



Kitchen Ventilation SPECIFICATION INFORMATION

Requirements for the installation of a complete kitchen ventilation system. Document includes canopy, ventilation and other associated specifics



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Information Provided By –



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Property Details

DONER AND GYROS

BLOCK A

CLERKE A

BURY

BL9 OPN

Site Requirements

Brief description of site requirement

High level discharge with cut off cowl and bird mesh guard.

This proposed system to be mounted or hung on anti-vibration mountings to reduce any reverberation type vibration from the extraction system, travelling through the building.

Access doors installed in ducting system for cleaning and maintenance.

We can confirm that the design and specification for the extraction system at the above address is in accordance with DW172 specification.

Summary of detailed information attached in this specification

Extraction:

Volume m3/second	Resistance	Discharge Velocity	Filtration	Noise level
2.49sec	275 pa	10.38	Activated Carbon V pleats Pleated Bags	58 dba

Supply:

Volume m3/second	Resistance	Replacement Percentage	Air Filter	Noise level
1.87 m3/sec	120 pa	75%	EU4	54 dba

Gas needs a minimum of 0.50 M/Sec Face velocity in order to meet the emissions requirements

Introduction

Canopy design

With the canopy supplied we have based the extraction airflow duty on the cooking type appliances underneath and calculated the volume required to capture the grease-laden air and heat removal over the appliances used.

Our Kitchen extraction Canopies are manufactured out of 430 or 304 grade stainless Steel. Stainless steel baffle filters within the canopy housing fully welded drain channel and complete with grease tap or grease pot.



Grease Tap

A stainless steel ball valve with plastic lever handle, threaded if want to make a permanent grease run off to grease pack.

These are installed at one or each end of the canopy, where the grease runs down the welded drain channel, turn the tap

Anti-clockwise and drain off any excess grease or oil and wash with hot soapy water and turn lever clock wise to shut off.



Grease Pot

Installed in bottom plenum a removable pot at one or each end of the canopy, where the grease runs through hole above into the drain pot, remove the pot and dispose of the grease appropriately, wash out with hot soapy water and re-fit by pushing back into the slides, wash drain channel with hot soapy water and drain off any excess grease or oil.

This is for good housekeeping for cleaning grease daily and is easily accessible

Our canopies are installed at a working height of 2000mm to 2100mm underneath the canopy. 300mm overhang on front and sides of appliances.

Proposed system specification

Brief description of site requirement

Discharge through rear wall and rising to roof level and terminating one metre above the eaves with a high velocity discharge cowl complete with bird guard.

Due to the nature of the building with high ceilings all the equipment to be mounted internally at high ceiling level within the unit.

This proposed system to be mounted or hung on anti-vibration mountings to reduce any reverberation type vibration from the extraction system, travelling through the building.

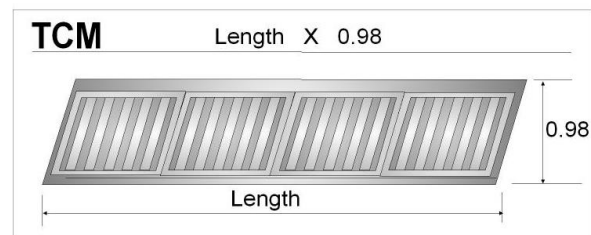
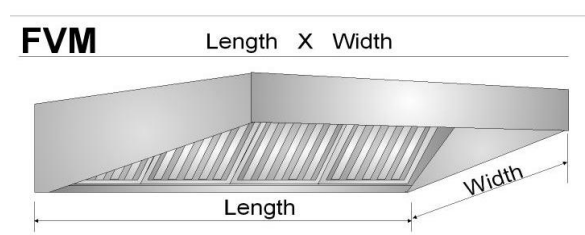
Access doors installed in ducting system 2-3 metre centres for cleaning and maintenance.

We can confirm that the design and specification for the extraction system at the above address is in accordance to DW172 specification.

Canopy Information

5100mm (long) x 1300mm (wide) 430 grade, brushed stainless steel wall canopy, complete with stainless steel baffle filters. Incorporated within each canopy would be a full-length plenum built filter housing to accommodate 8 off, Coil filters. Air supply plenum built into fascia of canopy complete with air supply grilles.

