

# HUBER Multi-Rake Bar Screen RakeMax®



Reliable, sturdy travelling screen

- Very high screenings discharge capacity
- Low headloss
- Low installation height above ground level even in deep channels
- Very wide range of applications through innovative design options

## ➤➤ RakeMax®

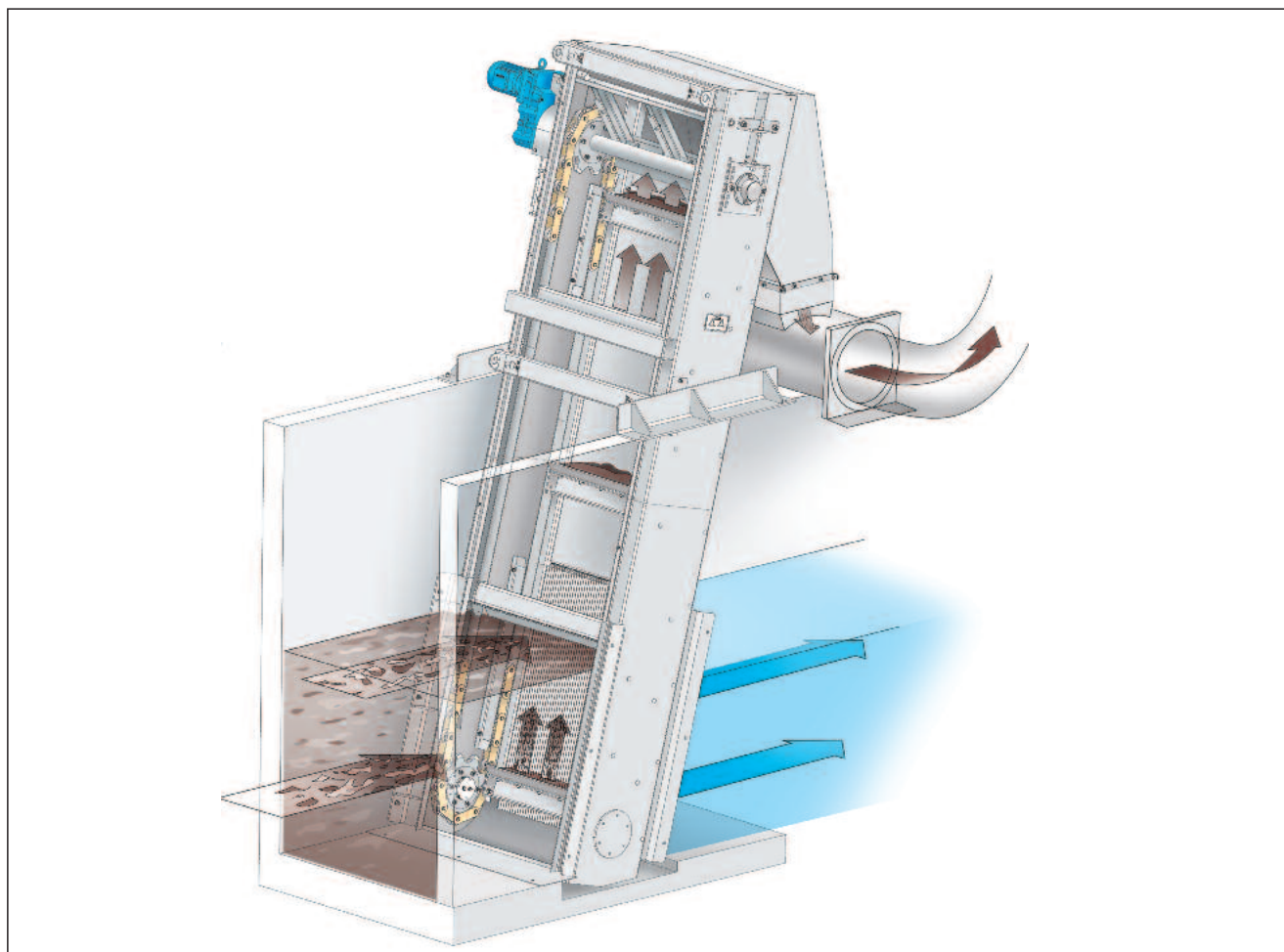
The HUBER Multi-Rake Bar Screen RakeMax® is perfectly suited to serve both municipal or industrial wastewater, and process water screening. The cleaning elements, attached to the chain system, can easily be adjusted to different requirements. As the cleaning elements can be variably adapted, the screenings removal capacity is then adjustable. This is especially favourable for high solids loads. The cleaning elements, consisting of the rake and comb plate, are screwed and thus independently replaceable.

