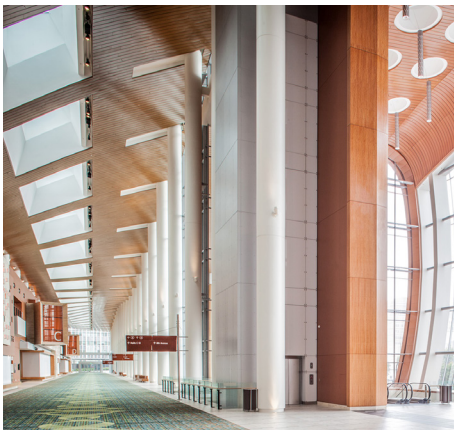
CASE **STUDY**
Commercial Building

EVENT CENTER

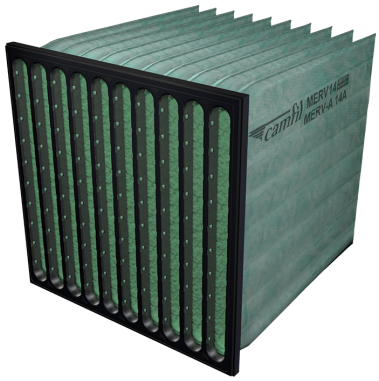
HI-FLO ES® MERV 13A POCKET AIR FILTER DELIVERS HIGH QUALITY INDOOR AIR DRAMATICALLY LOWERING FILTER-RELATED COSTS BY 34% AND LABOR HOURS BY 80%

COMPANY PROFILE
Music City Center is located in the heart of downtown Nashville, Tennessee. The 2.5 million square foot facility has hosted countless high-profile events and is a popular venue for industry exhibitions, art shows and concerts.



THE SITUATION
Three years prior, when the event center's air filtration contract was near its end, Music City Center's Director of Engineering, set out to ensure he had the best air filter solution for his facility. This decision was pre-COVID and in retrospect, proved to be a very wise course of action. Camfil's Nashville Branch Manager responded to the RFQ with a proposal to carefully survey the facility and tap into the technical expertise a global air filtration manufacturer like Camfil has to offer in order to determine the optimal solution.

THE ACTION
The survey revealed many of the air handling units were configured as two-stage systems incorporating a low-efficiency pleated prefilter as the first stage and a MERV 13 box-style rigid filter as the final stage. The common two-stage solution represented older technology. Camfil proposed a more advanced solution, the Hi-Flo ES pocket filter specifically engineered to operate without a prefilter. The greater media surface area of Hi-Flo ES minus the traditional prefilter offered significantly lower system pressure drop resulting in noticeably less energy use. In addition, previously the center's pleated prefilters were changed several times per year based around events and the rigid box filters were changed annually. Reducing the change-out time, the one-year service-life guaranteed Hi-Flo ES single-stage option enabled the maintenance staff to concentrate on other projects.



Testing as a MERV 13A according to ASHRAE 52.2-2017 with Appendix J, Camfil's Hi-Flo ES maintains MERV 13 particle capture efficiency throughout its service life which offered a critical risk mitigation strategy for the event center when protecting against COVID or other infectious diseases. A filter not tested to MERV 13A could've lost efficiency while in-service and allowed particles to pass through the filter into the spaces occupied by facility guests.

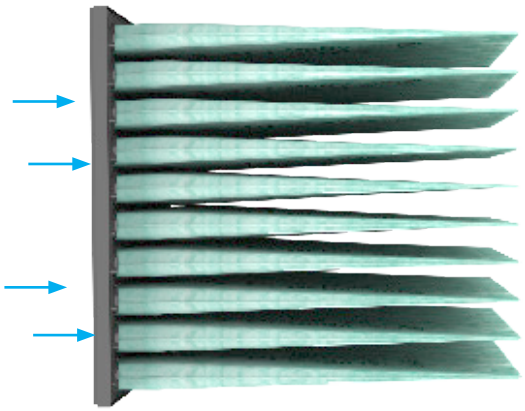
THE RESULT
While the product guarantee lowered investment risk for the event center, it wasn't needed. Virtually all of the center's installed Hi-Flo ES MERV 13A pocket filters remained in service for the entire three-year length of the contract. By converting to the single-stage, MERV-A solution, the center achieved significantly improved indoor air quality and reduced three-year filter-related costs by $307K, change-out labor by 349 hours, and landfill by 779 yds.

"We wanted to partner with people who are experts in air filtration. Camfil is a global organization who can put our clients' minds at ease when it comes to air quality throughout our facility."

THE PROOF

Air is supplied to the Music City Center facility primarily through 46 large air handling units with an average of 20 to 25 filter openings each. The total number of air filter openings throughout the facility is 1,048. Each opening consists of two stages of air filtration. A two-inch pleated MERV 8 panel as a prefilter and a 12" deep rigid box-style MERV 13 as a final filter. The combined initial pressure drop of both stages averaged approximately 1.0" w.g. when first installed. The prefilters were changed as close to quarterly as the facility schedule allowed and the final filters were changed annually. The total number of air filters used in a typical year was 5,240.

Camfil was able to customize filter selection and install the most optimum Hi-Flo ES pocket depth (12", 15" or 22") based on the configuration of each unit. Initial pressure drop was recorded and a systematic follow up enacted to monitor the increase in pressure drop over time. The Hi-Flo ES pocket filter comes standard with a 12-month service life guarantee and after the first year, none of the filters needed replacing. Pressure drop monitoring continued and at the end of the second year, again, none of the filters needed replacing. Monitoring continued for the third year and only 54 filters needed replacing. 994 filters were able to remain in-service supplying MERV 13A filtered air for three full years.



It's not magic, it's science. More accurately, it's engineering. The Hi-Flo ES pocket filter utilizes aerospace principles to move air through the filter with the least amount of resistance and turbulence as possible. The carefully constructed tapered shape of the pockets allows the entire surface area of the media to be used for filtering. In addition to lowering resistance, this feature increases the service life enabling a 12-month guarantee to be confidently issued. Virtually every single filter installed in the Music City Center performed for three full years.

The fabric media of the Hi-Flo ES is constructed from micro-glass fibers in a high loft, air-laid configuration producing a permanent high particle capture efficiency on sub-micron particles. Because the media does not rely on a temporary electrostatic charge that lessens when dirt and humidity build-up, Music City Center guests were protected with MERV 13A filtration level air filters for the entire three years.

The benefits of clean air on the overall experience visiting guests have during their stay or the increase in employee satisfaction for permanent employees of Music City Center can be difficult to measure; however, the value high performance Camfil Hi-Flo ES pocket filters delivered to the bottom-line operating expenses for such a large facility was easily calculated.

Contract Term = Three Years

	Previous	Camfil Solution	Savings
Number of Filters Used	15,720	1,048	14,672
Landfill Space Required	821 yd^3	45 yd^d	779 yd^3
Total Filter Spend	$375,915	$87,436	$288,479
Fan Energy Expense	$515,882	$496,994	$18,888
Annual Maintenance Hours Required to Change Filters	436	87	349