Length Metre	Width Metre	Type	Grade Satin	No: of filters	Filter Size	Filter Type	Canopy Style
5.10	1.20	Wall	430	8	500x500	Baffle	Box



FVM Canopy Calculation volume based on total face velocity

Length		Width		M ²		Velocity		Volume m3/second
5.10	X	1.20	=	6.12	X	0.50	=	3.06 M/sec

TCM Canopy volume based on face velocity required extraction through sloping filter plenum

Length		Width		M ²		Velocity		Volume m3/second
5.10	X	0.98	=	4.99	X	0.50	=	2.49 m3/sec

Volume 2.49 M3/sec

Minimum Requirements for Canopy

Velocity requirements:

Light loading – 0.25 m/s (applies to steaming ovens, boiling pans, stock-pot stoves) Pizza shop, bakery

Medium loading – 0.35 m/s (applies to deep fat fryers, solid and open top ranges and griddles) cafes, pubs

Heavy loading – 0.5 m/s (applies to char grills, specialist broiler units) Indian, Chinese, kebab shops.

Canopy Filter

Baffle filter information



It is universally recognised that there is an increasing need to maintain & improve hygiene standards & reduce fire hazards within kitchens. The Baffle Grease filter accomplishes both needs through its clever design of interlocking baffles that provide a tortuous route for the passage of air through the filter by creating two rapid 180° air direction changes simultaneously. The grease molecules having a far greater inertial force than air impact themselves on the vanes.

A series of vertical Stainless-Steel vanes are housed in a channel frame, with each of the baffles strategically aligned to provide the highest potential for grease removal.

Due to the smooth nature of the vanes the grease naturally runs downwards, through the drainage holes and into the collecting trays normally provided within the canopy holding casings.

Extraction System Information

Galvanised mild steel sheet of lock-formed ducting in accordance with DW144. Constructed from hot-dip galvanized steel sheet. Joints and spigots sealed with High-pressure ducting sealant, which complies with HVCA specification DW144.

Off the top of the canopy with rectangular 700x500 galvanised ducting, through flat roof to a Twin activated carbon filter complete with pre-filter, transposing to a 560mm Acoustic cabinet fan complete with speed controller, 1200mm long splitter silencer and terminating with cut off cowl and bird mesh, ducting complete with access doors for cleaning and supported on mounting feet complete with anti-vibration mounts.

This system is mounted on flat roof which has a high wall all around the perimeter, not visible to the public.

Air supply ducting off the top front of the canopy with supply grilles mounted in front face, ducting through flat roof and turning opposite way to extraction, fan, filter and silencer mounted horizontally supplying fresh ambient air.

Criteria: which our design is based on regarding airflow velocities.

Weather cowl: 8-10 M/sec to disperse high into atmosphere for flue dilution.

Duct velocities should be as follows: Extract (m/s) Main runs 6-8 M/sec with the branch and spigots 5-7 M/sec.

Type of discharge cowl

560mm Cut off cowl with bird guard discharging @ 10.38 M/sec.

Volume 2.49 m³/sec divided by 0.24 M² =10.38 M/sec this will create an efflux velocity to dilute into the atmosphere.

Carbon Filtration

Activated Carbon filter information. Second stage



The carbon filter is the ideal solution for a modular approach to fume removal. Activated carbon dates back many years. In the First World War, gas masks were filled with activated carbon to remove chlorine gas.

Today a wide range of carbon filters to deal with many noxious fumes and gases, whilst maintaining high levels of strength and low-pressure loss.

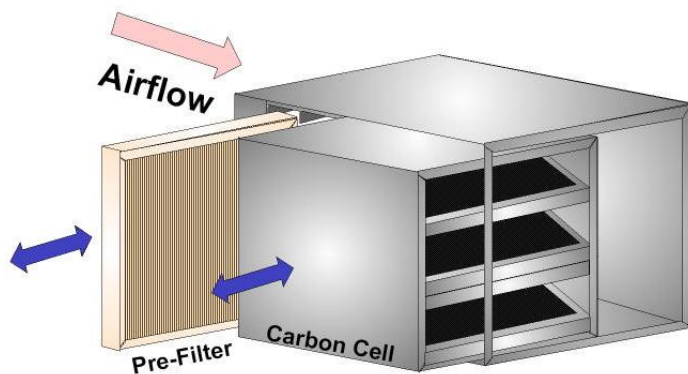
Manufactured from a number of carbon biscuits held in a vee formation within a corrosion-proof metal casing, these are sealed into the frames of our filters using polymer, which eliminates the possibility of any air bypass around the carbon.

