

Biotube® Effluent Filters

Established Performance

A good effluent filter prevents large solids from leaving the tank, greatly improving the quality of effluent and extending drainfield life. Orenco's Biotube effluent filters reduce total suspended solids (TSS) by about two-thirds. Orenco's data was used by Ron Crites and Dr. George Tchobanoglous in their leading textbook on decentralized wastewater systems, *Small and Decentralized Wastewater Management Systems*.



Biotube Effluent Filters reduce TSS by about two-thirds

Total Filter Surface Area vs. Total Flow Area

When comparing filters, consider both the total filter surface area and the total flow area. Total filter surface area is the total surface area of all the individual Biotubes within a filter cartridge. Total flow area is the total open area (area of the mesh openings) of all the individual Biotubes within a filter cartridge. See Table 1 for calculating surface area and flow area for Biotube effluent filters.

Table 1.

Biotube Effluent Filter Surface Area and Flow Area Calculations

Filter surface area (A_s) $A_s = \pi d \times L$

Flow area (A_f) $A_f = (\pi d \times L) \times 0.3$

where

d = diameter of filter tube material in feet or meters

L = total length of filter tube material in feet or meters

Example:

Orenco's FT0444-36 filter has 17.3 linear feet (5.3m) of 1.125in (28.6mm) diameter filter material. This equates to about 5.1ft² (0.47m²) of filter surface area. Since the flow area of a Biotube effluent filter is 30% of the filter surface area, you can find the flow area of the filter by multiplying the filter surface area by 0.3.

Because it prevents premature clogging, flow area is just as important as surface area. Figures 1 and 2 show that the total flow area of Orenco's Biotube effluent filters is typically 2 to 4 times higher than that of filters from other manufacturers, and sometimes much higher than that. This means Biotube filters can go longer between cleanings because the higher the total flow area, the slower the filter clogging process.

