MEGAcel® II eFRM HEPA Filter
CASE STUDY

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CUSTOMER:

A medical device manufacturer in the Midwest was using 1,000 glass terminal HEPA filters in their largest manufacturing facility to operate their ISO 8 cleanrooms.

CHALLENGE:

Although glass HEPA filter media has been the long established norm in cleanroom facilities, its Achilles' heel has always been its fragility, which often results in media damage during handling and installation. Not only did this fragility introduce the risk of leaks at their facilities, it had a major negative financial impact in the forms of extended manufacturing downtime required to replace damaged filters, the associated cost of replacement filters, and the need to keep up to 10% of the total number of HEPA filters in inventory as spares.

MEGAcel® II eFRM

RECOMMENDED SOLUTION:

The Facilities Engineer needed an alternative filter that would suffer far less damage during shipping, handling, and installation.

To help facilitate risk mitigation related to filter installation, AAF Flanders provided our patented, highly durable/low pressure drop MEGAcel® II eFRM membrane HEPA filter. The MEGAcel II eFRM product has 6 times the burst strength and 84 times the tensile strength of glass. The MEGAcel II eFRM filter also has up to 50% lower pressure drop than a comparable glass media.

IMPLEMENTATION:

1,000 glass filters were replaced with MEGACEL II eFRM membrane HEPA filters in the largest manufacturing facility. Installation of the filters was completed by Laboratory Certification Services, Inc. (LCS), a controlled environment testing and service company based in Columbus, OH. Kelsey Feathers, Vice President of LCS, said his team of 8 certified technicians installed all 1,000 HEPA filters in about 12 days. Per Kelsey, "the filters were delivered to the site and fully installed with zero damage."

As part of the 1000-filter installation, 10 additional MEGAcel II eFRM filters were purchased to have on hand should any replacements be needed during the installation. These filters were not needed and continue to remain in inventory.

To date (fall 2021), 100% of the filters installed are still in operation; a 100% success and 0% failure rate. From the facilities engineer's perspective, this provided "peace of mind," as there was zero damage to the MEGAcel II eFRM filters during installation.

ADDITIONAL BENEFITS:

Due to the reduced pressure drop of these new filters, the facility was able to reduce the fresh air intake dampers from 100% to 20% open upon installation. The damper reduction added significant capacity to the mechanicals (HVAC) supporting the cleanroom, which positively impacts the lifetime of the equipment. Also of interest, the reduction of the outside air damper setting prolongs the life of the ASHRAE-grade prefilters and secondary filters, which results in energy, material, and labor savings.

The facilities engineer also stated that the facility would experience a significant dip in pressure when doors were opened in areas that support the cleanroom, e.g., gowning room, air locks, etc. Installation of the MEGAcel II eFRM filters allowed for accelerated stabilization of the air pressure in these areas due to the low pressure drop of the new HEPA filters.

The decision to upgrade the site to MEGAcel II eFRM filters has led to multiple points of significant energy savings within the facility, as well as material and labor savings.

CONCLUSIONS:

Due to the 0% failure rate and the significant energy savings recognized at the facility, the customer is moving forward with replacement of all terminal HEPA filters, switching from glass media to MEGAcel II eFRM media in all of its Midwest medical device manufacturing facilities.

0% Failure Rate + Significant Energy Savings = Switched from Glass to MEGAcel II eFRM in all Their Midwest Facilities