

Breath Easy

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Protect your restaurants with proper exhaust fan maintenance

Kitchen exhaust fans seem like such a simple piece of equipment when you think of everything that goes into the overall operation and functionality of a restaurant. However, restaurateurs who have spent a decent amount of time in the heart of the industry know better.

In reality, these fans are the core functioning piece of the puzzle for a restaurant. According to Jonathon Mason, Hoods Department Manager for SLM Facility Solutions, the fan is the "heart and soul of a restaurant." Choosing to ignore proper maintenance and regularly scheduled cleanings for fans can ultimately result in a significant loss of money and a potential shutdown of the restaurant.

EXHAUST FAN BASICS

An exhaust fan is a mechanical ventilation device that creates an airway to expel impure or contaminated air and draw in clean air, improving indoor air quality. Any restaurant that uses cooking equipment and produces smoke is required to have an exhaust system to remove flammable fumes from the air within the kitchen. This is vital to not only improve the quality of air within the establishment, but to also ensure the safety and well-being of all customers and employees. In addition to protecting the inside of a restaurant, exhaust fans also help to prevent roof and building damage by directing air away from the rooftop and building.

There are many styles of fans within restaurants, including up blast, utility, in line and down blast. Each fan has a separate function and method for improving the overall air quality within the facility.

When selecting an exhaust fan, you should consider variables such as temperature, grease content in the air, the exhaust system and the fan's ability to handle friction, distance and airflow resistance.

TYPES OF FANS

UPBLAST FAN

The up blast, or "mushroom," fan is the most common fan used for exhaust systems. This type of fan is in high demand due to its low cost and user-friendly installation process. Most fast-food, casual and fine-dining restaurants use this style fan. The housing of the upblast fan is constructed of aluminum and includes a list of requirements when being installed on a rooftop. Phil Ackland's "Commercial Kitchen Exhaust Systems Manual" states that upblast fans must:

- Be listed for commercial cooking

- Be able to drain grease out of any trap or low point into a non-combustible container or collection device
- Have a grease collection device
- Be hinged and have a flexible weatherproof electrical cable to allow for cleaning

UTILITY FAN

Utility fans are also found in commercial cooking establishments and are made with steel instead of aluminum. This fan is made for a stronger and more durable application, compared to the upblast fan, and has a more powerful motor and lift. The lift refers to the cubic feet per minute, which is the measure of air being moved or "lifted" up through the fan. Utility fans differ from upblast fans in that they cannot be tilted and require access from the rear side of the fan housing. They are typically more difficult to clean and require additional maintenance due to the amount of ductwork that runs into the fan.

INLINE FAN

This fan is frequently used in larger systems that include constraints on how the ductwork runs through the building. Typically, they will be placed where the ductwork may run into a parking garage. High-rise buildings that have a ground-level restaurant are encouraged to use this type of fan.

DOWNBLAST FAN

Downblast, or downdraft, fans are usually not appropriate for use in a standard restaurant that produces a large amount of grease. This is because they blow the grease down into the ductwork instead of lifting it out.

FREQUENCY OF CLEANING

The chart below outlines typical cleaning schedules for exhaust fan systems, depending on the restaurant's cooking operations.

COMMON ISSUES

Patrick Kennedy, President at K-Kleen Inc., explains some common issues with exhaust fans:

Rattling. This occurs when components become defective due to lack of maintenance. Most rattles are caused by excess grease buildup on the fan blades or a worn belt. Usually, a good cleaning and belt change rectifies the problem.

Screws. These are extremely important, because if a fan is out of balance, the screws keep the fan from bouncing around, which could cause more damage to the fan.

Wiring melt. Usually wires melt due to a fan drawing in too much amperage; they, in fact, heat up. This happens for various reasons: The fan is dirty, which means it works harder than usual, or the belt (which is the key component that connects the motor and the blade) becomes loose or worn. Frayed or loose wires happen because of excessive movement, which is usually caused by normal wear (opening and closing a fan).

