

From the water catchment to the ecological treatment of the meteoric water : ROMAG solutions

Certified: ISO 9001 / ISO 3834-2

## CSO Screens - an introduction



Contaminated bank area



Instead, contamination residue in the screen (with comb movement deactivated)



The same point after installation of a ROMAG CSO screen (CSO = Combined Sewer Overflow)

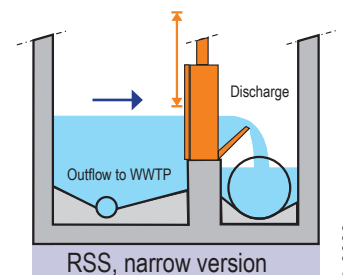
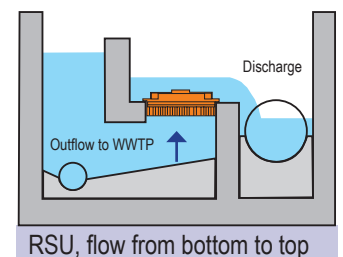
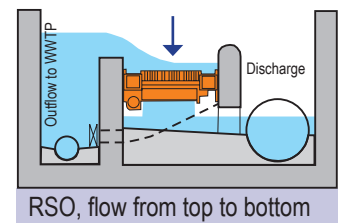
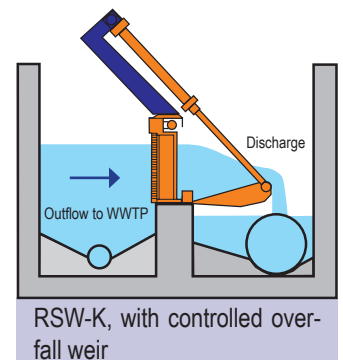
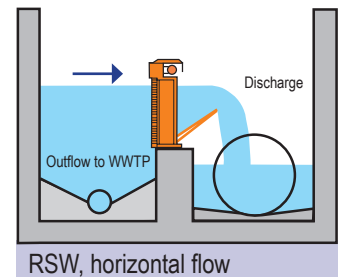
Where do the high contamination shares go in times of excessive rainfall or storm? On the ground or in the sewage treatment plant? Is this a question of expenditure, i.e. investment, or a question of choosing the right solution? The high-performance CSO screen system presented here is a low-cost, efficient solution. It is a system since all requirements can be met by a diverse variety of types of construction and sizes with one modular basic structure. How was this solution elaborated? When the Federal Office for the Environment (FOEN) investigated the question of CSO and SSO works, it quickly became clear that use of a CSO screen is far more efficient and environment-friendly than constructing large catch basins. It simply required further development of a screening technology. Of all the industrial companies invited, only the ROMAG company was interested and it has committed itself fully to this technology ever since. By the end of the first 6 years of introduction, 160 ROMAG CSO screens had already been installed in various countries. By late 2000, the figure had already reached 600. The technology was subject to ongoing further development during this period. The series of schematics at the far right shows five different types of application. The reason for this diversity relates to the fact that a CSO screen is very frequently

integrated in existing structures. This means that local conditions and situations need to be taken into consideration. Experience is necessary when selecting the right solution. And this is where ROMAG's services shift into gear. Always being on the lookout for new solutions, ROMAG is today a competent partner and advisor for the entire sector of water technology.

### Function

Basically, the effluent or sewage flows from the discharge culvert through the CSO screen into the relief sewer. The contamination retained in the CSO screen is cleared by a combing movement so that it is flushed with the sewage or effluent to the sewage treatment plant, and the shape of the comb rungs is very important in this respect. Depending on the type of works, the effluent or sewage flows horizontally, from top to bottom or from bottom to top through the CSO screen. It is important that operational reliability is ensured virtually with low maintenance. A controlled weir wicket, (Type RSW-K) is available for screens through which effluent or sewage flows horizontally, incidentally the most frequently used type of screen (Type RSW). This allows throughput to be rendered dependent on the volume occurring. This also allows conclusions to be drawn as regards the quantity relieved. There is a special, narrow screen (Type RSS) available for smaller sewers and culverts.

