

Air Filtration & Energy Savings

University Sees Proof of 24% Lower Energy Costs per Year with Camfil Farr Filter Versus Competitive Filter

Company Profile:

A well-known university located in the western U.S. established in 1875. The main campus is 560 acres including 311 buildings to serve 27,000 full-time students.

The Situation:

A Viledon® filter representative approached the university stating they could supply a synthetic media final filter that would last two years and not require a prefilter. A university representative called in Camfil Farr to validate the information and to request a side-by-side test against the proposed product. The Camfil Farr Distributor and Regional Sales Manager conducted a lifetime efficiency presentation (fine fiber micro-glass vs. coarse fiber electrostatically-charged synthetic media) comparing Camfil Farr product to Viledon. They also demonstrated a filtration Life Cycle Costing software for energy savings and total cost of ownership considerations. From there, the university asked Camfil Farr to set up an In-Situ test.

The Action:

40 filters from each manufacturer were installed in east and west air handlers in their Business Building. In one air handling unit (AHU), forty 24x24x12" Camfil Farr Durafil® V-bank 65% fine fiber final filters were installed. In a second AHU of equal airflow and outside air intake location, forty Viledon T-60 24x24x26" 8-pocket bag filters were installed. Airflow per AHU was run at 56,000 cfm. While the units normally operate at 40-70% fresh air intake for particle counting stability, the dampers were set to 100% recirculation during the days of efficiency testing. The test was run for 52 weeks with intermittent data collection and verification. Camfil Farr In-Situ test equipment was used and all tests were observed by the university staff and competitor's representatives. Tests were conducted in accordance with Eurovent 4/10 1996, In-Situ Determination of Fractional Efficiency of General Ventilation Filters. The tests were performed with no prefilters in place at the request of Viledon.



The Result:

The superior performance of the Camfil Farr fine fiber specially configured media proved itself far superior to the electrostatically-charged synthetic bag filter media both in efficiency and energy savings. After a 52-week analysis, the Camfil Farr product proved to save the customer \$14 per filter per year versus the Viledon alternative while delivering three times the air quality level.



“Specially configured media proves itself far superior to electrostatically charged synthetic media in efficiency and energy savings.”

The Proof:

After 52 weeks, the Camfil Farr final filter was at 33% efficiency on 0.3 micron particles (delivering almost two and a half times the level of air quality) versus the Viledon®'s efficiency of 15%. The Camfil Farr filters maintained a higher efficiency than Viledon for every particle size range tested. The Camfil Farr filters were operating at less than 1" in static pressure drop, and at 40% lower resistance than Viledon, leading to substantial energy savings.

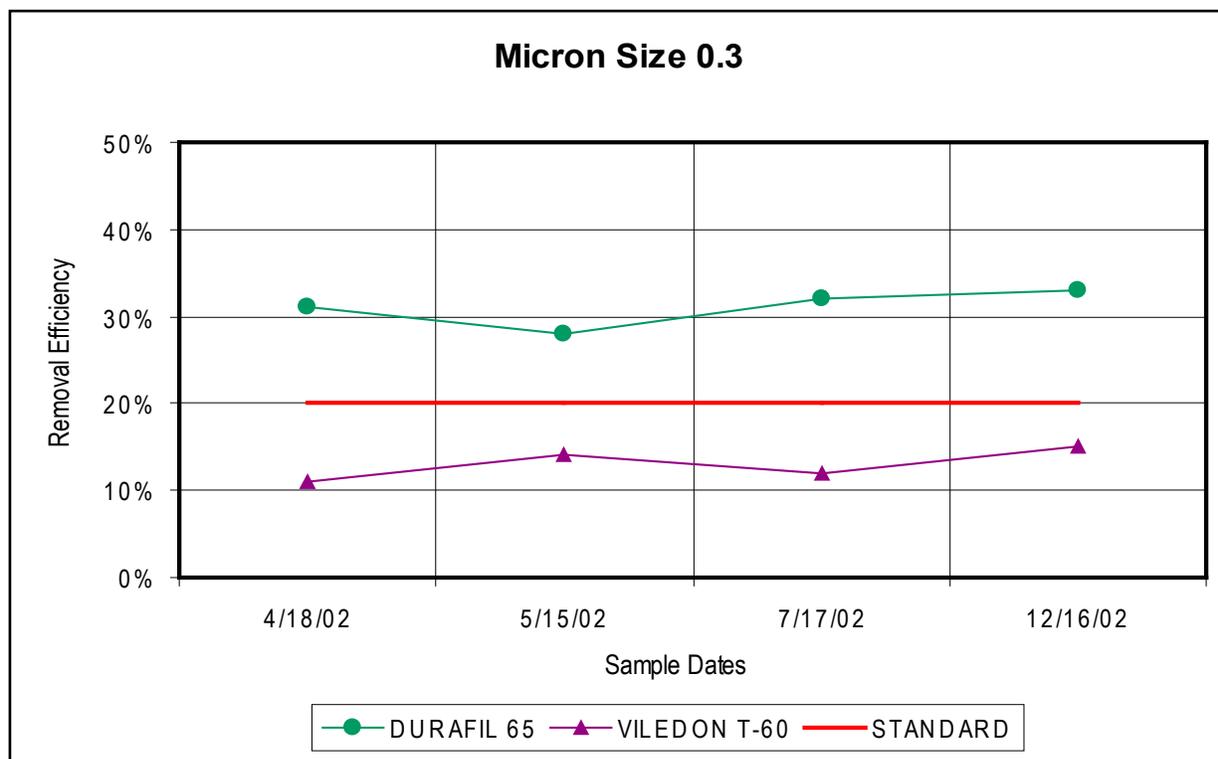
A Life Cycle Costing (LCC) analysis proved the Camfil Farr Durafil filter operated at a 24% lower energy cost per year than the Viledon T-60. The Camfil Farr product would save the customer \$14 per filter per year versus the Viledon alternative.

The Viledon T-60, like the majority of synthetic media filters, relies on an electrostatic charge to maintain efficiency. Viledon and other manufacturers of synthetic media filters propose that their filters will maintain efficiency when the charge dissipates due to an increase in mechanical efficiency resulting from a build-up of dust. While this holds true over the several hours of loading in an ASHRAE test, it doesn't hold true in real-life applications where loading takes place over longer periods of time.

In this test, the Viledon filter (and synthetic media) was given every opportunity to show sustained efficiency over time. The 85% efficiency filters formerly used in another building were replaced with 65% filters for this test. This should have made the efficiency results for the synthetic filters look better because 65% synthetic filters rely less on the electrostatic charge than higher efficiency synthetics (the efficiency of 85% synthetics would have fallen farther).

At the request of the Viledon representative, the prefilters were removed for the duration of the test. This might have caused the synthetics to load up with dust faster and achieve the bridge to mechanical efficiency sooner, but despite this potential advantage, the efficiency of the Viledon filter was well below industry standards for 65% filters. The Viledon filter did not recover over the one year test period.

The Camfil Farr Durafil 65, on the other hand, maintained an efficiency well above the standard for the entire test period. Glass micro-fiber media does not require a charge to maintain a mechanical efficiency at any efficiency rating from 65% to 95%. The Durafil filter also has a lower overall static pressure loss and a higher dust holding capacity.



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