case STUDY

FOOD & BEVERAGE

Air Filtration - 30/30® Panel Filter Lasts Longer

Food Retailer Sees Firsthand Proof of How the 30/30 Filter Can Provide Them Substantial Savings Corporate-wide

Company Profile:

One of the nation's largest, independently-owned food retailers with more than 300 stores throughout Texas and sales in excess of $12 billion dollars.

The Situation:

The retailer was changing their existing filters based on pressure drop every two months. A regional Camfil Farr agent dealt with several of the retailer's store chains in his local area convincing them to convert to the 30/30 panel filter. As a result, the stores ended up extending filter life to four months. With only a handful of the stores using these filters with double the life, the local agent was determined to prove the 30/30 financial benefit corporate-wide.

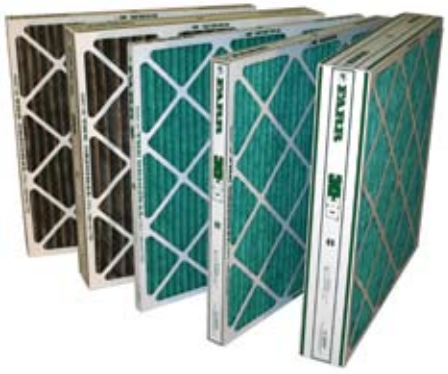
The Action:

Camfil Farr began doing test banks with some of the other stores to convince the corporate office to have all stores convert to the 30/30. Through a minimum of six test banks, without failure, the 30/30 lasted a minimum of twice as long as the competitive filters. Unfortunately these successful tests did not make a loud enough case to be heard by the corporate purchasing managers.

So after 18 months of test bank trials, the decision was made to send the Camfield Mobile Lab to the San Antonio Corporate office and prove once and for all which filters provide the best value for the retailer's business. The filters tested were a 2" MERV 8 Dustlock Pad in frame and the 2" and 4" high capacity off-brand filters called Enviroshield®. To make things interesting, the retailer's corporate decision makers requested that the keys to the lab be handed over to allow them to install the filters. This way nobody would know which filters were in which duct until a winner was declared. There was no hesitation in responding to the request because there was no doubt who the winner would be. It was a matter of which competitive filter would fail first and how soon it would occur.

The Result:

After two months of testing, the 30/30 had a 50% advantage on pressure drop compared to the Dustlok® Pad in frame and the 2" Enviroshield HC. The 30/30 ran neck-and-neck against the 4" Enviroshield HC. While holding a low pressure drop at 2-1/2 months, the 30/30 configuration advantage was apparent as the two Enviroshield HC pleats collapsed due to the weak frame structure and poor configuration. The Dustlok Pad in frame had obvious particle breakthrough along with a much higher pressure drop than the 30/30.



"On-site mobile filtration lab results prove the 30/30 filter maintains a lower pressure drop and holds up longer ."

The Proof:

Filters were installed in the CamField lab for continuous operation in 100% outdoor air. The lab contains 4 separate test ducts with independent fan systems. The airflow of each system is controlled by a feedback control system monitoring the resistance to airflow from a calibrated orifice plate installed in each air stream. Airflow is adjusted with a signal to the variable frequency drive on each fan motor. The airflow was set to a prescribed level (same for each product tested) and continuously monitored throughout the test.

The filter resistance to airflow was continuously monitored and all data was recorded via a data logger. The resistance to airflow was monitored with upstream and downstream static pressure probes installed in locations consistent with industry laboratory guidelines. The filter efficiency was calculated based on the particle counter readings taken at the prescribed period.

The airflow resistance was monitored over the length of the study where initial, average, and maximum values were evaluated for each duct, and estimated life was determined. Based on this data, the energy and total annual cost per filter was calculated.

Location	Initial resist. "wg	Avg resist. "wg	Max resist. "wg (74days)	Est'd life (days)	Cost of energy /yr/filter	LCC per filter/yr
Duct 1	0.14	0.35	1.57*	74	$128	$157
Duct 2	0.18	0.23	0.29	180	$58	$89
Duct 3	0.13	0.21**	0.77*	74	$54	$93
Duct 4	0.32	0.48	0.62	140	$108	$125

** Duct 1: Filter failed @ 1.57"wg; Duct 3: Filter failed @ 0.77"wg*

*** Duct 3: Average resistance appeared low. This filter had a rapid increase in resistance to airflow and failed prematurely. The premature failure enabled the "average resistance" to remain lower than it should have been with a normal life span.*

Efficiency measurements were taken every 11.5 hours for the time the filters were in service. The four test filters showed efficiency improvements as they loaded with dust, but the filter in Duct 2 exhibited a clear efficiency advantage, starting out and remaining higher than the other three ducts. Duct 1 began low, showed an increase as it loaded with dust, but then dropped in efficiency around 70 days into the test. Duct 3 exhibited the lowest efficiency averages of the four ducts. It also showed an increase in efficiency as it loaded with particles, but began to peak out and decline around 60 days. Duct 4 peaked around 45 days and declined in efficiency over all three channels.

The filter in Duct 2 appeared to have a clear advantage over all of the other filters in the test. The Duct 2 resistance to airflow remained low throughout the test, which shows this filter has a long service life and very good Life Cycle Cost (LCC) for the user. (LCC is an analytical tool for determining the most cost-effective filtration solution that factors in long-term costs of a specific filter.) In addition, the Duct 2 filter had the highest efficiency of the products tested. Thus, this filter offered the lowest operating cost and the highest Indoor Air Quality.

Although the filters in Duct 1 and Duct 3 had close efficiencies, there is a clear failure after only 74 days of service. This premature failure would result in higher maintenance costs due to unexpected change outs. The filter in Duct 1 would have the highest energy and total estimated cost because of the rapid increase in resistance and more frequent changes. The filter in Duct 3 seems to have a low energy cost, but the "average resistance" exhibited by the filter is lower than it would be for a normal life span due to the failure after 74 days of service. The filter in Duct 4, although it had a fairly long estimated life based on the field data, lost any advantage with its high resistance to airflow, which made it more costly over the course of its service life. The filter in Duct 2 appeared to be superior in terms of resistance and efficiency, and seemed to be the best choice in terms of cost.

CamField Lab interior - four separate test ducts