Type 8 carbon filter features: High quality carbon – all grades available

Robust modular construction: Low-pressure losses: High carbon content.

Typical required residence dwell times for various cooking Premises

Cooking Establishment	Capacity Required	Residence Time (seconds)
Canteen, Cafes, English style normal kitchen and restaurants, pizza and bread shops	Normal'	0.1 – 0.15
Kitchens producing large amounts of fried foods or Concentrated cooking of burgers	2 times 'normal'	0.2 – 0.35
Indian restaurants, Chinese, Kebabs etc. (spices etc.) Excess of onions or garlic smells from cooking.	3 times 'normal' but 4 times in Extreme cases	0.4 – 0.6 (up to 0.8 in Extreme cases)



High level control may include:

Carbon filtration (carbon filters rated with a 0.4 second residence time). V pleat pre-filters and pleated bag filters after carbon to filter out any carry over of odour and grease.

Maintenance must be carried out to ensure these performance levels are always achieved.

Type	Width	Height	Length	M2 Area	Pre-filters fitted
Activated carbon	100	600	900	0.72	V Pleat Synthetic

Odour control method

Area M2	Multiply	Length	Divided	Volume m3/sec	Equals	Seconds dwell Time
0.72	x	0.10	÷	2.49	=	0.29
Mesh pre-filters / Synthetic fitted to take out any large particulates						0.06
Pleated bag filters Fine filtration						0.08

Achieving a Total dwell time (seconds)	0.43
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Extraction fan details

Located Internally 4 pole, single-phase mixed flow fan at the designed Duty: 2.49m³/sec @ 275 Pascal's resistance.

Grease filter resistance

Baffle filters	Quantity	System Volume	Model	Resistance in Pascal's
	8	2.49 M3/sec	Bf 5050	85

System resistance calculations

	Extraction system	Pascal's
1	Ducting system	70
1	Activated carbon filter	120
8	Baffle filters	85
Total static resistance on the system		275

Selected Fan Details

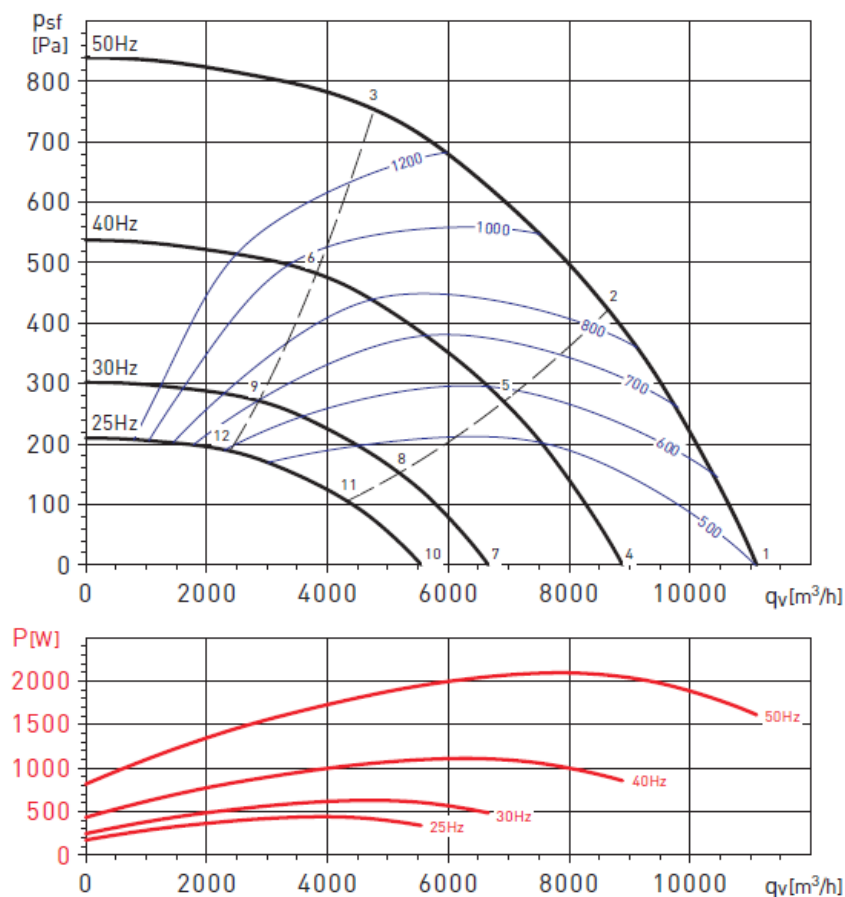
Fan Model	Type	Volume m ³ /sec	Resistance	Speed rpm	Phase	Noise level
560 CVAT	Mixed flow	2.49	275 Pascal's	1470	3/1	71 dba @ 3 Mtrs
With the fan mounted externally and 1200mm long silencer after the fan, approximately 3 metres from outside wall the fan noise level will be greatly reduced and is estimated to be 58 dba @ 3 metres distance from the cowl.						

