

# COUNTERFLOW COARSE AND FINE SCREENS

Simple, reliable and well established





# THE PROCESS

To suit your specific needs and process engineering requirements WERKSTOFF+ FUNKTION Grimmel Wassertechnik offers two different models of counterflow screens.

The GSR Counterflow Coarse Screen, which has proved its worth for many decades, is designed for the most efficient and reliable removal of course materials before they reach sensitive parts of the system, with a gap width of 15 mm (e.g. before reaching pumping stations, rainwater reservoir inlets or fine screens that receive substantial volumes), thus providing good protection for any subsequent componentry.

The GSFR counterflow fine screen is an innovative further development of this method. It can also remove finer material from the flowing waste water, as it has a minimum gap width of 10 mm.

In both units the removal of screenings from the grid is based on

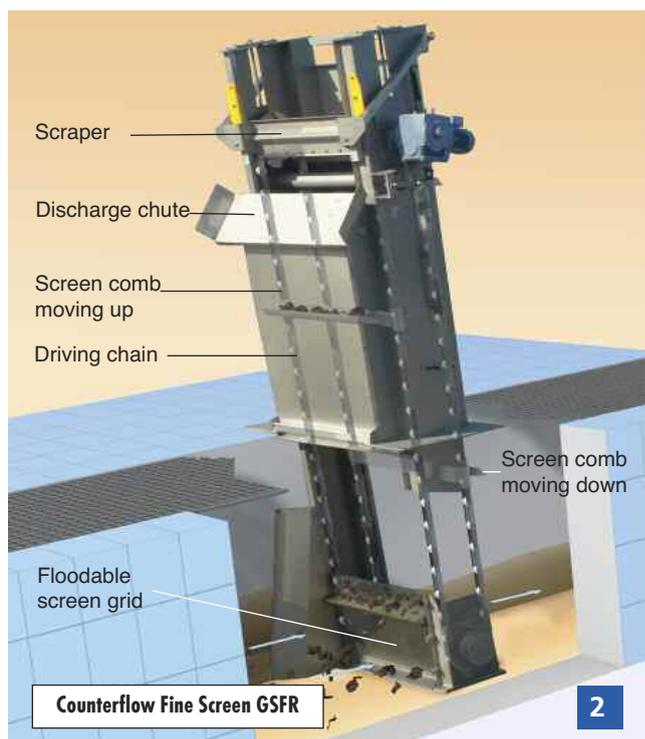
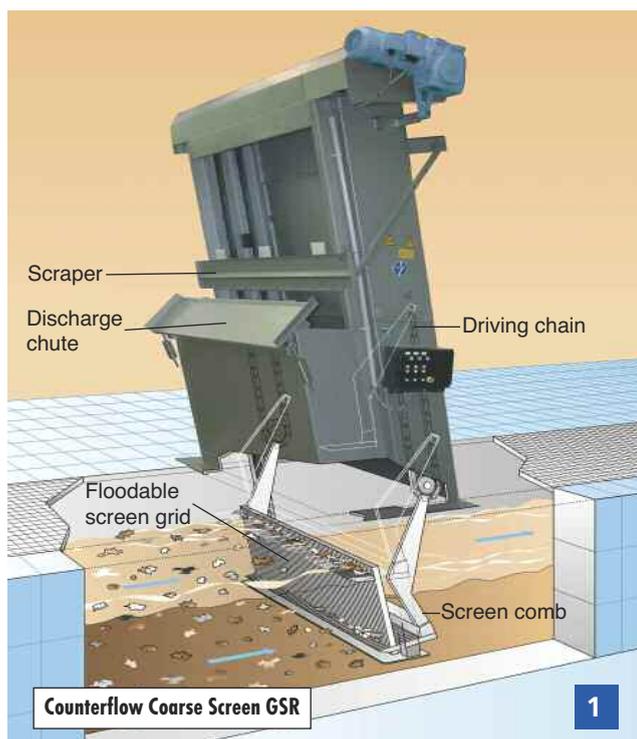
the counterflow principle. The screen comb moves in the opposite direction of the waste water as it flows into the screen grid which it cleans during its upward movement. This makes it impossible for screenings to squeeze through the grid or for course material to cause blockages between the screen comb and the grid.

The revolving movement of the screen comb on the GSR and of several screen combs on the GSFR is realised via two drive chains situated on the side of the screen housing. The screenings are removed by the screen comb(s) from the screen grid via a mechanical scraper. Before the screened material undergoes further treatment (e.g. wash press, conveyor, container, etc.), it passes through a discharge chute.

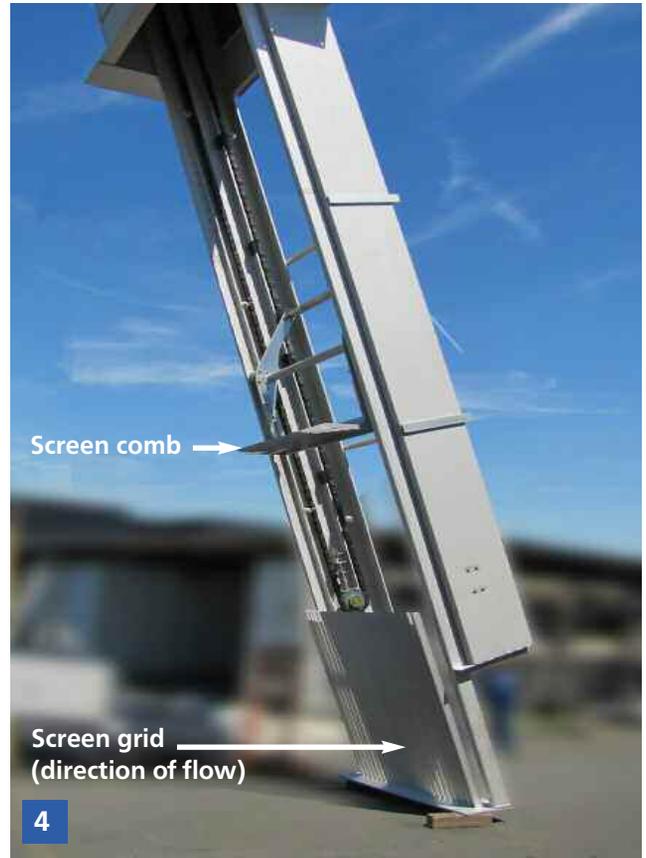
What these screening units makes so special is the floodable design of their screen grids and the positions of all their movable parts behind the grid in the pre-cleaned waste water.

The floodable open-top screen grid makes it unnecessary to use a complex emergency bypass. In the event of an accident the screen grid is simply flooded, thus warranting a continuous flow to the subsequent treatment processes. This feature also allows you to remedy an existing overburdened screening unit by adding a counterflow screen to its emergency bypass channel. Again, this safeguards the waste water inlet to the sewage plant.

The mechanical components (i.e. screen comb, chains and deflectors) which are required for the cleaning of the screen grid, are located on the "clean water side" and come *after* the grid, so that they are not touched by any of the course waste water materials *before* the grid.



# COUNTERFLOW COARSE SCREEN GSR



## Base

The base in both the GSR (Pic. 3+5) and the GSFR (Pic. 7) consists of a stable stainless steel frame, which is bolted onto the channel and has cover segments that can be removed one by one. Both units also offer the option of adding an enclosed discharge hood for air extraction / sanitation purposes. Moreover, they can both be adapted for outdoor use..

