

Hospital meets pressure to perform by reducing pressure drop, filtration costs

► Like many other health care providers, Atlanta-based Emory Healthcare is keenly aware of issues that affect the cleanliness of the indoor environment, particularly air quality. Recently, it had the rare opportunity both to upgrade its IAQ and to substantially reduce air filtration costs as well.

Thermal Recovery Systems (TRS) and its sister company, Air Filter Sales & Service (AFS, Atlanta), have a long-term relationship with Batchelor & Kimball, Inc., Mechanical Contractors (Lithonia, GA). A recent evaluation by Batchelor & Kimball of energy wheels and related components at Emory University Hospital Midtown showed that air filtration could be significantly enhanced by replacing the four-stage air filter configuration with technology developed by Camfil Farr.

FILTER SELECTION

This 90,000 cfm penthouse system — the largest of many AHUs at the facility — uses 56 each of three types of filters. A synthetic bag filter was used for exhaust air, four-ply ring panels and a synthetic bag filter were the prefilters, and 2V “graduated-density” air filters were used as final filters. Following a review of product test and performance documentation, along with detailed projections that were specific to the Emory University Hospital Midtown system, Batchelor & Kimball selected Camfil Farr filter technology for all three requirements: “30/30” pleated 2-in. filters replaced the synthetic bags on the return air banks, Hi-Flo pre-filters, and Durafil final filters completed the package.

Originally named for being 30% more efficient and having 30% more dust holding capacity, Camfil Farr’s 30/30’s were engineered specifically for health care, cleanroom, and similar environments where low initial resistance and low maintained resistance to airflow are required. Camfil Farr Hi-Flo bag prefilters, which use high lofted air laid microfiber media, were specified to remove fumes, bacteria, fungi, and virus-bearing droplet nuclei, as well as nuisance contaminants, including pollens, which are plentiful in this area of Georgia. The engineering behind Durafil final filters provides MERV 14 performance for the entire life of the filter.

IMPROVING PERFORMANCE

The issue of pressure drop is central to decisions on filtration because of its correlation with both filter performance and the energy required by the air-handling system. Before the upgrade was made at Emory University Midtown, the filter configuration produced over 3.85 in. w.g. of pressure drop. Eleven months following the upgrade, pressure drop was 1.16 in. w.g. for the total filter package — less than one third of the previous level. This is notable because pressure drop directly impacts system horsepower requirements.

If equipment service life is important, filter life is as well, and in a more immediate sense. The labor cost to change 224 filters, not to mention the cost of the filters themselves, is substantial for any large facility. The standard procedure at Emory Healthcare, as with most facilities, had been filter changeout based on a calendar-driven preventive maintenance schedule. The PM schedule does not address filter pressure loss, which varies directly with filter loading. Outside air prefilters were changed on a regular interval with no basis related to filter performance or system effect.

By using Dwyer Magnehelic gauges to measure pressure loss rather



Emory University Midtown Hospital in Atlanta saved money by changing filters based on performance instead of a calendar date.

than fixed calendar changeouts, Camfil demonstrated its Hi-Flo outside air filters (without prefilter protection) would consistently provide a fully productive service life of eighteen months or more thus reducing filter, labor, and administrative costs significantly. By using the same pressure loss standards, final filter service life was extended to 24 months, rather than the 12-month scheduled life, also a significant savings.

“Performance documentation, and cost reductions for all these facilities have been well documented,” said TRS’ Phil Chapman. “Also, we have generated for each facility, a notebook which we maintain, containing detailed spread sheets for each individual air handling unit. So, when the Joint Commission wants to check the systems, they can see the facility meets or exceeds current accepted good practice. ASHRAE data and other documentation are included. All facilities are all using 5 Star energy-efficient Green® filters and reaping the benefits of better patient care and less energy usage.

“The obstacle in many hospital groups,” Chapman adds, “is pressure on facilities to use what the buying groups want. These groups sell pre-selected products based primarily on purchase price, rather than true life-cycle costs which include energy, materials, and labor. This is unfortunate because considering only the cost of energy to operate the air-handling system, the return on investment for the 5 Star energy-efficient filters is less than a year. After that, savings are substantial and recurring.”

Preventive care: controls retrofit gives a healthy present to hospital

► Established in 1888 in Little Rock, AR under the name the Charity Hospital by the Sisters of Charity, St. Vincent Health System has grown into the premier health care facility in the State of Arkansas. The multicampus network consists of an eight-story infirmary, a four-story hospital, and a medical center, all in Little Rock, plus a three-floor rehabilitation facility and a health care center in Morrilton. In addition, St. Vincent has numerous medical clinics throughout the state of Arkansas.

In 2002, with no expectations other than to provide the best solution to meet St. Vincent’s immediate need, Middleton (the systems integrator) worked with Distech Controls and its regional distribu-