



**Private & Public Pools
Service**
Customers confirm:
**"Up to 50% lower operating
costs
with Pure Flow"**



PureFlow company



More than 100 years of experience in special wovens and fibres. A German company and world market leader

History of PureFlow

Product launch 2015, after multiple years of product development

IP protected process, no chemical additives

Environmentally friendly, recyclable material

Innovation awards since product launch:

- 2017 in Bavaria, family owned companies
- 2018 Interbad Stuttgart, Germany: Biggest exhibition in Europe in the segment public pools, spas, pools

References: Globally more than 5000 customers

- Multiple public pools in Europe from 180,000 – 500,000 visitors per year
- More than 15 thermal baths in Europe
- Hotels around world, Chile, Spain, Italy

Designed and developed to innovate water purification

- Best in class filter efficiency
- Lowest operating costs of all standard filter materials for pools
- It is a simple a genius way to filter water for this application

Drive your business by innovation and become member of the Pure Flow family!

Winners in the CATEGORY INNOVATION of Bavarian Family Entrepreneurs 2017



Benefits for Public Pools



Can be used in any filter container
(plastic, steel, concrete), as a single-layer or multi-layer filter

We guarantee performance

- Substantial reduction of operating costs up to:
 - 90% less work
 - 40% energy savings
 - 77% lower water costs
 - 75% less maintenance and maintenance
 - 95% less expenditure on chemicals
 - 75% total savings per year
- Reduces corrosion and its consequential damage
 - No more costly filter refurbishment necessary
 - No abrasive filter material in the plant
 - No damage to pumps, pipes, sliders
 - Specially developed filter for iron, manganese, etc.
 - Static benefits - 8,000 kg of sand are replaced by only 100 kg of Pure Flow
 - Longer use of the filter boiler and reduced risk of accident, tearing of the filter or connected pipelines
 - no extreme load due to high weight
- Improved water hygiene
 - significantly improved filter efficiency
 - Substantial reduction in biofilm formation
 - Substantial reduction in biofouling
 - Changing the filter material with little effort
 - No mixing of filter materials such as activated carbon and sand

Winners in the CATEGORY INNOVATION of Bavarian Family Entrepreneurs 2017

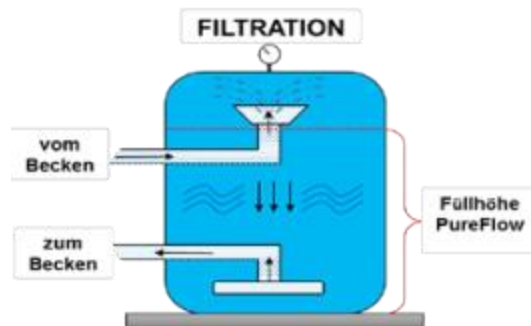


Funktionsweise



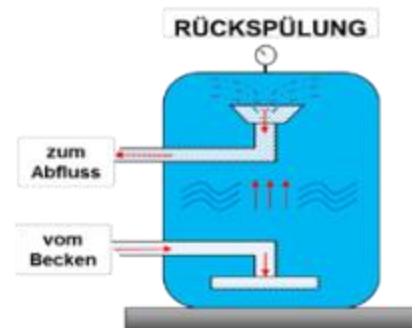
Installation

Installing PureFlow is ingeniously simple: turn off the system disconnect them from the power grid. Open the filter housing, remove the existing filter material, and clean the housing. Fill PureFlow into your filter housing and close it. Start with a backwash first, and then switch to normal operation.



