inside of the filter elements are loosened and flushed into the back-flushing line via the flushing arm.







- The conical form and arrangement of the filter elements permit a uniform flow with the result of a low loss of pressure and a complete cleaning of the filter elements.
- **Advantages:**
  - Fewer back-flush cycles
  - Lower back-flush volumes
  - Lower pressure difference ( $\Delta p$ )



## RF3 now manufactured in North America

**RF3-0 through RF3-3 are  
Available from US Manufacturing**

**Will begin stocking RF3-0 and  
RF3-1 shells and internal kits in  
order to overcome delivery  
problems encountered from  
Germany**

**Assembled in Leetsdale**





# Potential Problems for Wedgewire elements

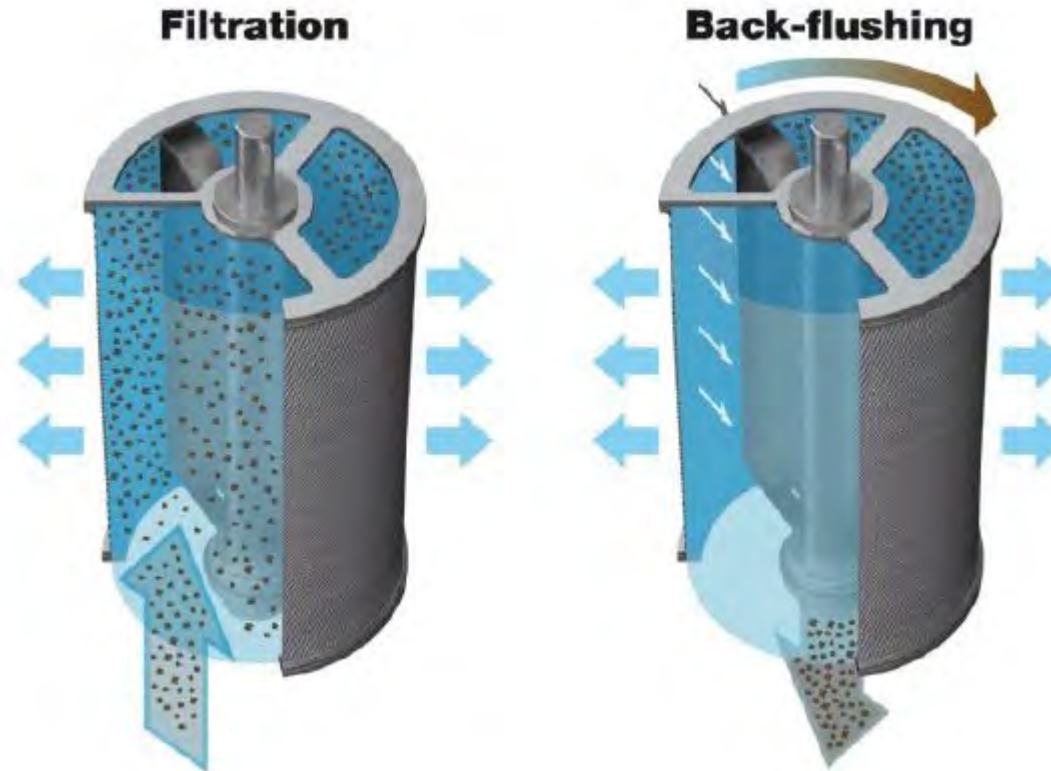




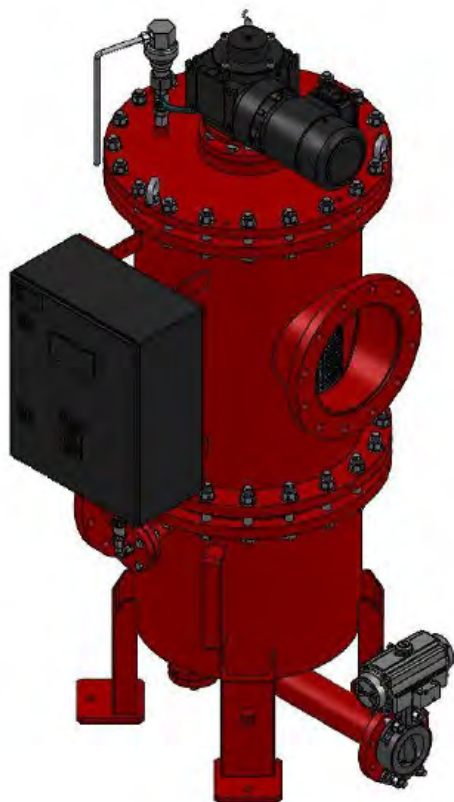
## Functional principle

- Filtration is from inside to outside through the filter basket
- If the differential pressure trigger point has been reached, then the gear motor turns the rinsing unit positioned on the inside of the filter basket
- The pressure drop between the filtrate and back-flush line leads to effective cleaning of the installed filter fabric.
- A flow-optimized flushing device, optimally adapted to the filter element, ensures a particularly effective cleaning of the filter material, which allows for ultrafine filtration to overcome the adhesive power of e.g. silt particles or

## Autofilt RF14



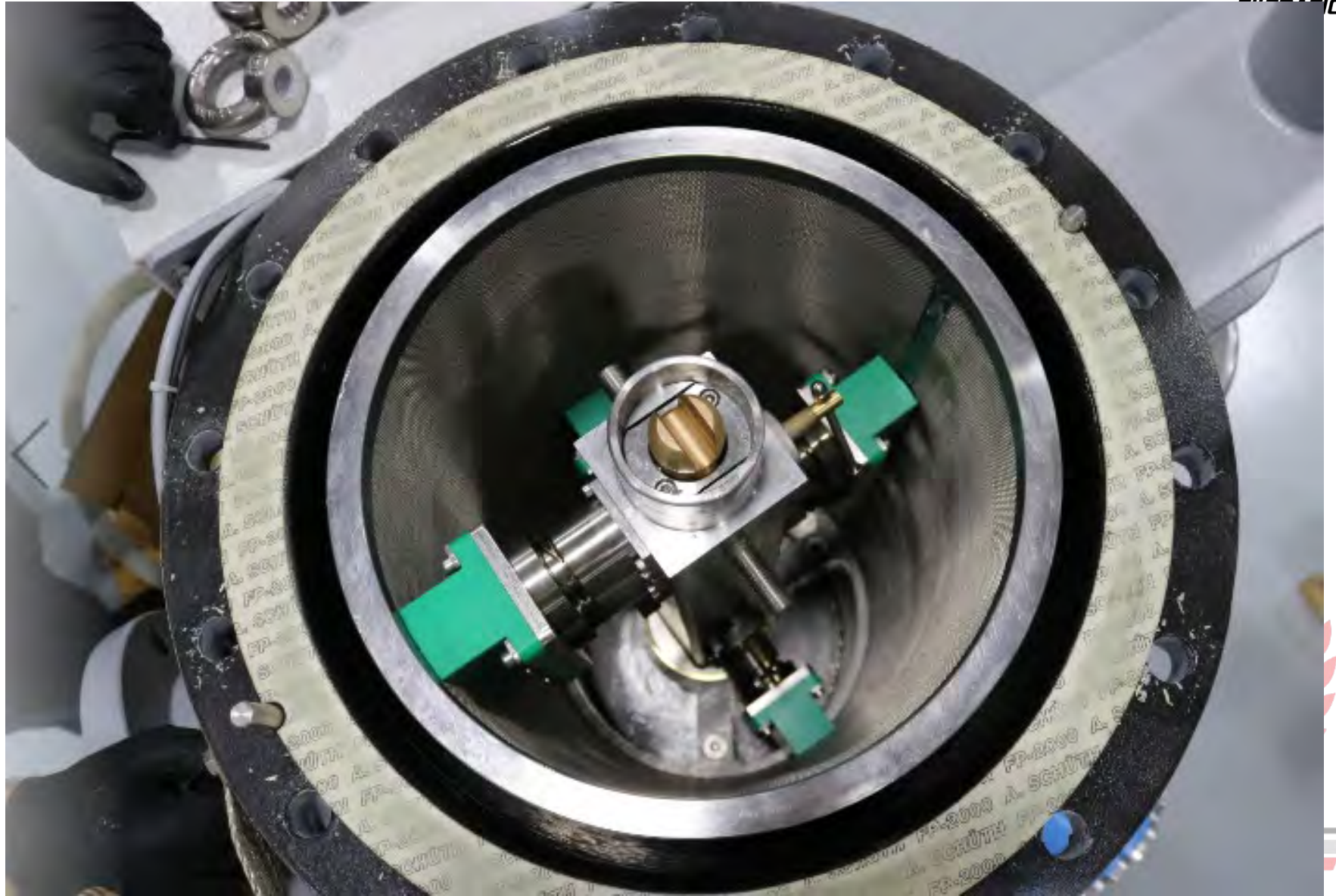
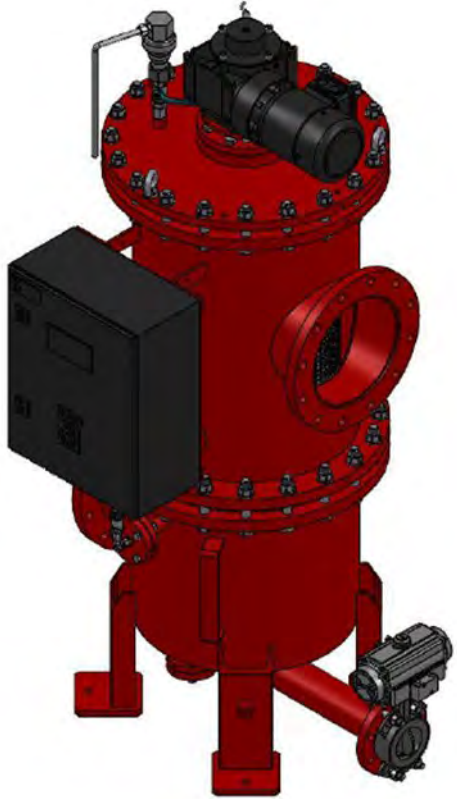
## AutoFilt® RF14



- **Basket type automatic backflushing filter**
- **Required inlet pressure:** **30 psi** (During the cleaning cycle)
- **Different filter execution depending on application** (e. g. Marine or Industrial)
- **Filtration degree range: 10 – 100 µm** (others on request)

