4 New College Parade

NW3 5EP

Filtration Assessment

Client: Tony`s Pita

1th March 2022
Project No: G0023

Filtration Report and Calculation for Proposed System at 4 New College Parade :

Kebab restaurants are catering establishments which extract air with high level odour emission alongside grease content. Further to this, the 'Risk Assessment Score' obtained **22/45** at the 4 New College Parade. The risk assessment score demonstrates that the risk to be considered as **'high'** according to table given below.

DEFRA Guide Risk Assessment for Odour Table 2

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 high velocity jet cowl or bird beak.

The system required 2.1 m3/s air, for this reason ESP4500E and carbon filters to be used in this system.

Very High level odour control may include:

01 Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4 – 0.8 second residence time).	03 Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.
02 Fine filtration or ESP followed by carbon filtration and counteractant/neutralising system to achieve the same level of control as 1.	04 Fine filtration or ESP followed by wet scrubbing to achieve the same level of control as 1.

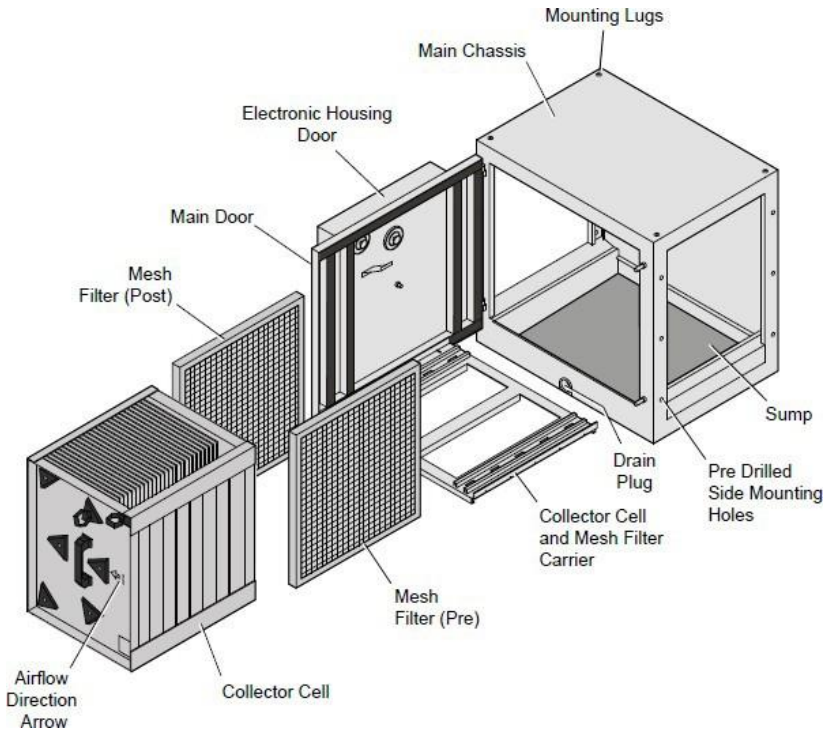
Table 2. High Level Odour Control ways

ESP4500E

Electrostatic Precipitators ('ESPs') have been specifically designed for kitchen extract systems and have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust. This not only simplifies servicing, but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on buildups of grease within the ducting.The ionisation voltage has been designed to run at a negative potential which enhances the ionisation of particles and also produces more ozone which is helpful in reducing cooking odours. Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with allextract volume requirements.

Why we recommend the ESP4500E?

The DEFRA Guide Risk Assessment for Odour confirms that the odour and grease level loading for Kebab Restaurant is the highest of four levels. The cuisine will be offered at 4 New College Parade will be very specific (kebab). Consequently, the appropriate airflow rate recommended is **2 m3/s**; therefore, ESP4500E coupled with carbon filters are to be utilized to achieve a **2.1 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 specification of each model is detailed below:

	ESP 1500EI	ESP 3000EI	ESP 4500EI	ESP 6000EI
Power consumption	20 Watts	30 Watts	40 Watts	50 Watts
Maximum air handling capacity	Up to 0.7m³/ sec	Up to 1.4m³/ sec	Up to 2.1m³/ sec	Up to 2.8m³/ sec
Dimensions	W 450mm H 630mm D 640mm	W 900mm H 630mm D 640mm	W 1350mm H 630mm D 640mm	W 1800mm H 630mm D 640mm
Weight	55kg	85kg	118kg	153kg
Power supply	220/240V 50Hz 1ph	220/240V 50Hz 1ph	220/240V 50Hz 1ph	220/240V 50Hz 1ph
Filter efficiency	Up to 98%	Up to 98%	Up to 98%	Up to 98%
Housing	Epoxy-coated galvanised steel	Epoxy-coated galvanised steel	Epoxy-coated galvanised steel	Epoxy-coated galvanised steel

Table 3. ESP`s spec sheet.

