

30/05/ 2024

Ref: Odour assessment for proposed, Unit 7 Oxford Road, Manchester

Dear Sirs,

Please find below our assessment of the potential for nuisance Odour arising from the cooking processed carried out at the above site. Although recently withdrawn and in the absence of any other document, we have based our assessment on using EMAQ+ Control of Odour and Noise from Commercial Kitchen Exhaust Systems 05-9-2018

Dispersion

The kitchen extract ductwork is to pass from the kitchen canopy internally through the fan and filtration systems, and discharge in the open undercroft of the rear service yard

Assessment score of 20

Proximity of Receptors

The location of the discharge gives the nearest sensitive between 20m and 100m.

Assessment score of 5.

Size of Kitchen

This restaurant is medium sized between 30 and 100 covers

Assessment score of 3.

Cooking Type (odour and grease loading)

The type of food being cooked is fried chicken and fast food

Assessment score of 10

Total Assessment Score = 38

Based on the above score, and following Emaq+ guidance, a Very high level of odour control will be required on this extraction system. As such we would propose to install a system comprising of the following:

System specification for Very High level of odour control:

1. Canopy baffle filters used as primary filters within canopy
2. UVO – ducted UV odour filtration located internally

3. Double pass ESP filtration for the removal of smoke and grease
4. Double Carbon filters to a dwell time of 0.6 seconds

Filtration Specification

Based on the latest catering layout provided, using method 1 of DW/172:2017 we have determined a Specific Extract flow rate for the cooking operation of 1.35m³/s. With this flow rate in mind, the factors of dispersal, operation type and the report result of requiring a very high level of filtration we recommend the following extract filtration system is provided for installation:

Primary canopy filtration

50mm deep Heavy-duty, Stainless-steel Baffle filters fitted as primary filtration on the Kitchen extract canopy

ESP/ UV

Purified air UVO – 1000 ducted ultraviolet odour control, connected in to the Kitchen canopy header

2no. Purified ESP 3000 filtration unit with built in UV ozone generation for the capture and ionisation of larger grease particulate and the introduction of UV for reduction in airborne microbials and introduction of ozone for odour dilution capable of flowrate volumes of 2.083m³/s

Media and carbon filtration

M5 pre panel filters installed to remove large particulates and as a protective barrier for media fine filtration.
Extra duty carbon filters – 12no (2 high x 2 wide x 3 long) 597mm x 597mm x 597mm

CARBON FILTER DWELL TIME CALCULATION

Cross section Area of carbon Filters= 1.197m w x 0.597m = 0.712m²

Total length of carbon Filters: 1.791m

Air Volume =1.35m³/s

$$\frac{\text{Face area of carbon (m}^2\text{)}}{\text{SEFR in m}^3/\text{s}} = \text{Face velocity of air as it travels through filter}$$

$$\frac{0.712\text{m}^2}{1.35\text{m}^3/\text{s}} = 0.53\text{m/s}$$

$$\frac{\text{Face velocity of air (m/s)}}{\text{length of carbon (m)}} = \text{dwell time}$$

$$\frac{0.53\text{m/s}}{1.791\text{m}} = 0.296\text{s}$$

1.79m

= 0.3 seconds Calculated dwell time

Maintenance

The washable stainless-steel grease baffle filters and secondary mesh canopy filters will be cleaned daily as part of a cleaning regime.

The ESP UV system will be cleaned, and filters replaced based on monitored schedule with a minimum change of 6 weekly services however with a reduction between service periods depending on trading level

The UV tubes are to be visually inspected monthly but have an hour specific operation life and will require replacement on a frequency in line with the manufacturer's recommendations.

The media filtration system will form part of the site planned preventative maintenance program, with minimum recommended replacement strategy as follows:

Activated carbon panels to be physically inspected quarterly and replaced at a minimum annually but sooner if flow rates issues deteriorate.

As well as maintenance to the filtration, the fan unit will be maintained and cleaned as per the manufacturer's recommendations, and this should form the basis of a service contract.

The ductwork cleaning will be provided in accordance with TR19 as published by the HVCA. We hope you find this proposal to your satisfaction, please contact us with any queries.

Yours Sincerely

Adam Moran