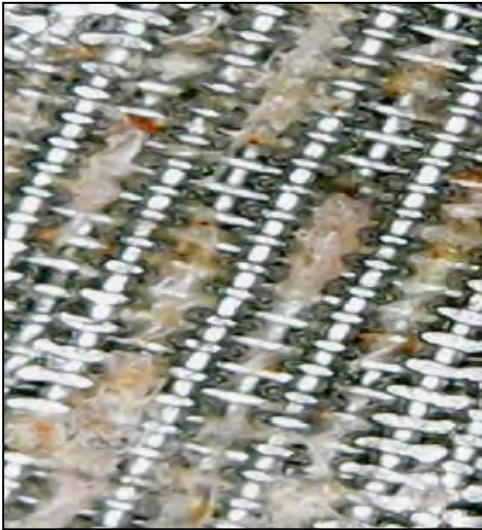








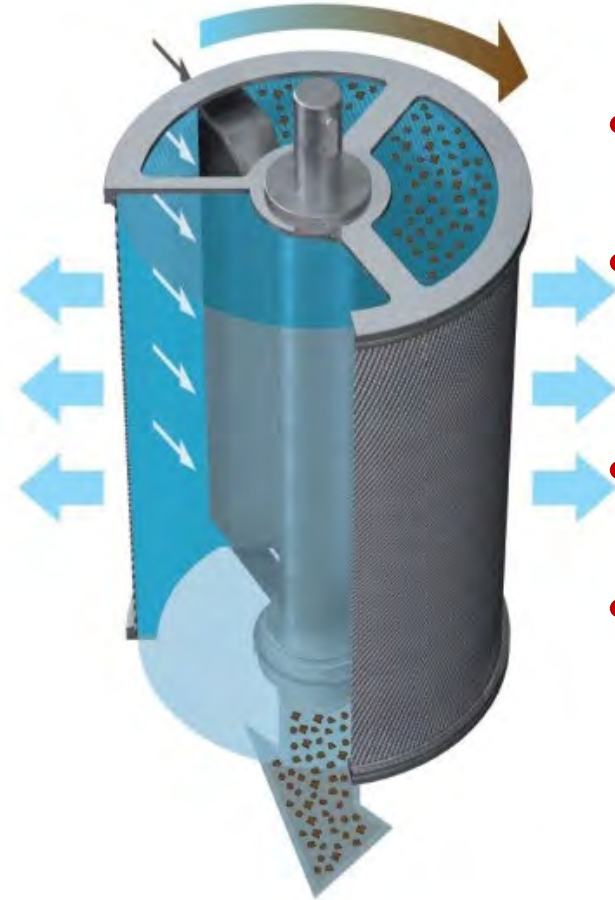
## Key features RF14 basket type



Before Cleaning



After Cleaning



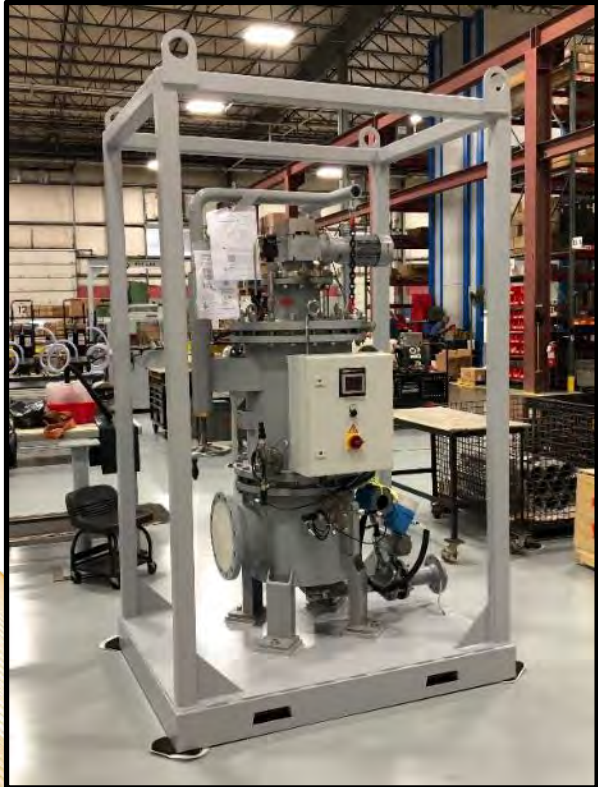
- Very intense focused Back-flush
- Speed of Back-flushing (4s - 8s)
- High amount of filter area cleaned to 100% per scan
- Low Back-flush water loss
- >>> TSS loads





## Algae Farm RF14 Pilot

Customer utilizes 40 $\mu$  algae to dry and use as food/vitamin supplements. However, 60 $\mu$  and 100 $\mu$  rotifers tend to eat the smaller algae. Hydac utilizes a 42 $\mu$  screen to separate the two successfully.





# discharge







# Paper Mill Application







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# The bodyguard for high requirements – PMRF

**Finest filtration**  
**25 -1 µm**

## Product description

- Candle filters
- High dirt holding capacity
- Bag Filters

## Filter element technology

Flexmicron Economy (PP) Spun Spray  
Flexmicron Standard (PP / PA) Spun Spray  
Flexmicron Premium (PES) Pleated  
High Capacity/High Flow Cartridges

## Product advantages

- Low pressure losses due to large cross sections and filter areas
- Very large filter area per filter element
- Compact design with high flow rates
- Flow-optimized design
- Protection of the clean side during element change
- High contamination retention capacity

Specifications	
Nominal size	G1" - DN 250
Qmax	500 m³/h
Filter finenesses:	1 - 90 µm



## High Flow, High Capacity Pleated Polypropylene Filter Elements

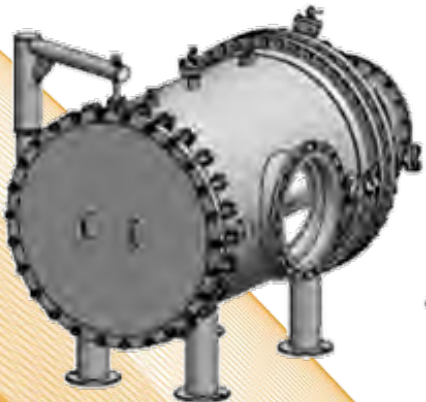
- Large cartridge geometry – bag element incorporated with pleated layer
- High flow capacity – up to 500 gpm/60”
- Media for highly consistent filtration down to 1 micron
- Inside to out flow traps contaminant inside the element and reduces solids from entering downstream
- Fits into standard #2 bag filter housings



- Pall typically sells this element for \$ 225-250
- In side by side pilot, we outperformed Pall and was 30% of the cost.

**Large number of  
Competitor  
Cross over elements**





## Product description

- PLF1 – Single-workstation filter housing
- PLF2 – Multi-workstation filter housing
  - ➔ Specially designed for the requirements of modern water treatment plants
- PLFx in horizontal or vertical version

**Finest filtration  
 25 -1 µm**

## Filter element technology

- Processmicron filter elements in 3 versions:
  1. 9" High Flow (HF) - Protective filtration
  2. 6" High Flow (HF) - Work filtration
  3. 9" High Load Cascade (HLC) – Complex operating filtration - contamination loads and contamination episodes

Specifications	PLF1	PLF2
Nominal size	DN 40 – DN 150	DN 200 –DN 600
Qmax	200	3600
Filter finenesses:	1 - 90 µm	

## Product advantages

- Excellent deposition rates
- Low pressure losses due to large cross sections and filter areas
- Very large filter area per filter element
- Compact design with high flow rates
- Flow-optimized design
- Protection of the clean side during element change
- High contamination retention capacity



# Processmicron Filter Elements Variants



- **9" High Flow:**
  - Protective filtration – high volumetric flows
  - Parallel fold
- **6" High Flow:**
  - Working filtration – high polluting load
  - M-pleat
- **9" High Load Cascade:**
  - Working filtration – contamination drawers
  - Combination of "M" and parallel folds

▪ 9" High Load Cascade



▪ 9" High Flow



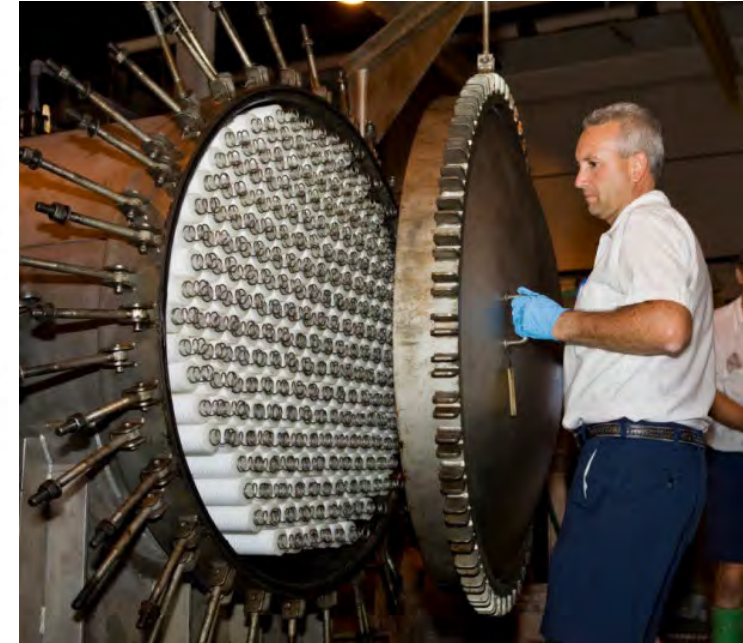
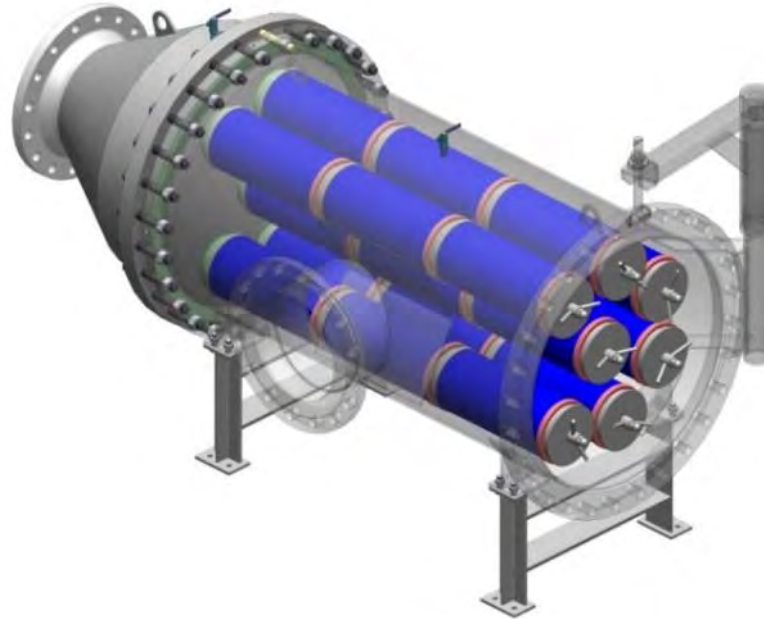
▪ 6" High Flow





