

## RoDisc<sup>®</sup> Rotary Mesh Screen



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

## ►► The situation

Due to the increasing hydraulic loads and changing settling behaviour of the activated sludge, secondary clarifiers are frequently 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. The increased COD, BOD and phosphorus load of the effluent will finally lead to higher wastewater fees and the loading of the receiving watercourse with oxygen-consuming substances. 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 and thus eliminate the oxygen-consuming substances.

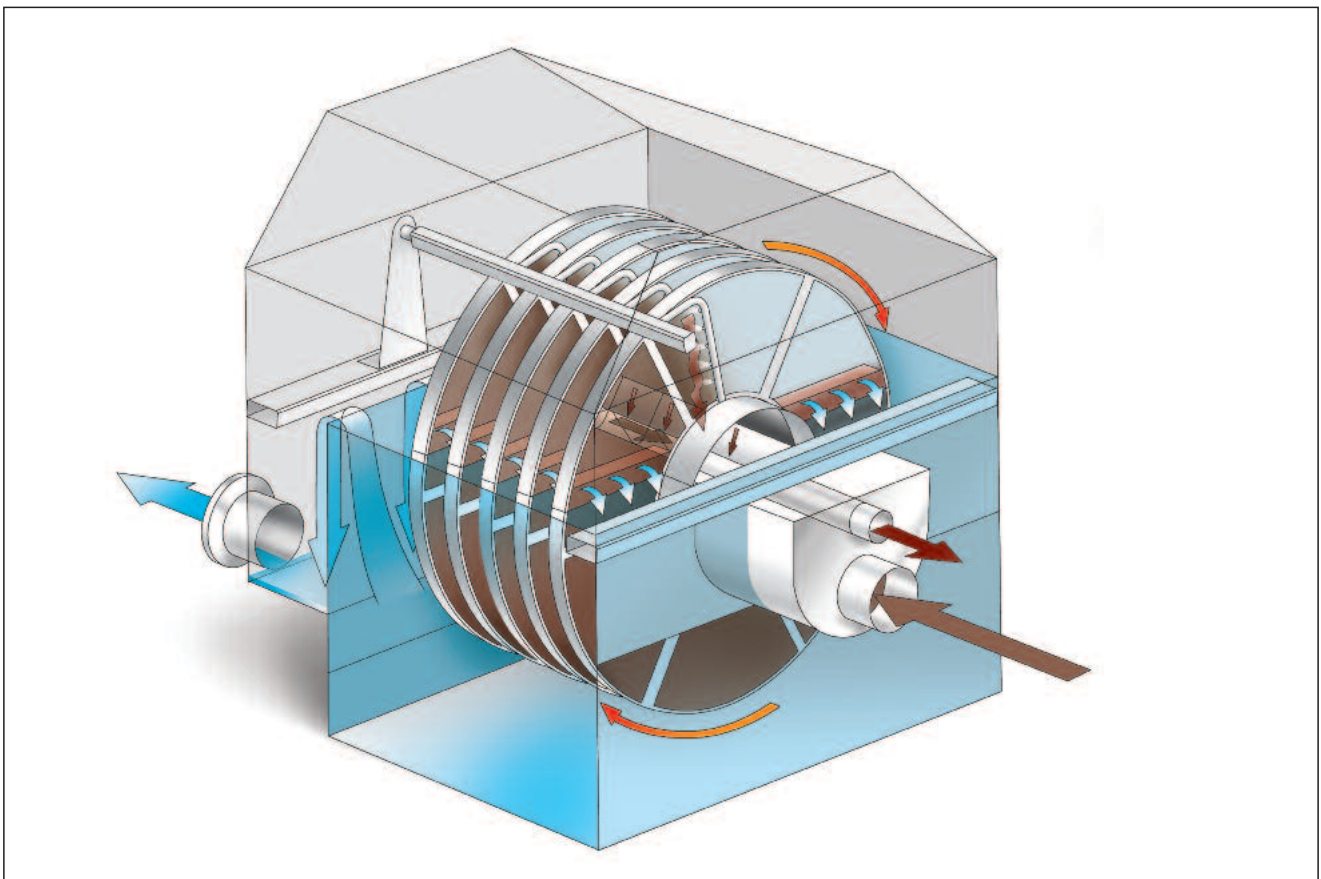
In view of the increased concentrations of nutrients in water bodies, such as phosphate, leading to eutrophication of rivers and lakes, further treatment of effluents from clarifiers is becoming more and more important. Installation of a mesh screen combined with a preceding chemical treatment stage (precipitation and flocculation) provides a quick and easy-to-implement means for the further significant reduction of the phosphate concentration in effluents and the prevention of algae growth.