Filtration

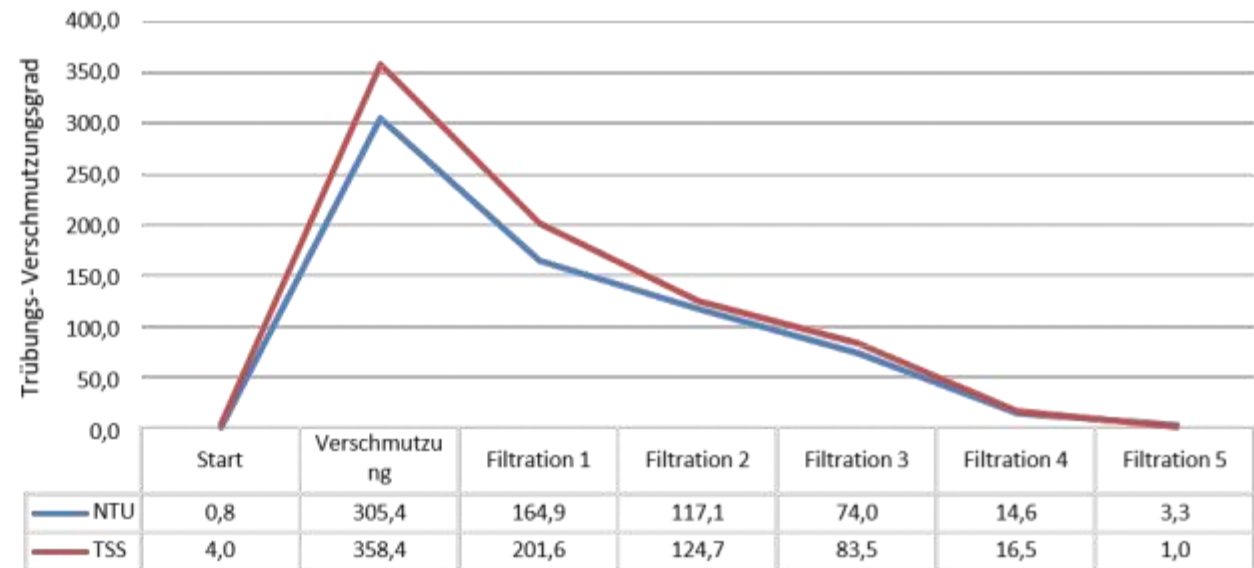
With the discharged water, the individual segments of PureFlow condense into a completely closed depth filter in the filter housing. In this, dirt particles and even the finest suspended particles remain stuck. The water flows through the filter almost without resistance, is clear cleaned and returned to the basin.



Backwashing

During backwash, water is fed back into the filter housing in the reverse flow direction. Due to the opposite water flow, the individual segments separate from PureFlow and release the dirt particles, which are then rinsed out.

Filter Efficiency



Filtration of fresh water contaminated with solid particles in the size of 1 - 100 microns.

Filtration:

48.5 m³/m²/h - filter □ 500 mm - housing height 850 mm

Introduced floating solid particles: charcoal 10-100 microns - Arabicum < 10 microns-

Aluminium powder < 50 microns as well as algae and other organic and inorganic substances dissolved in water in the ratio 2 Kg / 1000 L

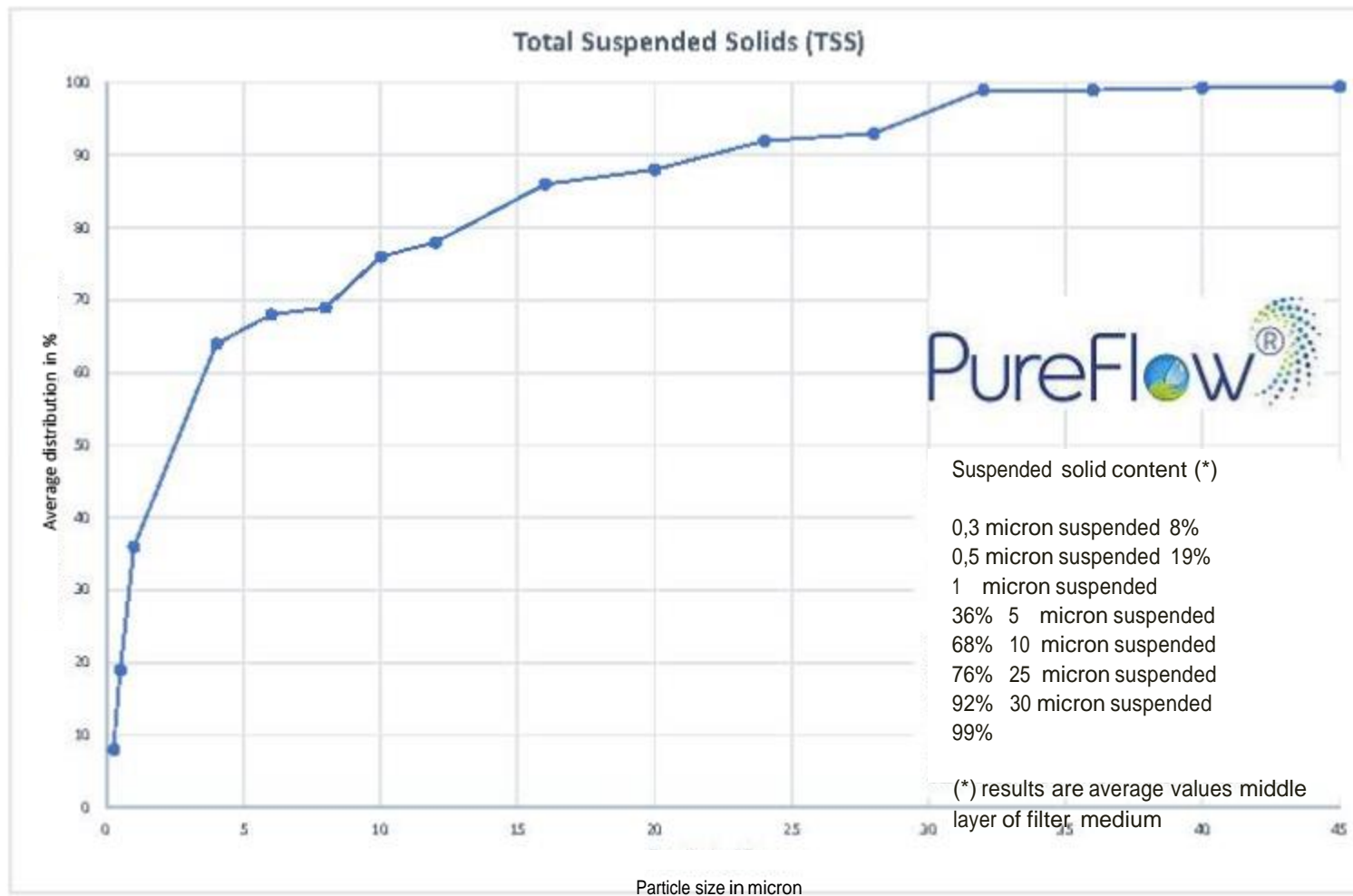
Testmittel:

Lovibond water testing device TB 300iR / Lovibond Photometer System MD 100

System:

LED interference filter and photosensor / Nephelometric (Non-Radio)

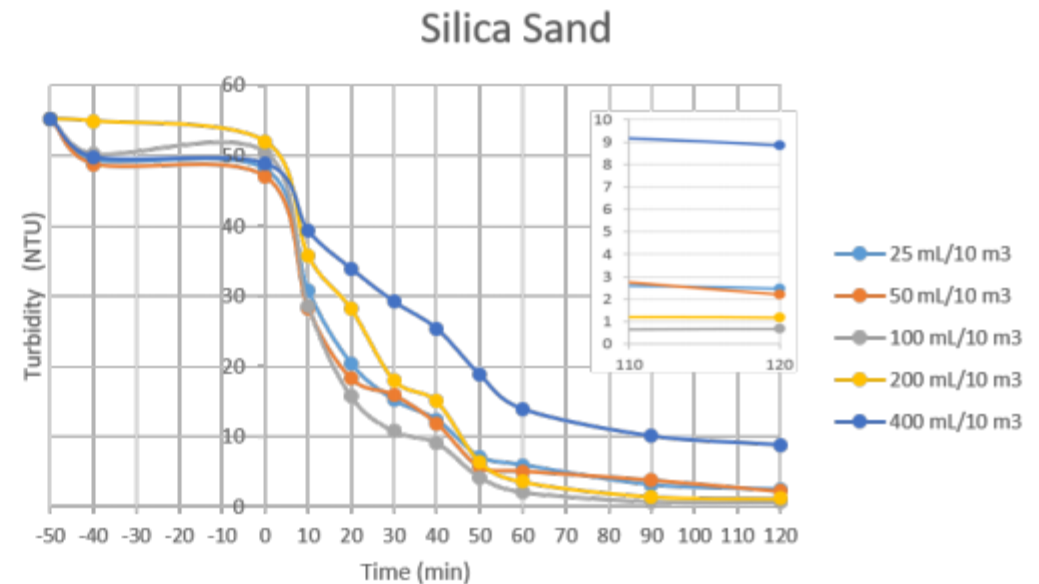
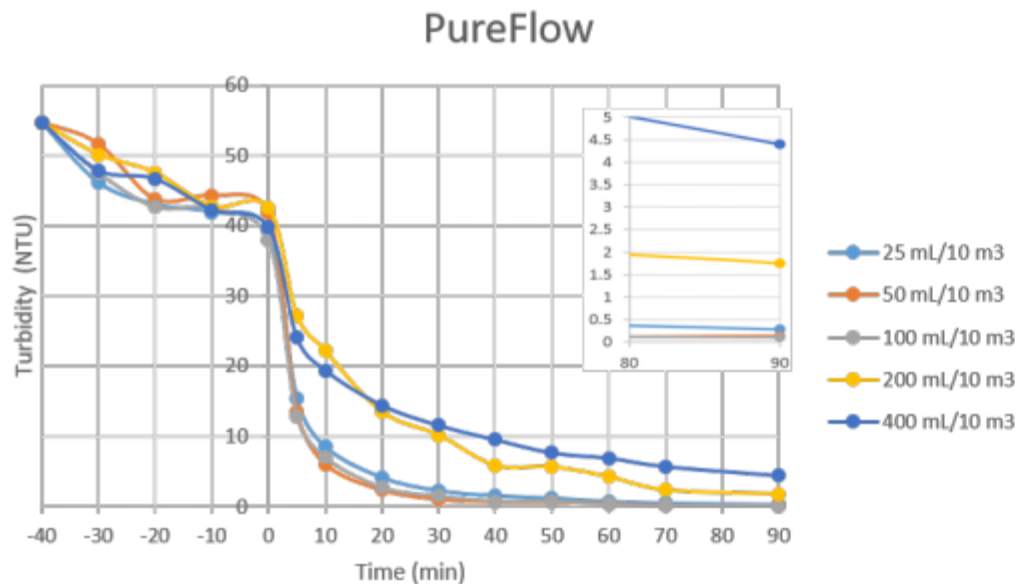
Filter Efficiency



