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The Future Is Now

Kitchen exhaust technology advances follow design innovation.



Left to right: Partners Glenn Catalano, author Joel Berkowitz and Anthony Scotto.

Until recent times, building design and engineering technology placed limits on where commercial kitchens could be located within a facility. Creating a restaurant in an older, multi-story tower posed seemingly insurmountable obstacles, not the least of which was how to get the exhaust system to the roof without installing an ugly stack up the side of the building.

The challenges posed by kitchen exhaust design have affected decision-making in new facility construction, but these challenges can now be overcome with new technology. In a large multi-use building, developers know that having a couple different restaurants on the ground floor provides a good source

of income and is a real attraction to companies that would want to lease office space and individuals seeking high-rise dwellings.

The problem has always been the kitchen exhaust ductwork and vents. Kitchen exhaust systems, with their insulated risers coming up through the building, occupy valuable square footage on every floor of the property, taking up thousands of dollars in otherwise rentable space every year.

The new technology for kitchen exhaust systems is a boon to property owners and managers. No longer is there a need to place ugly black exhaust risers up the side of the building. And forget relying on hot-dog carts outside on the sidewalk — today's technology allows for street-level kitchens in multi-story buildings without requiring vertical risers through the interior of the structure.

THE FUTURE IS NOW

Here's just a sample of what today's kitchen exhaust and grease removal technology can accomplish:

- Ultraviolet light that breaks the grease down into carbon dioxide and water within the canopy envelope.
- Carbon and potassium permanganate filter systems capture 97% to 100% all of the odors produced from the kitchen.

- Precipitator cells that produce an electrified field that ionizes grease particles and bonds them to a filter cell.

- Water wash canopies that automatically rinse grease from the interior portions of an exhaust system every night.

These aren't glimpses of the future — it is technology available now. Landlords and restaurateurs alike can take advantage of these systems, and build more creative kitchens in more locations than ever before. They are high-tech and cutting-edge and have the ability to revolutionize the industry.

Many of these technologies have been around for 10, 20, even 30 years in other forms and in other applications. Now they are available to the foodservice industry, making it better able to co-exist, particularly, in densely populated urban environments. These new and high-tech kitchen exhaust systems, and grease and odor elimination systems, make it possible to exhaust right out over the front door of a restaurant with 98% to 100% of grease and odor eliminated from the exhaust stream.

COMMON PITFALLS

Just like the guy who buys a state-of-the-art cell phone, but doesn't sign

up for service, these new systems, fancy as they are, are only useful if they are *properly installed and maintained*. Sometimes, the manufacturer or salesperson selling the equipment can leave the customer with the illusion that many of these systems are “self-cleaning.” I can’t tell you how many times we have estimated water wash canopy and precipitator installations, only to hear from the purchasing agent who approved the acquisition of the units that they are “self-cleaning” and “need no regular maintenance.”

Notice that I emphasized “properly installed and maintained” — because therein lies the problem that many people experience with these types of systems.

In a new construction application, there needs to be both an architect and general contractor who know enough about the technology to recommend the proper type, manufacturer and size of unit for the restaurant/foodservice operation being designed. Then there is a need to find qualified mechanical, plumbing and electrical subcontractors who are familiar with this type of equipment/technology and able to install it correctly.

There also needs to be an understanding by the foodservice/kitchen operator about the maintenance costs involved in keeping this technology operating in the manner to which it was designed. No precipitator will continue to extract grease and smoke from an exhaust system if there is grease bridging the gap between the charged plates in a cell. The cell must be removed cleaned and returned to service. No odor control module — whether it be carbon or potassium permanganate — will control odors for very long without some type of grease elimination unit working in front of it.

Specially trained service contractors who know the technology and the precautions necessary for safe and effective handling of the components of these systems are required.

Without the service and maintenance element in place, the systems are worthless. System complexity means that commercial kitchen owners and managers are unlikely to know anything about the internal workings or needs of these units. Their expertise is in the preparation and presentation of the next meal they serve. Just as they wouldn’t turn over food preparation to a bus boy, they can’t turn over kitchen ventilation service and maintenance to an amateur.

WHEN TO CLEAN THE SYSTEM

One of the most common questions regarding the equipment we just discussed is: How long will it be before it requires cleaning?

That’s a good question and there is only one right answer: as often as you must clean and/or inspect your entire kitchen exhaust system as defined by the local authority having jurisdiction (AHJ) at a minimum.

