

Kitchen Ventilation Report

Date: October 2025

Site Address:
16-18 Mackets
Lane Liverpool
L25 0LQ

Reference: W.25/Mac-2321

The client had invited us to propose the extraction ventilation system design for the site addressed 18-20 Mackets Lane, Liverpool, L25 0LQ.

It is understood that the rear of the mini market will be used as a cafe/restaurant incorporating small cooking stalls serving English and continental meals. A new canopy and associated extraction ventilation system are therefore proposed over all the cooking apparatus. The client advised that the cooking activities in the new cooking areas would include deep fat fryers, Mild Steel grills and griddles as well as cookers. The canopy and extraction design are based upon this information.

General Notes:

- The Canopies to be manufactured in stainless steel to comply with DW172 regulation guidelines.
- Extraction system designed and developed in accordance with the canopy assembly containing of total 10 of: 500 x 500 x 50 mm baffle style grease filters. Any other filters will invalidate both plant and ducting selection.
- Canopies to be 1200mm long x5nos.
- All building and first fix electrical works shall be carried out before ventilation system works.
- All works shall be undertaken by qualified and competent professionals.
- The drawings attached represents the ventilation design according to the equipment as listed in the calculation included within the document.
- Gas monitoring equipment shall be installed in accordance with current gas safe regulations.

Specifications and Calculations for Extraction Canopy units

HVCA Drawing Reference Code	DW/172 Item Description	Input Source	Specifications for Extraction Canopy Unit						
			Plan Size		Area m ²	Coefficient m/s	Flow rate m ³ /s	Surface Temperature °C	
			Length(mm)	Width(mm)					
	Deep fat fryer	Gas	7Eki	400	0.28"	0.5	0.14	190	
	Deep Fat dryer	Gas	700	400	0.28"	0.5	0.14	190	
	Mild Steel middle	Gas	400	700	0.28"	0.3	0.08	190	
	Open-Top Range & Oven	Gas	8Q+	900	0.72	0.40	0.39	190	
	Canopy Type	Overhead Wall Open One End	Canopy Factor		1.20				
		Specific extract flow rate Required			1.46				
		Specific Supply flow Rate Required			1.24				

The cooking equipment specified from the client will be using natural gas as the input source. The canopies design is an overhead wall mounted canopy over the cooking equipment with a single open end. The values are calculated in Table 1. The flow rate is the total for the equipment in the wall mounted extraction canopies, which has a canopy factor of 1.20 due to the single open end. Specific extract flow rate required is calculated to be 1.46 m³/s and thus the ventilation plant selection has been selected to fulfil and exceed the requirement.

Plant Selection

The recommended extract fan unit is a Systemair MUB 042 SOOEC Multibox. With notable features such as:

- Acoustic box fan which manages to be low noise and low vibration.
- Low sound pressure level at 3 m free field of 30 dB(A) at required power level (1.46 m³/s).
- Maximum airflow of 1.76 m³/s (exceeding the specified extract flow rate by >20%).
- The double skin panels are manufactured from galvanized steel with 20 mm mineral wool insulation.

It should be noted that the client shall confirm with the supplier with the fan selection. 3 phase electric supply can be achieved, for example via a Danfoss inverter with supply from a single phase.

Recommended Attenuation:

A single 500 mm 1D acoustic silencers to be installed directly inline on both the input and output face of the box fan resulting in a total of 2 acoustic silencers. After the output face box fan 1D silencer there will be a high velocity discharge top hat to enable the free-flowing discharge of the odour-controlled extraction air.

Additional noise reduction may be achieved by the installation of anti-vibration mounts between the fan fixings and mounting brackets.

Odour Control:

Purified Air were consulted on the odour control requirements which follow the specifications in the EMAQ guide. This is to ensure that odour control proposal will be in line with local authority requirements and with the system maintained correctly the site will not exhaust nuisance odours leading to complaints from nearby residents. A risk assessment was carried out with the total score of 40 (very high level odour control required). The very high level odour control can be achieved by ESP (Electrostatic Precipitator) followed by carbon filtration (carbon filters are rated with a 0.4 residence time).

The odour control system consisted of two distinct areas. The first stage of control will be ESP with grease and smoke particles filtered out of the exhaust through the filter and an integral sump to collect the oil, grease, and smoke particles. The ESP also ionises at a negative potential which enhances the ionisation of the particles and produces ozone which is chemically oxidizing the inorganic and organic materials in the air which enable the gaseous materials to decompose.

The second stage of the system is 18 carbon filters with a 0.4 second dwell time. With the activated carbon removing the malodorous gases within the commercial kitchen exhaust through chemical adsorption.

More detailed technical specifications are to be found in the Purified Air report.

Extraction System Plan Drawings:

