

RoDisc® Rotary Mesh Screen



- Retention of filterable solids from the secondary clarifier effluent
- Reduction of micropollutants using powdered active carbon (PAC)
- Preliminary filtration in drinking water recovery from surface waters and in UV disinfection applications

►► The challenge

High hydraulic loads, insufficient tank depth and poor settling behaviour of the activated sludge are the most common causes for the poor performance of secondary clarifiers. Frequently, secondary clarifiers are even unable to reliably ensure the solids retention required. Overflow of flocks increases COD, BOD and phosphorus loads in the effluent and receiving watercourse with the result of higher wastewater fees.

Due to improved methods of analysis micropollutants (pharmaceutical residues) are increasingly detected in water and soil in Germany. Some of these substances have a high damaging effect on the environment. Adsorption using powdered active carbon is a physical-chemical separation process to remove such substances. It is however of vital importance to prevent the ingress of contaminated powdered active carbon into the water.

A subsequently installed filtration system is a quick, efficient solution in order to achieve separation of suspended material, such as sludge flocks or powdered active carbon. Combined with preceding precipitation and flocculation a micro screen provides an easy-to-implement means for the reduction of phosphorus in effluents to very low concentrations. This prevents eutrophication of waters and excessive growth of algae and water plants.

►► The solution

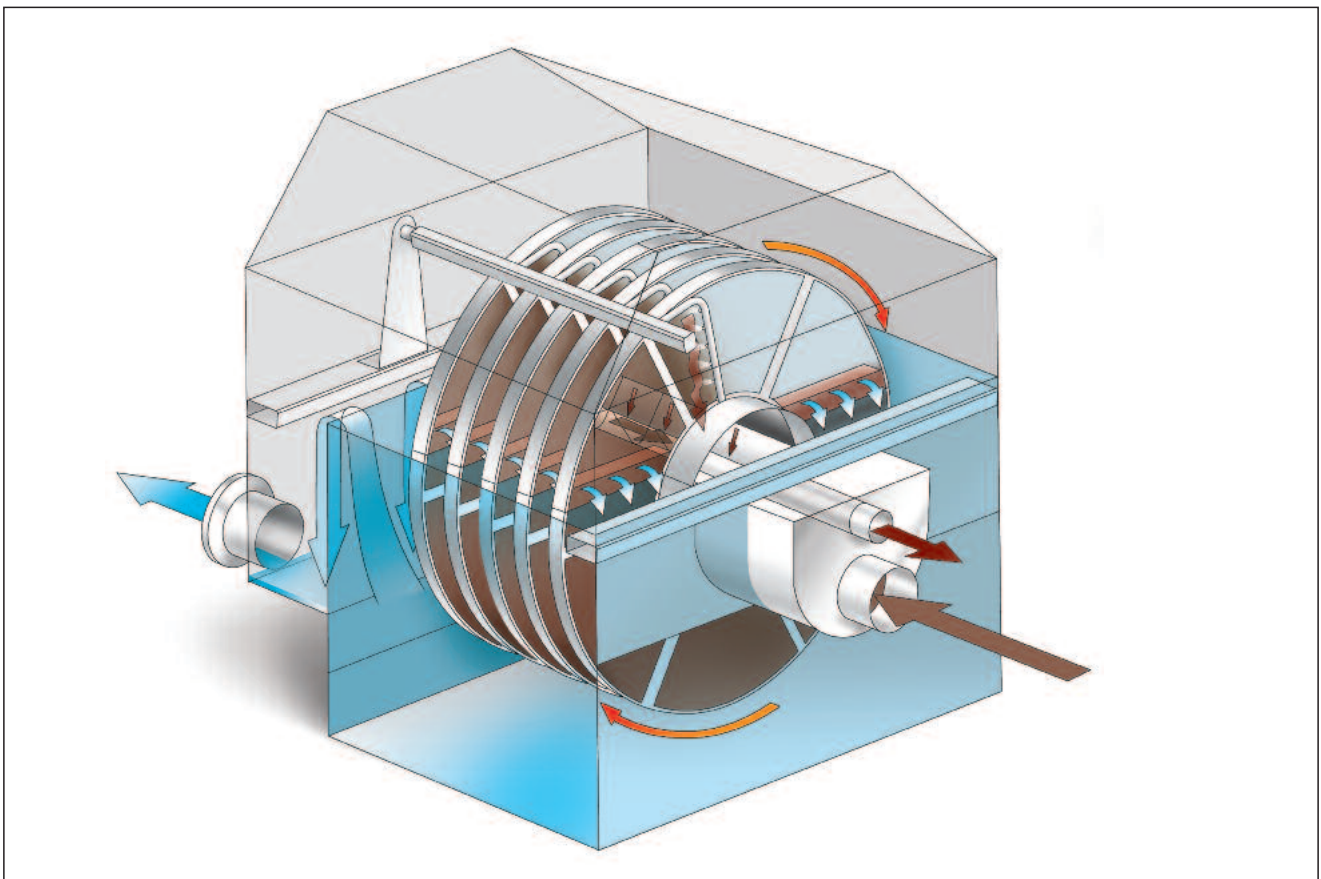
Our RoDisc® Rotary Mesh Screen is a filtration plant and consists of up to 35 vertical discs installed on a horizontal shaft. Up to 65% of the disc surface is submerged in the filtrate during operation.

