



Specification & EMAQ Report

Project Name: Five Guys Barnet

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Date: 19st February 2024

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**AIR FILTRATION
EXPERTS**



**MARKET LEADERS
S I N C E
1984**

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INTRODUCTION

Interpretation of Requirements

Following our conversation today 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 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;

Risk	Score
Dispersions	15
Proximity Of Receptors	5
Size Of Kitchen	3
Cooking Type	10
Total Score	30

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

Five Guys Selection of filtration

The following filtration has been selected for the project.

1. 2 x ESP 3000 units
2. 2 x UVC 3000 units
3. 2 x MUF1200 A1s G4 and Carbon
4. 2 x MUF 1200 CARBON

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 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 Receptor	Close	10	Closest sensitive receptor between 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 take away.
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 other premises cooking with solid fuel</i>
	High	7	Vietnamese, Thai, Indian, <i>Japanese, Chinese, steakhouse.</i>
	Medium	4	<i>Cantonese, Italian, French, Pizza (gas fired)</i>
	Low	1	Most pubs (<i>no fried food, mainly reheating and sandwiches etc.</i>), <i>Tea rooms.</i>

The System

The first stage of control should be our Electrostatic Precipitator ESP3000 units, stacked two high and double passed.



Key Features

Eliminates up to 98% of oil, grease and smoke particles

Filters particles down to sub-micron levels

Produces Ozone to help reduce malodours

Designed with an integral sump

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.

UVC



Key Features

High efficiency UV-C technology

Reduces the need for duct cleaning

Can reduce cooking odours by up to 90%*

Designed to complement our ESP system

After the ESP our UVC unit should be fitted; this uses UV technology by producing Ozone to neutralise the cooking odours.

This will be designed and installed with a 2 second dwell time ensuring the system designed meets EMAQ guidelines.

Our UV-C (short-wavelength ultraviolet radiation) technology is based on the synergy which occurs when ozone and ultra violet light are combined.

Each individual unit sits directly in the air stream of the kitchen extract duct and can feature from six to eighteen high output UV-C lamps supplied in racks of six.

The number of racks specified will be dependent on the cooking process coupled with the air flow volume which will dictate the amount of ozone needed.

Our UV-C units also feature a photo-catalytic liner which enhances the production of hydroxyl free radicals when exposed to UV light.

The ozone combined with the hydroxyl free radicals, both highly reactive oxidants, then act to oxidise odours and grease, permanently destroying and altering the molecular structure of the compounds.

As with our UV-O 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.

MFU



Key Features

Modular in design

Endless combinations of passive filtration

Multiple configurations

Built for stock / No lead times

After the UVC our MFU unit should be fitted; this carbon filtration counteractant/neutralising system odours.

This will be designed and installed with a 0.2 second dwell time ensuring the system designed meets EMAQ guidelines.

Our MFUs are designed explicitly for kitchen extract systems; they collect the oil, grease and smoke particles filtered out of the exhaust through a combination of passive air filters, including panel and carbon.

The high-quality unit can house multiple filter combinations and is effortlessly serviced, replaced or even re-configured to provide continually effective and affordable kitchen extract particulate control. Additionally, the units help reduce grease build-up within the ducting and reduce odours.

Its modular design means units can be configured in various ways to handle any required flow rate, providing effective and efficient kitchen extract filtration.

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

TECHNICAL SPECIFICATIONS (per unit)

2 No. ESP 3000E Units.	
Air Volume Max	1.4m3/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	50 W
Weight each	85kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

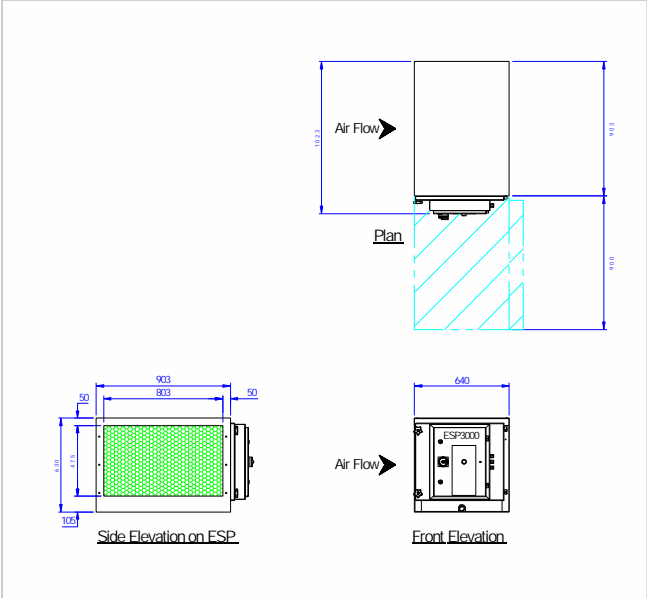
2 No. UV-C 3000 8 Lamp Units.	
Air Volume Max	1.4.m3/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	560W (per rack of 8 lamps)
Weight each	60kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