Comparison PureFlow - Sand Turbidity with algicide and flocculant



DIFFERENT CONCENTRATION CRISTALIN PLATINUM, pH 7.5 PUREFLOW - FILTERS SIGNIFICANTLY FASTER & MORE EFFECTIVELY THAN SAND



Summary:

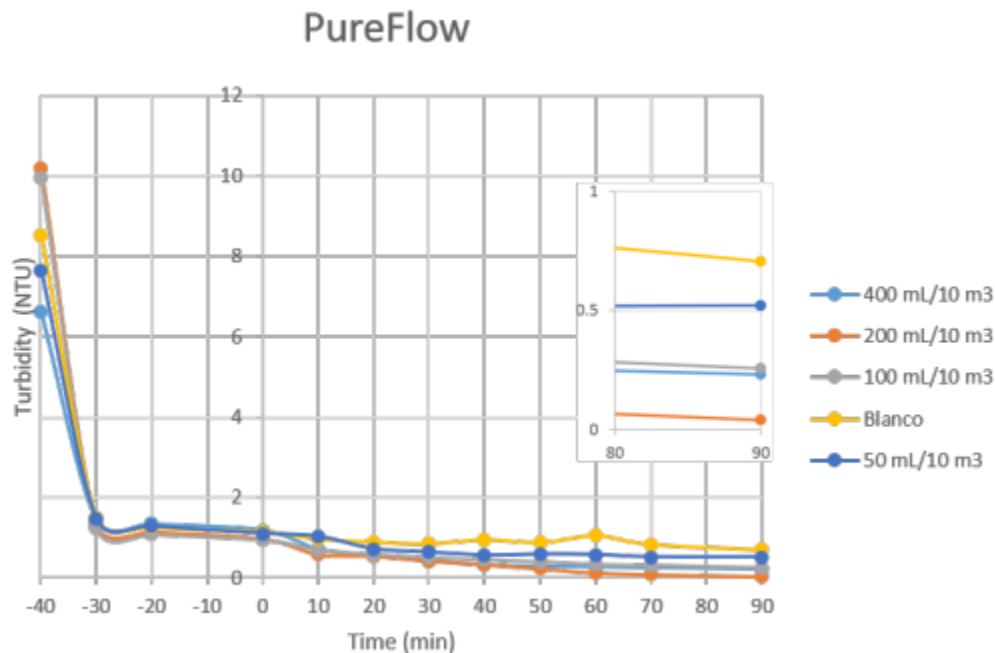
PureFlow improves water quality compared to sand. The water is cleaned faster and more effectively: PureFlow is 7 to 15 more effective!
Optimum Cristalín Platinum concentration 50-100 ml.

