

## Air Filtration - Total Cost of Ownership

### Pharmaceutical Factory Realizes Significant Reduction in Filters Used, Filter Certification Expenses, and Energy Costs

#### Company Profile:

A major pharmaceutical factory in southwestern United States with over 5,000 employees and operations that include production, packaging and R&D.

#### The Situation:

With the recent trend of pharmaceutical company mergers, there was a directive to reduce overall facility costs. As a major user of HVAC and HEPA filters, efficiency and filter life could not be compromised. With many of their systems built in the 1970's and multiple renovations thereafter, the process of consolidating and standardizing on filtration products was going to be daunting. Seventy-eight different filters were specified throughout the manufacturing campus.

#### The Action:

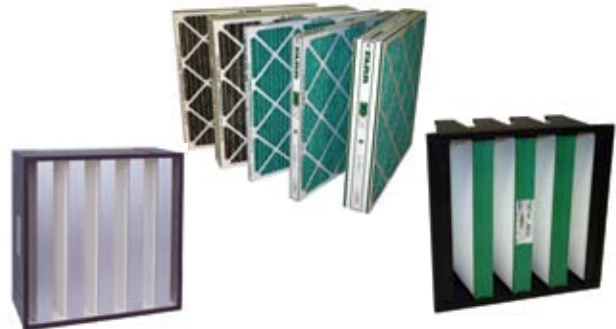
With the help of the local Camfil Farr representative, the facility used Camfil Farr's Life Cycle Cost (LCC) analysis modeling software to develop a program for streamlining their filter purchasing and standardizing products that met required efficiencies and have longer life. They also selected filtration products that were guaranteed to save their facility utility expense by choosing filters that use less energy. The goal — obtain the lowest Total Cost of Ownership (TCO) for their air filters and reduce capital investment of filters warehoused as well as the number of filters on campus.

A filter survey was completed that listed every filter on campus and documented installation details, areas serviced by the filters, and whether the filters met the areas processing requirements. The survey identified where filter usage could be reduced. Filters were selected that met process requirements, had long service life, and would provide the lowest energy consumption.



#### The Result:

The facility was able to reduce the variety of filter configurations from 78 to 32. This reduced the warehousing costs of replacement filters from over \$65,000 to \$42,000, a savings of 36%. The elimination of filter replacement stock also loosened up floor space for revenue producing activities. In terms of TCO, the projected annual energy savings were the most impressive. Additional savings resulted from filters lasting 50 percent to 100 percent longer in almost every installation.



“Real-life comparative field tests proved Camfil Farr filters had longest service life and lowest energy use.”

The Proof:

**Filtra 2000 Absolute Filter Selection**

HEPA filtration is critical in many areas of pharmaceutical operations to certify products are free from contaminants and protect the health of facility employees. HEPA filters are also notorious energy consumers. This facility wanted to maintain purity yet decrease energy and maintenance expense. A test bank of Camfil Farr's Filtra 2000 Absolute filters were installed in the R&D area of the facility, replacing twelve standard capacity 24" by 24" by 12" filters. The pressure drop of the filters being removed, and the initial pressure drop of the Filtra 2000's was recorded. After six months of operation, it was estimated that the Filtra 2000's would save approximately \$1,450 in energy costs during the first year.

Based upon projected loading, it was also estimated that the Filtra 2000's would last five years in the system as opposed to three years for the previous standard HEPA filters. Since this facility certifies their HEPA's upon each installation, there would be a savings of \$1,300 as the filter bank would only have to be certified once instead of twice. The total savings based upon this change — \$8,500. The facility has now standardized with Camfil Farr Filtra 2000 high capacity Absolute filters.

**Pre- and Final Filter Selection**

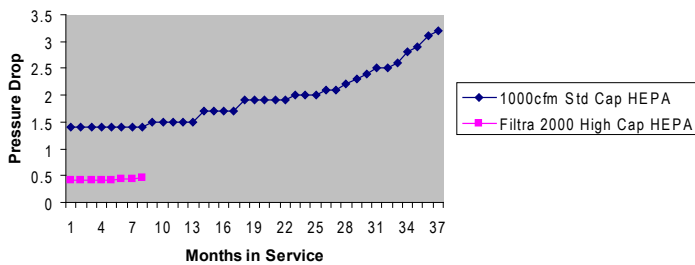
The facility engineers selected two air handlers moving the same cfm and serving the same space to evaluate the filters they had used historically and the Camfil Farr suggested products. Each unit held nine 24" by 24" by 2" pre-filters and nine final filters of the same dimensions. The Camfil Farr products outperformed the competitive products throughout the test. The Camfil Farr filters would last longer and use less energy.

The facility has standardized on 30/30® pre-filters and MERV 14 Durafil® final filters. The energy savings per filter is estimated to be \$55.00. The facility, based upon the evaluation, has decided to eliminate one change per year of pre-filters and also decided that the final filters can serve the space for three years as opposed to the 18 months that the previous final filters were lasting — further saving the facility expense in product cost and labor.



Specified Filters  
Prior to Test

**HEPA Pressure Drop Curve in Test Bank**



Left: Facility software was able to provide pressure drop data from the past three years prior to the removal of the HEPA filters. Their resistance after 36 months was 3.2" w.g. The pressure drop curve for the Filtra 2000 was virtually flat after seven months of operation leading to the conclusion that the filters would last five years before requiring change.

Right: After 18 months of service, the combination of the 30/30 and Durafil maintained a lower pressure drop than the competitor's filters being tested. The down-spikes demonstrate resistance reduction when a pre-filter is changed. The 30/30 only required three changes, to the competitor's four changes, and still maintained a lower average resistance over the life of the test.

**Pressure Drop Curve in Test Bank**