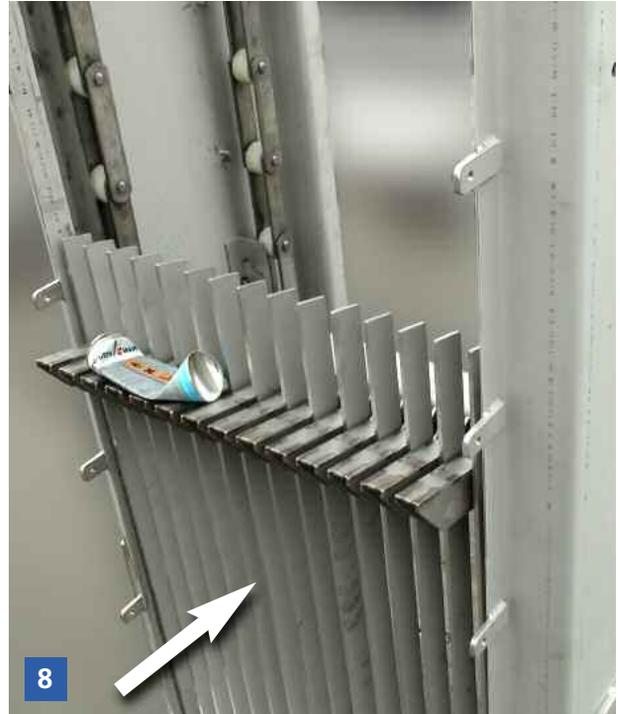
## Screen grid

In its regular design, the bars in the floodable screen grid are made from stainless steel (Pic. 6+9). However, for some applications the grid can also be made available with special profile steel. It is welded to a robust base plate and bolted onto the flat channel bed. The screen grid and its base are usually installed in the opposite direction of the waste water flow, and the installation angle of the grid is normally 75° in relation to the channel bed (Pic. 4).

## Screen arm/comb

The GSR only has one screen arm with a comb mounted onto the revolving bush conveyor chains (Pic. 4). The conveyor chains are usually deflected above the water level. However, the GSFR can also be equipped with several scraper combs, positioned on the revolving roller chains

# COUNTERFLOW FINE SCREEN GSFR



(Pic. 8+9). The removal capacity and thus also the hydraulic throughput volume are positively influenced by a higher number of scraper combs. In both units a scraper comb is continually in operation in the upper area of the grid while the screens are in the rest position. This to maintain consistent gap widths in the open-top screen grid (Pic. 9).

## Scraper

Situated on the base of the screen, both units have a scraper that can be lifted out and which has a discharge chute to send the screenings into a container or into a subsequent conveyor (Pic. 5+7+10).

## Drive

The double-sided chains that drive the scraper comb(s) are put into motion by a geared motor with a shaft and a chain wheel pair (Pic. 5+10). Motor current sensors are used to monitor the load. They have been coordinated to suit the drive unit and are integrated into the control system.



# GSR AND GSFR OPERATING CHARACTERISTICS

## General features

- No emergency bypass required, as the screen grid is floodable
- Operationally reliable and robust
- Parts which are in contact with waste water are made from stainless steel
- Maintenance-free bearings
- Automation upon request
- Maintenance-free drive unit with geared motor
- Easily accessible chain tensioning devices
  
- Long service life thanks to well-built, robust engineering and design
- All movable parts come after the screen grid
- Explosion-protected

## Special additional features of the GSR

- Chains and chain wheels are outside the waste water flow
- Simple bush conveyor chains are in use

## Special additional features of the GSFR

- Bars on screen combs can be replaced individually
- The number of scraper bars and thus the scraping intervals are variable and can be adjusted to suit prevailing circumstances

## Day-to-day experience

"... We found it hard to part with our IBO Counterflow Coarse Screen which had been in operation for 30 years..."

"... We didn't need to set up any emergency bypass and saved a lot of money on construction ..."

"... When we had a power cut, the water still continued to flow freely into the plant, but this time without flooding the inlet area. All that happened was that the screen grid was flooded..."

"... It was the only Counterflow Fine Screen we found on the market..."

"... It's often difficult to make it in time when the main screen develops a fault. The emergency bypass kicks in, the manually cleared screen locks up straight-away, and it all overflows. However, we've now installed a counterflow screen in the emergency bypass, and we've no longer got any problems."

"... It even works with big channel depths..."

"... And the machine even runs under very low temperatures..."

"... We've only had to tension the chain once so far. However, it wasn't an issue. It was a relatively quick job..."

"...Should the solids volume in the inlet ever increase, we can simply add more scraper combs..."

"The material, the workmanship and the robust quality of the equipment made it easy for us to decide for the GSR."

# DIMENSIONS

Abbreviations	Meaning	Counterflow Coarse Screen	Counterflow Fine Screen
CW	Channel width	up to approx. 2.500 mm	up to approx. 2.500 mm
CD	Channel depth	up to approx. 8.000 mm	up to approx. 10.000 mm
DH	Discharge height	up to approx. 3.000 mm	up to approx. 3.000 mm
SGH	Screen grid height	up to approx. 2.200 mm	up to approx. 2.200 mm
$\alpha$	Installation angle	75° - 80°	75° - 80°
GW	Gap width	15 - 150 mm	10 - 150 mm
Q	Flow capacity	4 m <sup>3</sup> /s	4 m <sup>3</sup> /s

