

## COMMERCIAL KITCHEN EXHAUST SYSTEMS – SERVICE GUIDE

*Lotus Commercial is Australia's Leading Commercial Kitchen Exhaust Cleaning Company*

COMPANY PROFILE	COMMERCIAL KITCHEN EXHAUST	OTHER SERVICES
<ul style="list-style-type: none"> <li>National coverage</li> <li>Over 30 years' experience</li> <li>Trained staff</li> <li>Tailored services</li> <li>Proof of service</li> <li>Compliance</li> <li>Fully insured</li> <li>IKECA member</li> <li>FPAA member</li> <li>HACCP accredited</li> </ul>	<ul style="list-style-type: none"> <li>Kitchen Filter Exchange</li> <li>Canopy Cleaning</li> <li>Duct Cleaning</li> <li>Exhaust Fan Cleaning</li> <li>Fan Breakdown &amp; Repairs</li> <li>Filter Sales</li> </ul>	<ul style="list-style-type: none"> <li>Kitchen High Clean</li> <li>Laundry Duct Clean</li> <li>Cool Room Cleaning</li> <li>Car Park Duct &amp; Fan Cleaning</li> <li>Sanitisation</li> </ul> <p>Commercial Air Conditioning</p> <ul style="list-style-type: none"> <li>Filter Maintenance</li> <li>Duct Cleaning</li> <li>Coil Cleaning</li> <li>Filter Sales</li> </ul>

### PURPOSE

The intention of this Service Guide is to provide information in relation to the services to be provided by Lotus Commercial, and to help to guide the customer in carrying out its ongoing responsibilities in relation to the customer's premises and equipment.

### SERVICE GUIDE STANDARDS

Our services, performance and recommendations draw upon the following standards and guidelines:

- Australian Standard AS 1851-2012, *Routine service of fire protection systems and equipment*
- National Fire Protection Association NFPA-96, 2014 Edition, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*
- International Kitchen Exhaust Cleaning Association ANSI/IKECA C10-2016, *Standard for Cleaning of Commercial Kitchen Exhaust Systems*
- Building Engineering Services Association, UK TR/19 HVCA 2013, *Guide to Good Practice - Internal Cleanliness of Ventilation Systems*

## KITCHEN EXHAUST SYSTEMS

A kitchen exhaust is a custom-built, engineered system with large number of specific design factors. Kitchen exhaust systems present a particular hazard due to the potential for the accumulation of grease/oil deposits. The need for specialist cleaning of kitchen exhaust systems will depend on the level of usage of the cooking equipment, types and quantity of cooking.

Specialised cleaning of your kitchen exhaust system is important in reducing many risks, such fire, hygiene and health issues, vermin and mechanical hazards.

A typical system has a number of parts to it:

- **Filters** – Sit within the canopy hood and designed to capture grease/oil and particulates from the cooking process and equipment below.
- **Canopy hood** - Also referred to as range hood, exhaust hood, or exhaust canopy.
- **Canopy/Exhaust plenum** - This is typically the area immediately behind the filters.
- **Ducting** - Ducting is connected beyond the canopy plenum. This may involve short transition ducts or may include many linear metres of horizontal and/or vertical ductwork. Vertical ductwork, also referred to as riser, may pass through many levels of a building.
- **Exhaust Fan** - To create extraction from the canopy an exhaust fan is typically connected to the ductwork. Exhaust fans discharge directly into the atmosphere via a cowl.
- **Fire Protection Systems** – Automatic systems that are intended to control or suppress fires that may occur in the kitchen exhaust system. Depending on the system provided, sprinklers and/or nozzles may be present in the canopy, plenum and ducting.

## KITCHEN EXHAUST SYSTEMS CLEANING

General guidelines for kitchen exhaust system cleaning frequencies are provided within the Australian Standards (AS 1851) however this standard does not provide detailed baseline frequencies.

Baseline cleaning frequencies have been provided by two leading industry groups; the Building Engineering Services Association (BESA UK TR/19) and the International Kitchen Exhaust Cleaning Association (ANSI/IKECA C10-2016).

Even though a baseline cleaning frequency has been recommended based on the guidelines, you must carry out constant monitoring of exhaust oil/grease deposits to determine if an increased cleaning frequency should be completed. Lotus Commercial staff can provide this recommendation during any periodic clean, however the customer must ensure that the exhaust system is regularly inspected to monitor grease deposits.

