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Paul Robinson
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Dear Paul

Re: Specification for EMAQ/DEFRA Report

Project: Devour Kitchen extension 2022

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 = 5
Proximity of receptors = 5
Size of kitchen = 3
Cooking type = 4
Total score = 18

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

Odour arrestment plant performance

Low 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.



Appendix 3 - EMAQ Guidance

Control of Odour and Noise from Commercial Kitchen Exhaust Systems

Criteria	Score	Score	Details
Dispersion	Very Poor	20	Low level discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not low level but below eaves, or discharge at below 10m/s
	Moderate	10	Discharging 1m above eaves at 10-15m/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 ¹
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 take away ¹
Cooking type (odour and grease loading)	Very High	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. <i>Turkish, Middle Eastern or any premises cooking with solid fuel</i>
	High	7	Vietnamese, Thai, Indian, <i>Japanese, Chinese, Steakhouse</i>
	Medium	4	Cantonese, <i>Italian, French, Pizza (gas fired)</i>
	Low	1	Most pubs, (<i>no fried food, mainly reheating and sandwiches etc.</i>), Tea rooms ¹

Note ¹ – a Planner may take a pragmatic view when assessing whether certain low risk kitchens require any odour abatement to be fitted. In reaching this decision, the Planner may consider the nature of the food being cooked and/or the size of kitchen and/or its location.

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

* Based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type.



Phase One

The first stage of control should be Purified Air Electrostatic Precipitator ESP4500 unit for Oil, Grease and Smoke.

Purified Air 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.

The ESP unit fits 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 unit a Purified Air UVO1000 unit should be fitted; this uses UV technology by producing Ozone to neutralise the cooking odours.

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

UVO1000

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 Purified Air 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 you can see the system that has been specified and designed and 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 6 months to start with, it can be increased or decreased depending on our engineer's recommendation.

We trust we have portrayed your requirements correctly, however should you require any further information or clarification please do not hesitate to contact me.

Yours sincerely

Matthew Robinson
Director
HVAC Technical Solutions Limited