There are considerable variables that must be investigated before any type of cleaning/maintenance schedule can be established for these systems. Is the foodservice operation a new venture that will be growing its business over time where there maintenance needs will build during the first year? Is it the next up-and-coming hot spot where it will be jammed for the first 6 months and then business will level off? Is the equipment placed in a stadium, or other seasonal location that will have spurts of activity around slower periods? Besides the established intervals of the local AHJ, there needs to be discussion and consensus between the maintenance provider and the customer about the timing and frequency of maintenance and cleaning of all of the components of these systems. Do what is best for the facility and system you have.

THE CLEANERS

In the past, people have gotten into the kitchen exhaust cleaning industry thinking that the work is basically just glorified pressure washing for

restaurants. Many cleaners thought they simply needed to clean from the hood up to the fan and out of the building. They assumed that all systems are created equal and were, basically, the same. And, it is true that some exhaust cleaners spend their entire careers cleaning single story units with the exact same systems. But all of that is changing, and it is changing fast.

I can’t tell you how many kitchen exhaust cleaning professionals have told me, “Oh we will never see one of those things in our area. We’re not in a big city and there is no need for that type of system for restaurants in our area.” But some facility managers, architects and decision-makers across the country, in both big cities and small, are already ahead of the curve. They understand the need to happily marry the restaurant unit with its surrounding areas. They understand that, more and more, restaurants are expected to coexist in multi-use environments where no one wants to smell the cooking or see smoke belching out of the exhaust on the roof.

As casinos, country clubs, outdoor malls and office buildings look to “go green” (www.usgbc.org) and eliminate odor and smoke emanating from their properties, these high-tech systems will become more and more popular. As food-related businesses try to get closer and closer to apartments, condos and single-family home clusters, local jurisdictions and homeowner associations are becoming more and more particular about the look (and smell) of their neighborhoods. And these advances in exhaust technology make all that more possible than ever.

Electronic precipitators and ultraviolet systems will allow even the high-volume steak house/restaurateur to live in harmony with its neighbors. Imagine no more fighting with the fire marshalls, building inspectors, EPA, neighbors or landlord. No matter what part of the industry you are in, you can use these new systems to absolute advantage.

This is just the tip of the iceberg.

Not only are these units making systems more efficient, but for those with conventional baffle type filter canopies there are changes coming as well. Greenheck Corp. (www.greenheck.com) is changing the shape and configuration of baffle filters to extract more grease at the canopy while improving air flow. Captrate Inc. (www.captrate.com) has developed a filter-within-a-filter to trap more grease at the canopy while allowing the filter to be more efficient. As with any type of filter that is more efficient and captures a greater amount of grease and debris than a conventional baffle, what are the fan requirements for the additional static pressure these filters may impart on a system?

Fan manufacturers and related companies are developing new technologies to slow fans down so they are more energy-efficient during slack periods in the kitchen. Then as heat and smoke rise into the canopy, an electric sensor speeds the fan up to exhaust the smoke, grease and debris into the duct and out of the building.

This does not even scratch the surface of the maintenance and cleaning necessary to deal with today's advanced exhaust and makeup air requirements for commercial cooking operations. A committed reading into the National Fire Protection (NFPA)

Standard 96 (2008 edition) will open many eyes on new requirements for cleaning, maintenance and for the companies that provide those services. To see the difference between a system cleaned to NFPA 96 standards and one not cleaned to the same standard, read any news article about the fire in Boston this past August. An improperly inspected and incompletely cleaned exhaust system fueled a fire that burned undetected for over an hour in the system ductwork. When the fireball blew through the roof, it was too late. Two firefighters died, while 10 firefighters and one paramedic were sent to the hospital. Besides the human collateral damage, the damage to the structure and its neighbors means millions in lost revenue, insurance payoffs and reconstruction. And it could all have been prevented, had the system been properly inspected and cleaned.

HOW DO I GET MORE INFORMATION?

Check out these links to find out more about the technology behind these units:

- Flanders Inc. (www.precisionaire.com)
- Gaylord Industries (www.gaylordusa.com)
- Halton Group (www.halton.com)
- Trion Industries (www.trioninc.com)

- United Air Specialist (www.uasinc.com)
- Smoghog (www.kvent.com/kvent-uas-smoghog.htm)

These are the manufacturers of precipitators, filter systems and UV equipment that my company has worked with over the past several years. If I neglected to mention others, it is not intentional. The International Kitchen Exhaust Cleaning Association (IKECA) is also a valuable resource for advances in exhaust technology, as well as being the only association of its kind to require that all members clean to NFPA 96 standards (www.ikeca.org).

The future is now. Why wait? 

Joel Berkowitz is a partner/vice president of New York City-based Fireproofing Corporation of America/PFC. Fireproofing Corporation of America has been a member of the International Kitchen Exhaust Cleaning Association (IKECA) for 13 years and Berkowitz has participated on the board of IKECA for 6 years as well as serving in the position of vice president and president from 2004-2007.