Comparison PureFlow - Sand Algae

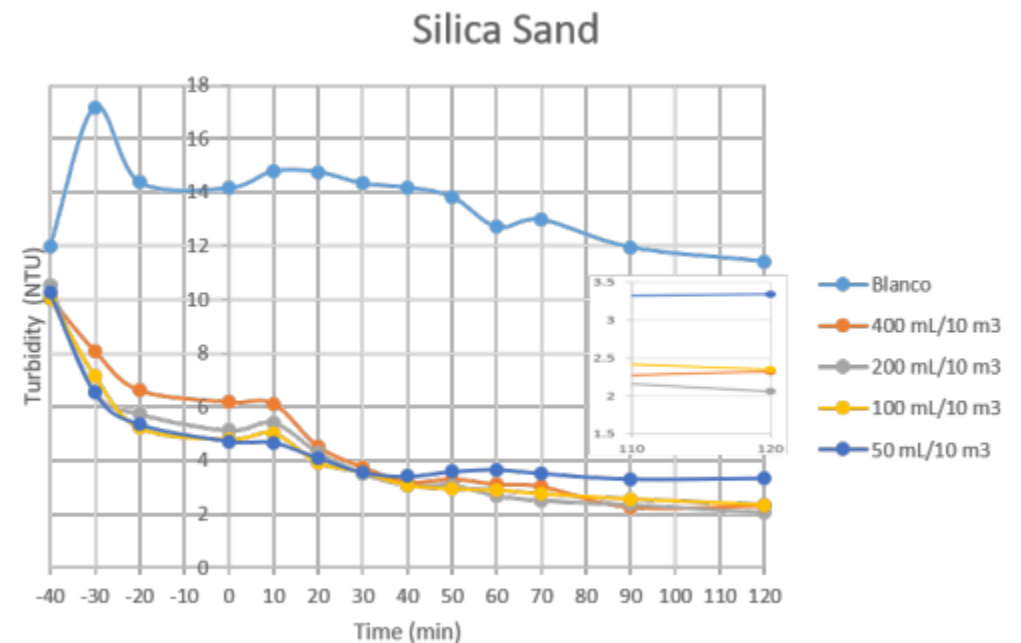


DIFFERENT CONCENTRATION CRISTALIN PLATINUM, pH 7.5

PUREFLOW - FILTERS SIGNIFICANTLY FASTER & MORE EFFECTIVELY THAN SAND



PureFlow has a very good effectiveness without Cristalin Platinum; Cristalin Platinum once again achieves significantly better results.



In silica sand, the filter performance decreases after some, as if the filter is saturated.

Filter efficiency comparison Filter media



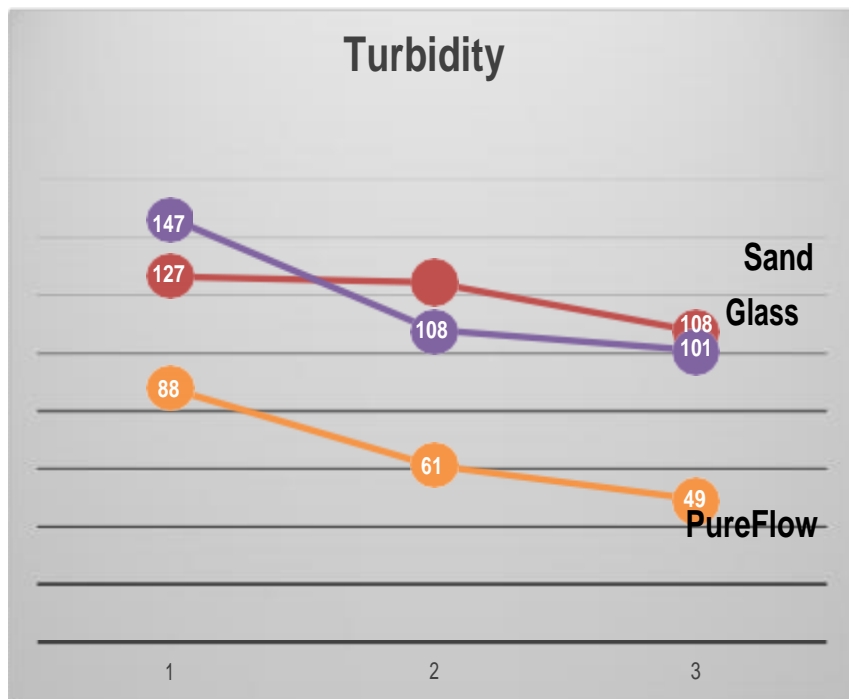
Change in turbidity value

Comparison: Sand - Glass - PureFlow

Filter cycles: 3 at 5-minute intervals

Initial value: 586 NTU

Turbidity	1. Filtration	2. Filtration	3. Filtration
Sand	127	125	108
Glas	147	108	101
PureFlow	88	61	49



