

PROPOSED EXTRACT VENTILATION SYSTEM FOR 10 COMMERCIAL STREET, BATLEY WF175HH

Extraction Ventilation Proposals

The main elements of the grease and odour control system proposed in the kitchen will be in accordance with the following:

Kitchen Canopy Extraction Requirements

The cooker canopy will be 2.5 m long and wide to cover all cooking ranges and appliances. The canopy will be of sufficient height to enable easy working, on the ranges, whilst low enough to entrain all odours and steam generated by the cooking.

The canopy will be constructed from stainless steel and will be fitted with primary grease filters. There will be sufficient primary grease filters fitted to cover the complete length of the canopy face above the cooking ranges in addition there will be grease catch trays attached to the canopy at minimum 1m centres.

Primary grease filters will be cleaned daily, however, a second set of filters will be used and will be rotated daily, so that one set is always in use whilst the second set is being cleaned. The extraction system has been designed to ensure that the velocity of gases through these filters enables sufficient residence time, this system has been designed to have 0.8s residence time.

Pleated Panel Filter

This filter will be installed in the ductwork within the filter housing before the final filter. This will be a disposable pleated panel filter in the ductwork. This filter can be incorporated in-line but prior to the odour control/ filtration, in the same filtration housing. The secondary filter shall be replaced every 3 months, however this could be done earlier depending on the volume of cooking.

Fine Filter

This filter will be installed in the ductwork within the filter housing before the odour control/ filtration the filter would be constructed of fibre glass and be used to remove any smaller particles.

Odour Control Filtration (Carbon Filter)

Activated carbon filters will be installed after the secondary filter.

Activated-carbon filters absorb gaseous odours, usually volatile organic compounds, onto the filter medium. They take the form of a panel having a 3-stage system of activated carbon frames contained within a single module, the carbon filter will have a dwell time of 0.8s. It is imperative that all grease is removed by the preceding grease filtration as grease contamination will reduce the life of the filters and increase cost.

Activated carbon filters shall be replaced every 3 months.

All secondary /final grease and activated carbon filtration will be located at a sufficient distance along the duct run, to prevent the heat from the cooking reducing the efficiency of the filtration. The filter housing has been designed to ensure ease of access for maintenance and to provide a good seal around the filters to prevent gases bypassing the internal surface of the filters, rendering them ineffective.

The internal surfaces of the filter housing shall be cleaned monthly.

The gas flow rates, through the filters, shall be matched to the respective retention time of each filter to achieve optimum efficiency of the filters. It is critical to achieve optimum efficiency to effectively remove grease and of dour and to prevent breakthrough of grease and odour, by too great a flow.

Odour Filtration Selection

Assessment and risk of odour and filtration techniques have been assessed against Defra “Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems”

Risk Assessment

Dispersion: 15

Proximity of receptors: 10

Size of Kitchen: 1

Cooking type (odour and grease loading): 7

Total: 33

The extract air would disperse at ridge level based on the score level of 30 it is considered that the level of odour abatement required would be high therefore a pre filter, fine filter and carbon filter is sufficient.

The odour control is in accordance with Defra guidelines: Annex C

The above odour control selection fulfils the requirements of the guidelines were a high level of odour control filtration is required.

Extraction Motor/ Fan

The extraction motor has been correctly rated for the application and at the correct speed/flow rate to achieve optimum performance of the filtration. That shall be Helios Multi-flow 500dia. The extraction fan shall be mounted on Anti-Vibration component and the extraction motor will be cleaned and maintained in accordance with the manufactures specifications. The motor controller shall be located in the kitchen and be of, two speed variable speed design, adjusted so that the speed settings correlate to and achieve the optimum flow rates of the odour control system.

Noise Control / attenuator

Noise control shall be implemented; attenuator will be installed after fan installation as per schematic. The attenuation will be of pod type supplied by London Fans.

Noise Level Assessment

British Standard 8233:1999 ‘Sound insulation and noise reduction for buildings – Code of Practice’ gives recommendations for acceptable internal noise level in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS8233:1999 recommends 30-35dB (A) as being ‘Good’ to ‘Reasonable’ internal resting/ sleeping conditions. With external levels of 40dB (A) at this window, the window itself would need to provide 10dB attenuation to achieve ‘Good’ conditions. However, according to BS8233:1999, a partially open window offers between 10-15 dB attenuation.

