



AmericanAirFilter®

case study

Healthcare

Hospital Improves Airflow, Saves Energy with AAF Solutions

Customer Profile

- University of Louisville Hospital located in Louisville, KY
- 404 bed hospital serving as the leading academic and research facility in the area
- The only level 1 Trauma center in the region
- Nationally recognized as a leader in trauma, stroke, high-risk OB, radiological/diagnostic services, cancer care, and regional clinical services

The Filtration Situation

The Air Handling Unit (AHU 16) was originally installed to provide airflow to the Oncology area of the hospital. Over the years, additional ducts were incorporated and now AHU 16 provides airflow to five areas of the hospital. Looking for an alternative option to replacing its costly motor, the University of Louisville Hospital's Director of Engineering asked AAF to assess the hospital's current filtration system and recommend a viable solution for AHU 16.

AHU 16 uses variable inlet guide vanes to control the flow of the supply fan. The variable inlet vanes, in the fully open state, could not supply enough airflow capacity due to the high static pressure in the system. The work output of the fan and its motor contribute directly to the airflow exiting the AHU. With the additional load, the AHU was deprived of the necessary air for proper ventilation. In order to pull more air into the system, the 100 horsepower fan motor would need to be sped up or replaced - an extremely expensive purchase for the hospital.

The current 3-stage filtration system installed consisted of AmerSea® Cube prefilters, VariCel® II secondary filters, and AstroCel® I high capacity HEPA final filters.



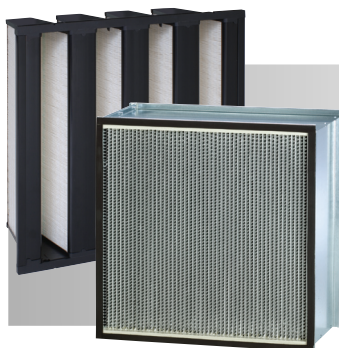
"...proven to be efficient and cost effective."

*-John Gildehaus, CHFM
Director of Engineering*

The AAF Solution

AAF representatives saw this as an opportunity to remove a stage of filtration to evaluate if there would be improved airflow and reduced energy consumption. A Life Cycle Valuation (LCV) analysis was generated to illustrate the potential energy saving benefits, based on moving to a two-stage filtration system with the parameters provided by the University of Louisville Hospital. AAF's exclusive LCV program is used to determine the total cost of ownership of a filtration system. The LCV program takes into account; cost of electricity (kWh), labor rates, cost of filters, air volume, operating hours, operating resistance, and disposal cost.

The AmerSeal Cube filters were removed from the system, eliminating the prefilter stage. VariCel II filters were replaced with VariCel VXL filters, AAF's 8-panel high efficiency filters designed for use in difficult operating conditions. The high capacity AstroCel I HEPA filters were upgraded to MEGAcel™ I HEPA filters with Helior® filtration technology, providing high efficiency and low energy consumption. University of Louisville Hospital then allowed AAF to monitor the changes in pressure drop across the filter section over the next 12 months.



The VariCel® VXL MERV 14 filter, with its dual density media, maximizes dust holding capacity; therefore extends filter life. Also, the low pressure drop of the VariCel® VXL saves energy. MEGAcel™ I filters incorporate AAF's unique Helior® filtration technology, a proprietary, durable media, combining high efficiency with extremely low pressure drop. Lower initial resistance significantly reduces energy consumption resulting in substantial energy savings and cost benefits.

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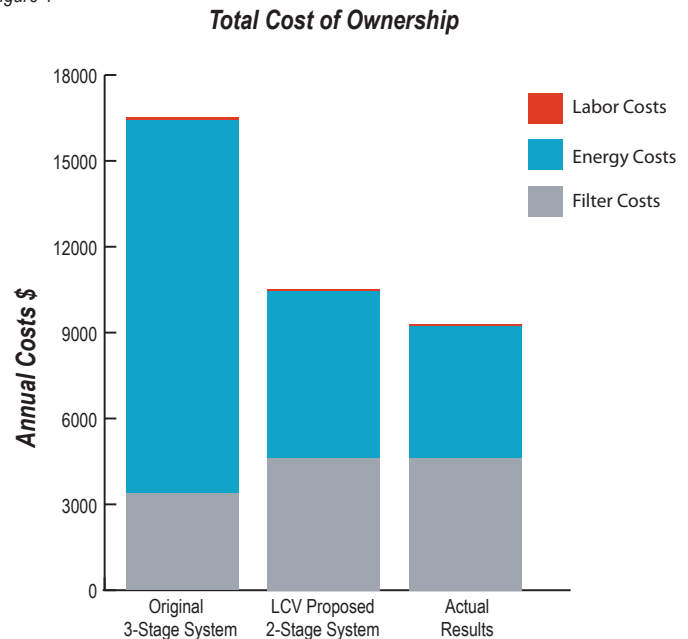
The Energy Saving Benefits

AAF's LCV analysis evaluated the original 3-stage filtration system configuration along with a proposed 2-stage system. The hospital's Director of Engineering agreed to trial the proposed system and record the pressure drop of the filters each month to monitor changes. The results from the hospital's readings consistently verified the reduced resistance of the MEGAcel I filters and the VariCel VXL filters. With the reduced resistance came an increase in airflow across the system, ultimately eliminating the need for a costly upgrade to the motor.

"After our 12 month study, the filters have proven to be efficient and cost effective," said John Gildehaus, CHFM, Director of Engineering for the hospital. With AAF solutions, University of Louisville Hospital increased airflow, decreased energy consumption, and realized labor savings from the reduction in filter changeouts, providing them with overall savings. The original system configuration had an annual cost of \$16,730 (Fig. 1). The new configuration produced an annual cost of \$9,277. **The result was an annual savings of \$7,259!**

the result...
an annual savings of \$7259!

Figure 1



Prior to AAF's recommended solution, the door to AHU 16 had to be left open to increase airflow in the mechanical room. After the installation of AAF's VariCel® VXL and MEGAcel™ I filters, the door to AHU 16 could finally be closed.

A.



B.



Pressure drop initial and final readings from AHU 16 with MEGAcel™ I filters installed. Image A shows the initial pressure drop reading. Image B shows the final pressure drop reading.

**To learn more about AAF Solutions
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