



Water Filter Systems

## BASIN SWEEPER PIPING SYSTEMS

### REDUCE

Fouling  
Energy Costs  
Chemical Costs  
Maintenance  
Downtime  
Legionella Risk

### IMPROVE

Thermal Capacity

The purpose of adding a Tower-Flo® Filter to a condenser water system is to remove suspended solids. Bottom line, solids have to get to the filter or they don't get removed.

Choice of installation style is key to filter effectiveness (see [www.towerflo.com/installation.pdf](http://www.towerflo.com/installation.pdf)). When the installation choice is independent side stream (as Tower-Flo recommends), basin sweeper piping systems are often used to further improve filter effectiveness.

There are two halves to a basin sweeper piping system: 1) the piping system for return of filtered water around the basin to create a sweeping action; and, 2) the piping system for attracting solids to the filter's suction or supply. Of these two, much more attention seems to be paid to design of return piping, while little or no attention is given to design and placement of the filter's suction piping.

A pipe opening in the corner of the floor of the basin, feet away from the tower's condenser water outlet, has a very small area of influence and does little to attract solids to the filter for removal; the solids are headed towards the condenser water outlet, not the corner. If at all possible, a perforated suction header should be placed around or in front of the condenser water outlet to intercept solids, before they reach the outlet, with an invitation to go to the filter for removal.

In the absence of attention to the suction piping, all that is accomplished with the return half of the sweeper system is an elaborate agitation system that promotes movement of solids out of the basin, entrained in the condenser water, which will then accumulate at the next location of lower water velocity; the chiller, condenser, heat exchanger, etc. The basin may look clean, but the problem has simply been transferred to other machinery where it can have significantly greater detrimental impact on operating and maintenance costs.

The most important determinant to an effective sweeper piping system is the design and placement of the filter's suction piping. Bottom line, solids have to get to the filter or they don't get removed.

There is benefit to be gained by directing the return flow of filtered water through a piping system to help sweep solids from the perimeter of the basin or tank towards the filter's suction piping. It is very important, however, to establish reasonable expectations of such a basin sweeper piping system from step one, the filter sizing step. Define the filtration objective – "clean water" or "clean basin floor"? The "clean water" objective is a function of volume and turnover frequency, while the "clean basin floor" objective is a function of flow rate to surface area. Filter sizing to achieve a clean basin floor objective will typically require two to three times the filter flow rate necessary to achieve a clean water objective.

When the primary objective has been determined to be "clean water", the filter can provide a secondary benefit using a basin sweeper piping system, matched to the filter's flow rate, to return filtered water flow in a manner that works with the basin's flow dynamics to address it's most troublesome areas of silt accumulation.

When the primary objective has been determined to be a "clean basin floor", the sweeper piping system must be designed to distribute the filter's return flow in manner that works with the basin's flow dynamics to effectively address the entire basin surface area.

With either filtration objective, the most important determinant to an effective sweeper piping system is the design and placement of the filter's suction piping. Bottom line, solids have to get to the filter or they don't get removed.

**LESS**

suspended solids in cooling water

**IS MORE**

thermal capacity

**FOR LESS**

operating cost

**UNITED**  
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