Each filter disc consists of 12 individual plastic segments equipped with two filter plates each. The filter plates are covered with filter mesh on both sides. A thermal process is applied to fix the mesh. Each segment can be exchanged individually in case the mesh should be damaged. The finest available mesh size is as small as 10 µm.

Due to its small space requirement and modular design the RoDisc® Rotary Mesh Screen can be tailored to suit any specific site requirements.

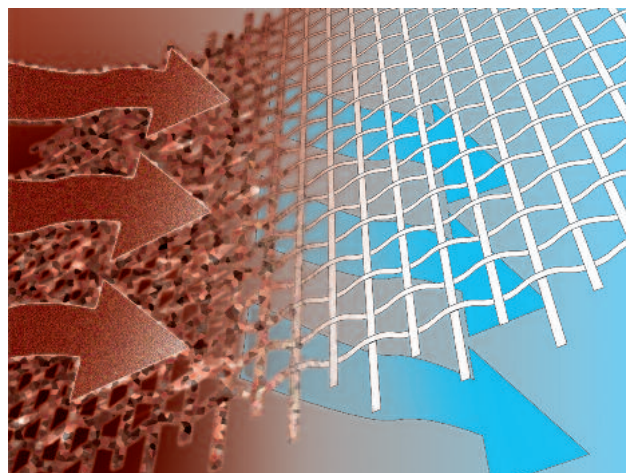
►► The function

The RoDisc® Rotary Mesh Screen is a gravity-flow filtration system. The wastewater to be treated flows into the horizontal shaft and from there through openings into the filter discs which the water passes from inside to outside. The filter discs remain in rest position at first during the filtration process. The solids are retained on the inner disc surfaces, which leads to gradual blinding of the mesh, resulting in an increasing pressure differential. An overflow weir ensures that the water level in the tank



remains virtually constant. The upstream water level rises as the blinding process progresses. When the predefined maximum pressure differential has been reached, the solids are removed automatically from the filter surfaces.

The filter material is cleaned by spray nozzle bars. The solids are removed by the slow rotation of the filter discs combined with the high-pressure water jets which wash the filtrate through the mesh from inside to outside without the need to use fresh water as filtrate is used for backwashing. The spray water and the solids contained are collected in a trough and discharged axially from the machine. The filtration process runs on continuously whilst the filter discs are being cleaned.



Excellent separation of fine solids from the wastewater flowing through the filter mesh with its small apertures

►► The applications

Filtration of biologically treated wastewater

The RoDisc® Rotary Mesh Screen is frequently utilised for the separation of fine suspended material from biologically treated wastewater within municipal and industrial applications, especially if secondary clarifiers work insufficiently because they are too small or the settling behaviour of the activated sludge is poor for example. Our RoDisc® Rotary Mesh Screen reliably achieves effluent values which are significantly better than the required limit values for filterable solids.

Reduction of micropollutants using powdered active carbon

It is possible today to identify the presence of a multitude of trace substances in surface waters and partly also in groundwater. The effects these substances have on the ecosystems in our waters have not yet been fully clarified. The removal of such micropollutants on sewage treatment plants in an additional quaternary treatment stage is therefore increasingly becoming a focal point. The combined use of the RoDisc® Rotary Mesh Screen and powdered active carbon is a treatment method which ensures that the substances to be eliminated from the wastewater are absorbed on the surface of the powdered active carbon and reliably separated from the wastewater flow by the RoDisc® Rotary Mesh Screen. The RoDisc® Rotary Mesh Screen is vitally important in this concept as it prevents the ingress of contaminated powdered active carbon into the water.

Filtration to protect or increase the efficiency of downstream treatment systems

A virtually solids-free flow is a prerequisite for effective and efficient as well as trouble and maintenance free operation of some subsequent treatment steps, such as UV disinfection or membrane filtration. Our micro screens significantly reduce the concentration of suspended

material. Investment and operation costs are more than compensated because micro screening saves money for downstream systems.

Treatment of water and wastewater in industries

Due to new legislation concerning direct or indirect wastewater discharge, advanced wastewater treatment at source is required. Removal of solids is also required for wastewater recycling because service and process water must be virtually solids-free.

Special applications:

- Wastewater within paper and pulp industry
- Wastewater within plastic processing industries
- Treatment of service and process water, closing water loops (e.g. in food and chemical industry)



Activated sludge flocs sometimes are insufficiently retained by the secondary clarifier.

►► The user's benefits

- High hydraulic throughput capacity on a small footprint
- Gravity system with low headloss, no lifting of wastewater required
- Significant reduction of filterable solids, COD, BOD, phosphorus
- Reliable removal of powdered active carbon for the elimination of micropollutants
- Effluent standards are reliably met. Reduced wastewater discharge charges
- Form-locked and chemical-resistant thermal fixation of the mesh.
- No external wash water supply required as filtrate is used for cleaning
- For installation within a stainless steel tank or in customer's concrete tank
- Continuous operation even during backwashing
- Easy exchange of individual filter elements without the need for lifting devices

►► Technical data

- 2230 mm disc diameter
- 2000 m³/h throughput capacity
- Up to 35 filter discs per machine
- 2 - 100 µm mesh size



28 RoDisc® Rotary Mesh Screen units with 24 discs each treating about 8.5 m³ wastewater per second



4 RoDisc® Rotary Mesh Screen units with 18 discs installed in a concrete tank



Backwashing of filter discs with filtrate – no external wash water required

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