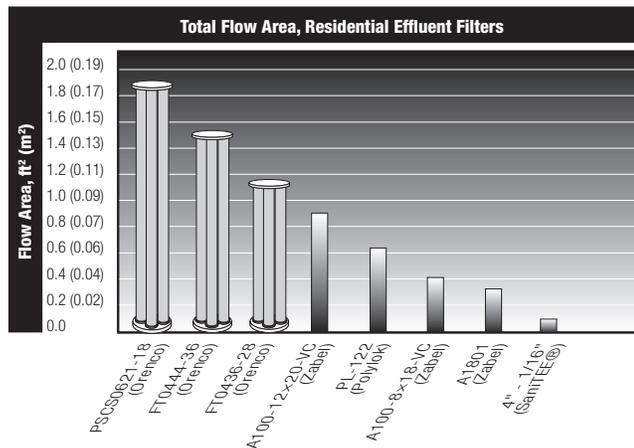


Figure 1. Total Flow Area for Selected Residential Effluent Filters

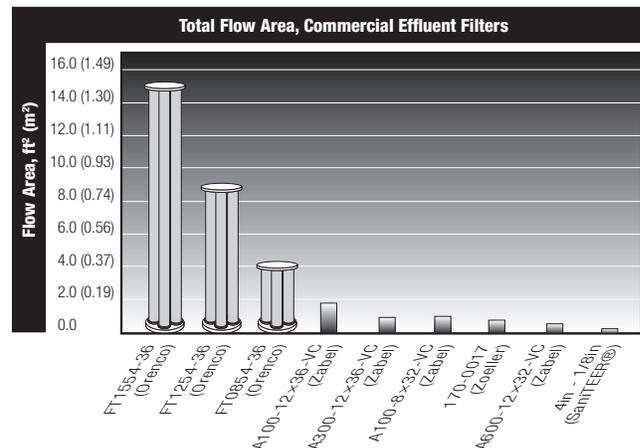


Figure 2. Total Flow Area for Selected Commercial Effluent Filters

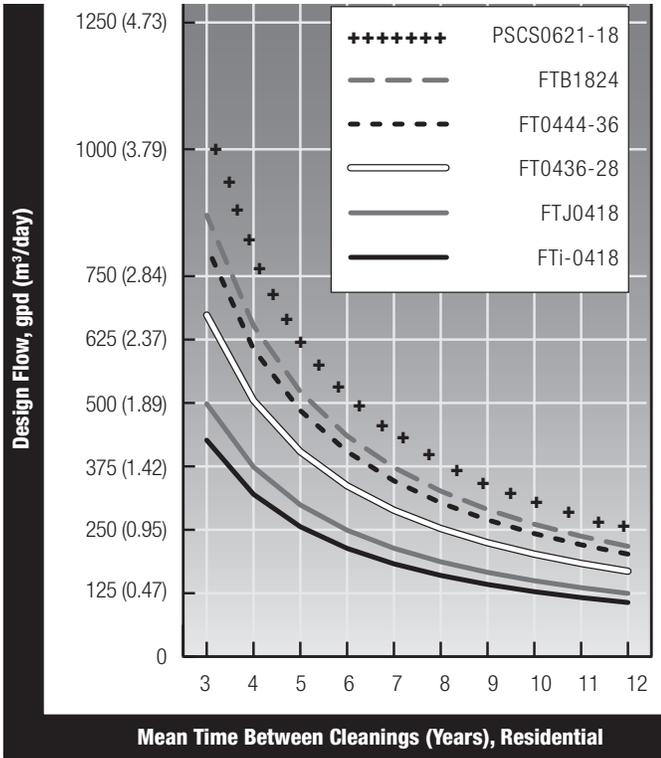


Figure 3. Mean Time Between Cleanings, Residential Biotube Filters

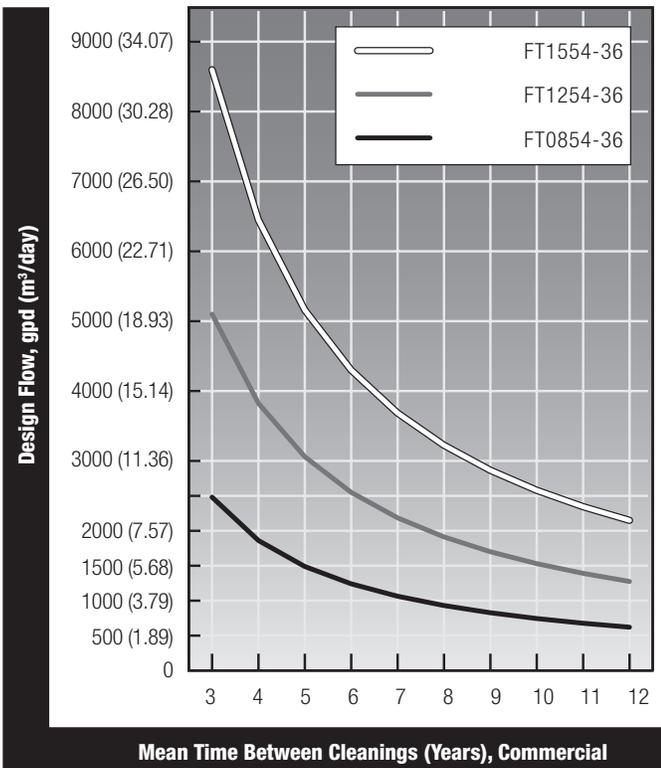


Figure 4. Mean Time Between Cleanings, Commercial Biotube Filters

Flow Rates and Cleaning Intervals

Flow rates for effluent filters have to be considered alongside service intervals. Not all filter manufacturers make this connection clear. Filters with very low total flow areas (which plug up easily) cannot handle high flow rates without frequent cleaning. Figures 3 and 4 show the relationship between Orenco's Biotube effluent filter models (residential and commercial), design flow, and the "mean time between cleaning." The larger the filter and the smaller the flow, the longer you can go between cleanings.

Based on maintenance records, we know that our standard 4in (100mm) FT0444-36 residential filter has an average maintenance interval in excess of 10 years, when used with typical residential flows.

Level of Filtration

A filter that provides a good level of filtration has a LARGE Total Flow Area to prevent premature filter clogging as well as many SMALL individual openings or holes to prevent the passing of biosolids.

Some manufacturers compare their 1/16in (1.6mm) slots to our 1/8in diameter (3.2mm) holes, hoping you'll assume that their slots offer better filtration. But the proof is in the reduction of Total Suspended Solids. Our field test data from thousands of installations using filters with 1/8in diameter (3.2mm) holes prove that our effluent filters reduce TSS by an average of two-thirds (and we also offer 1/16in diameter holes).

Performance Verification

Our new PSC06 (1/8in mesh) filters are NSF 46 certified. We also have long-term user data to show how well our effluent filters work over time.

Alarm Feature

Orenco's residential filters offer an alarm as an option.

Lifetime Warranty

Orenco's Biotube effluent filters come with a lifetime warranty when used in residential applications.