EKOTON
INDUSTRIAL GROUP

TECHNOLOGIES
AND EQUIPMENT
FOR WASTEWATER TREATMENT

RAKE BAR SCREEN

Rake bar screens can be installed at sewer pumping stations and at headworks of wastewater treatment plants.

Rake bar screens are intended for extraction of large and medium waste solids from industrial and municipal wastewater with subsequent unloading on a transporter or into a waste bin.

The screens are intended for use in the wastewater with pH = 6.5÷8.5.

RAKE BAR SCREEN ADVANTAGES:

- **Resistance to mechanical and hydraulic overloads** due to high tensile design in comparison with other types of mechanized screens;
- **High hydraulic efficiency** achieved by using tear shaped bars that cause a pressure gradient to the mesh and across the bar spacing;
- Tear shaped profile **as well protects the screen from waste jamming inside the filtering mesh.** By using this design, such blockages can be removed by rakes allowing the screen operate freely;
- **High reliability** achieved by the absence of the rotating parts in the submersible part;
- Submersible parts like casing, bars, chains and rakes are made of stainless steel to improve **corrosion resistance** in aggressive environments of wastewater;
- **Improved ergonomics:** maintainability of the screen due to accessibility of the main units in operation and screen lifting without demounting.

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DESIGN

Rake bar screens of different dimensions are made of stainless steel AISI 304 or AISI 316 on client demand. Dimensions of the rake bar screens are selected depending on required flow rate, wastewater composition and dimensions of the channels.

The rake bar screen is a filtering mesh consisting of bars installed into a frame. The bars are made from structural shapes with a tear drop shaped cross section that improves flow characteristics of the filtering mesh. The screen's filtering mesh can also be made of rectangular or round profile bars.

Bar spacing in the filtering mesh can vary from 5 - 100mm for typical equipment or can be adjusted individually. The rectangular frame consists of two longitudinal boards connected by cross beams. The laminated stainless steel chains can be moved along polymer guides installed on the longitudinal boards of the screen. Chain tension is adjustable.

Cross rakes are installed on the chains for cleaning of the filtering mesh. Chains and rakes are actuated by shaft rotation with drive sprockets located in the screen top section. The shaft is driven by a geared motor. At the screen bottom, the chain is moved along a pilot slider made of a wear resistant polymer material. Therefore, there are no rotating parts in the submerged section of the screen.

The screen is installed onto an axis of a special rotating prop mounted on the wall of the channel or onto special platform fastened in the channel while the screen itself can be lifted over the channel for maintenance. If there is a lack of space in a short channel without possibility of screen lifting, a special telescopic platform is used.

OPERATIONG PRINCIPLE

The rake bar screen collects and removes solids from wastewater that larger than bar spacing. The solids are periodically taken off from the filtering mesh by the rake moving them to the top edge of the frame. The solids are then removed from the rake by means of a kicker and dispatched along the gravity slide onto a transporter or into waste bin. The screen operation periodicity depends on the chosen equipment automation scheme and defined by technological commission results.

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TECHNICAL SPECIFICATIONS

Parameter	Units of measurement	Value
Channel width	mm	600 ... 2100
Channel depth	mm	600 ... 6500
Bar spacing	mm	5; 6; 8; 10; 15; 20; 30; ... 100
Inclination angle	°C	75 - 85
Waste unloading height	mm	depend on project
Power	kW	0,37; 0,75
Drive protection rating		IP 55

* Screen dimensions can be adjusted depending on the client's requirements.

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REFERENCES

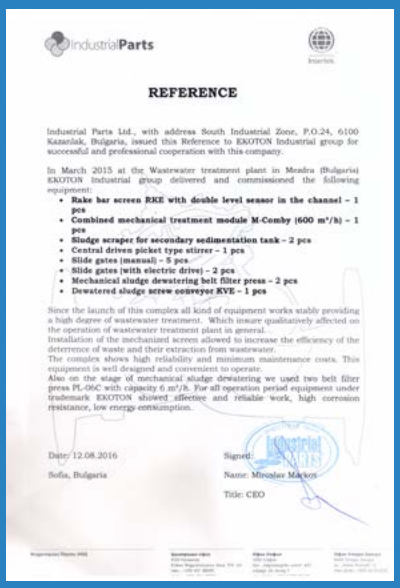
Wastewater treatment plant Bulgaria

Industrial Parts Ltd., with address South Industrial Zone, P.O. 24, 6100, Kazanlak, Bulgaria, issued this Reference to EKOTON Industrial Group for successful and professional cooperation with this company.

