

ESMIL
EQUIPMENT

EQUIPMENT AND TECHNOLOGIES
for wastewater treatment

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ESMIL Back Raked Screen with reverse rakes

A reliable solution for sewage treatment plants and water intake stations.

Easy-to-use equipment of high reliability, which is installed in sewage pumping stations and buildings for screens units at the sites of wastewater treatment facilities, as well as water intake constructions.



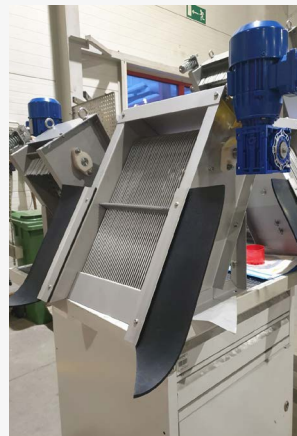
High performance of the equipment due to the design features of the screen bars.



Efficient removal of fibrous impurities and elimination of jamming problems.



Reliable and durable construction that does not require complicated maintenance.



ORIGINALITY AND HIGH RELIABILITY

PRINCIPLE OF OPERATION OF ESMIL BACK RAKED SCREEN:

The back raked screen consists of a screen assembled from cylindrical bars and installed in a frame. The bars have a round cross-section, which improves the hydraulic characteristics of the filtration area. In the standard version, the gap between the bars varies from 1 to 60 mm (depending on the application, other variants are possible).

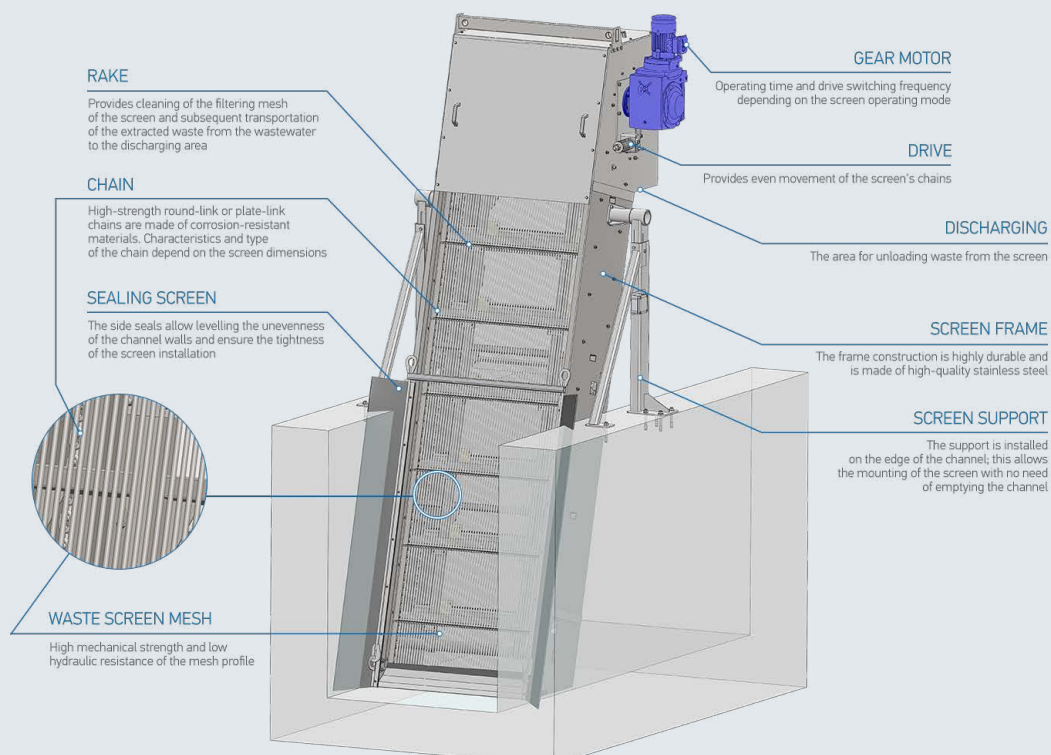
The rectangular frame consists of two longitudinal sides connected by transverse beams. Round-link chains made of stainless steel move in the guides along the longitudinal sides of the screen.

Cleaning of the filter mesh is done by a transverse rakes attached to the chains. The rakes are driven by the rotation of the drive shaft with gearwheels located in the upper part of the screen. The shaft, in turn, is driven by a geared motor. At the bottom of the screen, the chains run in the guides of the lower shaft.

