

Air Filtration - 30/30® Panel Filter Lasts Longer

Instant Coffee and Tea Manufacturer Reduces System Contamination and Finds Energy Savings

Company Profile:

Multi-billion dollar, global food and beverage manufacturer.

The Situation:

Due to their plant's unique environment, a large producer of instant coffee and tea was using inefficient washable filters and charged synthetic bag and rigid filters. The significant decline in small-particle capture by the synthetic bag filters made the current filter program very ineffective in managing airborne tea and coffee particulate, causing caramelized tea and coffee to build up downstream of final filters. The operation was incurring significant added labor costs to keep cooling coils and internal components clean. Washable filters were wasting costly energy due to their very rapid development of pressure drop. Filter cleaning was also adding labor. Earlier trials with competitive filter products had failed. Wet conditions had caused premature failure of competitive pleated filters, and ring panel products had not succeeded due to unacceptably high resistance which would also create higher energy bills.

The manufacturer's biggest concern was energy consumption, which made up 70 percent of their total air handling operational costs. Filter product replacement costs were very low; however, added cleaning of make up air units and cleaning of washable pre-filters had caused maintenance costs to be unacceptable.

The Action:

Filter tests were conducted by the manufacturer as specified in ASHRAE Standard 52.2-1999. Washable pre-filters were replaced with the Camfil Farr 30/30. Synthetic bag and rigid filters were replaced with fine-fiber media products. Two different filter combinations were tested (pre-filter with a secondary filter) with the test criteria of contaminant removal efficiency (System Cleanliness), contaminant holding capacity (Long Life), and resistance to airflow (Pressure Drop Development).



The Result:

Tests proved that the rigid, moisture-resistant construction of the Camfil Farr 30/30 allowed it to withstand the plant's moist environment where no other pre-filter could. The particle capture of the fine-fiber final filters eliminated the unit contamination problem. The manufacturer will save 20 percent of their AHU energy cost by changing to the Camfil Farr filter combination (30/30 pre-filter with the Durafil® 4V and 30/30 pre-filter with Hi-Flo® 10-pocket bag). Units are free of product contamination. Filters are lasting at least twice as long as the prior product, with less waste and lower disposal costs.



“Camfil Farr 30/30 filters withstood a moist environment where no other pre-filter could.”

The Proof:

Tests found the Camfil Farr filter package moved more air for almost the same amount of energy.

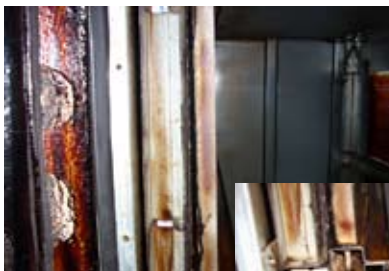
Camfil Farr's increased media area and radial pleat design equalized filter loading and decreased average pressure drop and resultant energy requirements.

30/30® tested most rigid.

The Camfil Farr 30/30's high wet-strength beverage board frame was able to withstand the humidity laden conditions where other filters failed under the testing within weeks.

The 30/30 with Durafil® and Hi-Flo® maintained system cleanliness, lasted longer, and maintained low 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 .66" w.g. The Camfil Farr Durafil maintained system cleanliness and had a resistance to airflow of 0.54" w.g. after one year of service. Neither of the opposing coarse-fiber box style filters maintained system cleanliness or held up under testing, indicating the life cycle would be only about half as long (six months). The Camfil Farr Hi-Flo maintained system cleanliness and had a resistance of 0.72" w.g. after a year of use. Competitive coarse-fiber filters did not maintain system cleanliness and required replacement at six months with over 1.00" w.g.



Filter Bypass



Contaminated Unit

Air bypass between filters, and between the housing and filters, allowed air to move through the unit untreated, contaminating HVAC equipment and processes downstream of the filters.



Tea Loading

Leaks through Washables



Contaminant passing through the low efficiency washable filters led the customer to Camfil Farr for a solution to their problems.



Washable Filters

Caramelization on HVAC



The caramelization of the byproducts of the manufacturing process created complications for HVAC maintenance and increased the possibility of process compromise due to uncaptured contaminants.