3 ECHO SQUARE

DA12 1NP

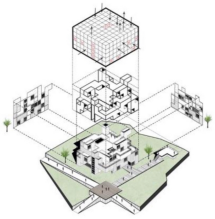
FILTRATION AND MAINTANANCE ASSESSMENT

GOYA WORKS

GOYA WORKS LTD

10/08/2023

Project No: G0096



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Document History

Revision	Purpose description	Origination	Reviewed	Authorised	Date
1	Issued for comment	GK	YS	GK	10/08/23
2					

Client	Oaklands Property & Developments Limited
Adress	3 Echo Square
Document title	Report on Kitchen Extract
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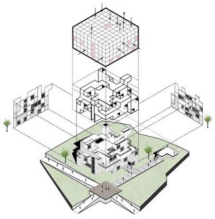


Filtration Report and Calculation for proposed System at 3 ECHO SQUARE :

Turkish restaurants are catering establishments which extract air with high level odour emission alongside grease content. Further to this, the 'Risk Assessment Score' obtained **26/45 for canopy system** at the 3 Echo Street .The risk assessment score demonstrates that the risk to be considered as **High Level** according to table given below respectively.

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low level odour control	Less than 20
High	High level odour control	20 to 35
Very high	Very high level odour control	More than 35

Table 1. Defra Guide Risk Assessment for Odour

To sum up the system, the canopy has an internal extraction unit composed with grease filters which will collect all fumes and contaminants into an internally placed and secure container at the base of the range. It will issue an audible alert, if the extraction unit experiences any problems.

Grease filters are removable and to be cleaned in intervals. Extraction duct that has connected to the canopy has run above roof on the kitchen area. And new Extracted air ducting will pass through the air purification system and then to the fan. After fan the termination will be with jet cowl.

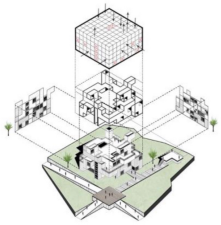
The system required 1.1 m3/s air, for this reason carbon filters to be used in this system.

High level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 – 0.4 second residence time).**

2. **Fine filtration or ESP followed by UV ozone system to achieve the same level of control as point 1.**

Table 2. High Level Odour Control ways for main canopy system



Why We Recommend Carbon Filter and Hepa Filter

The DEFRA Guide Risk Assessment for Odour confirms that the odour and grease level loading for Turkish Cuisine is the highest of four levels. The cuisine will be offered at 3 Echo Square will be very specific. Consequently, the appropriate airflow rate recommended is **1.1 m3/s**; therefore, carbon filters are to be utilized to achieve a **2 m3/s** air flow rate. Recommended system will be efficient enough to reduce any type of odour emission alongside reduced grease within the system.

The ESP`s use panels of cells to remove the malodours gases within the commercial kitchen extract duct through the process of chemical adsorption.

"To meet the criteria of a High-Efficiency Particulate Air (HEPA) filter and the Carbon filters must have the capability to eliminate 99.97% of particles, reaching a sub-micron level, from the air that flows through them. The primary purpose of utilizing HEPA filtration in our system is to effectively remove smoke particles

In these project; PA242424 7C and WEDGE H14/C 609X609X292 (2 of them) are to be used.

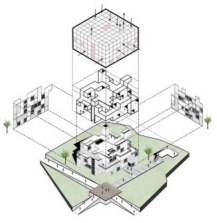
Carbon Filter Cell Part Number	Nominal Size (inches)	Height (mm)	Width (mm)	Depth (mm)	Weight of Encased Carbon (Kg)	Weight of Entire Cell (Kg)	Capacity @ 0.1 Second Dwell Time M3/h
PA-240824-7C "Site Safe"	24 x 08 x 24	594	196	597	17	18	1266
PA-242412-7C	24 x 24 x 12	594	594	297	25	36	1900
PA-242424-7C	24 x 24 x 24	594	594	597	50	61	3800