## Types of construction



## A comparison of investments

It is certainly interesting that the responsible Swiss Federal Agency has often halved the prescribed storage capacity per unit of drainage area in the catchment area when using a CSO screen. CSO screens are scheduled almost everywhere today for new projects. This dispenses with the need for complex and expensive structures for catch basins. Existing installations can be renovated very economically by installing a CSO screen. One important argument is certainly also that no additional building area needs to be created for such projects. Thus: the required investments for new or existing installations are far lower when using CSO screens.

## Installation of a CSO screen in an existing system

The ROMAG consultant engineer first establishes what type of screen is appropriate to the particular case. The optimum installation pathway is then established. Either the system can be installed throughs existing sewers or culverts or masonry openings must be made at an appropriate point. These can then be resealed or kept accessible.

Reference to further information: Separate information is available for each type of construction and for the description of the control system.

## Experience

Owing to the large number of projects implemented, ROMAG has a wealth of experience. The rugged design of the CSO screens, installation of all control elements in a dry chamber and operation of the moving parts by hydraulic cylinders mean that this CSO works requires virtually low maintenance. It is recommended to conduct a monthly visual inspection and verifications after exceptional rainfalls. This has also proven the best policy in practice. Reference lists are available.



RSW 5x7/4 screen in an enclosed basin outlet

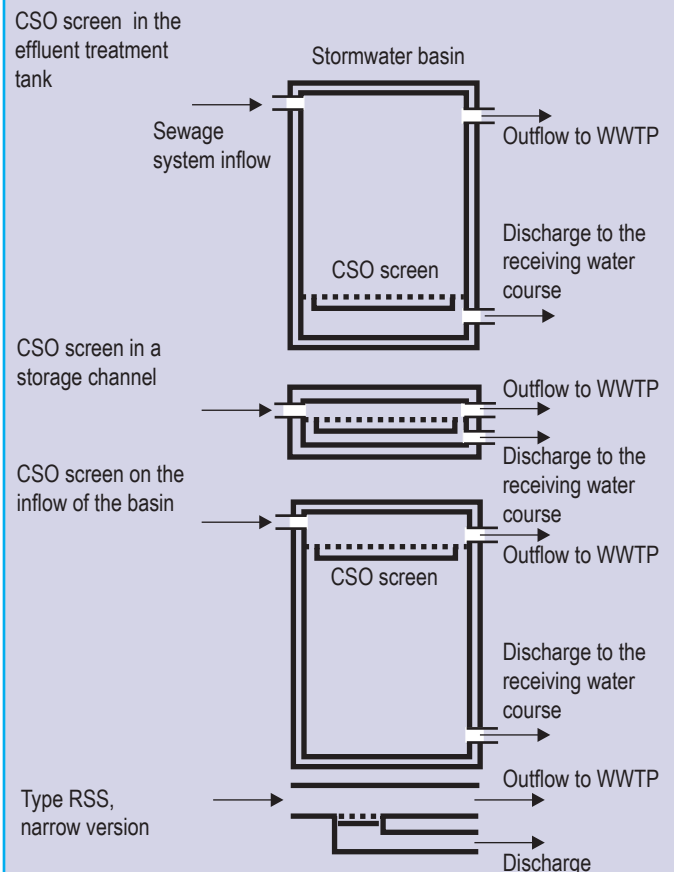


Screen admission through the outfall pipe



Installation of 3 CSO screens at the inflow channel of Geneva's WWTP

## Possible applications



Approximate data (varies depending on type of construction)

Length:	0.3 - 9.0 m
Width resp. height:	0.35 - 1.35 m
Flow rate:	52 - 6600 l/s
Electrical connection ratings:	400 V, 1.5 - 5.5 kW