

ROTAMAT®

Membrane Screen RoMem



- Removal of fibres and hair
- Increased operational stability of membrane bioreactors
- COD/BOD reduction in river or sea outfalls
- Reduced load on the biological treatment system of sewage treatment plants without preliminary treatment

►► The situation

The efficiency of conventional screens with typical bar spacings and perforations of 3-10 mm is insufficient for MBR plants. Improved separation of disturbing coarse material is required to ensure reliable and low-maintenance operation of MBR plants. Since especially fibres and hair are a hindrance as they produce undesired tressings, ultra-fine apertures are applied to remove such material, preferably square mesh.

Frequently, raw wastewater is only pre-treated with a mechanical coarse screen prior to being discharged to a river or the sea. Further reduction of the COD/BOD loads from such outfalls is required for the protection of the receiving water bodies if their self-cleaning capacity is insufficient. Ultra-fine mesh screens are able to achieve an extensive removal of particulate material.

►► The solution

The ROTAMAT® Membrane Screen is a very fine screen and provides a large screening surface due to its drum-shaped screen basket and installation angle. The headloss of the screen is therefore low even with higher flow rates.

The screen uses a square mesh. The two-dimensional design and very fine apertures of the mesh ensure that excellent solids separation results are achieved and all fibres and hair are removed. Even very fine slot screens are not able to achieve the same retention. In addition, square meshes have a very large free surface and therefore a low headloss even with high flow rates, despite their high separation efficiency.

The ROTAMAT® Membrane Screen is suitable for wastewater flows of up to 3500 m³/h and can be equipped with a 0.75 mm square mesh size. The complete treatment by the combination of screening, transport, compaction, dewatering and discharge in one compact unit make the ROTAMAT® Membrane Screen an efficient and economical solution for the separation of very fine solids from wastewater.

►► The function

The wastewater flows through the open front into the screen basket and through the very fine apertures of the mesh. A sealing plate between the channel and the front-end screen basket opening prevents unscreened wastewater from bypassing the screen basket. The solids can therefore not pass into the effluent but are reliably retained in the screen basket.

The screen basket surface consists of a square mesh that ensures high separation efficiency and provides a large



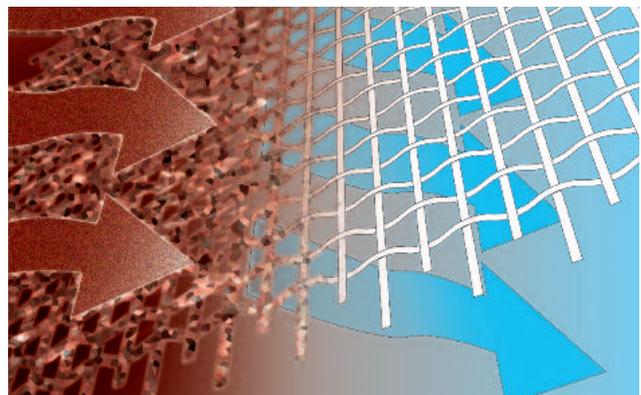
Particularly hair and fibres are separated by means of the two-dimensional square mesh design.

free screen surface so that the headloss remains low even with high flow rates.

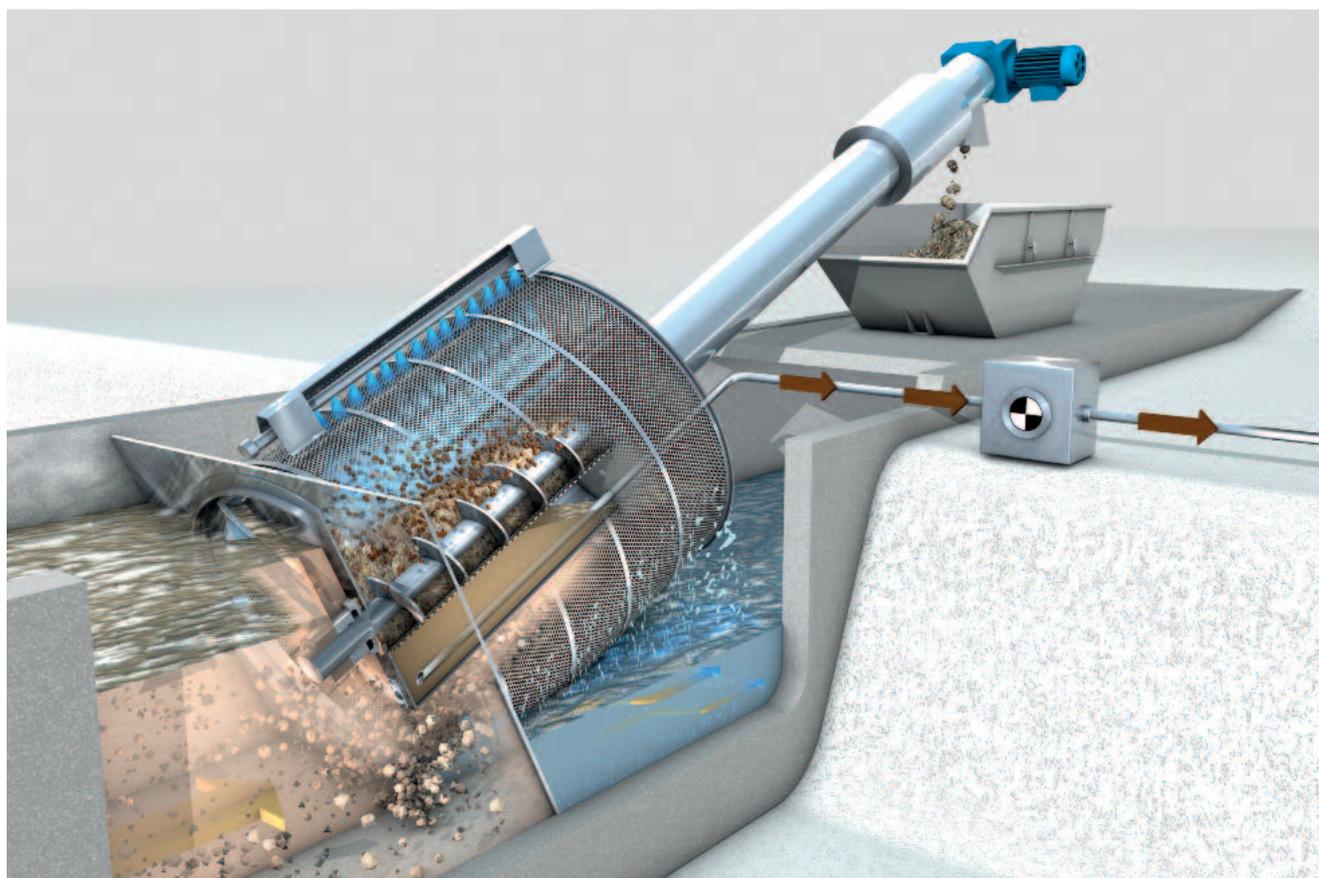
The solids retained on the screen basket surface lead to gradual blinding of the basket surface which has an impact on the level difference in the channel. The screen basket cleaning cycle starts at a defined water level in the channel upstream of the screen. The blinded screen basket surface is cleaned as the screen basket rotates lifting the retained solids to the spray water cleaning system where they are washed into the trough in the centre of the screen basket.