2 No. MFU 1200 A1	
Width	1245mm
Height	630mm
Depth	925mm
Weight	78kg

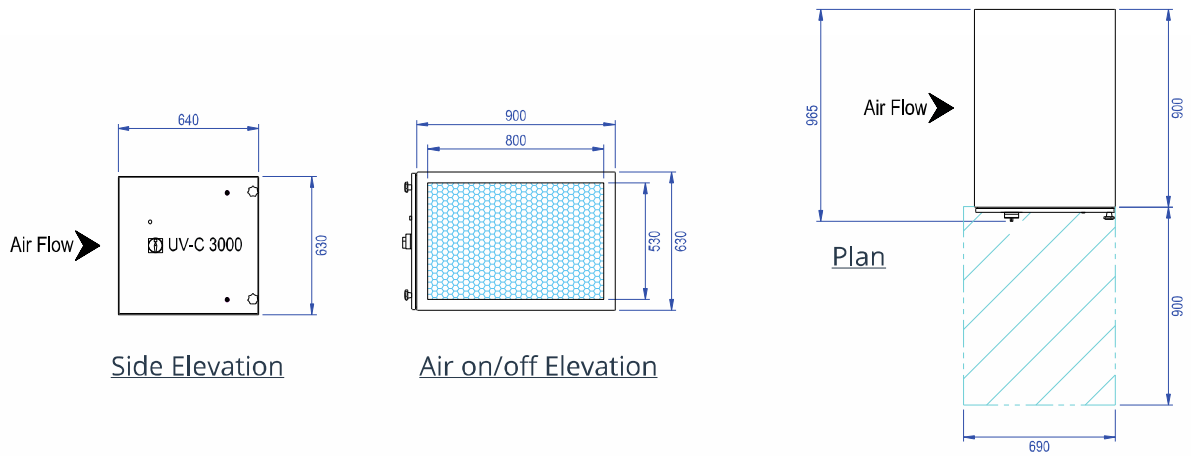
2 No. MFU 1200 A1 (carbon only)	
Width	1245mm
Height	630mm
Depth	925mm
Weight	78kg

TECHNICAL DRAWINGS

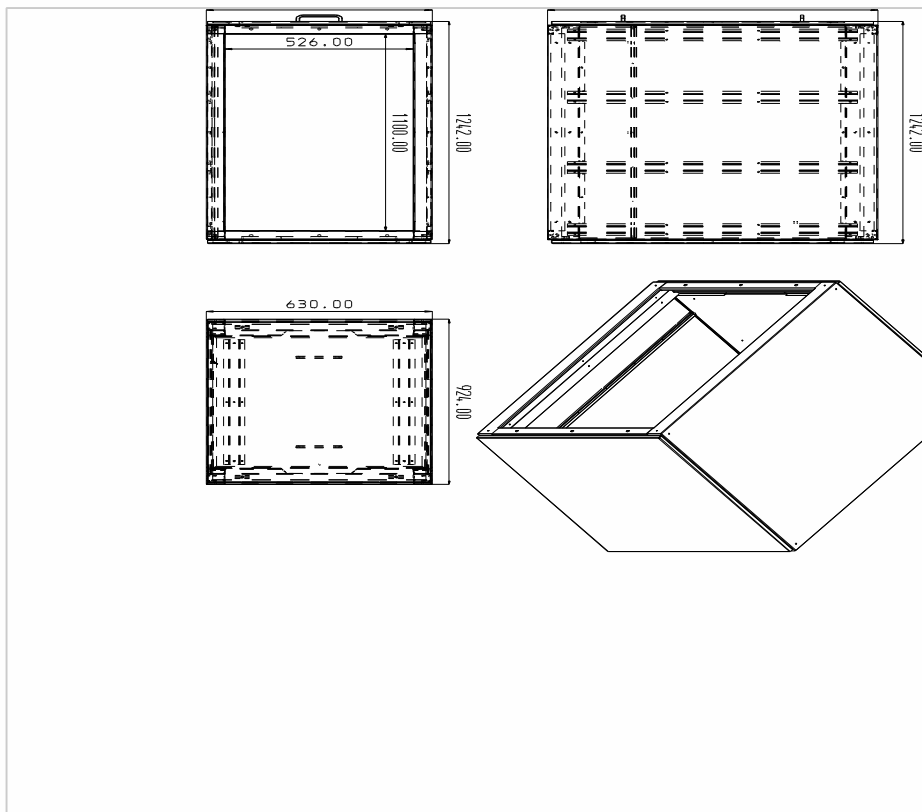
ESP 3000



UV-C 3000



MFU 1200





ACCREDITED AND CERTIFIED BY



Thank you for the opportunity to provide the specification and EMAQ report. Should you have any questions or queries please get in touch.

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