Change in solids

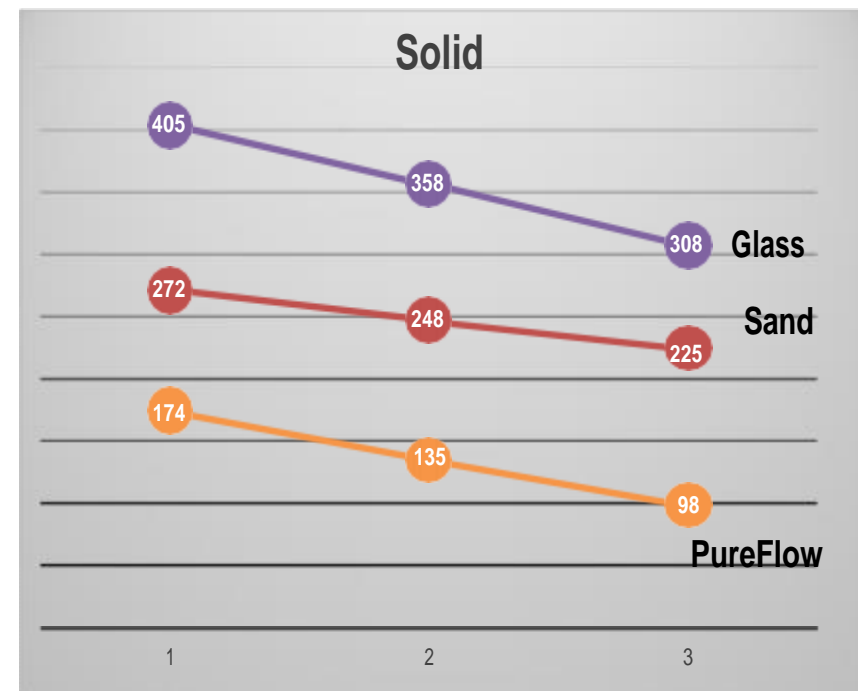
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Comparison:

Sand - Glass - PureFlow Filter cycles:

3 at 5-minute intervals Baseline:

Solid	1. Filtration	2. Filtration	3. Filtration
Sand	272	248	225
Glas	405	358	308
PureFlow	174	135	98



Why PureFlow?



product	Sand/Glas	DE/Cellulose	PureFlow
algae control	no	good	very good
Chemical resistance	yes	no	yes
Flow rate	low	middle	high
Energy savings	no	medium	high
Disposal fees	high	high	very low
Flocking agent necessary	yes	conditional	no
Weight	160 lbs	55 lbs bags	2 lbs
Installation/deinstallation	2-4 hours	2-4 hours	10-20 min
Process time of cleaning	long	long	very short
Selectivity	> 30 micron	> 3-5 micron	> 1 micron
TSS rate	- 54%	- 75%	- 99%
Back wash separation	yes	conditional	yes



PureFlow[®] Pool

High performance polymer filter for any sand filter



130g = 10kg

PureFlow

Sand

- ✓ *Exceptional filtration*
- ✓ *Long-term use*
- ✓ *High efficiency from the first cycle*
- ✓ *No rise in pressure in the filter*
- ✓ *No clogging of the filter*
- ✓ *Excellent filtration of algae*

Savings:

Jusqu'à	Jusqu'à	Jusqu'à
-40%	-77%	-95%
energy consumption	waste water	less chemicals Chlorine, flocculant, etc.

Poolstar
www.poolstar.fr

JL-P12058



3 7006 91 4 12058

References

Speck-Pumps



Fotographs of test series



Evaluation period 01.05.2018 – 30.09.2018

- The pool water was very clean and absolutely clear over the entire period.
- The water quality was perfectly fine. There were no problems or abnormalities with chlorine and other chemicals. Flocculants have been completely dispensed with.
- After backwashing, there was still adhering dirt on the filter segments. No complete detachment through backwashing.
- Particularly striking was the absolutely simple handling and the enormous saving in energy.
- I personally would change filter material annually for hygienic reasons.

Mit freundlichen Grüßen

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pumpen

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Verkaufsgesellschaft GmbH
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Fax: +49 9123 949 7277
speck-pumps.com

Geschäftsführer Hermann Speck, Armin Herger
Handelsregister Nürnberg HRB-Nr. 5080

References



Große kreisangehörige Stadt

Goethe- und Universitätsstadt

Stadt Ilmenau

Assessment of the filter material PureFlow by the bath company Ilmenau

The spa operation of the city of Ilmenau is the operator of a swimming pool, built in 1986. The building substance as well as the technology are outdated and no longer meet the requirements of the present time.