Due to the specific design of the RakeMax® screen its height above floor is very low and, even in case of deep channels, only dependent on the installation height of the downstream screenings transport or washing system.

Both ends of the cleaning elements are connected to drive chains. Each chain is driven by a sprocket on a common shaft and a flange mounted gear motor. Furthermore, defined meshing of the cleaning rakes with the bar rack ensures high operating reliability. An electro-mechanical overload protection system (spring assembly with deflection monitoring) reliably ensures that the process is interrupted when the preset overload is reached, or in case of a blockage.

## ➤➤ RakeMax® J

The RakeMax® J screen is a modified version of the proven HUBER RakeMax® screen. In contrast to the standard RakeMax® design version, the RakeMax® J screen does not have straight bars, the screen bars are bent in the bottom section, i.e. curved towards the sewer base. It is also this special form of the screen bars which gives the screen its name as the letter 'J' has approximately the same shape as the curved screen bars. The screen rake moves along the curvature of the screen bars and describes a segment of a circle in this section. The flat inclination angle of the screen bars in the sewer base section increases the cross-sectional flow area of the screen with the result of reduced hydraulic losses and a reduced flow velocity in the gaps between the screen bars.



*Schematic drawing of the HUBER Multi-Rake Bar Screen RakeMax®*

## ➤ RakeMax® HF

The RakeMax® HF excellently combines the advantages of the well-proven RakeMax® with the positive properties of a screen with a bar rack that is installed with only a small inclination.