Cleaning frequencies will be recommended to the customer on the initial inspection or assessment, at subsequent pre-cleaning and also at interval cleaning. The table below acts as an initial guide to the frequency of cleaning.

Perceived level of grease production	Typical example	Cleaning intervals (months) Daily usage			
		Up to 6 hours	6 – 12 hours	12 – 16 hours	16+ hours
Low	No significant production of grease laden aerosols during normal daily food production operations	12	12	6	6
Medium	Moderate production of grease laden aerosols during normal daily food production operations	12	6	4	3
High	Heavy, significant or continual production of grease laden aerosols during normal daily food production operations	6	3	3	2

Table 1 - Kitchen grease extract systems (BESA TR19 Chapter 7, table 11)

“1 - Commercial liability/property insurance policies invariably contain conditions and warranties that stipulate a minimum cleaning frequency for grease extract ductwork systems under the insurance which can be a higher frequency of cleaning than TR/19 recommendations. Failure to comply with such requirements will invalidate the property insurance policy.

2 - The canopy and canopy/extract plenum is an area of higher fire risk and consideration should be given to more frequent cleaning in accordance with insurers’ requirements.

3 - Periodic specialist cleaning should be accompanied by daily or weekly cleaning of canopies, filters and associated drains and traps in accordance with manufacturers’ recommendations, typically carried out by the kitchen operator, in compliance with the property insurers’ requirements.”

- Notes for the above table, BESA TR19 Chapter 7.

Oil/Grease deposit measurement	Recommended action
Under 50 µm in all areas (0.05mm)	No action required: Post-clean expected results
> 200 µm as a mean across the system (0.2mm)	Complete cleaning required
Any single measurement above 500 µm (0.5mm)	Urgent localised cleaning required

Table 1 - Surface Grease Deposit Limits (BESA TR19 Chapter 7, table 12) and critical thicknesses from TR19 Chapter 7.

“1 in the absence of, and the likely theoretical difficulties of, an absolute measure of the flammability of various quantities of grease deposit, the surface grease deposit limits are given in Table 12 and paragraph 7.42. These levels were determined by extensive field testing to measure at what levels good practice employers, or operators of systems, carry out system cleaning and what levels of cleanliness are normally achieved by specialist duct cleaners using available cleaning and measurement technology within reasonable economic bounds.

2 The deposit limits refer to the degree of grease deposition within the ductwork consistent with good practice. other factors such as cooking methods, potential ignition sources, and other combustible debris will affect the risk of fire.

3 The mean measurement is calculated by dividing the total of the test results by the number of testing locations.

4 The second category of any single measurement above 500 µm is provided to cater for local “hot spots” which should be cleaned even where the whole system does not require complete cleaning. Examples might be immediately local to a canopy or at a fan.

5 The extent of urgent local cleaning required by the presence of grease deposits above 500 µm shall be subject to reasonable appreciation of the extent of fouling and risk posed.

A precision gauge capable of measuring wet film thickness from 50 to 800 µ microns at suitable increments (including 200). Toothed combs typically used to measure wet paint film thickness are suitable.”

- Notes for the above table, BESA TR19 Chapter 7.

## **ROLE OF LOTUS COMMERCIAL**

Lotus Commercial will provide recommendations for frequency of cleaning of kitchen exhaust systems based on the above information, and base the cleaning service on the sections below. Lotus Commercial is able to recommend adjusted cleaning frequencies if oil/grease deposits exceed the above amounts. Lotus Commercial is available to assist / consult on access requirements for new sites under construction or during refurbishment of existing locations.

## **ROLE OF THE KITCHEN OPERATOR**

As the customer, you will be responsible for the actions of the kitchen operator. And in turn, the kitchen operator will play a vital role in ensuring the kitchen exhaust system oil/grease deposit levels are under the acceptable limits.

If an increase amount of grease deposits is found at any time, or there are changed cooking conditions that may increase the amount of expected grease deposits, Lotus Commercial should be immediately contacted to increase cleaning frequency.