Among other things, parts of the water treatment and the heating systems are particularly worn. This includes two sand filters (10m³ swimming pools (SB), 8m³ non-swimmer pools (NSB)).

Due to an accident (sand filter swimming pool) in December 2016, the operation of the swimming pool had to be stopped immediately.

A conservative repair/refurbishment of the affected filter would have resulted in the following:

1. Elaborate, cost-intensive repair,
2. Closure of the swimming pool for at least 10 weeks,
3. Static problems regarding the sand load of 8 or 6 tons.

In order to solve our problems, we decided at short notice to use the very light filter material "PureFlow" made of polymer fibre instead of sand. Due to the special geometry and the very low weight, "PureFlow" was used on the basis of a short-term exemption granted by the competent health authority temporarily.

Filling the existing filter with PureFlow was quick and easy to install due to the low weight. After appropriate tests and the necessary check of the water quality, the swimming pool could be reopened after only 7 days.

Based on these positive experiences, we also converted the filter for the non-swimmer's pool to the filter material "PureFlow" in summer 2017.

After 11 months of use of "PureFlow" in the swimming pool operation of the ilmenau swimming pool, we can confirm the following properties to this filter material:

- the bacteriological quality of the pool water is harmless (legionella), the cleanliness of the water we consider to be very clean and clear, the insertion of the filter material is much easier compared to sand (cost and time savings),
- the consumption of flocculants and other chemicals has been reduced by 86% with "PureFlow",
- the personnel effort for the filter flushing has been reduced by 50%, as the frequency of backwash cycles could be halved,
- The use of PureFlow filter material has almost completely avoided contamination in the surrounding area of the plant and the associated cleaning effort.



T. Schäfer
Werkleitung
Bäderbetrieb



City of Rehau

Dear Managing Director Künzel,
we will send you the desired assessment:

1:

We have an urban indoor pool with a sports pool of 25 m, diving pit and a children's paddling pool with two separate water treatment plants.

2:

The decision was made on Pure Flow because the replacement of the filter material was planned this year.

3:

- a) The placement of the filter media with Pure Flow is very easy and fast - no effort as with sand.
- b) We have taken the ozone plant out of service and the reaction tank out of the treatment cycle. A stainless steel plate with holes was mounted on the inlet bell in the filter to avoid rinsing the pads.
- c) If the specification DIN 19643 corresponds, no turbidity can be detected.
- d) No complaint by the laboratory.
- e) Very low chlorine depletion, we were able to decommission the marble tower in the children's pool for the first time.
- f) The differential pressure of the filters is almost against 0 and is 0,1 - 0,2.
- g) Ozone is no longer necessary.
- h) Chlorination - chlorine consumption has halved.

i) The addition of flocculants has been reduced to the minimum according to DIN.

Backwash - is carried out as air/water flushing. Less water is used, reducing backwash times. There is a clear discharge of dirt.

k)

Savings in the area of chlorine, water consumption (less for backwash), chemistry (less flocculants, no pH lifter or marble tower), energy savings - the pumps run at lower power (frequency control)

4: Technical recommendation

In advance, each individual swimming pool should be checked for the respective technical facilities. In this way, as in the case of the city of Rehau, damage pictures incurred in advance become avoidable.

5: Closingsentence

If customers are interested in a visit to our indoor swimming pool, we are at your disposal by appointment. New laboratory values are not yet available.

The samples taken by the staff are within the standard range.

For the city of Rehau there are no experience values on the durability of the material. In order to be able to allocate appropriate funds for the budget in the future, we ask for a

binding offer to exchange the material for the area 11 child and swimmer".

Mit freundlichen Grüßen
I.A.

Schrödel
Hochbauamt

Reference –
Ilmenau/Munich Germany



Reference – Rehau, Germany
Filter material change



18,000 kgSand=720Bags

./ 220 kg PureFlow

2x Filtervessel at 8.600 kgSand=2 x 100 kgPureFlow
2x Filtervessel at 400 kgSand= 2 x 5 kgPureFlow

Start: 09:18 am - End: 11:36 am

Duration: 2 hrs.18min.