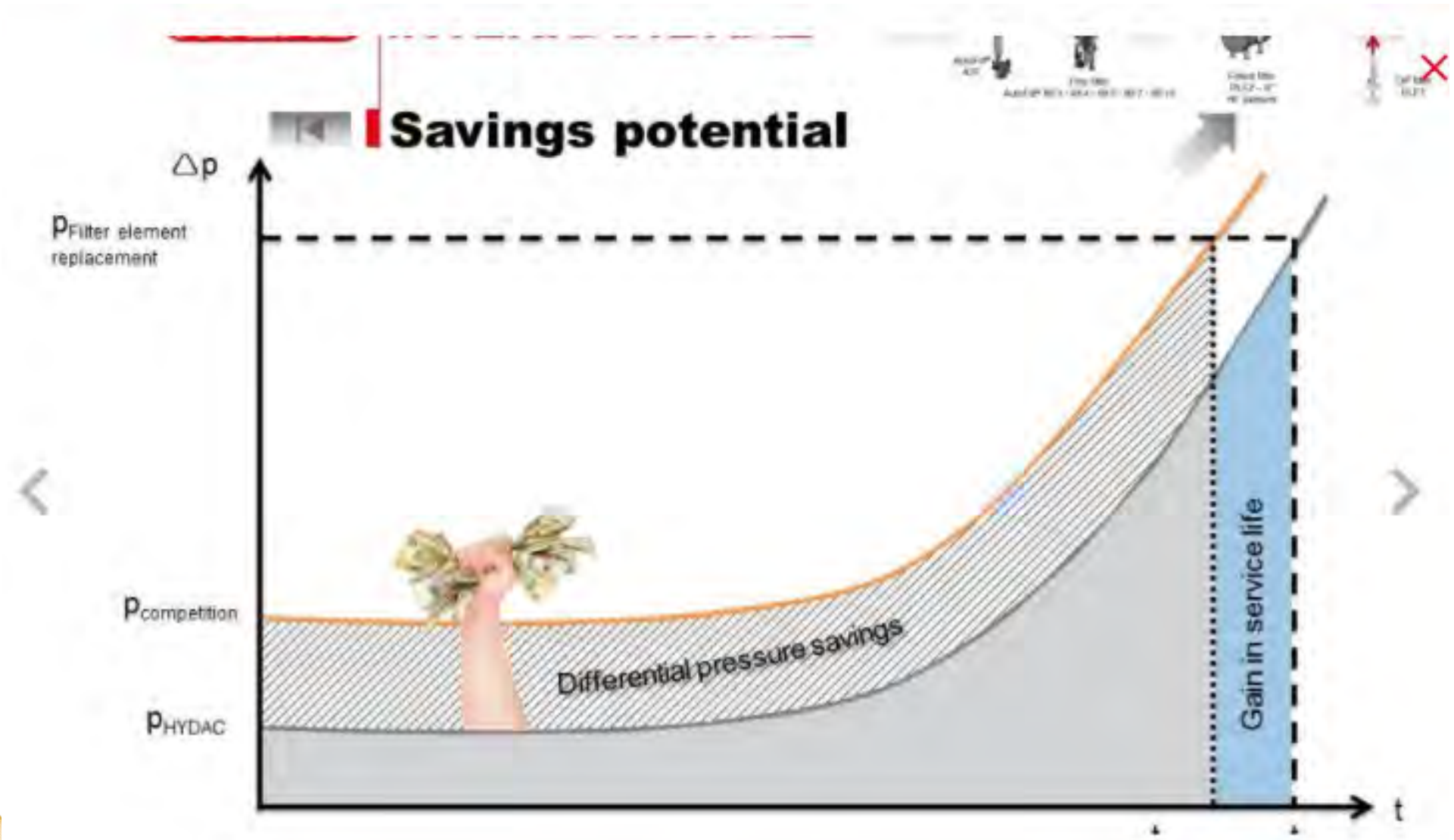


# Competitive comparison vs. Low-Quality filter elements



- **Application:**
- ➔ Protective filtration
  
- **Framework:**
- Volumetric flow: 2100 m<sup>3</sup>/h
- Initial  $\Delta p$  0,2 bar (Clean condition)

Features	<b>HYDAC</b>	Conventional solution
Filter elements	21 pcs.	1000 pcs.
Type	9" High Flow / 20" Length	2,5" Candle / 60" Length
Housing	<ul style="list-style-type: none"> <li>• PLF2-7 housing</li> <li>• 7 slots / à 3 elements</li> <li>• Housing diameter 700 cm</li> </ul>	<ul style="list-style-type: none"> <li>• e.g. 2 housings à 500 filter elements</li> <li>• Housing diameter approx. 1600 cm</li> </ul>





## Facts and figures Result of Competitive comparison

Framework conditions:

- Nominal flow: 2100 m<sup>3</sup>/h
- Filter inlet and filter outlet: DN 500

Differential pressure $\Delta p$	Competition	HYDAC
	0.92 bar	0.43 bar

**You save 0.49 bar  $\Delta p$   
when you use a HYDAC  
filter!**

How much in EUR energy costs  
is represented by 0.49 bar?



## Savings potential



**Energy savings 42.350,45 EUR / per year**

Flow rate	2100 m <sup>3</sup> /h	Input box!
(1) Density	1000 kg/m <sup>3</sup>	
(2) Gravity acceleration	9,81 m/s <sup>2</sup>	
(3) Flow	0,58 m <sup>3</sup> /s	
Differential pressure (Saving)	0,49 bar	Input box!
(4) Differential pressure height	4,9 m	
(5) Pump efficiency	0,87 %	

**P<sub>Gear</sub> 40 kW**

(7) Gear efficiency 0,8

Operational days	365 per year	
Operational hours	24 hours / per day	Input box!
Energy costs	0,12 EUR / kWh	

$$P_{Shaft} = \frac{p^{(1)} + g^{(2)} + Q^{(3)} + H_A^{(4)}}{\eta^{(5)}}$$

$$P_{Mot} = \frac{P_{Shaft}^{(6)}}{\eta_{Mot}^{(7)}}$$

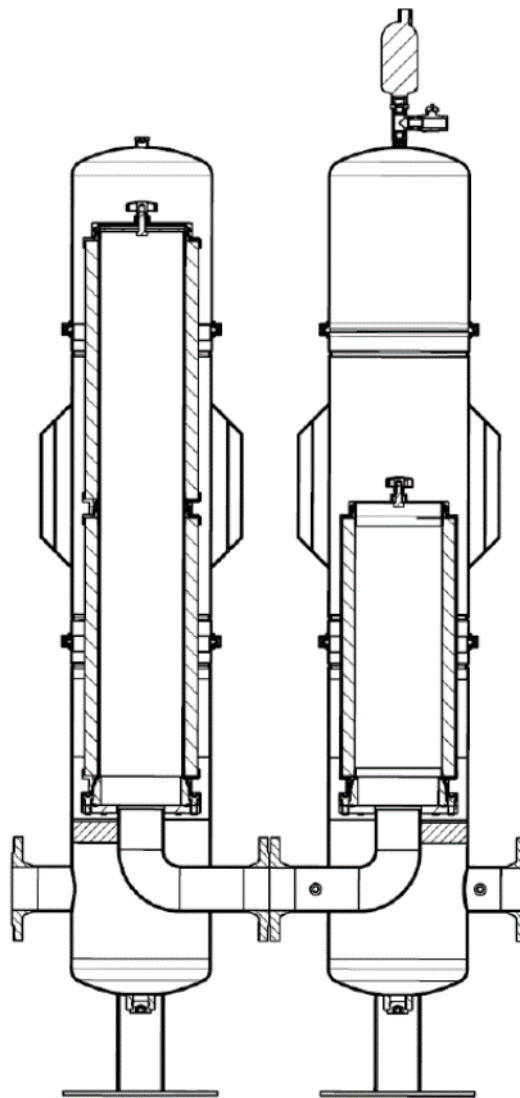


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# PLF1C Oil Coalescing Filter for Tramp Oils and Oil Absorbing Bags





# PLF-1C Coalescer Separator



## Areas of Application

Specially developed for **tramp oil separation** from various fluids → **efficient alternative for gravity oil separators**

## Features

- Combination out of coalescer and Gravity oil separation in one compact PLF1 housing
- Continuous bypass-maintenance of the fluid during system operation by removing a partial flow from the filtered process fluid
- Ideal for retrofitting → use of existing system peripherals

## Product benefits

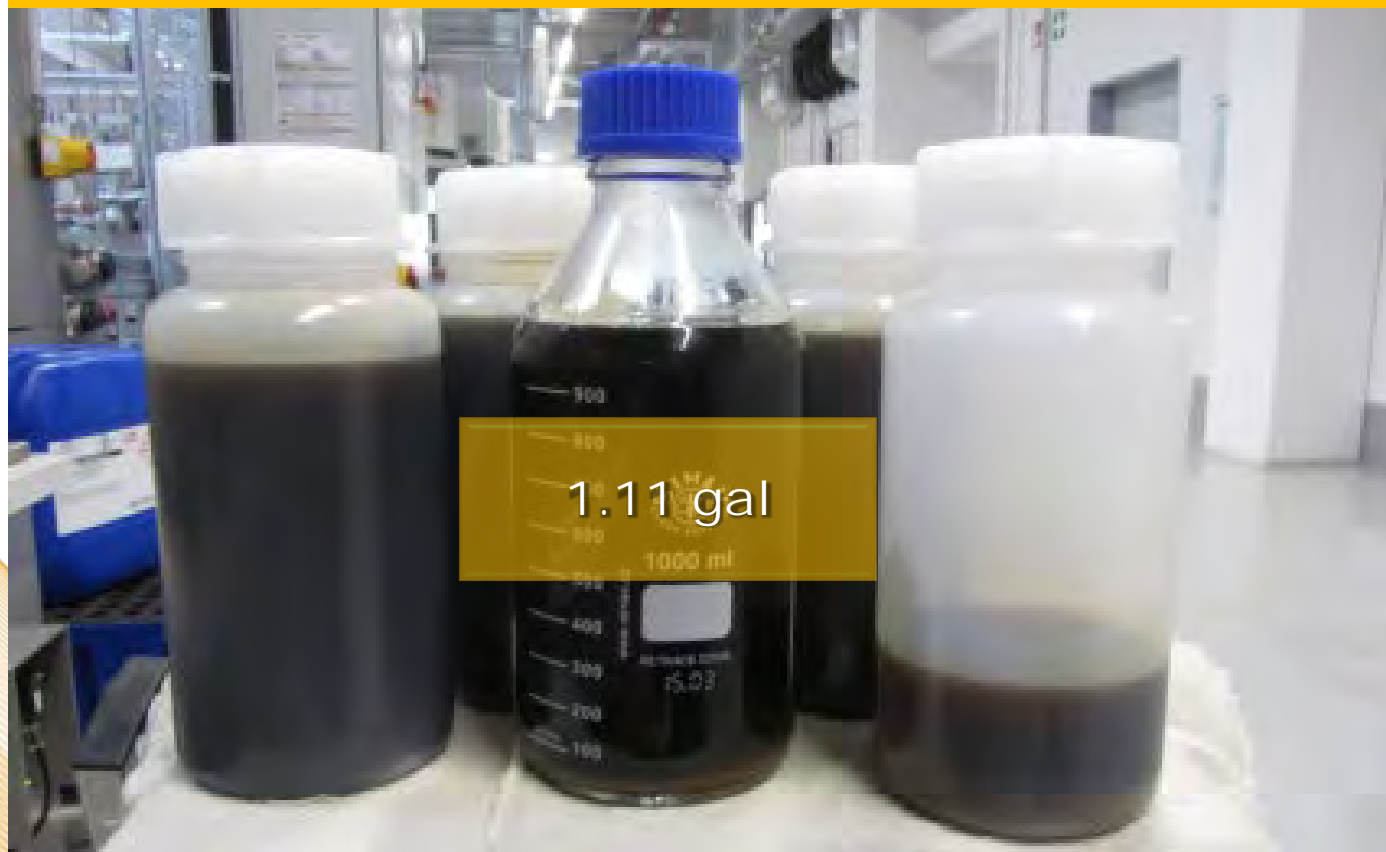
- Improvement of bath-lifetime
- Continuous separation in the partial flow reduces system downtime → no bath-calming necessary
- Improvement of circulation in comparison with Gravity oil separator
- Reduced installation area in comparison with Gravity oil separator
- Reduction of rejects
- Less man-hours for maintenance due to higher machine availability