*"The responsibility for inspection, testing, maintenance, and cleanliness of the ventilation control and fire protection of the commercial cooking operations shall ultimately be that of the owner of the system, provided that this responsibility has not been transferred in written form to a management company, tenant, or other party." - NFPA 96 Section 4.1.5*

## **LOTUS COMMERCIAL EXHAUST SYSTEM CLEANING SERVICE**

Lotus Commercial will:

1. Contact clients prior to work confirming price, start time, access and any changes to the system.
2. Provide an experienced, trained and inducted team to conduct all aspects of the work.
3. Ensure all work is conducted in accordance with appropriate safety standards and personal protective equipment (PPE). Ensure all site-related risk assessments and inductions are completed prior to commencement.
4. Conduct pre-cleaning inspection including: system test, filter and fan inspection, pre-clean photographs and access inspection to ensure reasonable access to all areas of the exhaust for cleaning. (See Appendix 2 - Access)
5. Ensure that all energy sources such as electrical switches, fire systems and heat sources are isolated and tagged.
6. Cover and protect the workspace from contamination by cleaning residues and by-products.
7. Clean the system in accordance with the agreed scope of work using the optimum methodology for the specific job. Ensure as far as practicable, that grease and contaminant build-up is removed from the system.
8. Confirm that grease build-up removal conforms to acceptable tolerances and take post job photographs to evidence work.
9. Remove all waste products and leave the workplace clean, tidy and ready for use.
10. Perform a full system test after completing the work.
11. Following receipt of payment, a service verification certificate is provided to serve as evidence of cleaning for insurers, council officers, landlord's agents, etc.

## KITCHEN FILTER CLEANING

Kitchen hood filters are the first line of defence in a kitchen hood fire, so they must be well maintained on a regular basis. Kitchen filters in the canopy should be regularly cleaned based on the volume and type of cooking.

Customers can either purchase an exchange set of filters which will be engraved with your business name so that you receive your own filters on each service, or you can have an exchange service where the filters you receive will be from the Lotus Commercial stock pool of a comparable quality.

The tables below provide a recommendation on the frequency of offsite cleaning of kitchen hood filters. Customers should regularly monitor their kitchen exhaust system and where necessary clean filters between services:

Clean all filters in these hoods	Offsite Cleaning (Lotus Commercial)
Filters in hoods over wood or charcoal grills, fast food grills or fryers, 24-hour grills or flat tops, rotisseries, char broilers, or woks	Multiday or weekly exchange of all filters in hoods of this type
Filters in hoods over deep fryers, flat top grills, moderate-use char broilers	Biweekly exchange of all filters in hoods of this type
Filters in hoods over high-use ovens, stoves, convection ovens, Henny Penny fryers, moderate-use hoods	Monthly exchange of all filters in hoods of this type
Filters in hoods over low-use ovens, stoves, convection ovens, any other low-use hood	Bimonthly exchange of all filters in hoods of this type

*Table 3 – Extract: Filter Cleaning Frequency by Type of Cooking (IKECA Journal Spring 2017, Eric Dyer – IKECA Certified Exhaust Cleaning Specialist)*

Type or Volume of Cooking	Offsite Cleaning (Lotus Commercial)
Systems serving solid fuel cooking operations, systems serving high-volume cooking operations, such as 24- hour cooking, charbroiling, or wok cooking	Multiday or weekly exchange of all filters in hoods of this type
Systems serving moderate volume cooking operations	Biweekly exchange of all filters in hoods of this type
Systems serving low-volume cooking operations, such as moderate-use churches or senior centres	Monthly exchange of all filters in hoods of this type
Systems serving low-volume cooking operations, such as low-volume use churches, day camps, seasonal businesses	Bimonthly exchange of all filters in hoods of this type (during season or when in use)

*Table 4 – Extract: Filter Cleaning Frequency by Volume of Cooking (IKECA Journal Spring 2017, Eric Dyer – IKECA Certified Exhaust Cleaning Specialist)*

## **APPENDIX 1 - SYSTEM TESTING (INSPECTION/MONITORING)**

The testing method outlined below provides an objective, repeatable and verifiable measurement of grease deposits, to overcome the subjectivity of visual inspection alone.

Measurements may be taken at the following locations where practicable:

- Canopy plenum behind filters
- Duct - 1 metre from canopy
- Duct - 3 metres from canopy
- Duct midway between canopy and fan
- Duct upstream of the exhaust fan
- Discharge duct downstream of the exhaust fan if inline

*Source: BESA, TR/19 7.41*

## APPENDIX 2 - ACCESS TO THE INTERNAL SURFACES OF THE KITCHEN EXHAUST SYSTEM

It is essential that a kitchen exhaust ductwork system, and canopy plenum, is provided with access panels of sufficient number, quality and size to enable unrestricted access for regular cleaning and inspection of the internal surfaces and in-line components.

Location of access to the internal surfaces of a kitchen exhaust system is dependent on a number of design and operational considerations:

- design and location of ductwork;
- building design and construction materials;
- location of kitchen within the building;
- location of exhaust fan and accessibility for maintenance;
- accessibility to physically reach the ductwork;
- any building modifications and current uses that may restrict access and
- the location and number of system components requiring access.

*Source: BESA, TR/19 7.18*

Access panels should be as large as the duct size permits without weakening the structure of the system. Openings should not be obstructed by other building services, stored equipment or by the fabric of the building.

Access panels should be fitted at the side of the duct, a minimum of 10mm above the base to minimise the risk of grease leakage. In designing systems due consideration should be given to providing physical unobstructed access to all access panels. The table below outlines where access panels may be required:

### LOCATION OF ACCESS PANELS FOR CLEANING AND INSPECTION

Component(s)	Access sides
Volume Control Dampers	Both sides
Fire Dampers	Both sides
Attenuators	Both sides
Changes in Direction	Both sides
Filter Sections	Both sides
Horizontal Ducts	Generally, every 3 metres
Risers – vertical ducts	Top and bottom as a minimum
Exhaust Fans	Both sides
Discharge grille/mesh	One side

*Table 5 - Location of Access Panels for Cleaning and Inspection Purposes (BESA, TR/19 Table 8)*

## APPENDIX 3 – RISK

*“Restaurant fires in Australia typically start in the kitchen. Annually they cost millions of dollars in insurance claims and lost revenue to the business. They also risk the lives of staff and diners, and result in the loss of local revenue and jobs. Fortunately, these fires are largely preventable if the right cleaning regimes are undertaken by qualified contractors and if appropriate automatic and hand-held fire suppression systems are installed, tested and maintained.”*

- VERO RM Insight Issue 11 – October 16, 2014.

*“A study of fires in the United States determined that between 2006 -2010, the average number of fires each year in cooking equipment was 4,360, being 57% of all eating and drinking establishments... Establishments with wet pipe sprinklers present had 75% lower property damage per event. Failure to keep kitchen equipment, filters and ducting clean was a direct factor in 21% of fires.”*

- NFPA Report: Structure Fires in Eating and Drinking Establishments, 2012.

Fires within kitchen exhaust systems can occur frequently and the severity of the fire is dependant many factors such as the design of the system, active and passive protection systems and regular cleaning and maintenance.

Kitchen exhaust systems designed and built to meet all relevant Australian Standards can greatly reduce the severity of a fire. This includes the installation of automatic fire suppression systems in the hood and ducting and surrounding non-combustible construction and equipment.

If the customer believes that their system does not meet all sections of the Australian Standards, the customer must take any necessary remedial action and reduce any fire risks. The customer should assess whether a “Hierarchy of Control” should be implemented in relation to any fire hazards at the customer’s premises.

Hierarchy of Control	Order	Action / Protection
Eliminate	1	N/A – Unable to eliminate the Kitchen Exhaust System
Substitute	2	Oils/grease inherited hazards of cooking – other methods of cooking can be recommended, however unlikely to occur.
Engineering Controls Automatic/Active	3	Provide Automatic Sprinkler Protection as per AS2118.1-2017 within the kitchen hood and within the duct, and/or provide alternative fire suppression/wet chemical system in accordance to the Australian Standard
Engineering Controls Passive	4	Ensure kitchen exhaust system, and the surrounding areas are non-combustible, solid construction and do not run through critical building areas.
Engineering Controls Manual	5	Kitchen Operator to ensure all kitchen filters are cleaned regularly (as per industry best practice) in order to reduce the risk of fire penetrating the first physical barrier of defence.
Engineering Controls Manual	6	Kitchen Operator to organise regular specialised cleaning of the kitchen exhaust system (i.e. Lotus Commercial) to reduce the risk of fire continuing within the ducting if the first barrier of defence has been compromised.
Administrative Controls	7	Ensure all kitchen staff are trained in fire response.
PPE / Personal Protection	8	N/A – Not applicable to this hazard

Table 6 - Hierarchy of Control - Path of a kitchen fire hazard