560 CVAT Acoustic cabinet fan with inverter from 3ph to 1ph installation

Voltage	Frequency	Watts	Amps	S/C	Temp	Class	Enc	Spl @ 3mtrs	KG
400 V	50Hz	1470	7.30 A	27.00 A	50 C	F	55	71 db(A)	82

Soler & Palau CVAT Acoustic cabinet fan Extraction Curve

CVAT/4-12000/560N D 2,2kW



TECHNICAL CHARACTERISTICS

Before installation check that the product electrical characteristics listed on the data plate label (voltage, power, frequency, etc.) match those of the intended electrical supply.

Model	Speed (rpm)	Maximum absorbed power (W)	Maximum absorbed current (A)	Maximum airflow (m³/h)	Sound pressure level* (dB(A))			Weight (kg)	Speed control	
					Inlet	Radiated	Outlet		REB	RMB
SINGLE-PHASE 4 POLES										
CVAB/4-1400/250N D	1300	107	0,5	1280	49	44	50	13,0	REB-1	RMB-1,5
CVAB/4-2000/315N D	1390	169	0,7	1820	53	47	54	13,0	REB-1	RMB-1,5
CVAB/4-3000/355N D	1370	312	1,3	2800	58	51	58	30,0	REB-2,5	RMB-1,5
CVAB/4-4000/400N D	1390	557	2,3	4210	62	54	60	32,0	REB-2,5	RMB-3,5
CVAB/4-6000/450N D	1380	930	4,0	6140	64	57	63	46,0	REB-5	RMB-5
CVAB/4-9000/500N D	1390	1289	5,5	7580	68	61	66	58,0	REB-10	RMB-8

Model	Speed (rpm)	Maximum absorbed power (W)	Maximum absorbed current (A)		Maximum airflow (m³/h)	Sound pressure level* (dB(A))			Weight (kg)
			230V	400V		Inlet	Radiated	Outlet	
THREE-PHASE 4 POLES									
CVAT/4-1400/250N D 0,18	1480	116	0,9	0,5	1.230	50	37	48	13,0
CVAT/4-2000/315N D 0,18	1460	169	0,9	0,5	1.830	54	41	53	13,0
CVAT/4-3000/355N D 0,18	1430	251	0,9	0,5	2.660	56	43	56	30,0
CVAT/4-4000/400N D 0,37	1445	438	1,6	0,9	3.850	60	47	60	32,0
CVAT/4-6000/450N D 0,75	1465	747	3,0	1,7	5.620	63	50	64	46,0
CVAT/4-9000/500N D 1,1	1480	1347	4,4	2,5	7.900	67	53	68	58,0
CVAT/4-12000/560N D 2,2	1470	2093	7,3	4,2	11.100	69	56	71	82,0
CVAT/4-16000/630N D 3	1460	3234	10,3	5,9	14.640	72	60	75	113,0

Air supply system

Replacement air

This canopy has an air supply plenum built into the front to supply fresh ambient air through perforated grilles into the kitchen, this helps with extraction efficiency and a better working environment for staff.

