Confining Chemicals

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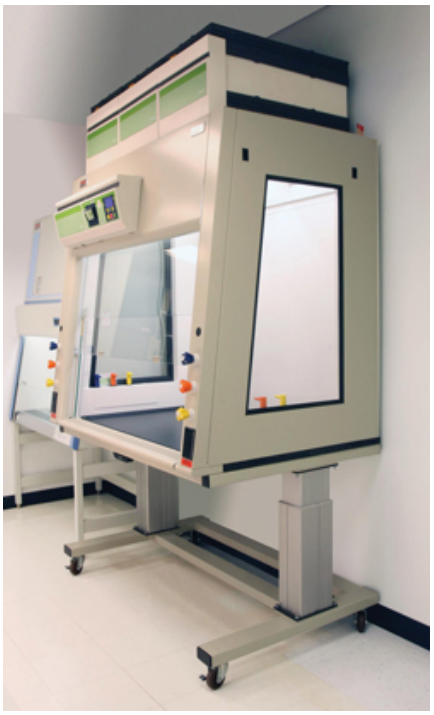
Today's fume hoods last longer, keep researchers safer and provide more flexibility.

Few labs if any lack a fume hood or two. The hoods of the past, though, cannot keep up with modern needs. Consequently, manufacturers keep increasing the capabilities of fume hoods.



A filtered-based hood from Thermo Fisher Scientific's Hamilton Laboratory Furniture and Fume Hoods can use powered bases to adjust to a user's height. (Source: Thermo Fisher Scientific)

For example, **The Baker Company** developed the BioChemGARD e3. Dan Eagleson, vice president, marketing and business development at The Baker Company, describes it as "a class II, type B2 total exhaust biological safety cabinet that … was engineered specifically for laboratories that need containment and removal of vapors, mists and particulates and has been tested in accordance with ANSI/ASHRAE 110-1995."

In developing this hood, says Eagleson, they focused on three crucial components:

energy efficiency, productivity and comfort. “By operating at only 664 cubic feet per minute,” says Eagleson, “the BioChemGARD e3 minimizes noise, cuts electrical power requirements by 70 percent compared to traditional B2 cabinets and reduces the volume of conditioned air that is exhausted from the laboratory.” He adds, “The new StediFLOW VFD motor controller maintains precise airflow by self-adjusting for filter loading.”

This fume hood also reduces maintenance. As Eagleson explains: “Baker’s exclusive ‘sealed access exhaust filter exchange system’—located directly under the work surface for improved access—minimizes exposure to contaminants and allows for faster, simpler maintenance.” He adds, “Our system permits filter bagging and exchanges within the work surface, providing improved access, a simpler process and an overall reduction in maintenance time while still minimizing exposure to contaminants by running the exhaust during the filter change.”

Doing Away with Ducts

“About every decade, there’s been a major shift in the fume-hood industry,” says Jon Zboralski—director of airflow products at **Thermo Fisher Scientific**’s Hamilton Laboratory Furniture and Fume Hoods. “We’re probably at that start of one now.” According to Zboralski, “The major change is new technology to build conventionally sized fume hoods for general-purpose usage using a filter instead of ducting them.”

Filter-based hoods can save money over ducted ones. For example, a filter-based hood does not need the ductwork required for a conventional one. It also recirculates air back to the lab, rather than removing it. “That provides a dramatic savings in energy in air conditioning,” says Zboralski. The lack of ductwork also gives such hoods more flexibility. “We have powered bases that move the hood up and down for the height of different users, and we can put it on casters so it can even be moved from one lab to another.”

This FumeGard NU-156 Vertical Laminar Airflow

Fume Hood consists of polypropylene to prevent damage from corrosive chemicals. (Source: NuAire)

At Thermo Fisher Scientific, these hoods use treated charcoal as the filter. “This molecular modification allows a wide base of chemicals to be utilized in that enclosure,” says Zboralski. In ordering a filter-based hood, the customer describes how the hood will be used and how often. “Then we can determine how long the filters will last,” Zboralski says. “We target applications where the filters will last at least two years.”

Zboralski also points out that Thermo Fisher Scientific makes this technology intelligent. “Every user gets a card that powers up the hood,” he explains. “This lets a safety person keep track of how the hood is being used and when the filter needs to be changed.”

Getting Rid of Rust

To give a fume hood longer life and eliminate the possibility of rusting, **NuAire** uses polypropylene. “We work in a niche industry, where people use a real, real corrosive chemical,” says Terry Thompson, polypro sales manager at NuAire. “All hoods are supposedly made to handle corrosive chemicals, but steel hoods eventually rust and that contaminates the user’s end product.” He adds, “Polypropylene stands up to virtually any chemical out there.”

Rust can also indicate a deficit in hood performance. “Once you see rust on the outside of the hood,” says Thompson, “it means that fumes are getting out.”

Buying that extra capability might cost 20 percent more when compared with a steel hood, but Thompson points out a range of economical benefits. “It’s not just that you don’t ever have to buy a new hood,” he says, “but you also save the time it takes to pull down an old hood and the lost research time when replacing it.”

For tomorrow’s labs or old labs getting a facelift, hoods like these enhance the efficiency and safety of research.

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