



## Closed pressure sand filter PFZ

consists of a pressure tank, in which there is a fitting enabling the filter function. The fitting consists of the inter-bottom with nozzles, upper and lower distribution systems and the pressure air distribution. The filter works in three modes: filtration, back-washing and raising. During filtration water goes through the filtration layer and the inter-bottom with the nozzles. When the filtration filling is clogged, the filter back-washing is carried out. By means of backwash water and air the filling is cleaned by the opposite flow than the filtration one. Material is carbon or stainless steel and plastic. The pressure filters can also be delivered in the multi-layer version.



*Closed pressure sand filter*

## Open atmospheric sand filter PFO

operates on the same principle as the pressure filter apart from the fact, that the filter casing is an open tank and water goes through the filling by means of the gravity. This saves energy with the necessity to enlarge the filtration area. Material is again the combination of the carbon steel or stainless steel and plastic.



*Open atmospheric sand filter*

## Continuously operating sand filter CPF VIVASAND

eliminates the main disadvantages of sand filters - discontinuous operation and uneven load of the filtration medium. The continuous operation of CPF is reached by means of the performance of the concurrent filtration process and sand washing (the filtration process is carried out in the same way as with the standard filters). However, at the same time the sand is mined from the cone bottom by the screw conveyer or by air lift to the wash device located in the upper part of the central pipe. Here the sand is washed continuously by the filtered water and it comes back to the upper part of the filtration layer. The atmospheric continuously operated filter VIVASAND is delivered in the version in the cylindrical container from plastic or steel for smaller flows. For bigger flows the cylindrical filters are arranged in the series or the version in the square or rectangular reservoir, usually a concrete one, is delivered.

During the filtration process, the polluted water brought to the bed of sand by means of the central pipe and the distribution arms, flows through the bed of sand to the upper part of the filter and from there through the overflow to the filtered water outlet.



*Continuously operating sand filter  
VIVASAND*



## Sand filtration

is a standard method of the separation of very fine mechanical impurities from water. It is based on catching particles in the gaps between the grains in the whole content of the filtration medium and in combination with coagulation it can remove also dissolved substances.

Advantage of sand filtration is easy regeneration of sand layer and low cost of its prospective exchange. Volume sand filters can be designed as open ones with continuous or periodical operation and as pressure ones with periodical operation.

New variants of multi-layer filters and newly developed artificial mediums improve considerably the qualities of the standard filters and expand the area of their use.

Continuously operating sand filters eliminate the main disadvantages of sand filters - discontinuous operation and uneven load of the medium.

Sand filters are used for filtration of process water in industrial plants, especially in paper industry, wood processing, chemical plants, metallurgy and mining. Traditionally sand filtration is used for final treatment of drinking, service and surface water in water and wastewater treatment plants.

# INKOS supplies complex solution of sand filtration

## Filtration tests

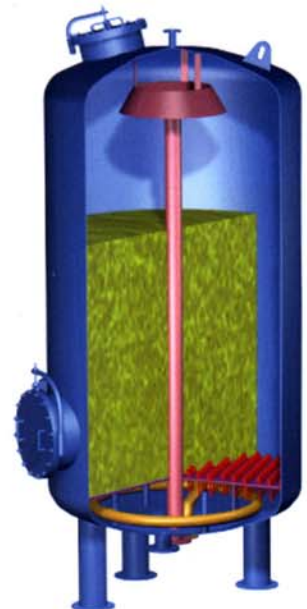
- With every new solution we carry out the laboratory tests of the filtration to optimise the efficiency and cost-effectiveness of the process
- At the request of the customer we carry out semi-performance tests at the place of the installation

## Deliveries

- Closed pressure sand filter PFZ
- Open atmospheric sand filter PFO
- Continuously operating sand filter CPF VIVASAND
- All accessories (control system, fittings, ...)

## Services

- Optimal technical set design
- Realisation project
- Erection
- Possibility of turnkey delivery of the filtration plant
- Warranty and after-warranty service



## Equipment advantages:

- Separation boundary 2 - 4  $\mu\text{m}$
- Simple filtration process
- Continuously operating filter VIVASAND eliminates the necessity to double the filters
- Moreover, with the continuously operating filters VIVASAND, there are not filter mode control systems, storage tanks and backwash water pumps, aeration in the washing stage and complicated piping distribution with controlled fittings
- Easy maintenance and service
- Automatic operator-free operation
- Very favourable proportion price/performance

## Areas of using the sand filtration

### POTABLE WATER

Drinking water treatment uses sand filtration in all its forms as the most common stage of treatment, which removes mechanical impurities, biological pollution and catches the flakes from the chemical treatment. Gradual introduction of continuously operating sand filters VIVASAND brings many advantages mentioned above.

### TECHNOLOGICAL WATER

Technological water treatment in the separation boundary of less than ten microns is historically based on sand filters. Lasting advantages together with the innovations of filtration media maintain this technology to be still up-to-date. They are brought to a qualitatively higher level by the continuously operating sand filters VIVASAND.

### SWIMMING POOLS

Mainly closed sand filters are used for water treatment in large pools.

### WASTE WATER

During the waste water treatment, sand filters are used as the last stage of the tertiary treatment, especially in the area where the purified water is used for irrigation or as service water. The contribution of the continuously operating sand filters VIVASAND is clear undoubtedly also in this area.



*Continuously operating sand filter  
in paper mill, CR*



*Fitting of sand filter PFZ*



INKOS, Vinohradská 76, 618 00 Brno, Czech Republic

Tel: +420-5-48216392, Fax: +420-5-48226125, e-mail: [inkos@inkos.cz](mailto:inkos@inkos.cz), <http://www.inkos.cz/>