In March 2015 at the Wastewater treatment plant in Mezdra (Bulgaria) EKOTON Industrial Group delivered and commissioned the following equipment: rake type bar screen RKE with double level sensor in the channel, combined mechanical treatment module M-Comby (600 m3/h), sludge scraper for secondary sedimentation tank, central driven picket type stripper, slide gates (manual), slide gates (with electric drive), mechanical sludge dewatering belt filter-press, dewatering sludge screw conveyer KVE.

Since the launch of this complex all kind of equipment works stably providing a high degree of wastewater treatment. With insure qualitatively affected on the operation of wastewater treatment plant in general. Installation of the mechanized screen allowed to increase the efficiency of the deterrence of waste and their extraction from wastewater. The complex shows high reliability and minimum maintenance costs. This equipment is well designed and convenient to operate.

For all operation period equipment under trademark EKOTON showed effective and reliable work, high corrosion resistance, low energy consumption.



IndustrialParts

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In March 2015 at the Wastewater treatment plant in Mezdra (Bulgaria) EKOTON Industrial group delivered and commissioned the following equipment:

- **Rake bar screen RKE with double level sensor in the channel – 1 pcs**
- **Combined mechanical treatment module M-Comby (600 m³/h) – 1 pcs**
- **Sludge scraper for secondary sedimentation tank – 2 pcs**
- **Central driven picket type stirrer – 1 pcs**
- **Slide gates (manual) – 5 pcs**
- **Slide gates (with electric drive) – 2 pcs**
- **Mechanical sludge dewatering belt filter press – 2 pcs**
- **Dewatered sludge screw conveyor KVE – 1 pcs**

Since the launch of this complex all kind of equipment works stably providing a high degree of wastewater treatment. Which insure qualitatively affected on the operation of wastewater treatment plant in general.
Installation of the mechanized screen allowed to increase the efficiency of the deterrence of waste and their extraction from wastewater.
The complex shows high reliability and minimum maintenance costs. This equipment is well designed and convenient to operate.
Also on the stage of mechanical sludge dewatering we used two belt filter press PL-06C with capacity 6 m³/h. For all operation period equipment under trademark EKOTON showed effective and reliable work, high corrosion resistance, low energy consumption.

Date: 12.08.2016
Sofia, Bulgaria

Signed:
Name: Miroslav Markov
Title: CEO

Appugarh, India

Pomorie, Bulgaria

Herzlia, Israel

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For 22 years of operation, the EKOTON Industrial Group has delivered more than 1000 units of rake bar screens all over the world

LIST OF REFERENCES 2013-2017

Herzliya, Israel	Municipal WWTP	Rake bar screen RKEn 1421
Chisinau, Moldova	JSC "Apa-Canal Chisinau" (Municipal WWTP)	Rake bar screens RKEn 2021
Herzliya, Israel	Farida sewage pumping station	Rake bar screen RKEn
Mezdra, Bulgaria	Mezdra Municipal WWTP	Complex for mechanical wastewater treatment M-Combi 600, rake bar screen RKE 0742, rake bar screen with manual cleaning RKR 800x3000, RKR 500x500
Pomorie, Bulgaria	Pomorie Municipal WWTP	Rake bar screen RKE 0907, screw compacting press PVOE 2027
Gdansk, Poland	ECOL-UNICON Sp. z o.o.,	Rake bar screen RKE
Marikina, Philippines	Jerdine Energy Control co.	Rake bar screen RKE -1230, screw compacting press SCP-2013
Siofok, Hungary	EuroAszfalt Kft. (Colas Alterra Zrt.)	Mechanical treatment complex based on rake bar screens RKE, step screens RSK, screw screens RVO, tangential grit chambers PT-50 and PT-150, screw compacting presses PVOE
Vratca, Bulgaria	INDUSTRIAL PARTS Ltd	Mechanical treatment complex based on rake bar screen RKE, step screens RSK, screw conveyors KVE, tangential grit chamber PT-50
Appugarh, New Delhi, India	Appugarh Municipal WWTP	Rake bar screen RKE -2012
Bartoszyce, Poland	Wodociągowo-Ciepłownicza Sp z o.o. „COWIK" in Bartoszyce (Municipal WWTP)	Rake bar screen RKE
Jēkabpils, Latvia	Jēkabpils ūdens	Rake bar screen RKE-0509, screw compacting press SCP-2007
Shantha Ashram, New Delhi, India	Shantha Ashram Municipal WWTP	Rake bar screen RKE -1448
Manila, Philippines	Quingdao Municipal Construction Group Ltd	Rake bar screen RKE -0948

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