# Application Example

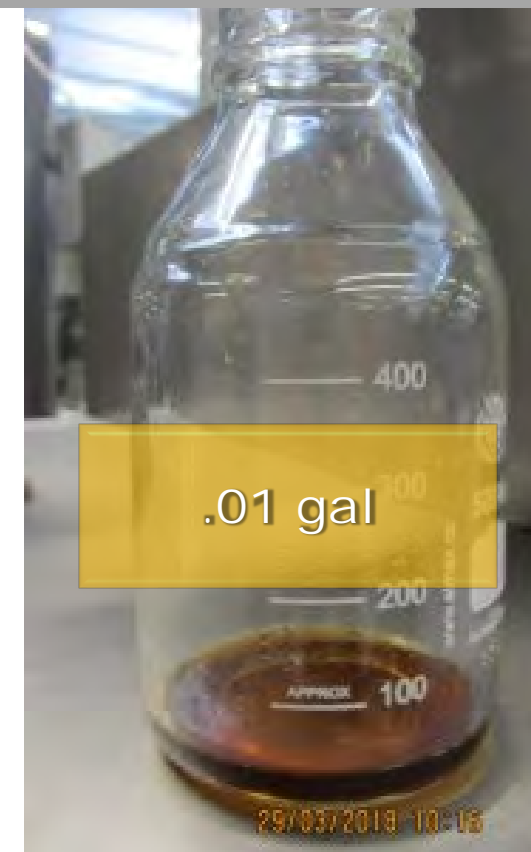


*After approx. 80 h*

Test evaluation: PLF-1C



*Gravity Oil Separator*





## Oil Absorbing Bag Elements

Hydac USA's Oil Absorbing Bag Filters (OAB) are a cost-effective solution for removing oil from water while simultaneously filtering as low as 1 micron. The high capacity bag filter is designed with different layers of micro-fibers that not only retain oil, but increase overall efficiency to 95% or greater on microns ranging from 1 to 50. The overall construction of this filter bag has 30 plus square feet of media and can retain 10 pounds or more of oil depending on the micron. These bags are offered in standard bag size 1 or 2.

- Food Processing
- Hydraulic Systems
- Gelatinous Contaminants
- Cutting Oil
- Vacuum Pump
- Parts Washing
- Engine Oil/Transmission Oil
- Natural Gas Sweetening
- Natural Gas Dehydration
- Lubrication Oil



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# RF4 and RF12

**Automotive industry**



- Filtration of coolant on central systems
- Filtration of coolant on de-central systems
- Filtration of washing fluids in several part cleaning systems
- Filtration of process and cooling water

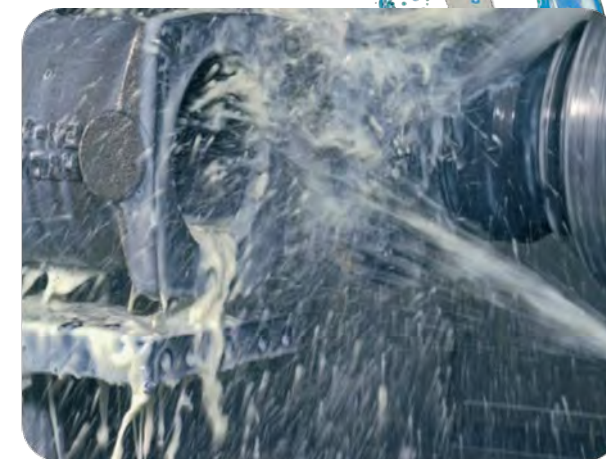
**Machine tools**



- Filtration of coolant for protecting components on machine tools
- High pressure coolant supply for machine tools



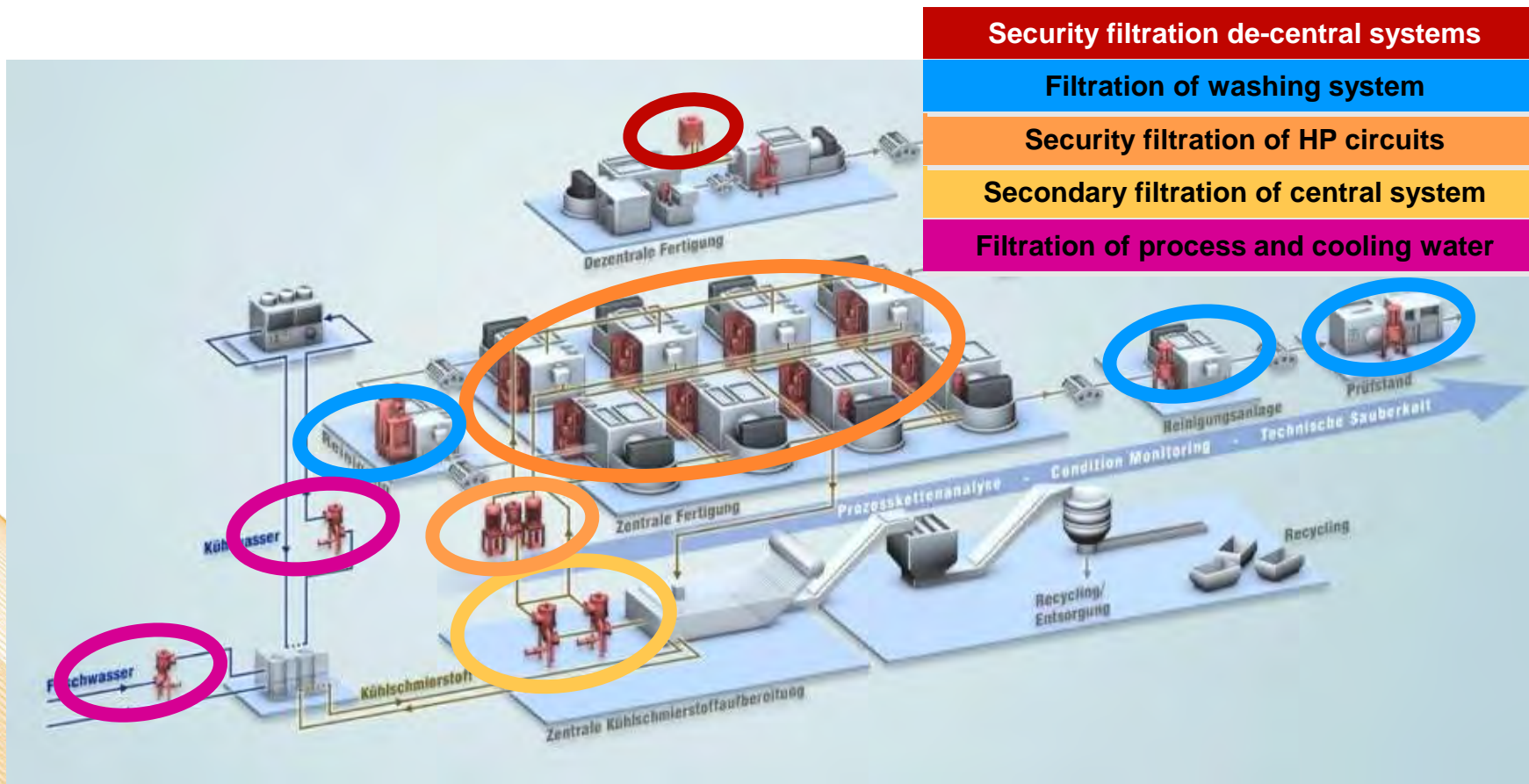
# Coolant and washing fluid applications



Protection of:

- ➔ High pressure pumps
- ➔ Nozzles
- ➔ System components:

- Rotary joints
- Valves
- Tools
- Tool fixture



Security filtration de-central systems

Filtration of washing system

Security filtration of HP circuits

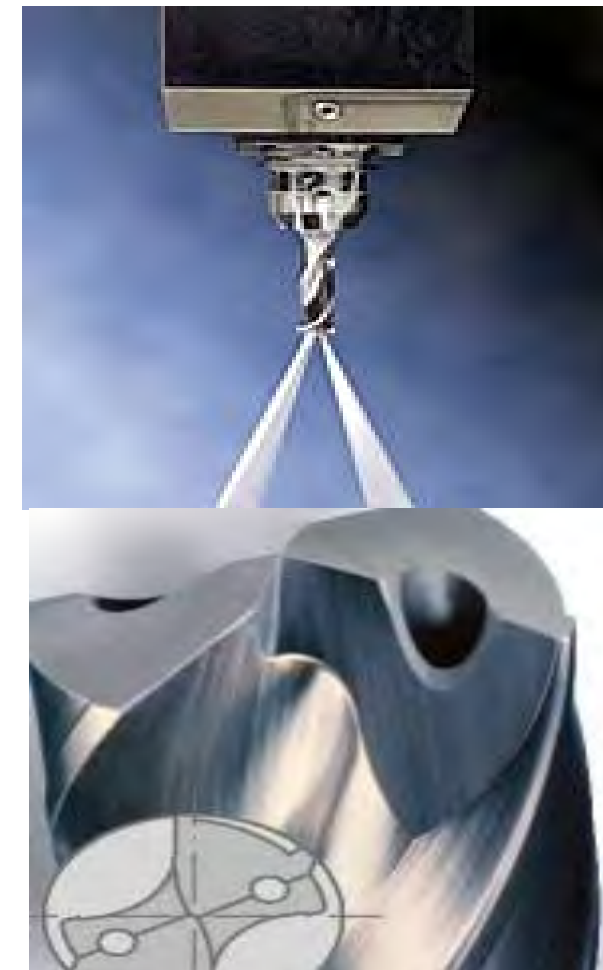
Secondary filtration of central system

Filtration of process and cooling water



## AutoFilt® RF4 Concept

- Cooling / cutting fluids and washing emulsions can be kept in circulation significantly longer.
- This eases the pressure on the environment and reduces waste-disposal and re-purchase costs.
- Filtering of cooling and service water protects valves, etc. from clogging and wear.



