

NORDICWATER

A Sulzer Brand

SUPERSAND™
continuous sand filter



MAIN INDUSTRIES AND APPLICATIONS

The SuperSand™ sand filter is a world-leading continuous filter developed in the late 1970s. SuperSand is used to clean and produce water for drinking, industrial processes, wastewater recycling and wastewater treatment before the water is discharged into a recipient.

SuperSand delivers unparalleled effluent quality that meets the highest of environmental standards for:

- Suspended solids reduction
- One and two stage continuous contact filtration
- Nitrogen removal (denitrification and nitrification)
- Phosphorous removal
- BOD/COD removal
- Activated carbon treatment
- Treatment of metal-bearing effluents
- Pretreatment to other processes

Examples of industrial applications:

- Metalworking
- Wash water recycling
- Process water
- Side stream filtration of cooling water
- Scale residues
- Chemical processes
- Ideal as pretreatment instead of gravity filters



HOW SUPERSAND WORKS

The SuperSand is an up-flow, moving bed filter that is constructed with various media depths for different applications and configurations.

SuperSand works as a stand-alone single filter or with several interconnected filters that work in parallel to match the required capacity. In large capacity plants, the filter modules are installed in basins with a common sand bed.

From feed to filtrate

Raw water enters near the top and is led to the bottom of the tank. Solids are filtered out as the raw water flows up through the media bed. As the water reaches the top of the filter, it passes over the effluent weir as filtrate and is discharged. A small part of the filtrate is used for cleaning and transfer of waste solids.

Backwash

A backwash rinse is performed while the tank is processing water.

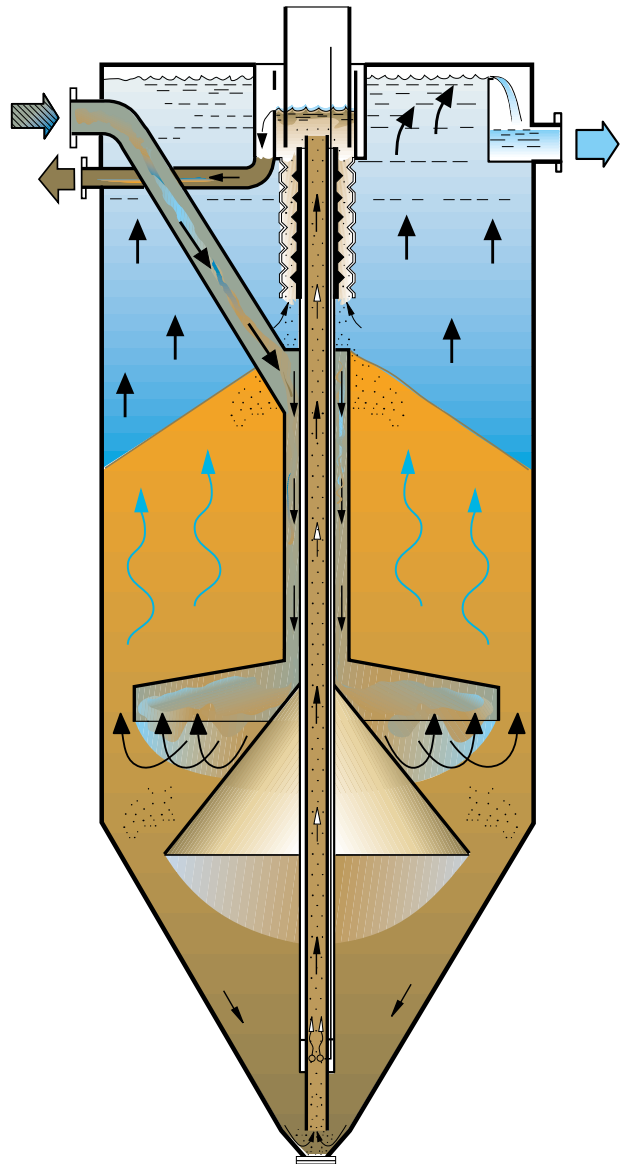
An air lift pump draws media from the bottom of the filter up into the wash box and into the sand washer where the filtered solids are separated from the sand. From there, the filtrate discharges the solids as backwash waste.

The washed sand falls on the media bed for continued use.

Save water and energy

The amount of wash water used can be significantly reduced by running the sand pump intermittently. This is especially valuable in groundwater treatment but has proven equally effective in other applications as in wastewater applications.

When the sand pump is run in cycles, the energy cost is reduced due to the decrease of air consumption. Additionally, letting the sand bed rest intermittently can result in a higher quality filtrate.



