NanoWave Media Cuts Filter Life Cycle Cost at Global Aerospace Company's Paint Facility

CASE STUDY

Customer Benefits

- Twice the dust-holding capacity of competitive filter media
- Lower life cycle costs
- Lower energy costs through better air handling
- Elimination of fiber shedding
- Mechanical filtration through enhanced-surface-area nanofiber technology

Customer challenge

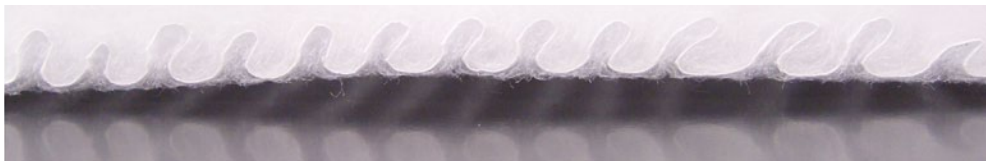
A global manufacturer of business and civilian jets had been burdened with the cost and disruption of frequent filter changeovers at one of its U.S. dry-paint spray booth facilities. Overspray paint is collected in bag filters that periodically need to be replaced to ensure a consistent flow across the paint bay. Obligated by law to comply with proper disposal procedures for hazardous waste, the facility experienced eight used filter set changeovers a year at $11,000 each. The standard synthetic ASHRAE filters used in the paint bays' two exhaust systems were effective, but their limited dust-holding capacity proved costly. This problem prompted the facility to search for another aerospace M-319-approved filter that would reduce maintenance and disposal costs. An HVAC and paint filtration systems provider recommended its revolutionary new bag filter — made with innovative NanoWave® media from Hollingsworth & Vose (H&V) — to dramatically reduce the facility's filter replacement costs.

This all-new filtration solution, incorporating H&V's extended-surface, submicron mechanical NanoWave media, had demonstrated dust-holding capacity at least two times greater than both synthetic and glass filter products. This performance could reduce the dry-paint spray facility's filter changeovers by 50% and generate major cost savings.

NanoWave solution

After evaluating the paint-spray booth, the filter provider and H&V proposed a multistage filtration plan that included a NanoWave multipocket filter to replace the facility's standard synthetic bag filter. This solution was the most cost-effective way to meet the MERV 13 exhaust requirement and stringent waste disposal rules. H&V and the filter manufacturer explained that while energy, maintenance, cleaning, and disposal represented up to 85% of the paint-spray booth's life cycle costs[1], filter replacement expense offered a significant cost-savings opportunity. The facility agreed to test the new bag design in the two paint bays — representing a total of 1,600 MERV 13 bag filters.

[1]Life Cycle Cost = Filter Investment + Energy + Maintenance + Cleaning + Disposal + Freight



Hollingsworth & Vose

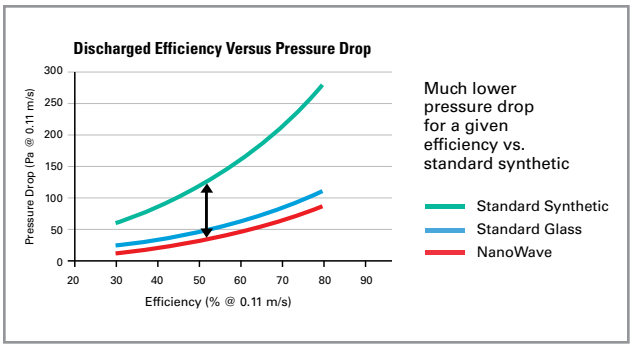
Established in 1843, Hollingsworth & Vose Company is a global leader in the supply of technically advanced nonwoven and specialty papers used in electronics, battery, filtration, and industrial applications. H&V drives value in customers' products by inventing next-generation materials with superior performance. The company operates manufacturing sites and research centers in the Americas, Europe, and Asia.

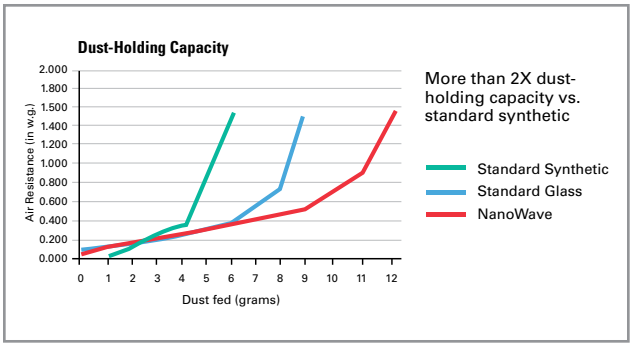
The results

With the NanoWave bag filter system in place, the paint facility is reaping considerable financial and performance benefits. In addition to annual cost savings of more than $45,000 per paint bay, the filtration solution delivers better air flow in the exhaust system than other synthetic filters. This improvement is attributed to NanoWave media's self-supporting structure, which allows more aerodynamic flow, shape retention, and increased productivity. The NanoWave bags achieve a lower average pressure drop over the life of the filter, translating to energy savings.

The proof

NanoWave's innovative multilayer, extended-surface-area design is responsible for the dramatic life cycle cost savings experienced by the customer. Using a combination of nano and coarse fiber layers, H&V's NanoWave media delivers 2.4 times the surface area of normal flat sheet media. The high surface area of the nanofiber layer allows for maximum mechanical efficiency with very low resistance, while further increasing dust-loading capacity. Compared to conventional synthetic media, which relies on an electrostatic charge, NanoWave meets the same efficiency at half the resistance in a discharged condition. Additionally, NanoWave offers much lower pressure drop for a given efficiency versus standard synthetic media, resulting in lower energy consumption for air handling equipment.





NanoWave®

Hollingsworth & Vose

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