The Commercial Kitchen Filtration Experts

Specification for EMAQ/DEFRA Report

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Interpretation of Requirements

Following our conversations and a perusal of drawings, I am pleased to provide an equipment selection for an odour control solution.

As with any project we get involved in we always recommend to our clients that they should closely follow the EMAQ/DEFRA guide for guidance on odour control equipment selection.
This ensures that what they propose will be in line with local authority's requirements and if the system is maintained correctly, they will not exhaust nuisance odours leading to complaints from nearby residents.

With this in mind, I carried out a Risk Assessment as detailed in Appendix 3 of the EMAQ Guide.
Taking into consideration the level of discharge, proximity of receptors, size of kitchen and cooking type your project requires a High Level of odour control to comply.

We have scored as below and as taken from Appendix 3: Risk Assessment for Odour;

Dispersion = 10
Proximity of receptors = 10
Size of kitchen = 3
Cooking type = 10
Total score = 33

The type of odour abatement system that complies is as below, taken directly from the EMAQ Guide and must be to a High Level of control;

Odour arrestment plant performance

High level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 – 0.4 residence time).
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

CRITERIA	SCORE	SCORE	DETAILS
Dispersion	Very Poor	20	Low level discharge into courtyard or restriction on stack
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s
	Moderate	10	Discharging 1m above eaves at 10 – 15 m/s
	Good	5	Discharging 1m above ridge at 15 m/s
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge
Size of Kitchen	Large	5	More than 100 covers or large sized take away
	Medium	3	Between 30 and 100 covers or medium sized take away
	Small	1	Less than 30 covers or small sizes take away
Cooking type (odour and grease loading)	Very High	10	Pub (high level of fried food), fried chicken, burgers or fish and chips. *Turkish, Middle Eastern, or any premises cooking with solid fuel.*
	High	7	Vietnamese, Thai or Indian, *Japanese, Chinese or Steakhouse*
	Medium	4	Cantonese, *Italian, French, Pizza (gas fired)*
	Low	1	Most pubs, *(no fried food, mainly reheating and sandwiches etc..) , Tea rooms..*

The System

Phase One

Because of the sensitivity of the site, I am advising extra Odour Control.

The first stage of control should be our Electrostatic Precipitator ESP6000 units, double passed (ESP followed by ESP) for Oil, Grease, and total Smoke removal.

ESP's

As our ESP's have been specifically designed for kitchen extract and not modified from industrial use, they 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 flammable build-ups within the duct run.

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 odours in kitchen applications.

Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with all extract volume requirements.

The Electrostatic Precipitator is a very efficient means for separating the particulate phase; operating efficiency when clean can be as high as 98% at particle sizes down to 0.01 micron.

The Electrostatic Precipitator does not present a high-pressure loss (175PA approx. dependant on air flow).

This gives a specific advantage in that most standard Kitchen extractor fans will have the capability of overcoming this small differential.

This is particularly advantageous when it is considered that if the pressure loss were high larger noisier fans would probably be necessary resulting in potential noise pollution.

Phase Two

After the ESP, the Site-Safe Carbons should be used to neutralise the cooking odours.
These should be installed with a minimum 0.2 second residence/dwell time.

Carbon Filters

We manufacture Site-Safe carbon filters, these innovative carbon units measure 594x196x597mm, three combining to 594x594x597mm, directly replacing our original carbon blocks whilst providing exactly the same filter performance as an existing full-size cell.

Their advantage is that they only weigh 18kg each against the 68kg of our original blocks.

This takes the strain out of fitting and servicing, allowing only one engineer to complete the task where two had been previously required.

Our Site-Safe carbon filters use panels of activated carbon to remove the malodourous gases within the commercial kitchen extract duct through the process of chemical adsorption.

By installing our ESP units before our Site-Safe filters, the carbon life span is greatly increased, allowing it to nullify malodours at optimum efficiency for much longer.

The carbon filters should be sized to achieve a minimum 0.2 second dwell time.

Phase Three

After the ESP's and Carbons, our UVO1000 unit should be fitted; this uses UV technology by producing Ozone to neutralise the cooking odours.

This will be designed and installed also with an equivalent 0.2 minimum dwell time ensuring the system designed meets EMAQ/DEFRA guidelines.

UVO1000

Unlike other UV-C systems, our UV-O units are located outside of the kitchen extract duct and are connected via a spigot and small diameter ducting.

The UV-O range uses UV-C technology to produce ozone and hydroxyl free radicals to oxidise cooking odours through a process of ozonolysis.

Although it is widely accepted that the best way to apply UV-C is directly in-line with the air stream itself, this can incur the problem of the lamps getting dirty and thus greatly reducing their effectiveness.

With our UV-O units the air flow does not come from the exhaust duct but from the ambient air around the unit, which is filtered on entry. This means that it is able to provide a uniform supply of ozone and hydroxyl free radicals into the extract system with an extremely low-pressure loss.

As with our UV-C range, for optimum performance we would recommend 2 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.

As you can see the system that has been specified is in line with EMAQ guidance.

Maintenance

We would advise that a service maintenance contract should be taken out, to enable our engineers to carry out the necessary service.

Intervals depend on how aggressive the cooking is, we would probably advise every 12 weeks to start with, it can be increased or decreased depending on our engineer's recommendation.

Specification

2 No. ESP6000EI Units.

Specification per unit

Air Volume Max*	2.8m3/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	50 W
Weight each	118kg
Min/Max Working Temperature	4/56oC
Max Relative Humidity	75%

Carbon Filter System providing a minimum 0.2 second dwell/residence time.

12 No. 594 x 196 x 597 Site Safe Carbon Filters

Side access casing measuring 1205 high x 1200 wide x 750 in direction of airflow

1 No. UV-O1000 10 Lamp Unit.

Specification per unit

Air Volume Max	2m3/s
Electrical Supply	220/240V 50HV 1ph
Power Consumption	700W
Weight	50 Kg
Min/Max Working Temperature	4/56oC
Max Relative Humidity	75%