

Air Filtration - Total Cost of Ownership

Global Chemical Company's R&D Facility Discovers Annual Savings of \$300,000 in Reduced Filter, Energy, and Labor Costs

Company Profile:

Fortune 500 global chemical company with nearly 2,000 scientists and researchers. The company pursues opportunities for global markets including agriculture, nutrition, electronics, safety, protection, coatings, and performance materials.

The Situation:

A facilities engineering consultant was tasked with delivering annual energy savings based on quantifiable financial returns.

The Action:

The current supplier and Camfil Farr were asked to provide their best filter solution to meet site efficiency requirements of MERV 13 while delivering the lowest Total Cost of Ownership (TCO). The incumbent supplier provided Purolator® Dominator® rated at MERV 15, AAF VXL rated at MERV 13, and Flanders® Super-Flow® V rated at MERV 13. Camfil Farr supplied the Durafil® ES rated at MERV 13. The four air handlers had common air intake plenum and the same runtime and airflows during the 8-month study.

The Result:

The in situ test demonstrated that Camfil Farr's 30/30® and Durafil ES delivered the rated MERV 13 efficiency with the lowest average pressure drop. All others delivered the rated MERV 13, except for the Purolator product, which delivered an estimated MERV 11. As a result of drop in efficiency, the Purolator Dominator was prematurely eliminated from further testing after six months in service. (The Purolator Dominator dropped from rated MERV 15 to estimated measured MERV 11 after 6 weeks in service.)

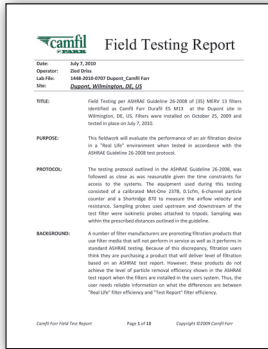


After 32 weeks in service, the 30/30 and Durafil ES combined pressure drop was .48", the 30/30 and AAF Varicel VXL pressure drop was .75", and the PerfectPleat® and Flanders Super-Flow V pressure drop was .58". Results were verified by the site energy consultant who, for cross-verification purposes, ran simultaneous tests on the same four air handling units. The site consultant determined they would save approximately \$300,000 per year in reduced filter, energy, and labor costs by using the 30/30 and Durafil ES filters.



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The Proof:



The fieldwork evaluated the performance of an air filtration device in a "Real Life" environment when tested in accordance with the ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Guideline 26-2008 test protocol. The ASHRAE Guideline 26-2008 is used to estimate filter performance per ASHRAE 52.2.

Using this method, the Durafil® ES MERV 13 met the MERV 13 rated efficiency. The 30/30® MERV 8 and Durafil ES MERV 13 use fine fiber technology and thus filter efficiency is maintained throughout the service life of the filters.

Filter manufacturers commonly promote filtration product efficiency based on standard ASHRAE testing and not true filter performance while in service. The chemical producer learned from the "Real Life" field study, that the filters being evaluating (with exception to the Camfil Farr filters), did not achieve the level of particle removal efficiency shown in the ASHRAE test report when the filters were installed in their system – hence, the difference between "Real Life" filter efficiency and "Test Report" filter efficiency.

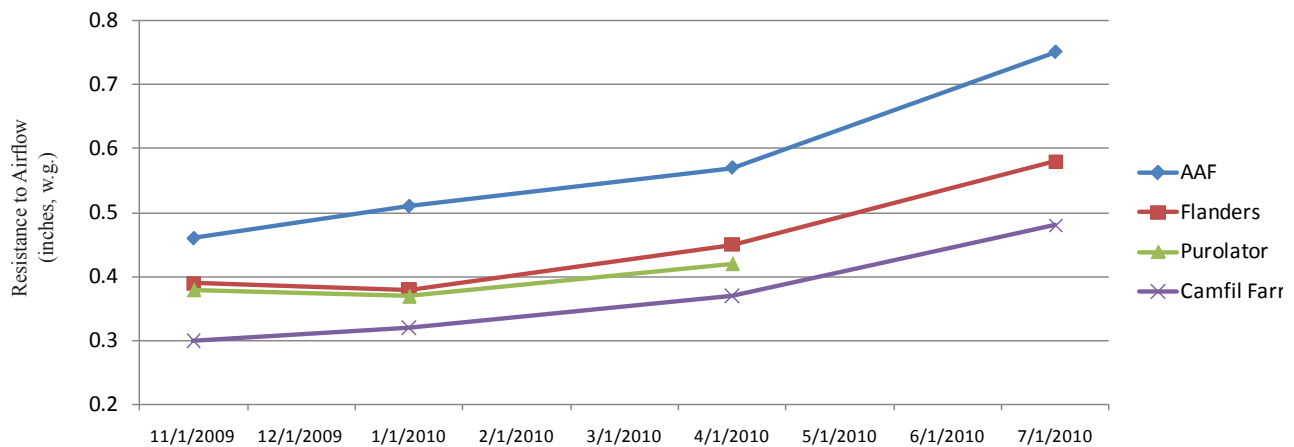
The Camfil Farr 30/30 and Durafil ES MERV 13 met and maintained the rated efficiency and sustained the lowest resistance to airflow amongst all the tested filter banks.



▲ Upstream



▼ Downstream



Through eight months of operation, one filter failed completely and two others increased in resistance significantly. The Camfil Farr product maintained low pressure drop which translates into major energy dollar savings for this end user.