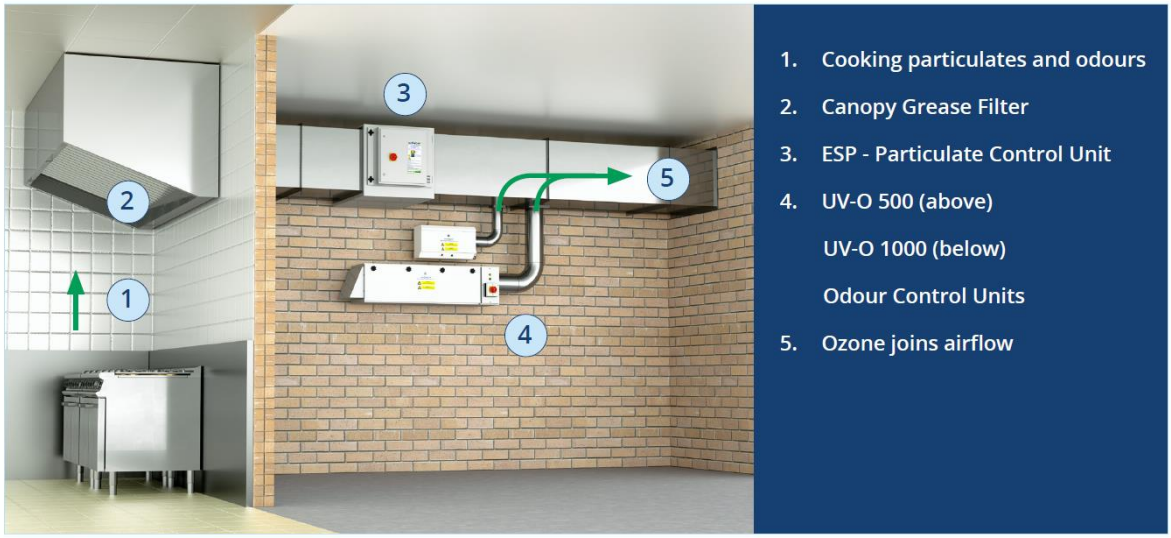
Table 5. Carbon Filters Spec Sheet

E10 WEDGE HEPA FILTERS					
Actual Sizes mm			Flow Rate	PD	Part Numbers
H	W	D	m³/s	Pa	GWEDGE/E10/C
609	609	292	0.89	200	1510820
609	305	292	0.45	200	1510821

H14 WEDGE HEPA FILTERS					
Actual Sizes mm			Flow Rate	PD	Part Numbers
H	W	D	m³/s	Pa	WEDGE/H14/C
609	609	292	0.89	280	1510830
609	305	292	0.44	280	1510831

Table 6. Hepa Filters Spec Sheet





Picture 1: Example System View

MAINTENANCE FORON100:

All maintenance should be carried out in accordance with the planned maintenance set by the installation contractor as set out below and by the Technical and Operations Manual for the ON100 at section 7 (Maintenance and Cleaning).

All maintenance should be carried out by a trained operative.

When handling any components suitable PPE should be used - gloves, eye protection and access equipment.

Basic Maintenance Activities	**Frequency**
Clean the inside of the Unit and remove dust and grease from the filter compartment	From once a week to once every 3 months depending on the degree of pollution.
Clean the Mesh Pre-filter, with particular attention to the ESP Collector Cell and the Mesh Post-filter and check for damage	From once a week to once every 3 months depending on the degree of pollution.
Clean the outside of the Unit with mild detergent	Every 6 months
Check the door sealing material	Every 12 months

Table 5. ESP`s Cleaning Schedule.

MAINTENANCE FOR CARBON AND HEPA FILTERS

All maintenance should be carried out in accordance with the planned maintenance set by the installation contractor as set out below and by the Technical and Operations Manual.

All maintenance should be carried out by a trained operative.

When handling any components suitable PPE should be used - gloves, eye protection and access equipment.

Carbon Filters

Frequent deep cleaning of the activated side carbon should be replaced with new activated side carbons every 12 months.

Hepa Filters

Frequent deep cleaning of the activated side carbon should be replaced with new activated side carbons every 12 months.

Bag Filters/Pre Filter

Frequent deep cleaning of the bag filters should be replaced with new filters every 6 months.

Ducts and Fan:

Intervals between kitchen extract cleaning depend on usage. These are minimum recommended intervals according to the HVCA`s TR/19 best practice guidance.
A new table provides clear guidance to assist in assessing the requirements for cleaning particularly where cooking methods produce high volumes of airborne grease contaminants.

Example	Up to6 hrs per day	6 to 12 hrs	12 to 16 hrs	16+hrs	Max inspection interval
No significant production of grease	12 months	12 months	6 months	6 months	6 months
Moderate production of grease laden aerosols during normal daily food production	12 months	6 months	4 months	3 months	6 months
Heavy significant production of grease during normal food production	6 months	3 months	3 months	2 months	6 months

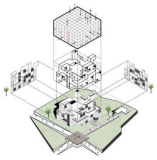



Table 7. Ducting Cleaning Schedule