Mason says facility managers should also look out for the following:

Access panels. A major issue is when customers do not purchase access panels, which inhibits proper cleaning. Access panels are necessary in kitchen exhaust systems where the ductwork has areas not accessible for proper cleaning. Without access panels, grease tends to build up in the areas of the ductwork that the cleaners cannot access, which can cause additional problems such as fires, foul odors and even a contaminated working environment.

Ductwork. Before a cleaning, a technician needs to see a blueprint of the ductwork or at least some general documentation as to what type ductwork the location has, and whether they need access panels to complete the cleaning.

Lack of maintenance of the fan and the roof containment system. These two items significantly increase the chance of grease leaks, which occur when the fan blades are not properly running, or the housing of the fan is not thoroughly cleaned. The housing of the fan can be tricky to clean since it's the protective covering for the motor and electrical wiring. If grease leaks onto the roof of a building, it will eventually destroy the roof and can cost up to \$18,000 for repair or replacement. The solution to grease issues includes a proper cleaning schedule, as well as a grease containment system.

PROPER GREASE CONTAINMENT

Grease-containment systems provide a significant amount of protection from grease damage by trapping the grease. There are two primary types of grease containment systems: high capacity and the side-kick.

High-capacity grease-containment systems are the most expensive, but they decrease the chance of most grease leaks. This style is primarily designed for restaurants that produce a high volume of grease. It uses a combination of grease-absorbing pads with a four-sided application to ensure all grease is captured.

The side-kick variation differs in that it is designed for applications that produce much lower volumes of grease. This version includes a container on one side of the fan, instead of all four, along with grease-absorbing pads to reduce the risk of grease leaking onto the roof. By protecting the roof, you will ensure that working areas surrounding the fan are kept safe for technicians who come to service the fans on a regular basis. It will also ultimately save you money.

HINGE KITS

Hinge kits are a vital part of the fan that often get overlooked during installation. However, without hinges, your fan will not meet NFPA- 96 code requirements. In addition, a lack of hinges can also lead to roof and electrical damage during cleanings, since the technician will have to place the fan directly onto the roof. Often, the fan will cut wires or create holes in the foundation of the roof if placed improperly. Hinge kits allow for safer and easier cleaning underneath the fan and in the duct by tipping the fan instead of completely lifting it off the exhaust system onto the roof. This allows easier accessibility for technicians to complete their cleaning in the most efficient way.

PREVENTING FIRES

Consistent maintenance of exhaust fans is a primary defense against fire hazards in a restaurant. Every year, an estimated 5,900 restaurant fires occur in the United States, causing an average of 75 injuries and \$172 million in property loss.

The cleaning process includes the exhaust of the hood, all ductwork and the exhaust fans. Typically, during a cleaning, technicians remove the grease buildup from the entire system so it does not end up in the restaurant's floor drains. In order to remove all grease particles from the hood, duct and fan, technicians may use a variety of different sanitizing methods, including chemical degreasers, scrubbing and power washing. Quality control is vital during cleanings to ensure compliance with all applicable municipal, state and NFPA codes.

Upon completion, the technician should place a proof-of-performance label on the hood. The label shows when the cleaning was done and assures the fire marshal the system was cleaned properly. Ideally, further documentation, such as a list of any service issues, documentation of the type of cleaning and before-and-after photos should be uploaded to the cloud for clients to view.

By keeping up with the maintenance of your kitchen exhaust fan, your restaurant will benefit from greater energy savings, improved health standards, a cleaner working environment and minimized product contamination. Preventive maintenance cleanings and repair costs are dramatically less than damages that may occur without consistent maintenance. The risk of fire hazards also significantly decreases and you will remain in compliance with local municipal fire codes. Not only that, but your equipment enjoys a longer life and saves you many future headaches.

Susan Daywitt is the Founder, President and CEO of SLM Facility Solutions Nationwide. She is an active member of RFMA and a regular contributor to Facilitator.