## RF4-3

- Designed for Water Filtration
- Handles the flow of RF3-C at half the cost
- Available in Aluminum and SS

**NEU!**  
**Qmax 385 l/min**





# AutoFilt® RF4W Automatic Filter to Protect Heat Exchangers in Combination with Water-to-Water Heat Pumps

## Quality & Functionality

of a modern industrial filter optimised  
for building services engineering



## Compact

385 x 730 mm (width x length)

## Reliable

Self-cleaning & fully automatic

## Powerful

$Q_{max} = 450 \text{ l/min (27 m}^3\text{/h)}$   
 $p_{max} = 16 \text{ bar}$

## Robust

Housing made of cast  
stainless steel

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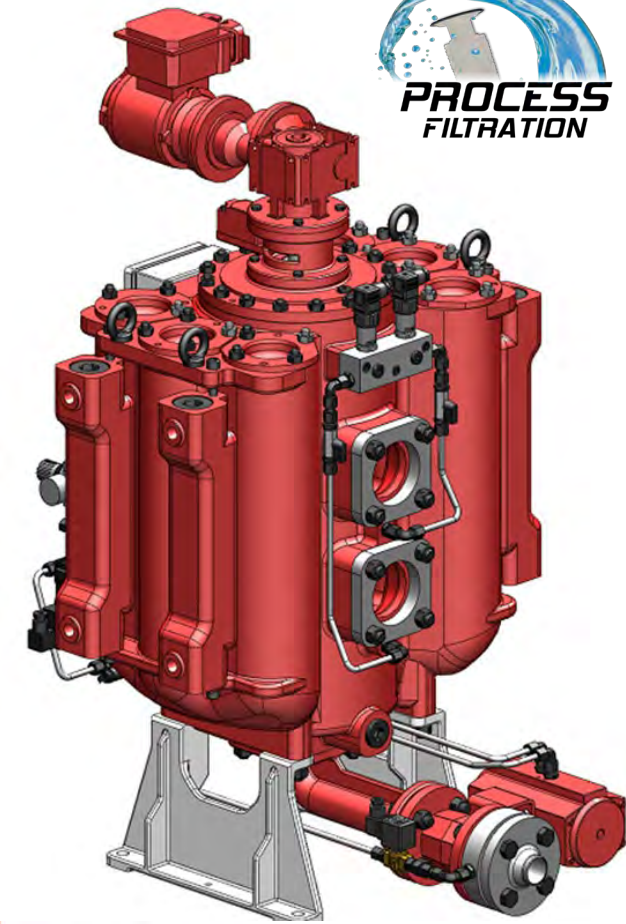
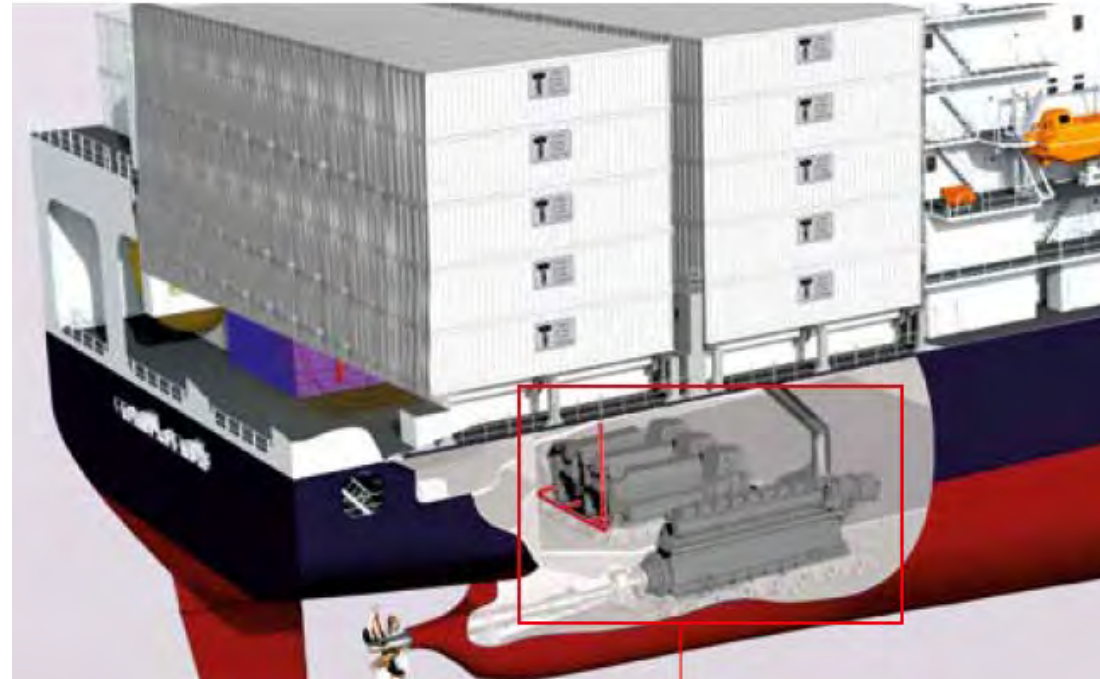




# RF9

## The Challenge:

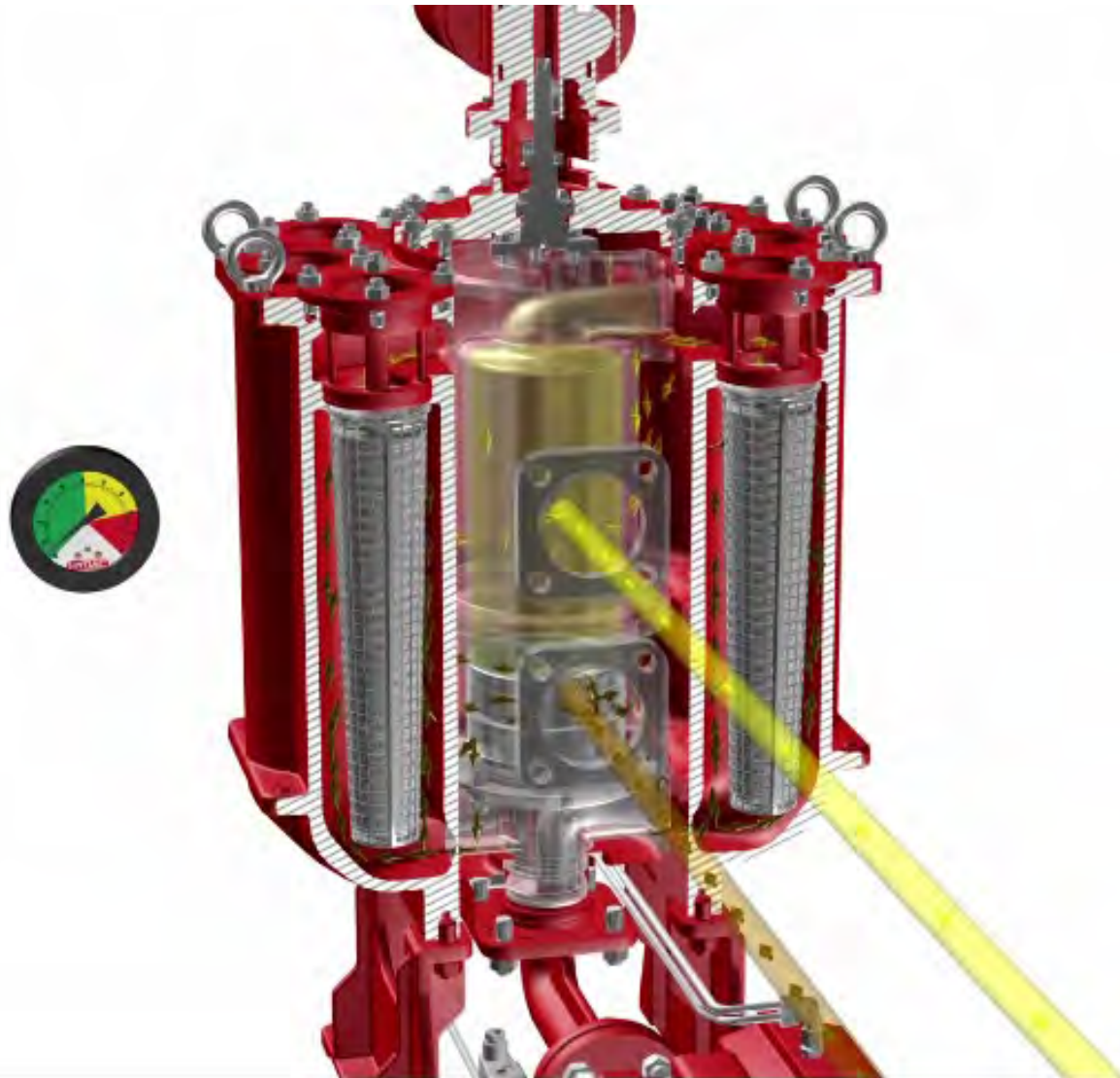
In response to the Tier III standard which will come into effect in 2016, the International Maritime Organization (IMO) is placing tighter limits on the greenhouse gases, such as nitrogen oxide and sulphur oxide, produced by shipping. Marine engine builders are banking on common rail systems to reduce fuel consumption and exhaust gases, resulting in new requirements for efficient fluid management in marine engines.



**Clean fuel,  
 clean combustion, clean air.**

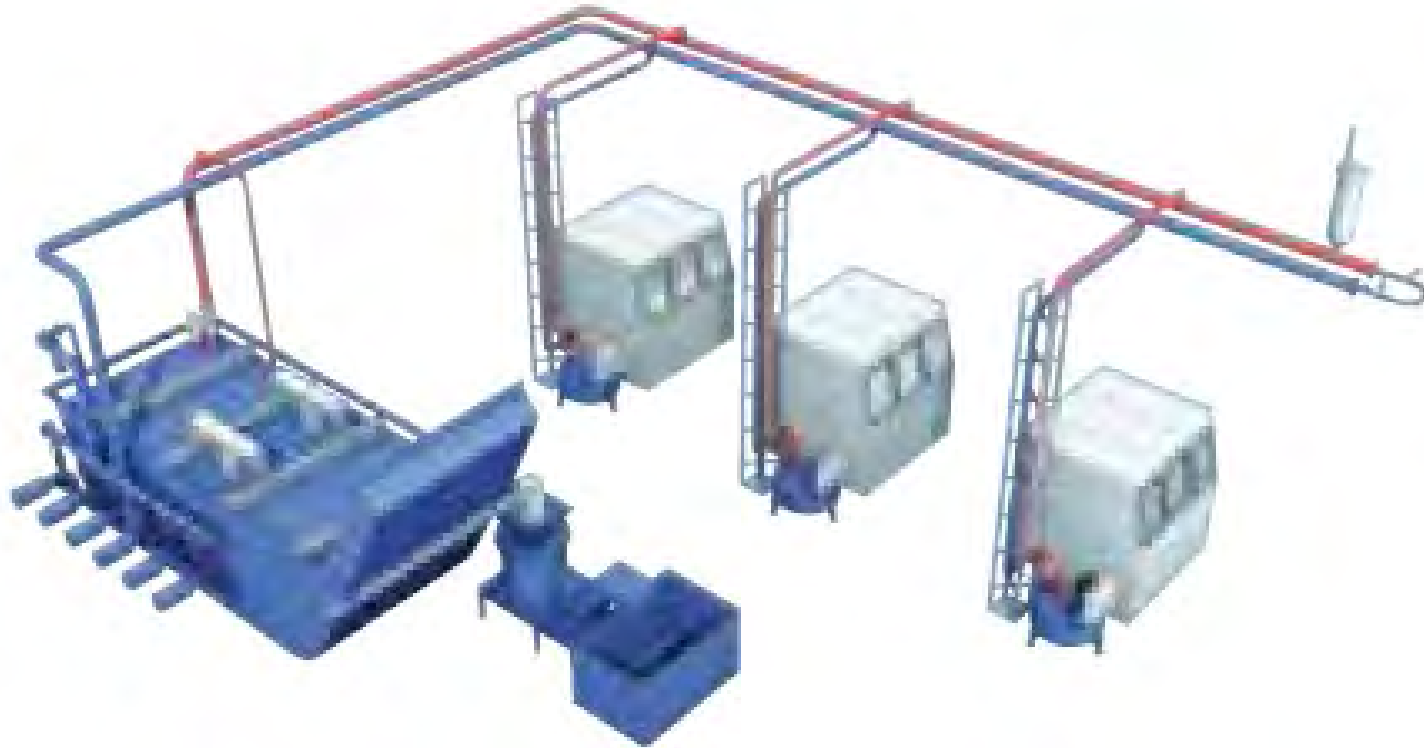
- Heavy Fuel Oil
- Diesel
- Marine Diesel Oil / Marine Gas Oil
- Biodiesel oil
- Lubricating oil

