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HIDDEN

Fire Hazard

Pollution control units provide additional filtration, but they also pose a threat if not properly safeguarded.

As Americans become more environmentally conscious, the implementation of clean air laws in cities around the country is rising. Air quality is a growing health concern. This has led to a greater focus on the air pollutants and fumes expelled from buildings. This includes the exhausted air from restaurants.

Cooking can release a number of pollutants into the air, such as nitrogen dioxide and carbon monoxide, as well as particulate matter. When these pollutants are exhausted from a kitchen, they can release grease, smoke and odors into the outdoor air.

This is why restaurants are increasingly adding pollution control units (PCUs) to their kitchen exhaust systems, providing an additional level of filtration to exhaust cleaner air. For those restaurants with PCUs, it's important to ensure units are protected from potential dangers. Safeguarding against fire hazards with a fire suppression system is of primary importance.

CLEANER AIR FOR ALL

PCUs provide secondary filtration and pollution control of grease, smoke, odors and other particulates produced during cooking. Installed in the grease exhaust ductwork of kitchen ventilation systems, they can be "in duct" models, mounted directly within a ductwork run, or "end duct" models, which are mounted on the roof at the end of the ductwork system.

They can be configured with a variety of sizes and filtration options, depending on the needs of the particular kitchen and restaurant. The specific PCU configuration depends on a number of factors, such as the type

of cooking done in the kitchen (charbroiling, stir-frying, high-volume frying, etc.), location of the restaurant and floor plan.

Filtration options include baffle filters, DOP panel filters, HEPA filters, bag filters, charcoal filters and Electrostatic Precipitators (ESPs), among others. Charcoal filters are often recommended for odor control, while ESP options provide heightened smoke removal.

INCREASING CODE ENFORCEMENT

Given the added environmental benefits of PCUs, there has been an increase among some municipalities and building officials to enforce the use of PCUs in restaurants through local building and mechanical codes. Additionally, factors like urban growth and the prevalence of multi-use occupancies have affected the need for secondary filtration and pollution control to meet minimal environmental protection requirements.

While these factors have led to a rise in the number of PCU installations, there is no nationally recognized standard requiring PCUs to be used in commercial kitchens. This has led to a lack of awareness, specifically related to safety and maintenance, among restaurant owners.

Some restaurant owners or operators may already have a PCU installed, but because they are unfamiliar with its use, they may not maintain it properly. This can ultimately leave the restaurant and personnel at risk.

HIDDEN FIRE HAZARD

Similar to other grease-producing cooking appliances and exhaust system components, PCUs themselves can also pose a fire risk. PCUs, as designed, provide secondary filtration installed within the ventilation system and serve to filter hazardous, flammable materials, such as grease vapors and particulate matter.

In addition, PCU filtering media may be

constructed using flammable Class A materials, or may retain higher levels of grease particulate than the typical baffle filters used in exhaust hoods. And because they are installed within the path of exhaust, a PCU may also become involved in a fire originating in a cooking appliance below. Consequently, an effective fire suppression system, designed and installed within the PCU, is also needed.

LACK OF SAFETY STANDARDIZATION

Despite the fact that restaurant owners are not always required to have a PCU as part of their exhaust system, it is mandatory for those who do have PCUs to have approved fire protection.

Per National Fire Protection Association (NFPA) 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, 2014 Edition, Section 9.3.3., “any equipment, listed or otherwise, that provides secondary filtration or air pollution control and that is installed in the path of travel of exhaust products shall be provided with an approved automatic fire-extinguishing system, installed with the fire-extinguishing system manufacturer’s instructions...”

Although PCUs must have fire suppression systems installed, there is a lack of standardized

safety listings or testing protocol for these systems. Currently, Underwriter’s Laboratories (UL) does not have a fire test protocol for PCUs in the ANSI/UL 300, Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment.

With no standard UL 300 test procedures, fire suppression system manufacturers can provide their own guidelines to PCU manufacturers and fire system distributors. These guidelines must always meet the requirements of NFPA 96 and NFPA 17A, Standards for Wet Chemical Extinguishing Systems.

CUSTOM SOLUTIONS HELP ENSURE PROPER PROTECTION

The most optimal safeguard against fire hazards will typically come from a customized solution.

Due to the many design and configuration variables of PCUs, as well as the lack of standard UL 300 testing, it is difficult to recommend generic protection for all PCUs. To ensure their PCU fire suppression system provides the right protection, restaurant owners should work directly with a trained and certified fire protection distributor.

The fire protection distributor will then work with a fire suppression manufacturer and pollution control manufacturer to determine a customized approach with recom-

mendations to protect their specific PCU hazards.

CLEANING AND MAINTENANCE ARE KEY

Regular cleaning and proper maintenance are other key factors to help ensure the effectiveness and safety of any PCU system. The following are typical PCU manufacturer guidelines that are applicable to most units.

- Inspect the entire unit and duct for grease leakage. Clean grease-laden deposits upon inspection.
- Thoroughly clean first stage filters with warm soapy water.
- Monitor all filter media for fuel loading to determine frequency of cleaning.
- Inspect and replace, if clogged, second stage filters, HEPA filters and carbon filters.
- Inspect and clean the entire PCU and all of its integral components.
- Replace integral components, if necessary.
- Keep record of inspection and cleaning on premises for inspection.
- Inspect the entire exhaust system. This should be done monthly if PCU is serving solid fuel cooking equipment.
- Prior to restarting the unit, check all fasteners and hardware for tightness every time maintenance checks are performed.

The guidelines above provide basic instructions for keeping PCU systems

running efficiently and safely. Remember that all inspection and cleaning should be performed by qualified personnel, in accordance with the PCU manufacturer’s recommendations and in compliance with local codes and requirements.

PCUs are a leading solution when it comes to air quality health and safety concerns, so it is vitally important to ensure the PCU is protected against cooking-related fire hazards. Even in the absence of standard UL 300 testing procedures for PCU fire suppression systems, restaurant owners and operators can help ensure the unit is protected with a customized fire protection solution to meet their needs. ■

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