The screenings are removed from the trough by a screw conveyor and dewatered and compacted as they are transported upwards through a rising pipe. The trough is decoupled from the inlet water level by an additional trough to ensure durable function even with increased water levels (backwater) on the outlet side. Spray water in the trough is removed by separate suction to ensure the reliable transport of the sludge-containing fine screenings.

Periodic high-pressure washing at 120 bar (standard setting: twice a day) eliminates sedimentation on the screen basket and ensures that grease and oil is removed which might clog the screen basket surface.



Excellent separation of even very fine solids from the wastewater flowing through the square mesh



Schematic diagram of the ultra-fine ROTAMAT® Membrane Screen RoMem

►► The applications

The ROTAMAT® Membrane Screen is used for screening of municipal and industrial wastewater.

Our ultra-fine screen can be installed either directly in the channel or supplied in a separate tank.

COD and BOD reduction prior to river or sea outfalls

Frequently, raw wastewater is only pre-treated with a mechanical coarse screen to remove at least unsightly waste prior to being discharged directly to a river or the sea. But if the self-cleaning capacity of the receiving water body is insufficient, also oxygen consuming substances must be removed from the wastewater. Fine mesh screens separate not only waste but also fine particulate material of organic origin with a high COD and BOD.

Reduced load on downstream biological treatment systems

Fine mesh screens are able to remove high loads of AFS, COD and BOD and thus relieve the load on downstream treatment systems. Their space requirements and investment costs are only a fraction of what would have

to be invested for a preliminary treatment system.

Separation of hair and fibres prior to membrane bioreactors

The selection of the mesh size depends on the applied membrane system. Membrane modules are divided into hollow fibre and plate modules. Separation of fibrous material is particularly important prior to hollow fibre membrane plants as fibres may lead to tressing or blocking of the membrane. Ultra-fine screens are a reliable solution to mechanically eliminate such particles through forced separation.

Treatment of industrial wastewater

Mechanical preliminary wastewater screening at source is necessary to meet the requirements concerning wastewater discharge into sewer systems. Since wastewater fees depend on the freight discharged it is economically beneficial to minimise the freight by using a fine mesh screen. Especially attractive for customers are solutions which provide for the reuse of separated solids.

►► The user's benefits

- Protection of downstream equipment, e.g. MBR plants, through removal of fibres, hair and other disturbing material
- Reduced load on downstream biological treatment systems due to removal of AFS, COD and BOD
- Fine screening of large wastewater volumes in a gravity line
- Low headloss due to the use of square mesh
- Extensive reduction of COD and BOD for river and sea outfalls
- High efficiency through combination of screening, transport, dewatering, compaction and discharge of screenings in one compact unit with one drive
- Easy to install in existing channels
- High-pressure washing at 120 bar eliminates blocking.
- Available in a stainless steel tank or for channel installation
- Pickled in an acid bath for perfect corrosion protection

►► Technical data

- Screen basket diameters from 780 to 3000 mm
- Throughput capacity up to 3500 m³/h
- 0.75 mm mesh size



ROTAMAT® Membrane Screen RoMem units in tanks



ROTAMAT® Membrane Screen RoMem units installed to protect a large downstream MBR plant



Outdoor installation with cover and insulated spray water line

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