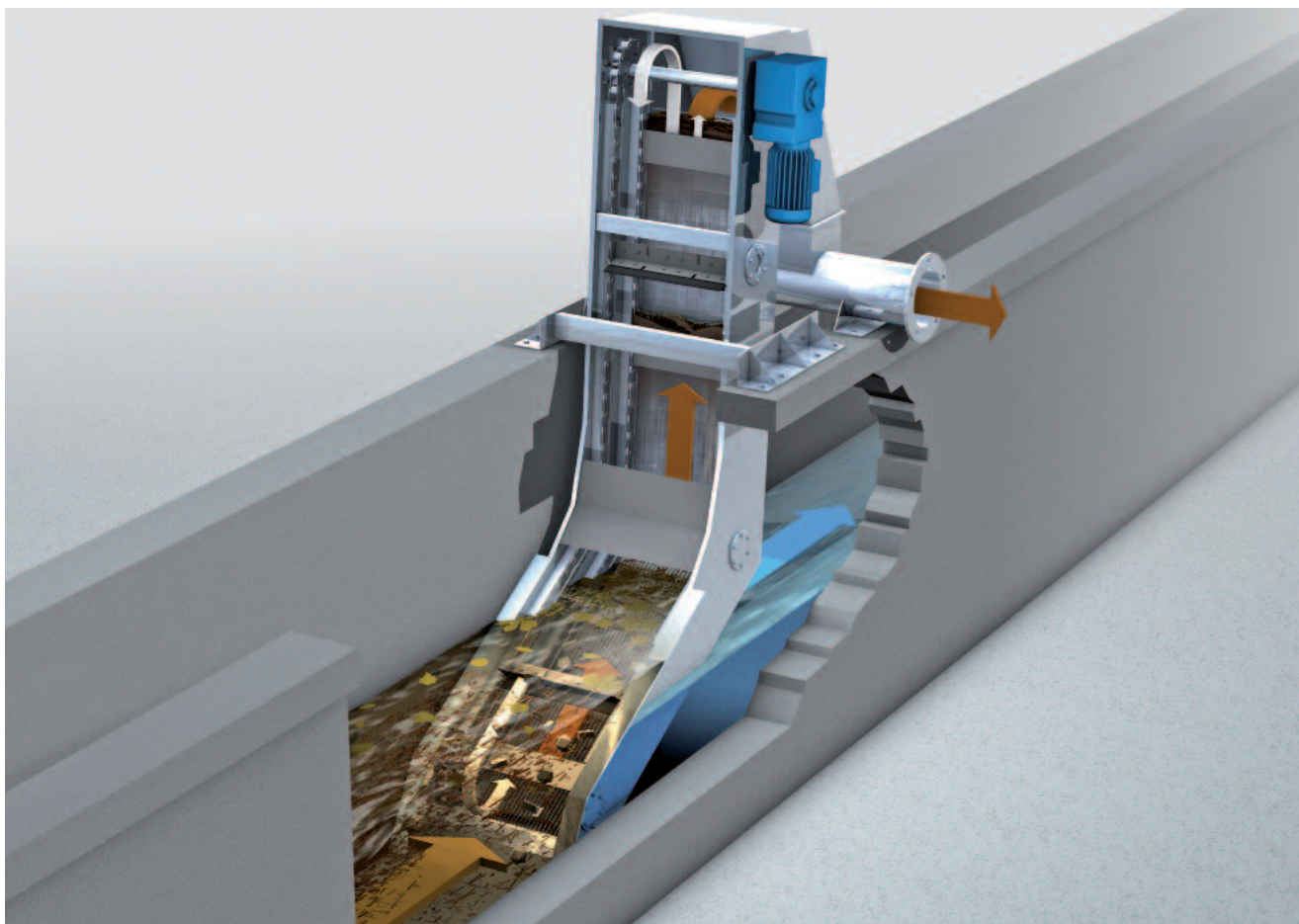
The RakeMax® HF has a L-shaped design with two different screen sections: The flat bottom section provides a large screening surface and favourable hydraulic conditions, the steep conveying section ensures screening on a small footprint.

Due to the extremely flat installation of the bar rack of 30° the screen section through which the flow passes is always double the depth of the approaching flow. Material removal from the screen starts virtually right at the bar rack mounted flat to the channel bottom so that any accumulation of disturbing material is eliminated. The optimal approaching flow conditions and large effective bar rack surface ensure a high hydraulic throughput capacity.

For further information, please refer to the separate brochure of the HUBER Multi-Rake Bar Screen RakeMax® HF.



*From the outside the HUBER RakeMax® HF is hardly distinguishable from a RakeMax® unit, the well-proven basic machine design.*



*The schematic drawing of the RakeMax® HF screen shows the transition from the flat bar rack providing favourable hydraulic conditions to the steep bar rack section.*



## ➤ RakeMax® Hybrid

The special feature of this type of screen is a bar rack that is manufactured from highly wear-resistant fibre-plastic composite which is manufactured in a special pultrusion process and, of a similar make, has proven its reliability in the field of aerospace engineering for many years already.

By adding materials like glass fibre or resins for example the profile bars are made suitable for applications with high mechanical loads and excel for their very high stability, deformation resistance and resistance to wear.

Due to their high breaking elongation and elastic energy absorption the profiles retain their shape even under mechanical load, are highly flexible and return to their original shape. They also excel with a very high production precision, size accuracy and form stability so that even smaller bar spacings can reliably be maintained.

Another advantage of the RakeMax® Hybrid screen are the individually replaceable screen bars for quick and safe handling without the need for welding work.