It is advisable to install an air supply system to supply and replace with fresh ambient air to the front of the canopy to give a better working environment and increase the extraction efficiency.

The requirement is to supply fresh ambient air to replace approximately 70=80% of the extract flow rate volume of the extracted air.

Extraction Duty: 2.49 M3/sec 75% of extraction volume = 1.87 M3/sec

System resistance calculations

	Supply system	Pascal's
	Ducting, weather cowl	120
Total system resistance		120

Selected Fan Details

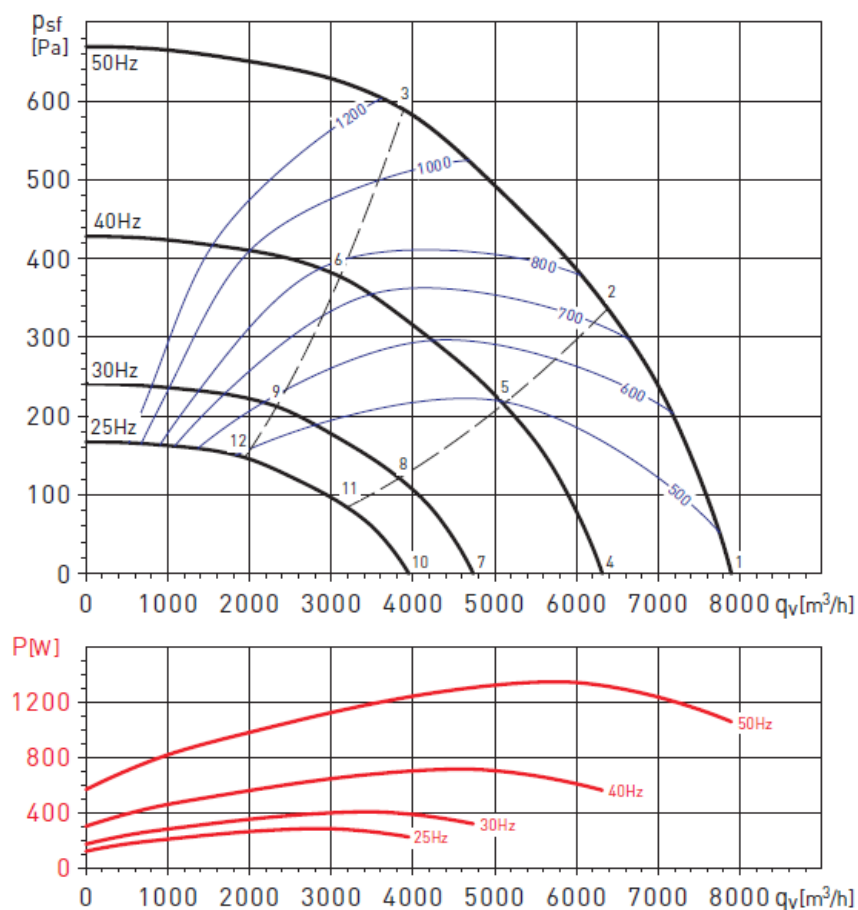
Fan Model	Type	Volume m3/sec	Resistance Pascal's	Speed rpm	Phase	Noise level @ 3 metres
500 CVAT	Mixed flow	1.96	120	1470	3/1	68 dba
With the fan mounted externally approximately 5 metres from outside wall the fan noise level will be greatly reduced and is estimated to be 54 dba @ 3 metres distance from the cowl.						

500 CVAT Acoustic cabinet fan with inverter from 3ph to 1ph installation

Voltage	Frequency	Watts	Amps	S/C	Temp	Class	Enc	Spl @ 3mtrs	KG
400 V	50Hz	1470	7.30 A	27.00	50 C	F	55	68 db(A)	58

Soler & Palau CVAT Acoustic cabinet fan Air supply Curve

CVAT/4-9000/500N D 1,1kW



TECHNICAL CHARACTERISTICS

Before installation check that the product electrical characteristics listed on the data plate label (voltage, power, frequency, etc.) match those of the intended electrical supply.