Why we recommend x12 Activated Carbon Cells- Carbon Filters

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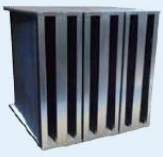
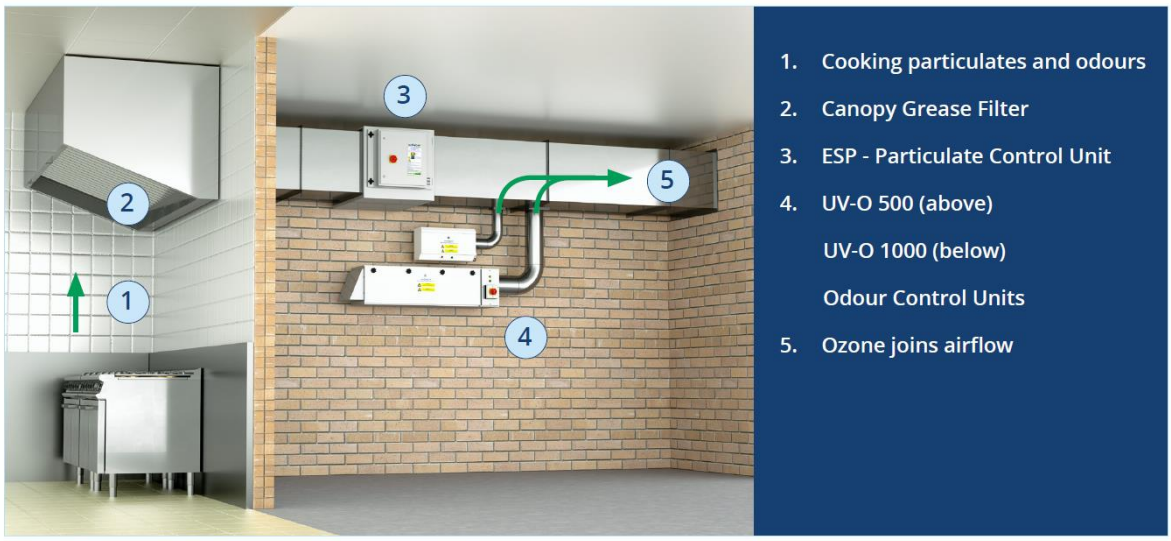
The site-safe carbon filters use panels of activated carbon to remove the malodours gases within the commercial kitchen extract duct through the process of chemical adsorption. By installing the ESP units before our Site-safe filters, the carbon life span is greatly increased, allowing it to nullify malodours atoptimum efficiency for much longer.

Will require two people plus lifting equipment to carry and install.	Safe for one person to carry. No special lifting equipment required.	
		
		
Carbon PA242424	Sitesafe PA240824	Sitesafe 3 x PA240824
Size 594 x 594 x 597	Size 594 x 196 x 597	Size 594 x 594 x 597
Gross Weight 68.2Kg	Gross Weight 17.95Kg	Gross Weight 53.85Kg
Carbon Weight 50Kg	Carbon Weight 16.6Kg	Carbon Weight 50Kg
Rated Airflow 3600m³/hr*	Rated Airflow 1200m³/hr*	Rated Airflow 3600m³/hr*
Pressure Drop 120Pa	Pressure Drop 120Pa	Pressure Drop 120Pa

*Rated Airflow based on a dwell time of 0.1 seconds. Available in all sizes to retrofit carbon cells

Table 4. Carbon Filterechnical Spec Sheet



Picture 1: Example System View

MAINTENANCE FOR ESP:

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 ESP4500E 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 CELLS:

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 Carbon filter.

Note: Other activities are strictly reserved for qualified personnel.

Example	Up to6 hrs per day	6 to 12 hrs	12 to 16 hrs	16+hrs	Max inspection interval
No significant production of grease	1	1	2	2	2
Moderate production of grease laden aerosols during normal daily food production	1	2	3	4	2
Heavy significant production of grease during normal food production	2	4	4	4	2

Table 6. Carbon filter changing Schedule for a year period

DUCTINGS:

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