AMISCREEN
Sewage water retention system with integrated solid reject retention system
AMISCREEN products are combined sewer storage systems with stormwater overflow and additional cleaning element for coarse solid content, analogous to a rake or screen system.

The classical screen element for coarse material retention is relocated from the weir into the reservoir. The advantage: it is possible to create a much greater screen surface area irrespective of a defined, mostly short weir length. More screen surface area means an increase in openings with any given perforation. The flow rate decreases. It is reduced so much that the dirt particles only flow through the openings at a very low speed. The larger particles slide along the walls and are not pressed into the perforation. Therefore, they cannot clump together and clog the screen in a short time. This results in significantly less blockage.

An AMISCREEN storage sewer system allows individual perforations for the coarse material retention. These can be either round, square or slotted. A system with an 8 mm x 8 mm mesh will hold back 100 % of all dirt particles with a grain size of more than 8 mm. Moreover, particles of 4 mm grain size will be filtered out to 50 % and pollutants of 2 mm to 25 %.

Visible coarse material such as faeces or cellulose products in the receiving water or at the discharge point of the combined sewer overflows are therefore a thing of the past.

AMISCREEN sewage water retention system with perforated screen elements for coarse solid retention in the storage sewer
Functionality

Dry weather: In dry weather conditions, when the incoming flow is lower than the throttled maximum, the system operates as a normal sewage pipeline.

Filling: When the inflow exceeds the outflow throttle in rainy weather, the storage sewer is slowly filled. As the water level rises in the sewage storage chamber, at approximately 40% full, the water also flows into the screen elements. The flow rate through the perforations corresponds to the increase in the storage level in the sewer and is therefore extremely low.

Discharge: If the storage reservoir is completely filled, the sewer starts to discharge as the excess water falls over the weir. Coarse solid material in the combined water is held back reliably by the screen elements inside the sewage reservoir. The overall length of the screen system, the number and diameter of the pipes, as well as the size of the perforations are determined by and adapted to the projected amount of stormwater overflow. It is notable that the flow rate through the perforations remains extremely low, even at the maximum amount of discharge. The dirt particles are not pressed into the openings and the perforations are not blocked. The dirt particles slide or lie loosely along the pipe walls.

The sedimentation of suspended matter in the sewage reservoir is maintained.

Emptying: When the rainfall event is over, the storage sewer is slowly drained through the throttle device. The residual water in the overflow chamber flows through the screen elements in the storage sewer and thereby also removes any sticking coarse solid materials. After complete emptying, these solids are washed out into the sewer via the dry weather drain.
An AMISCREEN sewer storage system is in practical use in Winterberg, Germany.

Over a length of 42 m, 250 m³ of storage space is being created using Flowtite GRP pipes in nominal diameter DN 2800. The discharge amount at the stormwater overflow can be up to 700 l/s. With a conventional bar screen at the overflow, this would result in a flow speed of up to 0.75 m/s. Here, two perforated pipe systems with a nominal diameter of DN 700 were integrated over a length of 10 m. This resulted in the creation of an open screen flow area of 22 m².

This is 25 times greater compared to the conventional variant. Thus the emerging flow rate is reduced to a maximum of 0.03 m/s. This amount is well below the DWA recommendation for stormwater sedimentation tanks of maximum 0.05 m/s. Also, after several months of operation, a coating had only formed on the pipe segments but this is easy to rinse off. The results in practical application confirm low-maintenance use as a whole.

**Inspection and cleaning:** The pipe filters can be cleaned from the inside out with a flush hose and cleaning nozzle.
Why is AMISCREEN so powerful and low-maintenance?

In AMISCREEN storage sewer systems, there is an enormous screen surface area. On the one hand, this is the result of relocating the screen elements into the large storage reservoir and on the other hand, from their round tube shape. A 1 m DN 1000 pipe can already achieve a free flow area of more than 1.6 m². When integrated in pairs in an accessible, several metre long storage sewer, the result is a huge surface area that exceeds a standard screen on an overflow weir many times over.

An AMISCREEN system is constructed so that the flow rate through the perforations is lower than the flow rate in clarifiers of sewage treatment plants.

Despite a fine mesh perforation, coarse particles are not wedged in the gap and there is no associated build-up of a closed contaminant wall. A blockage of the screens is avoided.

The AMISCREEN system operates completely without any mechanical cleaning elements or other moving parts. It does not need an external power supply. Maintenance outlay is decreased to an absolute minimum.

The cleaning cycle of the screen elements is adapted to the overall system. In the basic system it is more than half a year and can also be also far longer.

System Advantages

- Huge surface area for screening, even with a small discharge element
- 100 % retention for defined filter sizes
- No increase in overflow and back pressure (ability to retrofit!)
- Works without external energy – no electricity or water connection necessary!
- No moving parts – no wear and tear!
- Completely corrosion resistant
- Storage chamber remains normally accessible
- Good self-cleaning properties of the storage chamber
- Simple cleaning of the retention elements
- Individual parts replaceable
- Cost effective
The construction and expertise of AMISCREEN are protected by patents. This booklet is intended only as a guide. All values listed in the product specifications are nominal. Unsatisfactory results may occur due to environmental fluctuations, variations in operating conditions or the interpolation of data.

We strongly recommend that users of this data have specialised training and experience in the use of these products and their normal installation and operating conditions. Before installing these products, engineering staff should always be consulted to determine the suitability of the products for the intended purpose and the intended applications.

We hereby declare the exclusion of any liability and the exclusion of liability for loss or damage resulting from the installation or use of the products listed in this manual, as we have not specified the degree of diligence which is required for product installation or maintenance.

We reserve the right to revise this data without notice as necessary. We welcome comments on this brochure.