## ►► The solution

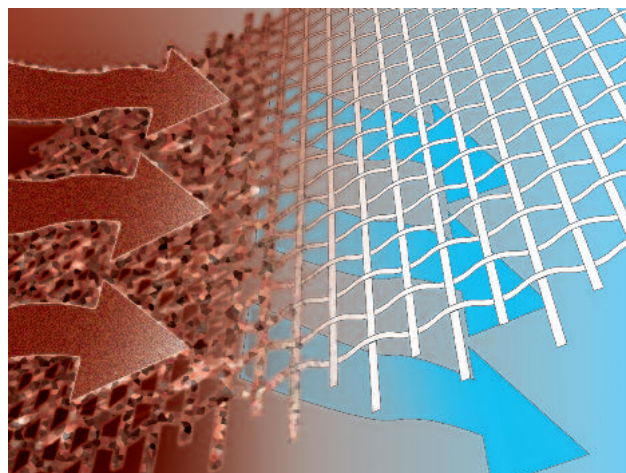
The RoDisc® Rotary Mesh Screen has been designed for micro-screening of up to 1500 m<sup>3</sup>/h with a mesh size down as small as 10 µm. The screen is especially suited for applications where a very high filtrate quality and large filter surface area is required. Due to its small space requirement 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 screen consists of horizontally arranged rotating filter discs installed on a central shaft and are submerged by up to 60% with each filter disc consisting of 12 individual plastic segments equipped with two filter plates each. The filter plates are covered with a square mesh. A thermal process is applied to fix the mesh on the plates. The wastewater to be treated flows through the segments from inside to outside and the filtrate is discharged at the inlet end of the screen. The filter discs remain in rest position during the filtration process. The solids settle by gravity on the disc surfaces themselves, which leads to gradual blinding of the square mesh with the retained solids as the filtration process progresses, resulting in an increasing pressure differential. When the predefined maximum pressure differential has



been reached, the solids are removed from the filter surfaces by the slow rotation of the filter discs combined with a spray nozzle bar. The spray nozzles are pump fed utilising some of the filtered wastewater. This eliminates the need for the addition of external water (service water). The removed solids are washed into a trough situated below the segment openings prior to being discharged and the filtration process runs on continuously whilst the filter discs are being cleaned.



*Maximum separation efficiency due to the defined separation provided by the mesh*

## ►► The applications

The RoDisc® Rotary Mesh Screen is utilised for the separation of fine suspended material within municipal and industrial applications. The modular screen design allows for easy retrofitting of additional filter surface areas to meet the ever increasing throughput requirements. For example within municipal applications with preliminary screening and preceding biological treatment a throughput capacity of up to 1500 m<sup>3</sup>/h can be achieved with 30 filter discs.

### **Wastewater micro-screening prior to discharge into waters**

The reduction of COD/BOD and phosphorus prior to the discharging of wastewater into watercourses is an essential prerequisite for water pollution control. Micro screening is of particular importance for the protection of water by reducing the oxygen-consuming load within river and sea outfall applications as the majority of them has only a mechanical treatment stage. An increased screen performance can further be achieved with the inclusion of preceding precipitation and flocculation.

### **Micro-screening prior to advanced treatment processes**

The removal of fine suspended material is a prerequisite for trouble and maintenance free operation of subsequent treatment steps, such as UV disinfection or membrane plants. This is particularly important for UV disinfection plants as they require very fine prior screening in order to reliably eliminate fine suspended material which impairs the efficiency of UV disinfection and therefore increases operating costs.

### **Treatment of wastewater from industrial processes**

Wastewater from production processes which are frequently loaded with suspended material increasingly requires treatment. Due to new legislation concerning wastewater discharge into sewer systems, mechanical preliminary wastewater screening at source and treatment of the retained solids is required. And frequently the conventional screening and sedimentation systems available are unable to meet these requirements.

#### **Special applications:**

- Paper and pulp industry
- Treatment of circulation water, wash water, and service water
- Treatment of process water within the food and chemical industries
- Solids separation with the plastics industry



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

## ►► The user's benefits

- Screening with a defined separation size provided by a square mesh
- Gravity system (no lifting of wastewater required), low headloss
- A special thermal process ensures the form-locked and chemical-resistant fixation of the mesh.
- High hydraulic throughput capacity
- No external wash water supply required
- Effluent standards are reliably met. Reduced wastewater discharge charges
- Reduction of filterable solids, COD, BOD, phosphorus
- For installation within a stainless steel tank or in customer's concrete tank
- Continuous operation principle

## ►► Technical data

The RoDisc® Rotary Mesh Screen is manufactured in one standard size. The throughput of the unit is dependent upon the number of filter discs installed, the selected mesh size and the solids content of the wastewater to be treated. For example with municipal wastewater after preliminary screening and preceding biological treatment up to 20 filter discs can be installed in parallel on one central shaft to enable a throughput of up to 1500 m<sup>3</sup>/h to be achieved.

Square mesh sizes of 10-100 µm are available and can easily be adjusted to suit the individual filtration requirements. Stainless steel is utilised as the standard material for the complete casing and screening basket.



*Clear and virtually solids-free effluent form the RoDisc® Rotary Mesh Screen*



*RoDisc® Rotary Mesh Screen with 20 discs installed in a concrete tank*



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

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