People:	2
Pollution:	none



References international



PureFlow® CARTRIDGE



Pure Flow Cartridge

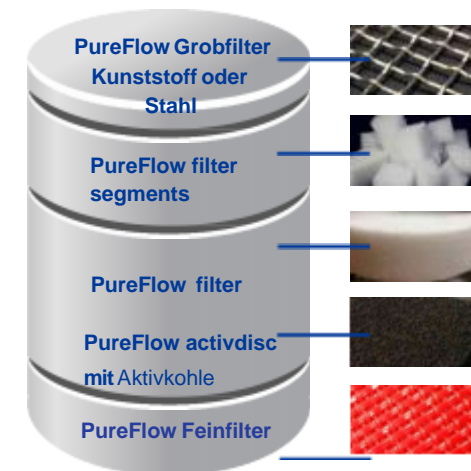
- Op to 250 times higher filter volume
- Long life time
- Better filter efficiency < 1 micron

Individual filter design and cartridges

- Customized products on request
- Felxible in design
- full body filter cartridges
- Typical Cartridge with PureFlow – layer
- R&D and manufacturing in Germany
- Can be combined as multilayer cartridge with activated carbon & Iron/Manganese filter

Close to customer requirements

- Cartridges can be adjusted in size to meet all customer requirements

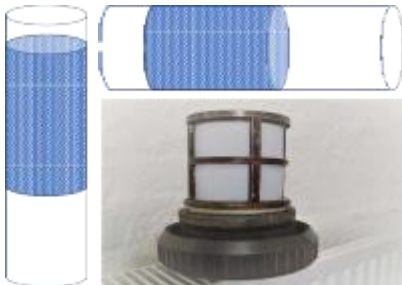
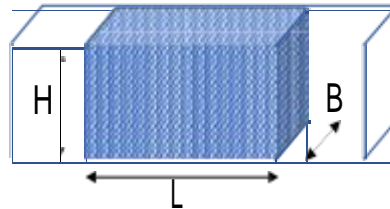
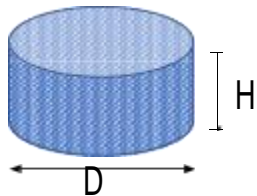


Skimmer, pipe, gutter and infinity filters



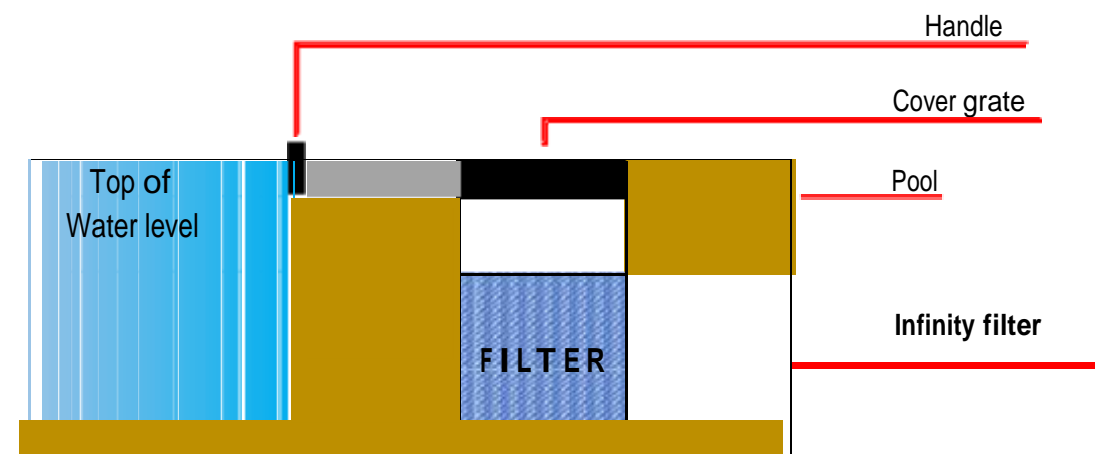
With our PureFlow products pipe, gutter, skimmer and infinity filters, you prevent contamination from entering your main filter in advance. Stop the penetration of pine needles, foliage, insects and many other types of debris. The PureFlow filter is quickly removable and can be easily washed out. Individual solutions possible, flexible indimensions:

Required Dimensions: Diameter (D) or Width (W) in cm; Height (H) in cm; Length (L) in cm



Your advantages:

- They extend the useful life of your main filter.
- They prevent sudden overflows.
- They prevent blockage of the filter pre-chambers.
- No insects enter the filter vessel.
- They reduce the development of biofouling throughout the plant.
- They prevent damage to the pump, pipe system and shut-off valves.
- They avoid unwanted contamination (return) into the basin.
-



Contact details



We are also happy to offer the right solution for you. For further questions, please contact us at:

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E-Mail

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We look forward to seeing you!

Your PUREFLOW team

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PureFlow. We protect water.