case STUDY

PHARMACEUTICAL

Air Filtration & Energy Savings

Energy Cost Savings were Imperative for the Pharmaceutical Manufacturer and Camfil Farr Filters Surpassed the Expectation

Company Profile:

Multi-billion dollar, global pharmaceutical manufacturer.

The Situation:

North American Bio-Pharma manufacturers are faced with stiff competition to keep manufacturing jobs at home. The higher costs of living in the 'Pharma Capital' of the world in the North East is driving manufacturers to reduce costs.

This particular campus has 900 air handling systems in one site. They have a team of full-time employees dedicated to changing filters. The systems are typically located in the most difficult to reach places and require a controlled project management program to ensure filters are changed without disrupting the 24/7 production.

The Action:

Camfil Farr already has 90% of the HEPA business where standardization was implemented on the Pharmaseal® and Megalam® panel filters some years back. This particular member of 'big pharma' had an HVAC filter contract in place for several years with a competitor. Coarse fiber (synthetic) bag filters and pleated panel filters were the majority of the filter combinations in the systems on site. The challenge was to demonstrate to the engineering team that the Camfil Farr 30/30® (radial pleat design) and the Hi-Flo® bag filter with unique tapered stitching would increase life and reduce energy.

A year-long study following an accepted on-site test was conducted. Efficiency and pressure drop data were collected monthly. Early in the test, it was evident that the coarse fiber filters were not performing as published. During the test, the customer informed the current vendor that a coarse fiber filter was no longer acceptable.

The Result:

The prefilter tests demonstrated the 30/30 was 'best in class,' surpassing six months in a tough outdoor environment while competitive filters collapsed. The current policy was to change prefilters four times a year and final filters once a year. The 30/30 would easily achieve six months, but the site decided to change the filters three times a year. "Even though the 30/30 showed reduced energy costs, their procurement and engineering team calculated that for every additional $1 spent with Camfil Farr, over the competitor, the customer would save $14 in labor charges."

"Tests demonstrated the 30/30 to be 'best in class,' outperforming the competition while sustaining its structural integrity."

The Proof:

Only five months into the testing, the data demonstated obvious benefits of Camfil Farr products over the competition. In all cases, the Camfil Farr filters showed higher efficiency performance, which will deliver better indoor air quality and will enable the downstream HEPA filters to last longer.

The resistance to airflow passing through the filter is the highest expense of operating a filtration system. The Camfil Farr 30/30® tested normal (resistance increased when airflow increased); whereas, the Purolator® filter showed possible structural weaknesses.

The Camfil Farr filters outperformed the Purolator filters in the lab and in the field testing. In the field testing, the efficiency of the prefilter and final filters could not be individually measured, but the overall efficiency could be measured. The field testing showed the Camfil Farr products have 10-14% higher efficiency for particulate below 1.0µm in size. Given that 99% of all particles in the air are below this size, the Camfil Farr filters provide better IAQ and protect the expensive HEPA filters downstream from smaller particles.

Normally, the end user changes the pleated prefilters every three months. Proven through the trial, the Camfil Farr 30/30 will hold up to a six-month service life with no structural problems and deliver high efficiency throughout the service life. The Purolator filter could only be left in place for the current three-month interval without risking product failures.

The efficiency data from the field and from an independent test lab showed that even though both Camfil Farr and Purolator market the same efficiency, in both the prefilters and the final filters, the Camfil Farr products exceeded their literature values by one level. The Purolator final filters met their stated efficiency, but their prefilter performed below the literature value.

Based on the field data, using the Camfil Farr products will save the end user approximately $1,300 per year for one building's AHU. This does not take into account the option to specify a slightly lower efficiency Camfil Farr product to further increase the savings. Even with the lower efficiency Camfil Farr products, the efficiency is approximately 30-40% higher than the typical field performance of the electrostatically charged media currently in use.

Data Table - Efficiency (%) and Statistical Uncertainty (%) Values by Particle Size (µm)

	Camfil Farr: 8 Pocket 85% Bag, HF-85/24/24/22/8 – Air Laid Glass Media						Purolator: 10 Pocket 85% Bag, SP8510-4422 – Air Laid Glass Media					
Size (µm)	Test 1 09/13/05		Test 2 11/15/05		Test 3 02/09/06		Test 1 09/13/05		Test 2 11/15/05		Test 3 02/09/06	
	Eff	Unc	Eff	Unc	Eff	Unc	Eff	Unc	Eff	Unc	Eff	Unc
0.4	65.7	1.17	54.9	1.70	60.4	2.55	49.2	2.74	40.1	4.65	47.6	2.10
0.6	75.7	3.00	72.4	0.81	73.2	2.29	59.2	4.08	58.8	5.81	59.6	3.63
0.8	93.8	3.00	82.0	0.91	81.5	2.71	78.5	13.75	71.1	3.30	68.0	3.30
1.4	100.0	0.00	88.6	0.66	90.1	1.96	96.4	5.52	85.1	1.47	80.3	2.11
3.2	100.0	0.00	94.9	0.76	98.3	0.95	83.3	39.11	96.1	0.65	97.0	1.66
7.1	100.0	0.00	100.0	0.0	100.0	0.0	83.3	39.11	91.7	19.55	100.0	0.00
Average Temp (F)	76.9		62.8		67.8		74.1		62.0		68.3	
Average RH (%)	50.7		60.7		35.0		54.6		54.1		27.9	
Velocity (fpm)	252		252		245		298		267		234	
Resistance ("wg)	0.27		0.24		0.29		0.41		0.24		0.30	
Flow Corrected Resistance ("wg)	0.27		0.24		0.29		0.34		0.22		0.32	
Flow and Size Corrected Resistance ("wg)	0.27		0.24		0.29		0.38		0.26		0.36	