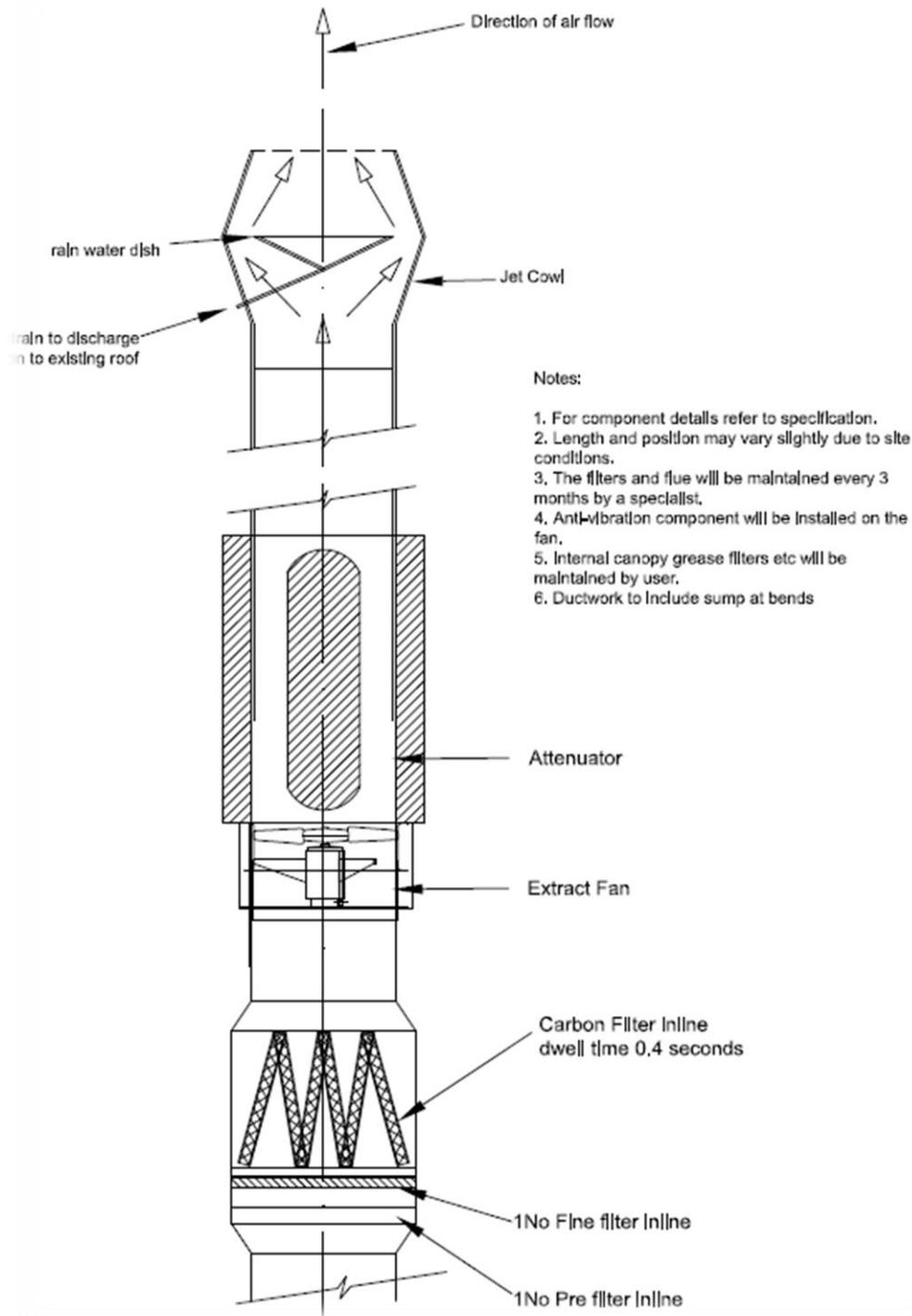
The design has taken into consideration that the noise level from the extract fan/ductwork should not exceed 40dB at the closest receptor between 11:00 Pm – 7:00 am. Therefore out target level would be 40dB @ to the external sensitive point. The closest receptor would be the first floor window which is 2.0 m from the extraction fan. We have calculate the sound pressure level at 2.0 m from the fan which will below the requirements. The level would be 36.9dB (A) to the closest receptor.

Extract Fan Details

We propose to use MFW 500/4 extract fan, sound levels provided by manufacturer as the calculations predict a sound level of below 36.9dB @ 2.0 m when installed with attenuation which is considered satisfactory.

Final Termination

The ducting shall discharge 1.0 m above eaves level with no restrictions to final opening. Duct termination has been designed to achieve a vertical efflux velocity of at least 8meters per second (m/s).



EXTRACTION VENTILATION DUCT

Baffle Filter Model GFBE



GENERAL DESCRIPTION

These filters are designed for use in commercial kitchens and ventilation from food preparation areas where their primary function is to reduce flame from travelling from the cooking area up into the extract duct.

Construction

These filters are manufactured by rolling stainless steel to create a series of baffle plates which are welded onto a sub frame. The sub frame is then wrapped with the outer frame.

Features

- Strong Double Frame Construction
- Scratch Free Outer Surface
- Bright Polished Surface Fold Down Handles Drain Holes
- Rolled Safety Edges
- Low Price
- Ex-Stock Delivery

Frame Material

- Stainless Steel to Specification BS1449(2)
- Bright Polished Surface



GFBE Baffle Filter STANDARD SIZES

