case STUDY

HOSPITAL

Air Filtration - 30/30® Panel Filter Lasts Longer

Saving Energy is a Bonus in Hospital that Reached Goal of Reducing Filter Changes & Meeting Efficiency Requirements

Company Profile:

A large district health center complex encompassing a 55-bed acute care hospital and community health center connected to a 70-bed personal care home.

The Situation:

The project is a two-story, 81,000-square-foot facility, including a surgical suite, emergency services, CSR, diagnostic services and laboratory and a large extended treatment/rehabilitation unit and associated therapy services. The building is designated as a Power-Smart building, utilizing northern construction standards, including high performance building envelope, energy efficient lighting and mechanical systems. The health center serves a regional catchment which includes several First Nations communities. The facility's pre-filters required changing on average every two months and the final filters needed changing every year. The center was operating with a reduced level of staff which meant minimal manpower and time to perform the required filter changeout tasks.

The Action:

Camfil Farr proposed using a 30/30 pleated pre-filter to replace existing fiberglass throwaway filters. They were presented with the "30/30 Lasts Longer Guarantee." It was also suggested that the existing AAF® VariCel® final filters be replaced with longer-lasting Durafil® filters. The combination would provide better filtration and reduce man hours currently dedicated to servicing filters. The bonus would be that they would also save energy costs.

The Result:

A life cycle cost analysis (LCC) was performed comparing the existing systems using the AAF PerfectPleat and the AAF VariCel 3V

against the Camfil Farr 30/30 and Durafil. The LCC projected a five-year savings of $4,590 for every ten filters, the average number of filters in an HVAC system in the facility. Changing the filters every two years as opposed to each year would save an additional $3,473.

The facility would also save on reduced purchasing costs and was able to free up filter inventory area for other uses. If the filter changes were optimized, scheduled based upon pressure drop as opposed to time, the savings would be even more. Although the number of filter changes would increase slightly, by two pre-filters and one final filter over five years, the savings would rise to $6,200. The facility now can claim adherence to medical facility requirements as the 30/30 provides a true MERV 8 efficiency.

"By converting to the 30/30 and Durafil, the facility now meets filter efficiency requirements."

The Proof:

Based strictly on the Total Cost of Ownership (TCO) of the Camfil Farr proposed solution (not including energy savings), the customer will save at least $694 annually just on the final filters lasting twice as long.

The facility also measured actual electric consumption over a one-year period and found they had saved $28,000 facility-wide.

Actual instrument data of 1-year electric usage	Fiscal Year 2006-7	Fiscal Year 2007-8	**Annual Savings**
Energy consumption	4,330,265 units (KW/h)	3,631151 units (KW/h)	**699,114 units of energy**
Energy costs	$ 203,000	$ 175,000	**$ 28,000**

- Filter savings in one year $694
- Energy savings in one year $28,000
- Labor savings for only one final change in two years – priceless!!

	Pre-filter		**Final Filter**	
Filter Brand	**AAF®**	**Camfil Farr**	**AAF**	**Camfil Farr**
Filter type	Perfect-Pleat® HC[1] MERV 7	30/30® Pre-filter MERV 8	VariCel® 3V MERV 14	Durafil® 4V MERV 14
Media	Synthetic/ Charged/ Pleated	Cotton/ Polyester Pleated	Fiberglass/ Wet Laid	Fiberglass/ Wet Laid
Size (in)	24x24x2	24x24x2	24x24x2	24x24x2
Effective media	15.0 ft²	17.3 ft²	175.0 ft²	200.0 ft²
Filter price	$6.00	$6.66	$113.75	$138.95
Labor cost	$1/Filter	$1/Filter	$1/Filter	$1/Filter

[1] The facility originally used fiberglass throwaway filters. Since these filters did not meet the standard of care required by authorities for hospitals, the AAF equivalent of the proposed pre-filter was used for analysis purposes. If the original pre-filters were used in the LCC analysis, projected savings would be even greater.

2000 CFM (70% Return Air)	**AAF**		**Camfil Farr**	
Filter Type	**Perfect Pleat HC M7 2"**	**VariCel 3V M14 12"**	**30/30 Prefilter M8 2"**	**Durafil 4V M14 12”**
Pressure drop	0.31" wg	0.53" wg	0.31" wg	0.38" wg
Final pressure drop	1.00" wg	1.50" wg	1.00" wg	1.50" wg
Average pressure drop	0.54" wg	0.97" wg	0.55" wg	0.78" wg
Filter life	2,100 hrs	12,000 hrs	3,500 hrs	31,900 hrs
No. of filter changes	20.9	3.7	12.6	1.4
Total filter cost	1,360	4,850	930	2,940
Labor cost	220	30	130	10
Energy cost	6,360	11,500	6,580	9,240
Disposal cost	210	30	130	10
TOTAL LCC*	$8,150	$16,410	$7,770	$12,200
COMBINED LCC	$24,560		$19,970	
COMBINED ECI VALUE	25.9 $/%		20.3 $/%	

The LLC analysis was run with the same historical operating parameters as the existing filters, reflecting a savings of $4,590 for every ten filters.

Camfil Farr	
30/30 Prefilter M8 2"	**Durafil 4V M14 12”**
0.31" wg	0.38" wg
0.81" wg	0.77" wg
0.49" wg	0.56" wg
3,000 hrs	17,500 hrs
14.6	2.6
1,080	4,440
150	20
5870	6630
150	20
$7,250	$11,110
$18,360	
16.1 $/%	

When system was compared at optimized change-out points based upon pressure drop, savings increased to $6,200.