The screen unit is mounted on the axis of pivot support installed on the edge of the channel or on special support that is fixed in the channel, while the screen itself can be lifted above the channel for maintenance.

ORIGINAL TECHNICAL SOLUTIONS:

- » The main distinguishing feature and the main advantage of the back raked screen is that the rake mechanism is located behind the screen bars and comes into contact with already purified water. This greatly reduces the likelihood of fouling by dirt or jamming by large objects.
- » The design of the filtration area makes it possible to avoid jamming of the rake: it is a set of separate bars bent in the upper part towards the waste discharge and fixed only in the lower part of the screen. This allows to treat wastewater containing fibrous contaminants that often wrap on the screen elements. Wastes are moved along the bars by a rake mechanism and are easily dumped from the free ends of the screen bars.
- » The bars are installed over the entire length of the screen — from the bottom of the channel to the discharge. This improves the removal of screenings and reduces the risk of getting them back into the channel along the transportation path.
- » The round profile of the bars reduces hydraulic resistance in comparison with the rectangular one and provides high throughput of the screen.
- » There are no rotating elements of the screen underwater (bearings, rollers, shafts, etc.). The rakes have support platforms with plastic washers that slide along the frame guides. As a result, there are no elements that need maintenance and replacement in the submerged part of the screen.
- » The back raked screen is highly abrasive (sand) resistant.
- » The rakes spacing is 0.5 m, which guarantees timely removal of wastes from the filtering mesh and ensures high efficiency during periods of peak water or wastewater inflows.
- » The screen drive: high-reliability worm gear motor from one of the world leaders NORD Drive Systems.



PRACTICALITY IS THE MOST IMPORTANT ADVANTAGE OF OUR EQUIPMENT

EASE OF USE AND CONVENIENT OPERATION:

- » There are no complex mechanisms and components in the design that require constant attention and maintenance.
- » The screen is able to operate continuously despite entering a large amount of waste. No clogging occurs in the channels.
- » The sliding plastic washers situated on the support platforms of the rakes can be easily changed over the channel in the accessible part of the screen.
- » The use of round link traction chains allows convenient and cheap maintenance and repair.
- » The screens are easy to service thanks to the accessibility of the main components and the drive.
- » The unit is equipped with a control system operating in various modes. It is possible to synchronize the complex with other types of equipment, for example, a screw compacting press or a screw conveyor.
- » Easy installation and quick commissioning of equipment.

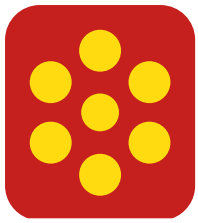
WHAT MAKES BACK RAKED SCREENS DIFFERENT FROM OTHER TYPES OF EQUIPMENT FOR MECHANICAL TREATMENT?

- » Back raked screens are the most optimal and reliable equipment for removal of large and medium waste from treated water.
- » Hydraulic characteristics and the principle of cleaning the filter cloth are improved in comparison with other types of screens. It allows to operate continuously removing the widest range of contaminants without stops and jams.
- » The technical features of the screen make it one of the most effective solutions for use at water intake facilities and melioration pumping stations.

WHY DO WE GUARANTEE LONG OPERATING LIFE?

- » High corrosion resistance of the materials used: the screen is made of AISI 304 stainless steel.
- » Obligatory anti-corrosive treatment: tank immersion pickling and passivation by special means.
- » Mechanical protection: trigger adjustment by a spring force.
- » Electrical protection against overload and power surges.





IMPORTANT NOTE:

Various options for equipment automation are possible. Configurable periodic operation includes the following modes:

- » By time;
- » By the difference in the level of wastewater in the channel before and after the screen;
- » By the level of wastewater in front of the screen;
- » According to a given program.

OPTIONAL:

- » Optional manufacturing of a screen from stainless steel AISI 316/316L.
- » Telescopic stand.
- » Outdoor version.
- » Design for installation in a tank.

Back Raked Screen Specifications

Parameter	Value
Channel width, mm	600 - 2100
Channel depth, mm	600 - 6000
Angle of inclination of the screen to the horizon, deg.	70 - 80
Gap width, mm	1 - 60
Chain pitch, mm	22 - 100
Rakes number, pcs.	4 - 80

Electric drive:

Ingress protection rating	IP55
Power, kW	0,12 - 1,5 3 phases, 380 V, 50 Hz



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