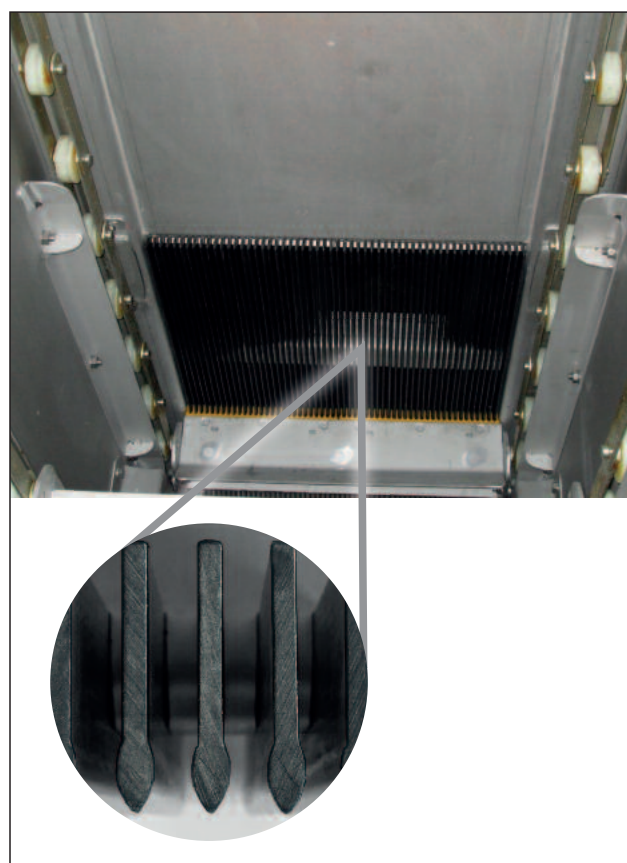
Another crucial functional element of a screening system is the profile of the screen bars. To prevent jamming of solids, especially with small bar spacings, and ensure the reliable removal of screenings, the bar rack of the RakeMax® Hybrid is of course also available with the well-proven tear-drop shaped bar profile.

The characteristic feature of this profile is a very low headloss. As a result, hydraulic throughput capacity increases compared to conventional flat steel profile or trapezoidal profile bars. This bar shape furthermore prevents jamming of solid material, such as gravel.

- Due to their high breaking elongation and elastic energy absorption the profiles retain their shape even under mechanical load, are flexible and return to their original shape.
- Very high production precision, size accuracy and form stability, reliable even with smaller bar spacings
- Individually replaceable GRP profile bars for quick and safe handling. Welding is not necessary to replace the bars.
- GRP material combines high stability and resistance with low weight and minimum maintenance requirements



*Multi-Rake Bar Screen RakeMax® Hybrid as fine screen with a machine width of 3.2 m*



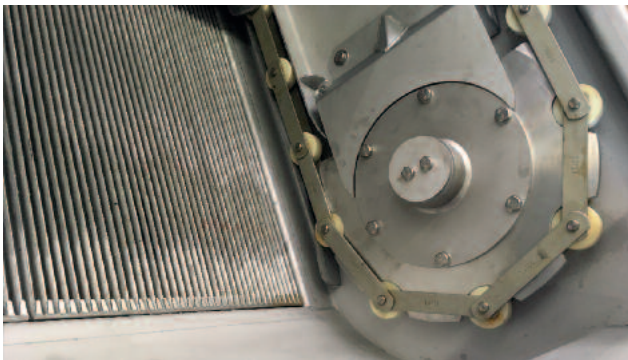
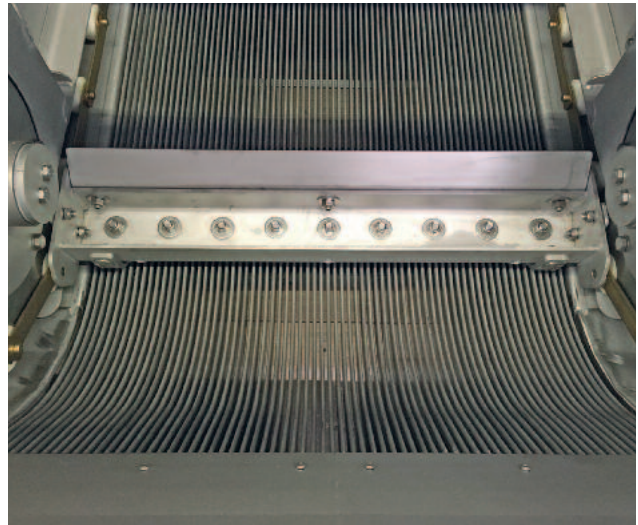
*RakeMax® Hybrid with tear-drop shaped screen bars – the well-proven, flow-optimising bar design*