FILTER IMPROVES THE QUALITY OF DRINKING WATER

SuperSand Oxy filter

The SuperSand Oxy filter is designed for aerobic applications and is therefore equipped with an aerator. It is excellent for use in biological aerobic treatment applications where filtration and aeration in the same filter is desired.

The aerated filter media bed acts as a biologically active filter to improve the drinking water quality. SuperSand Oxy can be used for biological treatment of surface water for taste and odor control and for treatment of groundwater for biological iron and manganese removal.

SuperSand Carbon filter

In applications where water contains soluble pollutants that cannot be removed by contact filtration or biofiltration, activated carbon is ideal for removal by adsorption. Activated carbon is one of the world's most powerful adsorbents and can be used to remove a wide range of contaminants from industrial and municipal wastewater as well as from surface and groundwater in drinking water production.

SuperSand carbon filters are often installed directly after standard SuperSand filters with contact filtration. The water can then flow through gravity from SuperSand to the SuperSand carbon filters.

The SuperSand carbon filters can be used for drinking water or raw water applications mainly to remove COD-Mn, and to improve taste and smell of the water.



FEATURES AND BENEFITS

1 Direct feed without the need for pretreatment

- SuperSand handles high levels of suspended particles often without the need of pretreatment

2 Efficient water distribution

- Hydraulic distribution of water fluid over the complete filter surface maximizes the filtration process

3 Simple process that provides filtered filtrate effluent

- Always high-quality clean filtrate – no first filtrate

4 Simplified service

- Sand washer in two halves facilitates dismantling for easy cleaning and maintenance

5 Segmented air lift pump for easy handling

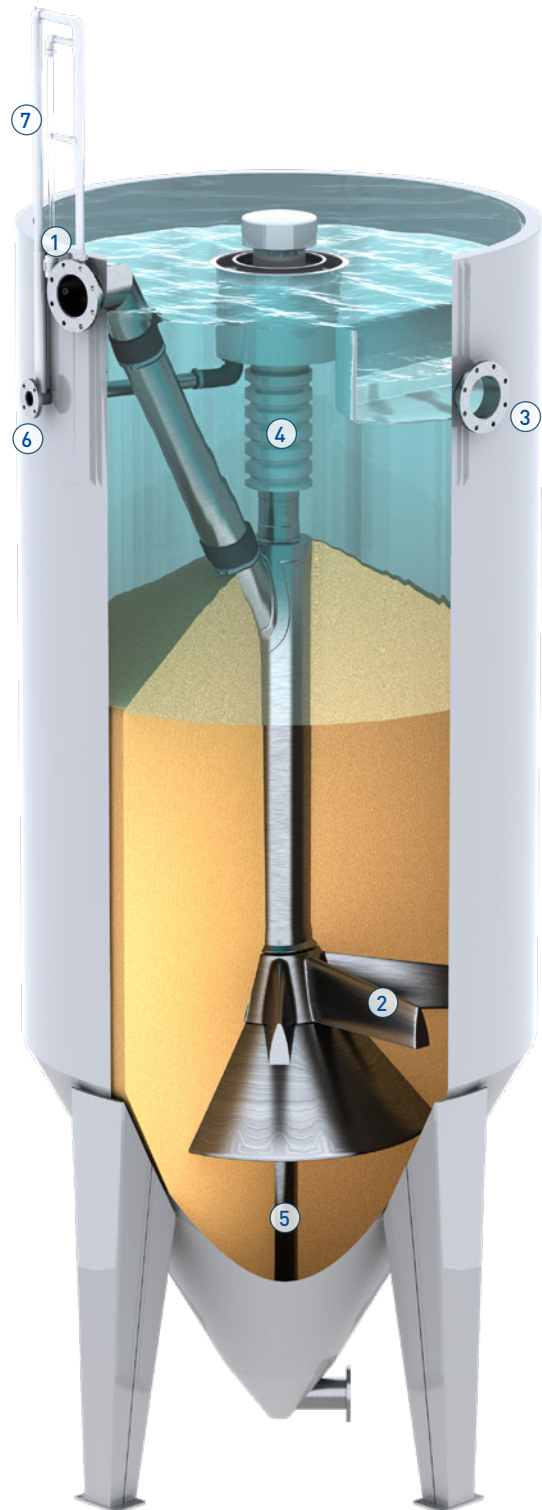
- The sectioned design enable easy replacement and low transport cost

6 Even flow of wash water effluent for cost-effective filtration

- No shock loads on the wash water treatment system as backwash rinse is performed continuously
- No need for backwash pumps and valves
- No need for wash water collecting tanks

7 Easily accessible deaeration pipe

- Enable measuring of the low gravity head loss
- Provides deaeration and anti-siphoning effect



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