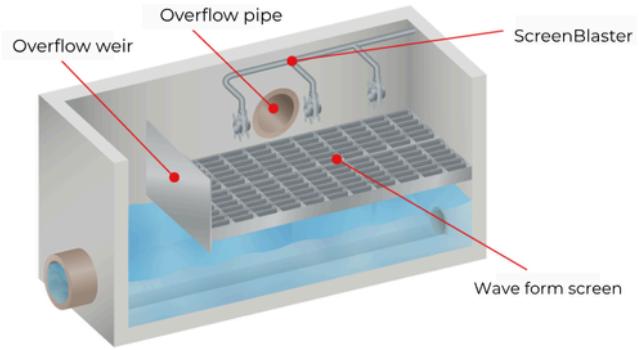
Cleaning Combined Sewer Overflow (CSO) Screens: Comparing Cleaning Methods

There are many types of screens used in the water industry. All of them need to be maintained and cleaned. Below, we look at and compare the three broad categories of screen cleaning systems in the water industry and the pros and cons of each. For simplicity, we will focus on the cleaning of static CSO screens, but the lessons here will apply to other types of screens as well.

Broadly, there are three types of screen cleaning systems: manual, fully automated and semi-automated.

Manual Cleaning

The screen will be accessed by people armed with hoses, brushes, scrapers and other cleaning equipment, typically wash-down hoses or pressure washers. Each screen site is visited and the screen inspected and cleaned.



Pros & Cons:

- **Cost** - it uses manpower, which ultimately means it is the most expensive method of cleaning.
- **Time-consuming** - the time it takes to travel to, open up and access the screens can be very wasteful. CSO screens can be located in remote areas, and gaining access may be problematic.
- **Not time sensitive** - the logistical issues above may prevent cleaning immediately after a storm, when debris is easiest to remove. Delays allow residue to harden, making cleaning more difficult.

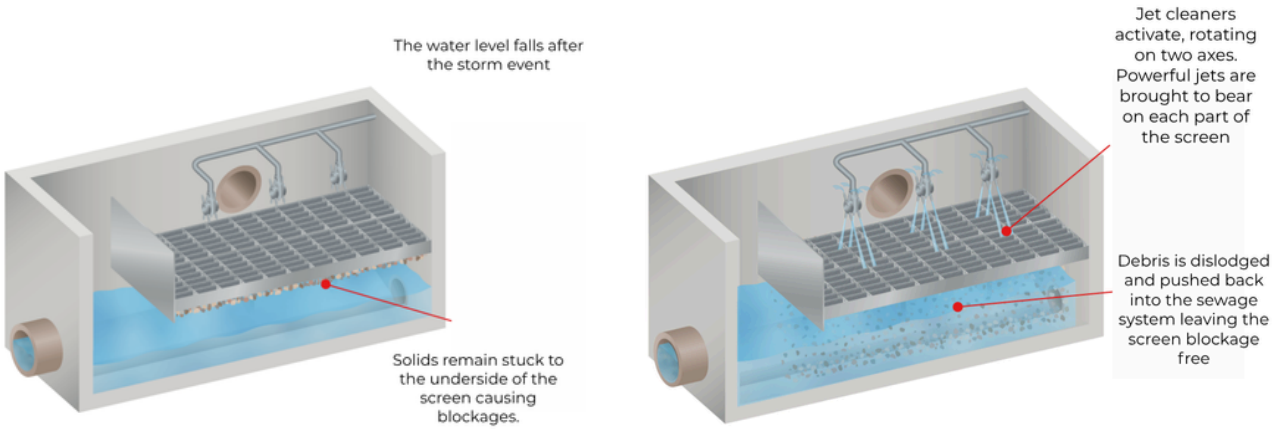
Automated Cleaning

A fully automated cleaning system will have permanently deployed washing nozzles or scrapers. These will be linked to a sensor indicating when the system should operate, usually shortly after a storm event ends.

A typical automated jet cleaning system includes a wash water storage tank, pump, control valves, sensor and control system to sequence the nozzles.

Pros & Cons:

- **High CAPEX** - these systems have an initial cost to install.
- **Much lower OPEX** - Once installed, the cost per clean is minimal.
- **Time sensitive** - such systems can be activated exactly when needed and at the optimal time, i.e. shortly after a storm event.
- **Utility costs** - might be difficult or expensive to provide power and water. Many of these sites are very remote and may lack both. Wash water cannot be drawn from the sewage system itself, as this will be too contaminated with particulates to clean effectively.



Semi-Automated Cleaning

A fully automated cleaning system will have permanently deployed washing nozzles or scrapers. These will be linked to a sensor indicating when the system should operate, usually shortly after a storm event ends.

While each site still needs to be visited, this eliminates manual cleaning and greatly reduces cleaning time. A jetting system typically takes only 10 minutes to complete its cycle. A mobile bowser truck simply connects, activates the pump, waits 10 minutes, then disconnects and moves on.

Pros & Cons:

- **Lower CAPEX** - no pump, control system or wash water tank is required, so installation costs are lower.
- **Medium OPEX** - people are still required for cleaning, but as each site can be cleaned more quickly, operating costs are significantly reduced. With the right equipment, 5–6 times as many sites can be cleaned in the same period.
- **Very robust / low maintenance** - with no on-site electrics or power, these systems are simple and robust. They require little maintenance apart from occasional inspections to ensure jet heads are working.
- **Time sensitive** - with good planning, can be performed at the right times. While not as flexible as fully automated systems, the increased cleaning speed makes it easier to schedule cleans at the optimal time.

Conclusions

Fully automated cleaning systems make economic sense for larger screens where water and power are available or can be installed without significant cost.

Semi-automated systems are a cost-effective solution for remote sites with poor infrastructure.

Manual cleaning should be a last resort, used only for very remote sites or where vehicle access for water bowsers is not feasible.

Why Partner with SNP for Screen Cleaning Systems

At The Spray Nozzle People, we specialise in supplying spray nozzles and tank cleaning heads. We do not provide whole CSO chambers or screens. Our expertise lies in advising companies of all types on nozzle selection.

We help design cleaning systems for industries including food processing, pharmaceuticals, chemicals and petrochemicals. This includes cleaning tanks, gas scrubbers, mist eliminators, conveyors and other surfaces.

The screens used in the water industry vary in design and size. Site conditions and available resources also vary. In short, screen cleaning requires a nuanced approach. A one-size-fits-all solution is unlikely to be effective.

This is where our expertise comes in. We have helped design cleaning systems for almost any conceivable situation, from small process components to vast vessels. Our Storm Blaster storm tank cleaning system is widely regarded as the most effective solution for cleaning stormwater attenuation tanks. We bring this experience to bear on the cleaning of screens in the water industry.

Our Screen Blaster system is an excellent choice for many screens, but we have a wide range of tools available. Talk to us about your screen cleaning challenges and we will help design an innovative and cost-effective solution for you.