# RF9





# New Application Central Lube/Coolant Systems



# Today's Topics

1. Top MRO Markets Served
2. Low Viscosity Fluids – water, emulsions, coolants
  - A. Coarse Filtration
  - B. Fine Filtration
  - C. Finest Filtration
  - D. Oil Removal
3. Machine Coolants
4. Heavy fuels, oils and lubrication
- 5. Backwash Treatment/Gravity Filters**
6. ConoScreen for high dirt loads
7. High Pressure Filters
8. Gas Filtration
9. Videos





# Backwash and “Others” – BTU and RMF



# Backflush Treatment Unit BTU

## 2.1.2 Filtration rating of twist sieve

- 25 µm to 150 µm SuperMesh

## 2.1.3 Backflushing filter

- Series AutoFilt® RF3, sizes C, 0 and 1
- Size 2 on request
- Series AutoFilt® RF4, sizes 1 and 2



The process twist sieve (PTS) is a component which is fitted downstream from the back-flushing filter to filter the back-flushed volume. In this way, with the help of the twist sieve, a further filtration process is carried out via the back-flushing line.



# Backflush Treatment Unit BTU

## 2.1.4 Bag filter

- PE: Polyester
- PP: Polypropylene
- N: Nylon
- Filtration rating: 25  $\mu\text{m}$  to 150  $\mu\text{m}$



The solid particles from the back-flushing volume are collected in a bag filter which is suspended under the twist sieve. When this is full, it is easy to dispose of by pulling open the drawer. The fluid filtered by the twist sieve or the bag flows back to the buffer tank (BTU1). As soon as the fluid level in the buffer tank reaches the upper switch point of the level gauge (optional, the tank pump (optional) empties the tank.

# Rolling Media Filter

## ■ *Simple Solution to Complex Problem*

- Filtration for areas automatic backwash filters may encounter problems
  - Filtration down to 7 micron
  - Moderate to high dirt load
  - Fibrous or sticky influent particulate
  - Low pressures or gravity fed influent







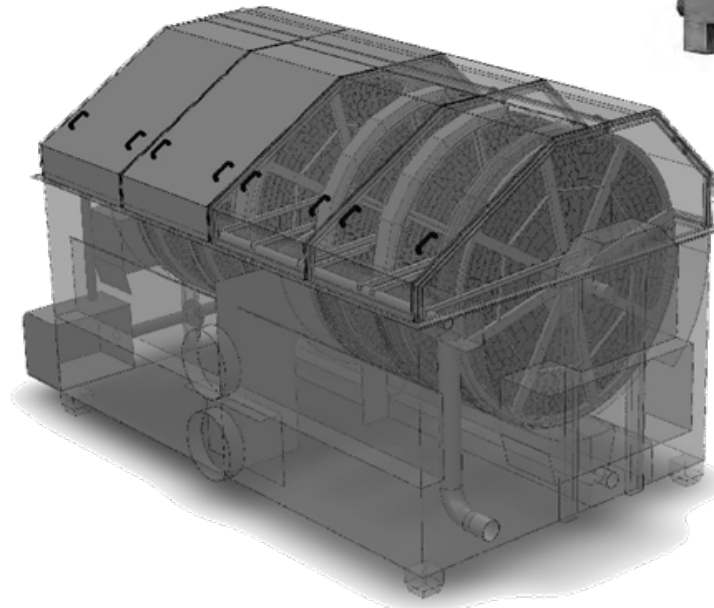
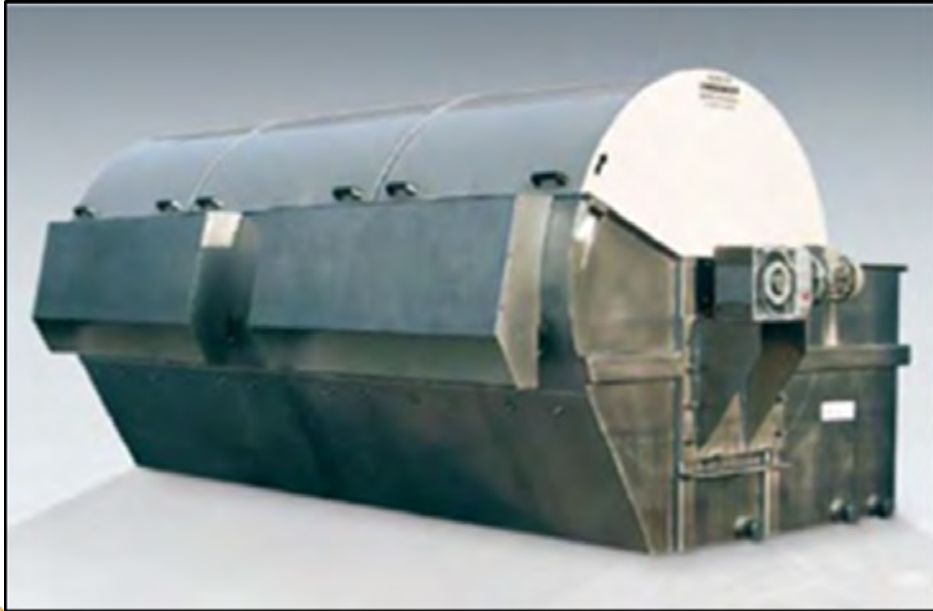
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# Introducing ConoScreen/UltraScreen/PrimeScreen



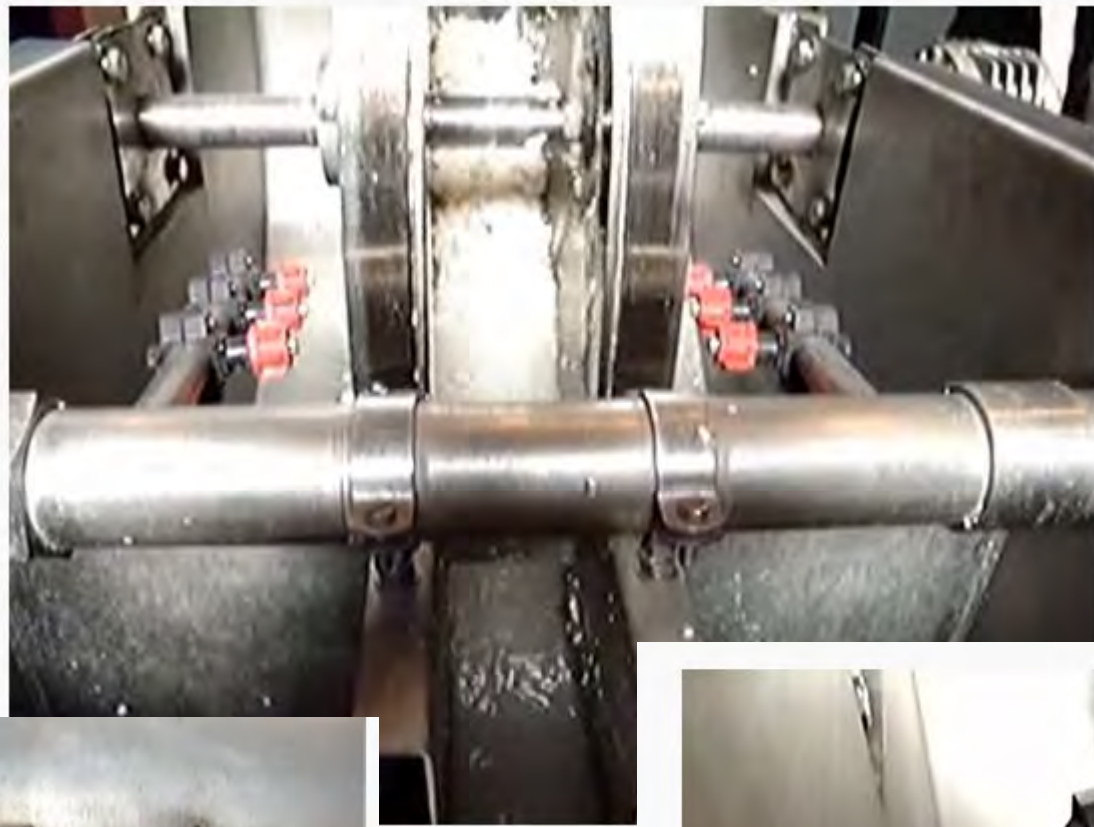
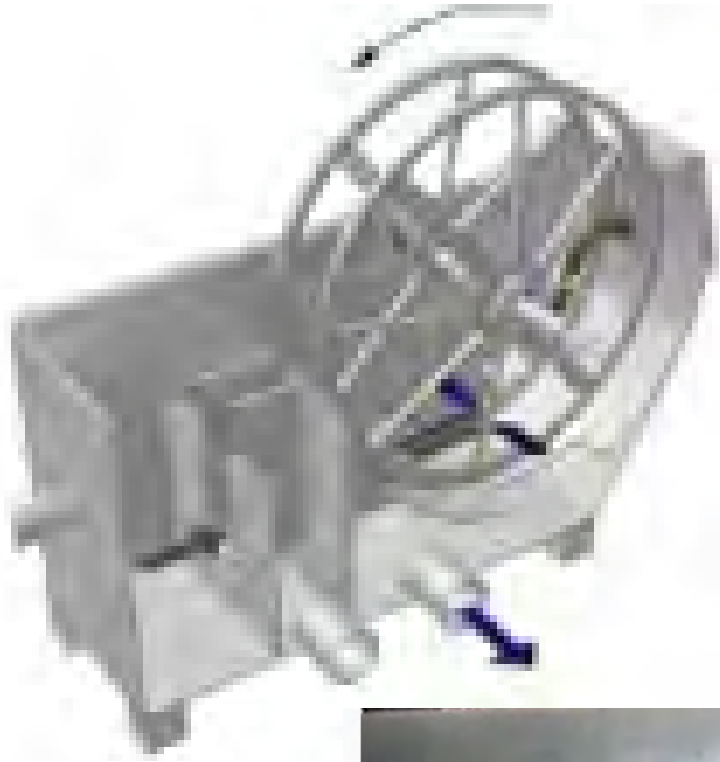
## Superior Performance