## ► RakeMax® Features

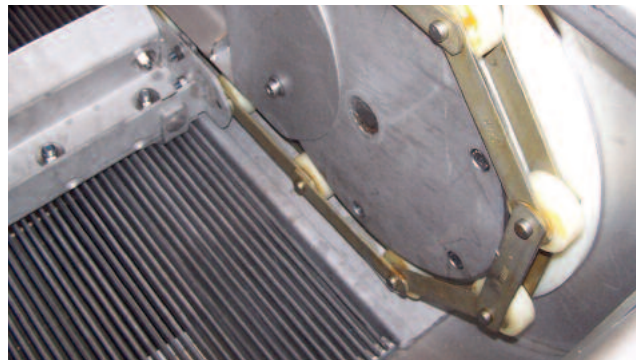
Due to its different design options the RakeMax® covers a very wide range of applications, allowing us to respond to the individual needs of our customers and to specific constructional and hydraulic site conditions. The special features presented here are only a selection of the possibilities the RakeMax® provides.

*Right:*

*The RakeMax® J offers extra high hydraulic throughput capacity and the advantage of screenings removal from the bar rack starting straight at the channel bottom, in addition to all the well-known benefits of the proven RakeMax®, i.e. reliable solids separation and high screenings discharge capacity.*



*Drive chain made of hardened wear-resistant steel or stainless steel of different qualities as suitable for the specific requirements. Irrespective of the design, wear-resistant and maintenance-free ceramic bearings are used.*



*A rigid chain return system can optionally be used instead of the proven ceramic bearing, without any bearings submerged in the water.*



*Screens with small bar spacings (here 6 mm) have specially shaped bars (tear drop design). The pressure loss is thus significantly reduced compared to flat or trapezoidal bars. The special bar shape prevents jamming of solids in the bar spacings. The screen proves thus its insensitivity to grit and gravel.*



*A control-independent safety system (torque compensator) reliably protects the screen against damage giving an electric signal. The specific design principle ensures high adjustability and continuous control.*



## ►► The benefits of the HUBER Multi-Rake RakeMax® at a glance

- Very low headloss – high separation efficiency
- Defined meshing of the cleaning rakes with the bar rack ensures a high operating reliability.
- Screen installation possible without a bottom step
- Compact design with a low installation height above ground level
- Completely odour-encased screen with easy to remove covers
- Easy-to-retrofit into existing channels, installation without channel recesses possible
- The screen consists of a self-supporting folded stainless steel profile so that it can easily be lifted out of the channel.
- Not hindered by gravel or grit
- Simple and easy-to-access chain tensioning unit
- All parts in contact with medium (except the chain, pinion, drive and bearing) are made of immersion pickled stainless steel, optional stainless steel chains and chain wheels.
- High screenings discharge capacity through adjustable cleaning elements
- Independently replaceable rake and comb plates
- Automatic scraper mechanism, no service water required

## ►► Installation examples



Universally applicable HUBER RakeMax® screen for big channel widths ...



... and big discharge heights

## ►► Screen sizes

Channel width: up to 4000 mm

Discharge height above channel floor: up to 20 m

Bar spacing:  $\geq 1$  mm

Installation angle: 50° – 85°

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