

Air Filtration - Lifetime Efficiency

University Medical Facility Performs On-site Filter Test to Discover Fine Fiber Media is Far Superior to Synthetic Media

Company Profile:

A leading private northeastern university and medical research, teaching, and patient care campus. Its four million square foot complex serves 52,000 patients per year and 110,000 emergency room visitors. With an annual budget of \$2 billion this institution ranks in the top 25% of all medical centers in federally funded research.

The Situation:

A Camfil Farr local distributor and regional manager conducted an educational session for the university maintenance and facility management personnel detailing the importance of filter lifetime efficiency and the poor performance risks related to electrostatically charged synthetic filter medias. In addition, the Camfil Farr MMT (Mobile Media Tester) was used to demonstrate the rapid efficiency loss of synthetic coarse fiber filters leaving the medical facility with air quality conditions below industry recommended guidelines.

The Action:

Since the medical center was using synthetic final filters they asked that Camfil Farr conduct an In-Situ test in multiple air handling units to prove our claims. Thus, two separate tests were set up. One test involved comparing Camfil Farr 95% Hi-Flo® fine fiber bag filters (24x24x22" 8 pocket) to Viledon 95% MF-90 bag filters. The second test compared Camfil Farr 95% Durafil® 4V fine fiber V-shaped final filter against 95% Viledon MV-90 coarse fiber (synthetic electrostatically charged) V-shaped rigid final filter.

The Result:

The Camfil Farr product proved far superior. In both cases, the tests scientifically demonstrated early loss of efficiency in real life use of the coarse fiber products.



After only eight weeks (12% of total lifetime of use) the Camfil Farr product was at 72% efficiency at 0.19" static pressure while the Viledon product was at 20% efficiency at 0.16" pressure drop. The Viledon product had dropped in particulate removal by 73% in the first two months of use.



“Coarse fiber product demonstrates early efficiency loss in real life use and performs significantly lower than Camfil Farr’s fine fiber media product.”

The Proof:

The Camfil Farr Hi-Flo® filter at initial start up had an efficiency of 92% on the 0.04 micron particles tested and a static pressure drop of 0.15". The Viledon product started at 93% efficiency at 0.16" pressure drop. After eight months (for filters that should be in service 12-18 months), the Camfil Farr bag filter was at 93% efficiency and at 0.16" pressure drop, while the Viledon bag filter had dropped to 40% efficiency providing air quality less than half the cleanliness of Camfil Farr.

IN-SITU TEST

Coarse Fiber vs. Fine Fiber MERV 14 (90-95% DS)

| In-Situ Test - University | | Product Test Data | |
|----------------------------------|-------------------|---------------------|-----------|
| 25 Filters (100% Outdoor air) | Mfr | Camfil Farr | Viledon |
| | Type | HF 95/24/24/22/8 | MF-90 1/1 |
| | Media | Fine | Coarse |
| Initial performance | ΔP (inWG) | 0.15 | 0.09 |
| | 0.4mm Eff. (%) | 92 | 95 |
| 8-week performance | ΔP (inWG) | 0.16 | 0.08 |
| | 0.4mm Eff. (%) | 79 | 50 |
| 8-month performance | ΔP (inWG) | 0.16 | 0.11 |
| | 0.4mm Eff. (%) | 93 | 40 |



IN-SITU TEST

Fine Fiber vs. Fine Fiber MERV 14 (90-95% DS)

| In-Situ Test - University | | Product Test Data | |
|----------------------------------|-------------------|-------------------|-----------|
| 25 Filters (100% Outdoor air) | Mfr | Camfil Farr | Viledon |
| | Type | Durafil 95 | MV-95 1/1 |
| | Media | Fine | Coarse |
| Initial performance | ΔP (inWG) | 0.18 | 0.15 |
| | 0.4mm Eff. (%) | 70 | 84 |
| 8-week performance | ΔP (inWG) | 0.19 | 0.16 |
| | 0.4mm Eff. (%) | 72 | 20 |
| 8-month performance | ΔP (inWG) | 0.22 | 0.17 |
| | 0.4mm Eff. (%) | 71 | 23 |
| 3-year performance | ΔP (inWG) | N/A | 0.25 |
| | 0.4mm Eff. (%) | N/A | 56 |

The Camfil Farr Durafil fine fiber V-shaped filter began at 70% efficiency at 0.18" static pressure and the Viledon MV-90 product at 84% efficiency at 0.15" pressure drop. Thus the electrostatic charge did give the Viledon product a higher initial efficiency as expected. However, after only eight weeks (12% of total lifetime of use) the Camfil Farr product was at 72% efficiency with 0.19" static pressure while the Viledon product was only at 20% efficiency with 0.16" pressure drop.