Designed to work for removal of hair and found extremely effective for removal of high fibrous suspended solids such as:

- Wool
- Lint
- Hair
- Light dust
- Seaweed
- Algae
- Pulp

*Items that usually creates problems for other filters*





# Conoscreen® : Application List

MICROFILTRATION PLANTS WITH CONOSCREEN® MICROFILTER				
APPLICATIONS IN THE LEATHER-TANNING INDUSTRY	n. 1030	plants in function	53,9%	
APPLICATIONS IN THE TEXTILE INDUSTRY	n. 295	plants in function	15,4%	
APPLICATIONS IN THE PLASTICS INDUSTRIES	n. 146	plants in function	7,6%	
APPLICATIONS IN THE TIMBER INDUSTRY	n. 62	plants in function	3,2%	
APPLICATIONS IN THE PAPER INDUSTRY	n. 115	plants in function	6,0%	
APPLICATIONS IN SLAUGHTER HOUSES AND IN ANIMAL BREEDING FARMS	n. 55	plants in function	2,9%	
APPLICATIONS IN THE FOOD INDUSTRY	n. 89	plants in function	3,2%	
APPLICATIONS IN THE CIVIL SECTOR	n. 118	plants in function	6,2%	
			-----	
			100%	
November 2015- Total plants in function n. 1910				



We have started to sell the **Conoscreen® Microfilter in the leather tanning industry** which has always been the most important sector for Nuove Energie.

The sector is currently a little overstocked and the possible sales are mostly in the developing countries.

We are currently obtaining significant results in the **textile and paper industries** because they are sectors with high sale possibility.



## Ultrascreen®

is a very innovative system that permits to reuse the water wasted from the sewage plants.

The Ultrascreen® microfilter is protected by an Italian Patent, a European Patent, a US Patent and other international Patents. The Ultrascreen® microfilter has been also obtained through the California Department of Public Health (CDPH) - State of California (USA), the prestigious TITLE 22. The TITLE 22 Certification is attained after a series of very strict functional and performance tests that must be obtained in order to sell the equipment in the State of California (USA).

Recently, the **Ultrascreen®** has also acquired the rigorous Japanese Certification released by the Organization for the Promotion of New Technologies for the Water Treatment. This allows the Ultrascreen® to be sold in Japan meaning, thus, a new sales market.

Therefore, the Ultrascreen® microfilter is used in the tertiary treatment, not only to respect the waste values in the plants for the biological secondary treatment but also for the recovery of water for irrigation purposes once it has been processed with microfiltration.



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## STAINLESS STEEL PRESSURE FILTERS

### MPSSF / HPSSFH / ACSSF Series

Inline Filters

Up to 30,000 PSIG • up to 40 GPM

### ACSSFH-1035

High Pressure Filter

Up to 15,000 PSIG • up to 63 GPM

### EDFR Series

Inline Filters

Up to 6000 PSIG • up to 105 GPM

#### Element Collapse Pressure Rating

Betamicon®-H (BH/HC)	3046 psid (210 bar)
Betamicon®-N (BN/HC)	363 psid (25 bar)
Metal fiber (M)	3046 psid (210 bar)
Wire mesh (D)	3046 psid (210 bar) or 4,200



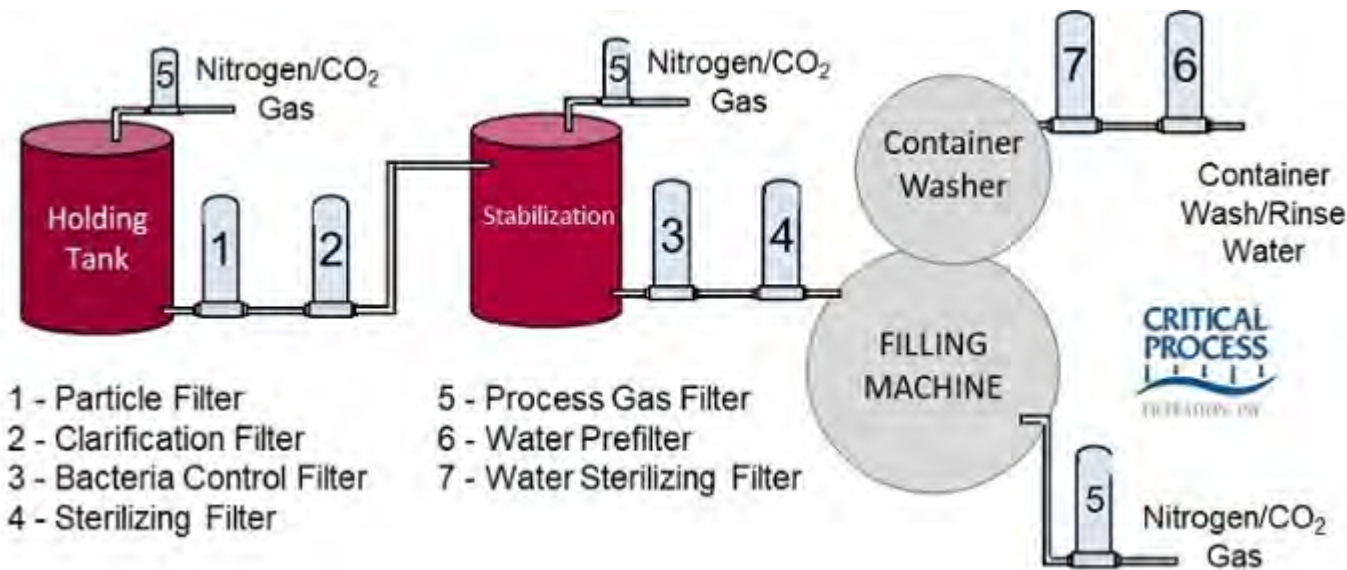
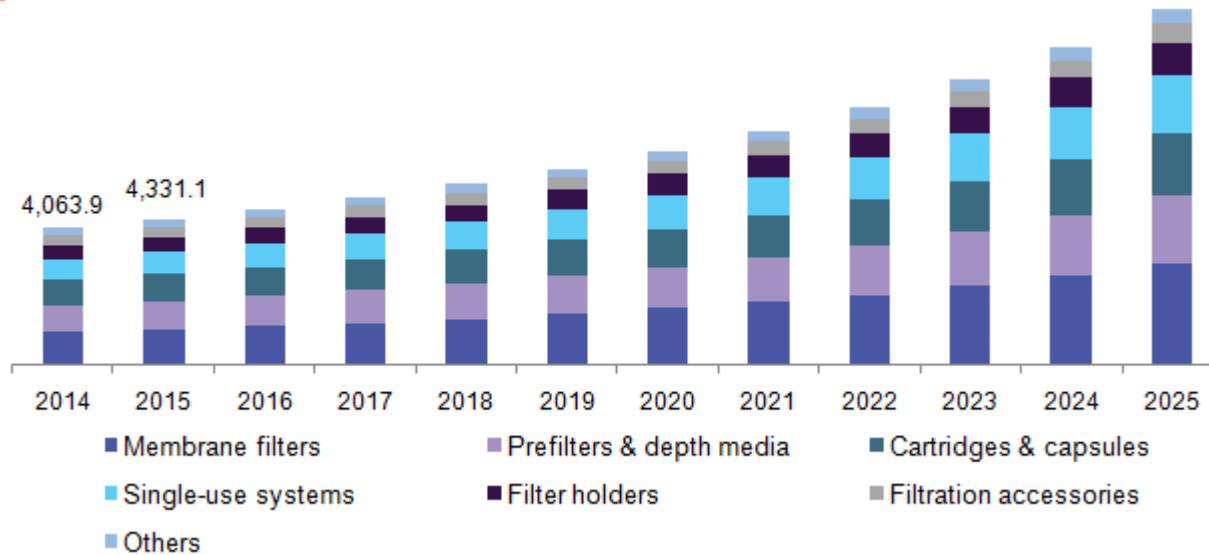
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# Gas Filtration Products



## The areas of application

- Offshore and marine
- Petrochemical industry/refinery
- Pipelines
- Power plants
- Booster stations
- Compressor stations
- Gas turbines
- Industrial pumps
- Hydrogen applications

# Applications / Gases



Mixtures of all of them

+ Special chemistry in applications of the Chemical Industry

Organic Gases		Inorganic Gases		Aerosols / Condensates	
<u>Methane</u>	(CH <sub>4</sub> )	Nitrogen	(N <sub>2</sub> )	<u>Water</u>	(H <sub>2</sub> O)
Ethane	(C <sub>2</sub> H <sub>6</sub> )	<u>Hydrogen</u>	(H <sub>2</sub> )	Oil and greases	
Ethylene	(C <sub>2</sub> H <sub>4</sub> )	Oxygen	(O <sub>2</sub> )		
Propane	(C <sub>3</sub> H <sub>8</sub> )	Carbon monoxide	(CO)		
Propene / Propylene	(C <sub>3</sub> H <sub>6</sub> )	Carbon dioxide	(CO <sub>2</sub> )		
Iso-Butane	(C <sub>4</sub> H <sub>10</sub> )	Hydrogen sulfide	(H <sub>2</sub> S)		
N- Butane	(C <sub>4</sub> H <sub>10</sub> )	Ammonia	(NH <sub>3</sub> )		
Iso-Pentane	(C <sub>5</sub> H <sub>12</sub> )	Compressed air			
N- Pentane	(C <sub>5</sub> H <sub>12</sub> )				
N- Hexane	(C <sub>6</sub> H <sub>14</sub> )				
Nat. Gas					



## Product Overview

### Coalescer Filter Gas



### Particle Filter Gas



### Pre-Separator / Fluid Separator



### Filter Element Technology



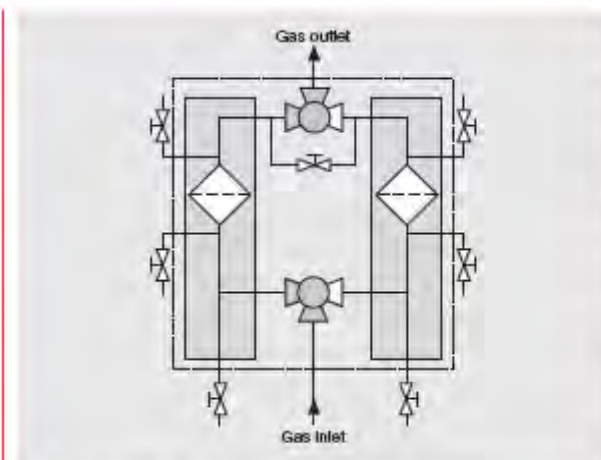
### Challenge

- ➔ Protection for valuable system components, such as seals, injection nozzles, turbine blades and valves
- ➔ Retention of solids and aerosols
- ➔ Stable filtration efficiency

