



FILTER CHAMBER SIZING & ITS RELATIONSHIP TO SOLUTION CLARITY

IN ADDITION TO THE QUESTION OF IN-LINE OR RECIRCULATORY INSTALLATION OF A FILTER FOR YOUR SOLUTION, CHAMBER SIZING CAN MAKE A SIGNIFICANT CONTRIBUTION TO THE ECONOMICS OF THE FILTRATION PROCESS.

Chamber Sizing / Oversizing

Select a filter chamber for its solids holding capacity. The size and amount of dirt in the solution will determine the number of cartridges or surface area necessary, with one 10" (25 cm) cartridge (3.5 square feet), or 2/3 sq. ft. of surface for each 50 gallons (200 liters) of solution used as a rule of thumb. The flow rate should be 2 - 30 or more tank turnovers per hour on recirculatory filter systems, depending on the application and the clarity desired. Coarse media and high flows are desirable for high dirt load applications. Increasing the number of cartridges reduces solution flow per cartridge, improves efficiency and reduces cartridge consumption. Filter cartridge solids holding capacity is increased if flow rate (velocity) through each cartridge is decreased. Therefore, reduced flow rate or velocity through the cartridge

reduces the number of filter cartridges consumed by a given dirt load. Thus, when 2 cartridges per 50 gallons (200 L) are employed, cartridge consumption is reduced by 29% and when 4 cartridges are employed, cartridge consumption is reduced by 50 %.

Oversizing by a factor of 4 doubles the solids holding capacity per cartridge. Since the chamber holds 4 times the number of cartridges, the filter is opened only 1/8 as often, reducing the labor by 87-1/2% for cartridge changing. Increasing the size of your filter chamber is particularly worthwhile since most filter chambers are offered in larger sizes at only a slight increase in cost. Oversizing also results in a savings in downtime and prevents solution loss.

ECONOMICS OF FILTER CHAMBER OVERSIZING

Oversizing Factor	Number of Cartridges in Chamber*	Dirt Holding Factors per Cartridge	Time Between Cartridge Change	Cartridge Consumption/ Cost Reduced by:	Labor Cost Downtime/ Solution Loss Reduced by:
1	C	D	T	0	0
2	2xC	1.4D	3T	29%	67%
3	3xC	1.7D	5T	42%	80%
4	4xC	2D	8T	50%	87½%

For example...

using a 12 cartridge filter	instead of a 9 cartridge filter	reduces cartridge consumption by 13%
9 "	6 "	" 18%
6 "	3 "	" 29%
9 "	3 "	" 42%
12 "	3 "	" 50%
15 "	3 "	" 55%

* Based on average sizing [i.e. 1 - 10" (25cm) cartridge per 50 gallons (200 L)]