

## RoDisc® Rotary Mesh Screen



- Micro screen for reliable removal of fine suspended solids
- Large screen surface on a small footprint
- Gravity system
- High separation efficiency

## ►► 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. Under storm conditions for example, the amount of filterable solids can be up to three to four times the volume experienced under dry weather conditions. Overflow of flocks increases COD, BOD and phosphorus loads in the effluent and receiving watercourse with the result of higher wastewater fees.

Especially the increased concentrations of nutrients in surface waters, such as phosphate and nitrate, lead to eutrophication of water bodies and excessive growth of algae and water plants.

A subsequently installed micro screen is a quick, efficient and economical solution in order to achieve further separation up to a virtually solids-free effluent. Combined with preceding precipitation and flocculation a micro screen provides a quick and 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

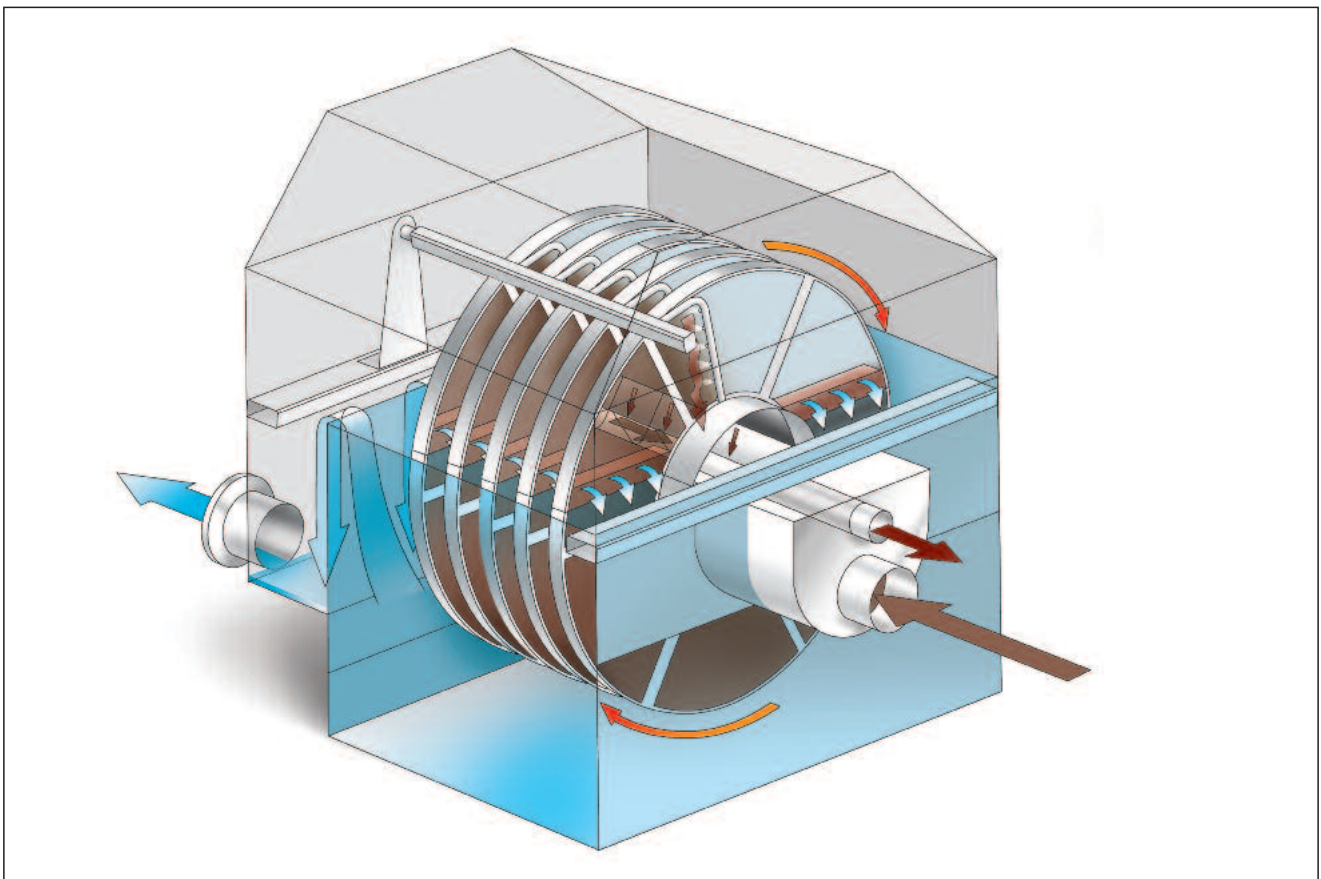
Our RoDisc® Rotary Mesh Screen is a micro screen and consists of up to 35 vertical discs installed on a horizontal shaft. Up to 60% of the disc surface is submerged in the filtrate.

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.

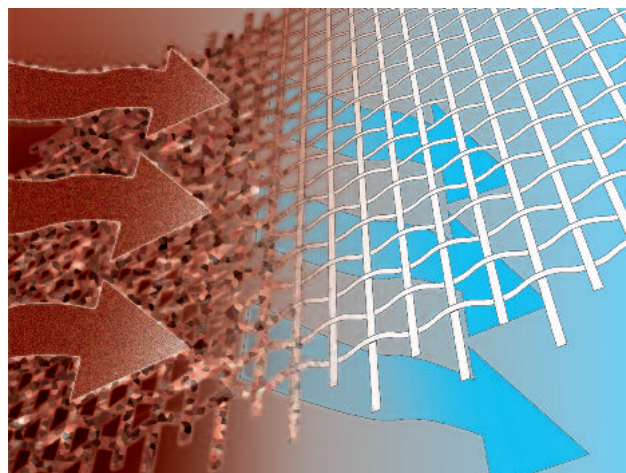
## ►► The function

The RoDisc® Rotary Mesh Screen works on the basis of the well-proven drum filter principle. The wastewater to be treated flows through the filter discs 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 solids are removed by the slow rotation of the filter discs combined with spray nozzle bars which wash the filtrate through the mesh from inside to outside without the need to use fresh water. 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

### **Micro screening 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 micro screens reliably achieve effluent values which are significantly better than the required limit values for filterable solids.

### **Micro-screening of raw wastewater prior to discharge into waters**

In many regions raw wastewater is only passed through a simple mechanical screen prior to being discharged to a river or the sea. Such applications require a sufficient self-cleaning capacity of the receiving water body. If this is not the case, COD/BOD and phosphorus loads should be reduced as extensively as possible for the protection of the receiving water bodies.

Additional micro screening is of particular importance for the protection of waters by reducing the oxygen-consuming load and preventing eutrophication. An increased screen performance can further be achieved with the inclusion of preceding precipitation and flocculation.

### **Micro-screening 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
- Effluent standards are reliably met. Reduced wastewater discharge charges
- Form-locked and chemical-resistant 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 m<sup>3</sup>/h throughput capacity
- 10 - 100 µm mesh size



28 RoDisc® Rotary Mesh Screen units with 24 discs each treating about 8.5 m<sup>3</sup> 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