### Benefits of HYDAC solution

- ✓ Robust design
- ✓ High quality filter element technology
- ✓ Stable filtration efficiency
- ✓ Space-saving design
- ✓ Reliable function
- ✓ Convenient operation

# Gas Coalescer Filter GCF for Particle and Aerosol Filtration



Circuit diagram, GCF w/o cyclone

## Application range

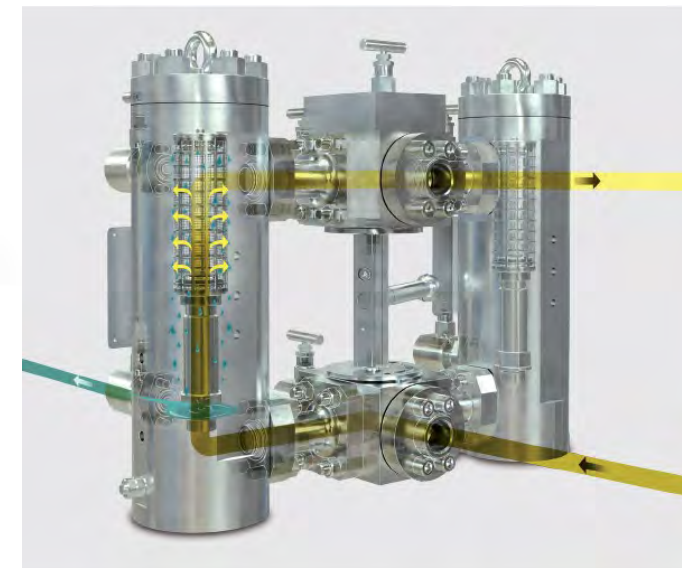
- Filtration of moist gases

## Features

- Reversible double stainless-steel filter
- Double Block and Bleed variant for applications with high pressures and hazardous gases
- Low-Pressure variant available for applications with low pressures

## Advantages

- Pressure-loss-optimised design
- Reliable filtration of fluid and particulate contamination down to 0.1 µm
- Compact design
- Double-sealing design for hazardous gases
- Design with no weld seams for best corrosion resistance (H<sub>2</sub>S)
- No pressure loss caused by switchover process
- Simple filter element change
- High contamination retention capacity of the filter elements
- No reduction in cross-section (particularly change-over valve and filter element)
- No welded parts





# Hydrogen/CNG Gas Storage/Filling Stations

## Gas Filter GF1

The Filtration-Technology for H<sub>2</sub>-Fuel Stations up to 1,000 bar



### Description

Hydrogen technology is being rolled out across the world. Especially in the automotive industry, as an alternative energy source, hydrogen becomes more and more important. Here, the purity of hydrogen is of crucial importance for the life-time of fuel cell operated vehicles.

With development of the HYDAC PSA-H70 (HYDAC Accessories), for the first time the detection of gas contaminations during fueling at 700 bar fuel stations was possible. Hence, an effective gas filtration which meets the high requirements of hydrogen fuelling is essential.

With combination of optimized housing design and superior filter-technology the GF1 meets highest demands of hydrogen applications up to 1,000 bar and consequently grants a substantial contribution to technical cleanliness of hydrogen fuel stations.



# HYDAC Process Technology

## Fuel Gas Filter (FGF)

### Product description and area of application

The HYDAC FGF is an addition to our product range for gas filtration and is specifically designed for use in the fuel gas systems of gas turbines.

Fuel gas (natural gas) is used as an energy supply for operating gas turbines that are used to drive generators or turbo compressors.

The natural gas is pumped through pipelines and normally does not undergo adequate pre-filtration.

This leads to increased wear of components as well as costly maintenance and repair efforts. The components affected most by this are those such as injection nozzles, turbine blades and valves.

The FGF is made exclusively from stainless steel machined parts without weld joints and complies with API specifications. The FGF can optionally be fitted with a cyclone for pre-filtration which enables fine aerosol droplets (> 3  $\mu\text{m}$ ) and surges of fluids to be filtered. For main filtration a coalescing filter is fitted that filters out the fine aerosol droplets (0.3  $\mu\text{m}$  and bigger).

### Technical data

Flow rate:	up to 12,000 Nm <sup>3</sup> /h
Nominal size:	2 Inch and larger
Pressure:	Up to 1,450 PSI





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8. Gas Filtration
9. **Summary**





LG Water Solutions

## Superior Quality Leads to Repeat Customers



### LG SW SR G2 and GR G2

The next generation membranes with industry-leading salt rejection



### LG SW SR, GR and R | High Rejection Membranes

Well suited for high feed TDS and high permeate quality requirements



### LG SW ES | Energy-Saving Membranes

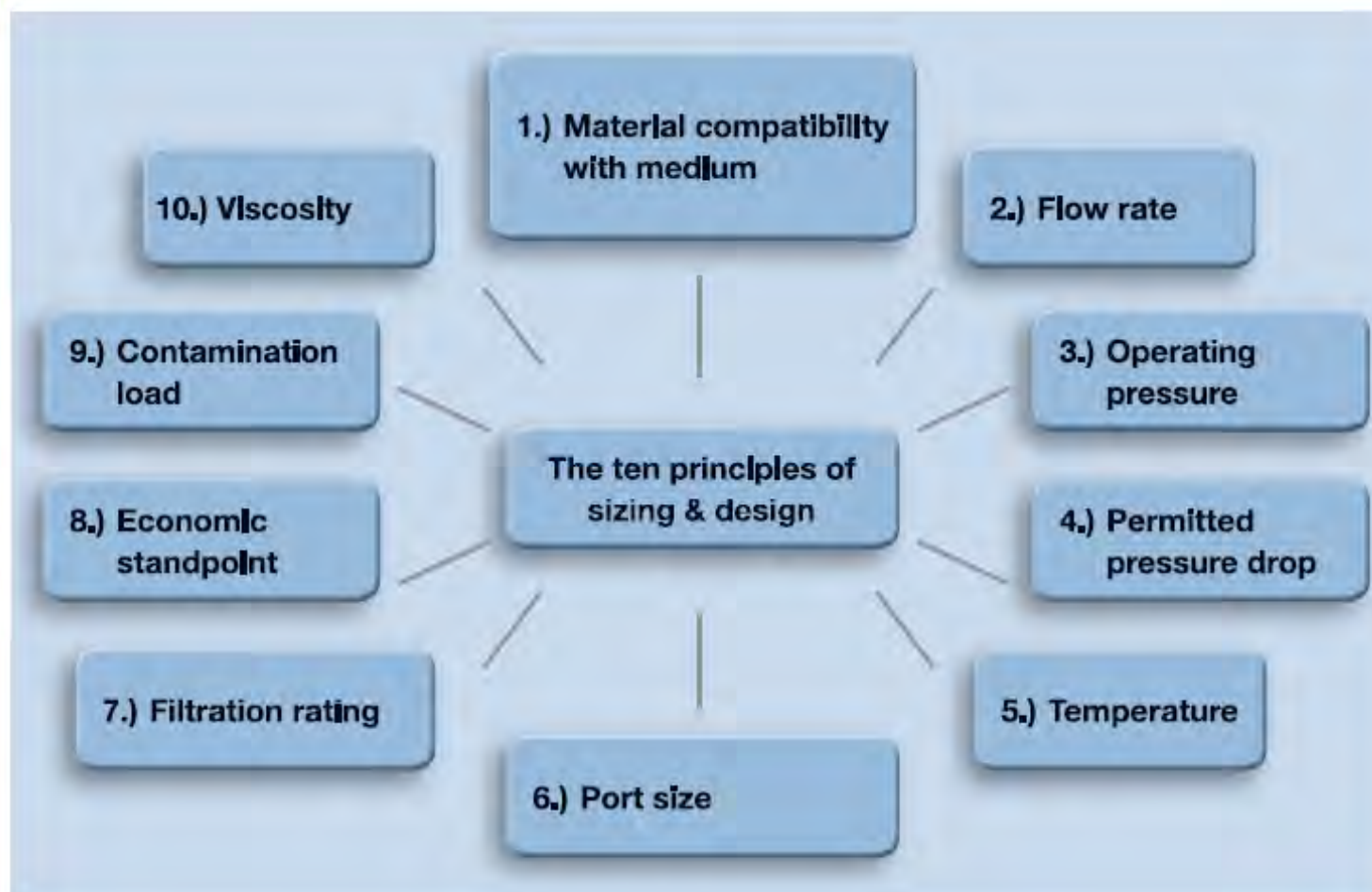
Well suited for low feed TDS and low temperature seawater applications





## Sizing Process Filters

Although there are no standards for selecting the appropriate process filter, there are nevertheless some helpful calculation principles which should be followed. We will be pleased to send you our filtration specification questionnaire and devise with you a filtration solution which is specially tailored to your requirements. HYDAC also offers products which are suitable for use in potentially explosive areas.



- Aerospace
- Agricultural Irrigation
- Air Compressor
- Automotive
- Ballast Water
- Basic Oxygen Furnace
- Beverage
- Blast Furnace
- Boilers
- Cable And Wire
- Carbon Filter
- Cartridge Filter
- Car Wash
- Cement
- Center Pivot
- Chemical
- Chiller
- City Water Intake
- Cold Rolling Mill
- Continuous Casting
- Cooling Towers
- Descaling
- Drippers

- Electric Arc Furnace
- Electronics
- Farms
- Fire Sprinkler
- Food
- Glass
- Golf
- Granular Media Filter
- Greenhouses
- Heat Exchanger
- High Pressure Pump
- Hot Rolling Mill
- HVAC
- HVAC System
- Institutions
- Instrumentation
- Intake Water
- Makeup Water
- Membrane
- Mining
- Molds
- Municipality / Government

- Nurseries
- Oil / Petrochemical
- Orchards and Groves
- Other
- Ozone Treatment
- Paper
- Pasteurizer
- Pharmaceutical
- Plastic
- Potable Water Intake
- Power
- Pre-treatment
- Process Cooling
- Produced Water
- Pump Seal
- Reclaimed/Reuse Water
- Safety Shower
- Scrubber
- RO/IEX/Softeners
- Source Water
- Spray Systems
- Sprinkler

- Steel
- Sugar
- Textile
- Traveling Screen
- UV Treatment
- Valve
- Vineyard
- Wastewater Effluent
- Welders
- White Water
- Other Industrial
- Other Irrigation

*endless possibilities*

If you have particles that  
require removal, we have the filter





***THANK YOU FOR YOUR ATTENTION!***

Together we Succeed

