The Growing Role of Adhesives in Increasing F

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The FilterFAB 3000 series introduces PVA technologies that act as binders.

The adhesives are sprayed directly onto the filter

For years, filter manufacturers have relied on adhesives to put together various components of the HVAC filters they make, so as to assemble the filter media or bond it into a frame or end cap. Now, they are looking to this versatile substance to increase performance of the filter media itself.

The ability of adhesive to bond filter media together or to a frame also enables it to capture and hold in place particles in an air stream during filtration. Atomizers along the production line spray an adhesive formulated specifically to entrap the matter directly on the filter media. The adhesive bolsters filtration efficiency throughout the expected life span of the media.

At least one adhesives manufacturer that serves the filter industry has taken a lead in developing products to meet the growing interest in spray-on adhesives for improved HVAC filtration efficiency. Franklin Adhesives & Polymers recently launched FilterFAB 3000, a series of adhesive technologies for media in residential and commercial air filters. The series offers adhesive technologies designed to increase particle entrapment, including one that also functions as a binder. It also includes an adhesive technology developed strictly for use as a versatile media binder.

The company, which also offers a wide range of adhesives for many other filter assembly applications, plans to broaden the FilterFAB 3000 series over time to meet additional filter media manufacturer specifications. It also is prepared to customize FilterFAB 3000 formulations for specific production equipment, filter media type and manufacturer requirements.

The initial product in the FilterFAB 3000 series draws on technology used for pressure sensitive adhesives (PSAs) – adhesives that typically are coated onto a substrate to make tapes and labels. PSAs can either be removable (such as painter's tape), permanent (a label on a prescription bottle) or repositionable (sticky memo paper). The FilterFAB PSA takes on far different roles in the filter manufacturing facility. As a permanent PSA, this surfactant-stabilized vinyl acrylic adhesive can both laminate layers of filter media together and increase particle entrapment.

The FilterFAB 3000 line also includes water-based surfactant-stabilized polyvinyl acetate emulsions developed as binders to stiffen filter media. The binder is designed to ensure easy pleating and crimping of media and to minimize pore clogging during filtration.

Filter manufacturers get the best of both worlds with the final adhesive technology in the current FilterFAB line-up – a unique combo-adhesive that fuses the above PSA and polyvinyl acetate (PVA) technologies to offer the dual functionality of enhanced particle entrapment and media binding. A single sprayer can simultaneously apply a binder and filtration enhancement PSA, both increasing plant productivity and end-product performance.

Despite their ability to provide specific

HVAC Filtration Efficiency

media.

This digitally altered photo depicts entrapment of particles.

solutions to the filter manufacturer, the technologies that comprise the FilterFAB 3000 series share a number of characteristics that position them to easily meet varied application and production requirements, offer the convenience of easy clean-up in the plant and meet regulations for environmental friendliness.

First, the adhesives manufacturer can easily customize key performance characteristics of any of these technologies to meet specific application requirements. Any of the formulations can be matched to media type, production equipment, end use, viscosity, etc. Customized adhesives will be tested in the lab to ensure ideal performance in the actual production facility. Further, the formulations are compatible with a wide range of conventional additives, increasing their versatility and ability to meet specific manufacturer needs.

As a group, the FilterFAB 3000 adhesives help filter manufacturers maximize filter efficiency at minimal cost and effort. The application process typically can be incorporated directly into existing media equipment, without need for additional equipment or reduction in productivity. Once sprayed onto the media, the adhesives set and dry quickly, without significant impact on overall production time. And minimal clean-up requirements can increase productivity: The FilterFAB 3000 series easily cleans up with water when wet, decreasing time required to keep equipment clean, free of clogs – and operating smoothly, with minimum downtime or unnecessary maintenance costs.

HVAC filter manufacturers make equipment for customers who require – and value – air purity. Likely, it's important both to the manufacturers and end-users that products used in the manufacture of filters follow guidelines for environmental friendliness. All FilterFAB 3000 adhesives – indeed, all adhesives under the FilterFAB brand – are formaldehyde-free. "Green" formulation ensures that they meet environmental regulatory requirements and are both safe for the plant crew to apply and for use in residential and commercial HVAC systems.

Filter manufacturers continue to seek cost-effective, viable methods to increase filtration efficiency. Recent research and development in the adhesive laboratories strive to provide them easier and better ways to achieve it. Adhesives manufacturers, such as Franklin Adhesives & Polymers, are willing to work with filter manufacturers to develop the best way to produce the highest-quality filtration media for a healthy world.

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