case STUDY

FOOD & BEVERAGE

Air Filtration - Total Cost of Ownership

Beverage Producer Manages Air Quality in Production Process and Achieves Significant Savings in Labor and Energy Costs

Company Profile:

Among the top five global manufacturers of the food and beverage industry.

The Situation:

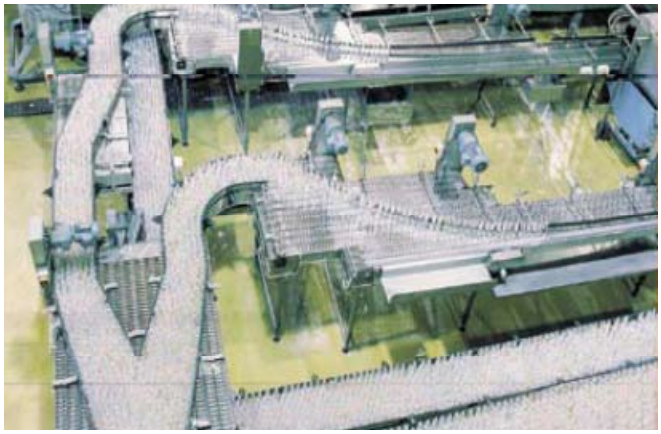
Large food manufacturer acquired several water brands and allowed each plant to maintain their historical quality filtration standards critical to the bottling process. As a result of the local control, there was no corporately developed specifications for airborne contaminants and appropriate filter change cycles. Local control also made it difficult to implement cost containment programs.

Air conveying systems which consumed a great deal of energy, labor, and filters were critical to the process. Product quality concerns resulting from airborne contaminants had caused engineering to over-design intake filtration. Air conveyor original equipment manufacturers were providing filtration products with poor resistance performance characteristics causing ongoing line air flow problems. Concerns with line flow had caused manufacturing to maintain very short change cycles causing high labor and material costs. High resistance filters had become a greater concern due to escalating energy costs. Energy consumption was estimated to represent 70% of their total air handling costs.

The Action:

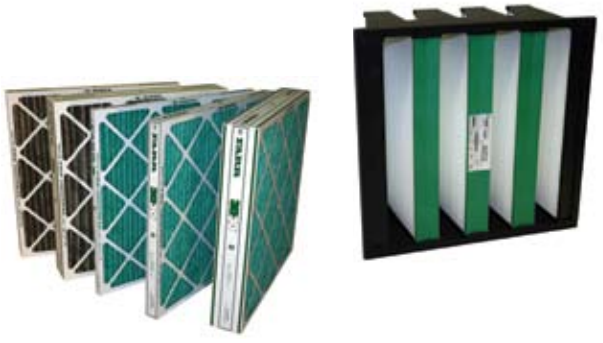
Faced with managing a high volume low margin business with escalating expenses, the global manufacturer understood the business need to provide effective filtration; but realized they needed to do it at a reduced cost.

Three different filter combination (prefilter with a secondary filter) tests were conducted by the manufacturer as specified in ASHRAE Standard 52.2-1999. The test criteria was based on contaminant removal efficiency, contaminant holding capacity, resistance to airflow, and safety with regard to support or spread of fire and smoke.



The Result:

The tests results reflected that the bottling operation would save 20% of their AHU energy cost by changing to the Camfil Farr filter combination (30/30® panel filter with the Durafil® 4V). By converting, the air conveyors would also require half the number of filter changes. Fewer filter change outs would also provide significant savings by reducing material costs, labor costs, less waste, and lower disposal costs.



"By converting to the 30/30 panel filter and Durafil 4V combination, the air conveyors require half the number of filter changes, reducing costs across the board."

clean air solutions

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camfil FARR

The Proof:

Tests found the Camfil Farr filter package moved more air for almost the same amount of energy. This is a result of the Camfil Farr's filter construction designed with more media, sturdier frame and media support, and a unique filter media fold which allows for even loading across the filter. The 30/30® and Durafil® combination maintained the lowest resistance to airflow. The Camfil Farr 30/30 filter met the rated efficiency and maintained structural integrity throughout the six-month service life. The resistance to airflow was just over the suggested final resistance of 1.0"wg. Neither of the opposing filters held up under testing, indicating the life cycle would be about three months (which is half the service life of the 30/30). The Camfil Farr Durafil had a resistance to airflow of 0.54"wg after one year of service; whereas, the competitive filters tested at 0.62"wg and 0.98"wg.

LCC Analysis for Air Intake Panel Filters on Air Conveyors

Filter	Existing Conditions Airguard SC Pleat Changed 18 Times/Yr. AG SC 24x24x2	Recommended Change Camfil Farr 30/30 Change 6 Times/Yr. 30/30 24x24x4
Filter Count	144	144
Total Airflow (cfm)	144,000	144,000
Replace. Filter Price	$562.00	$1,512.00
Filter Life (hrs)	292	876
Filter Changes	90.0	30.0
Init'l Press (in WG)	0.09	0.05
Final Press. (in WG)	0.13	0.07
Avg Press (in WG)	0.11	0.06
Initial Investmt Cost	$515.52	$1,605.60
Energy Cost	$14,832.00	$8,208.00
Filter Change Labor Cost	$12,960.00	$4,320.00
Total Filter Cost	$50,580.00	$45,360.00
Total Filter LCC	$78,372.00	$57,888.00

Energy Calculations

Labor Cost Calculations

Filter Cost Calculations

5-Year Estimated Net Savings	Savings as a Percent
$6,624.00	44.66%
$8,640.00	66.67%
$5,220.00	10.32%
$20,484.00	26.14%

Existing Conditions Airguard SC Pleat Changed 18 Times/Yr. AG SC 24x24x2	Recommended Change Camfil Farr 30/30 Change 4.8 Times/Yr. 30/30 24x24x4
144	144
144,000	144,000
$562.00	$1,512.00
292	1,095
90.0	24.0
0.09	0.05
0.13	0.07
0.11	0.06
$515.52	$1,605.60
$14,832.00	$8,352.00
$12,960.00	$3,456.00
$50,580.00	$36,288.00
$78,372.00	$48,096.00

5-Year Estimated Net Savings	Savings as a Percent
$6,480.00	43.69%
$9,504.00	73.33%
$14,292.00	28.26%
$30,276.00	38.63%

Assumptions:

Energy Cost: 0.11/KWH

Labor Cost Per Complete Change: 144.00