Model	Speed (rpm)	Maximum absorbed power (W)	Maximum absorbed current (A)	Maximum airflow (m³/h)	Sound pressure level* (dB(A))			Weight (kg)	Speed control	
					Inlet	Radiated	Outlet		REB	RMB
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CVAT/4-16000/630N D 3	1460	3234	10,3	5,9	14.640	72	60	75	113,0	

ACOUSTIC CABINET FANS CVAB-N / CVAT-N Series



Range of direct drive backward curved centrifugal cabinet fans designed for ventilation of commercial kitchens and industrial applications. Cabinet fan manufactured from aluminium profiles and double thickness side panels internally lined with 25 mm thickness of fireproof fibreglass acoustic insulation. Circular duct connection flange on the inlet and outlet. CVAB-N/CVAT-N incorporates direct drive backward curved centrifugal impeller, manufactured from aluminium (CVAB-N) or steel (CVAT-N) sheet, with motor fitted inside the air stream.

Motors

CVAB-N

Single-phase external rotor motors 230V 50Hz, IP55, class F, with thermal protection, speed controllable by tension. Working temperature from -40°C to 60°C.

CVAT-N

Three-phase 4 and 6 pole motors 230/400V 50Hz, IP55, class F, with thermal protection (PTC), speed controllable by inverter. Working temperature from -20°C to 40°C.



Backward curved centrifugal impellers

To prevent accumulation of dirtiness. Dynamically balanced.



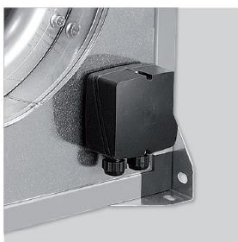
Low noise level

Double thickness side panels lined with 25 mm thickness of fireproof fibreglass acoustic insulation.



Robustness

Quality finished aluminium profiles and plastic corners providing a great robustness.



IP55 external terminal box

To ease electrical connection. Only available for CVAB single-phase models. For three-phase models, connection to the motor terminal box.

ATEX versions

On request, explosion proof versions in accordance to ATEX Directive, for three phase models.

Working temperature from -20°C to +40°C.

- ATEX Flameproof - Gas

In standard ATEX version flameproof motors are without thermal protection.

If used with frequency inverter, flameproof motors with a PTC-type thermal protection must be specified at order.

⊕ II 2G Exd IIB T4

⊕ II 2G Exd IIB+H2 T4 (with motor Exd IIC T4)

- ATEX Increased safety - Gas

⊕ II 2G Exe IIC T3

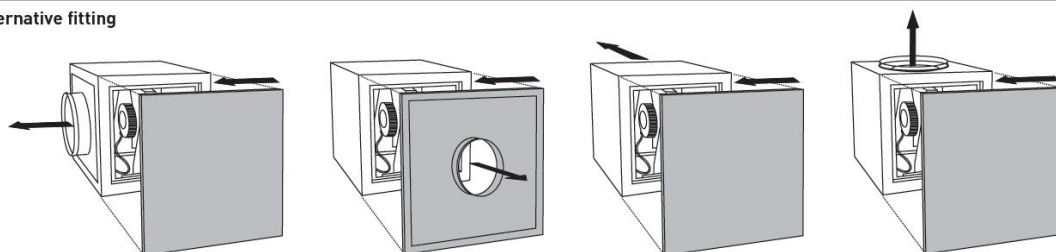
To select CVAT-N ATEX refer to performance curves, or Easyvent. Note electrical data may vary for ATEX motors.

Specific applications

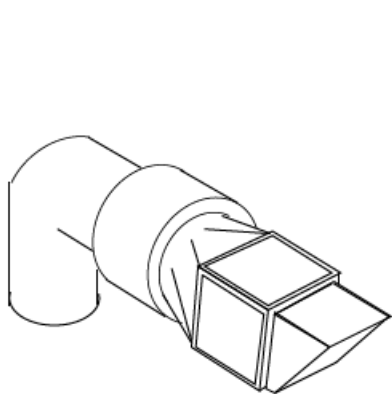
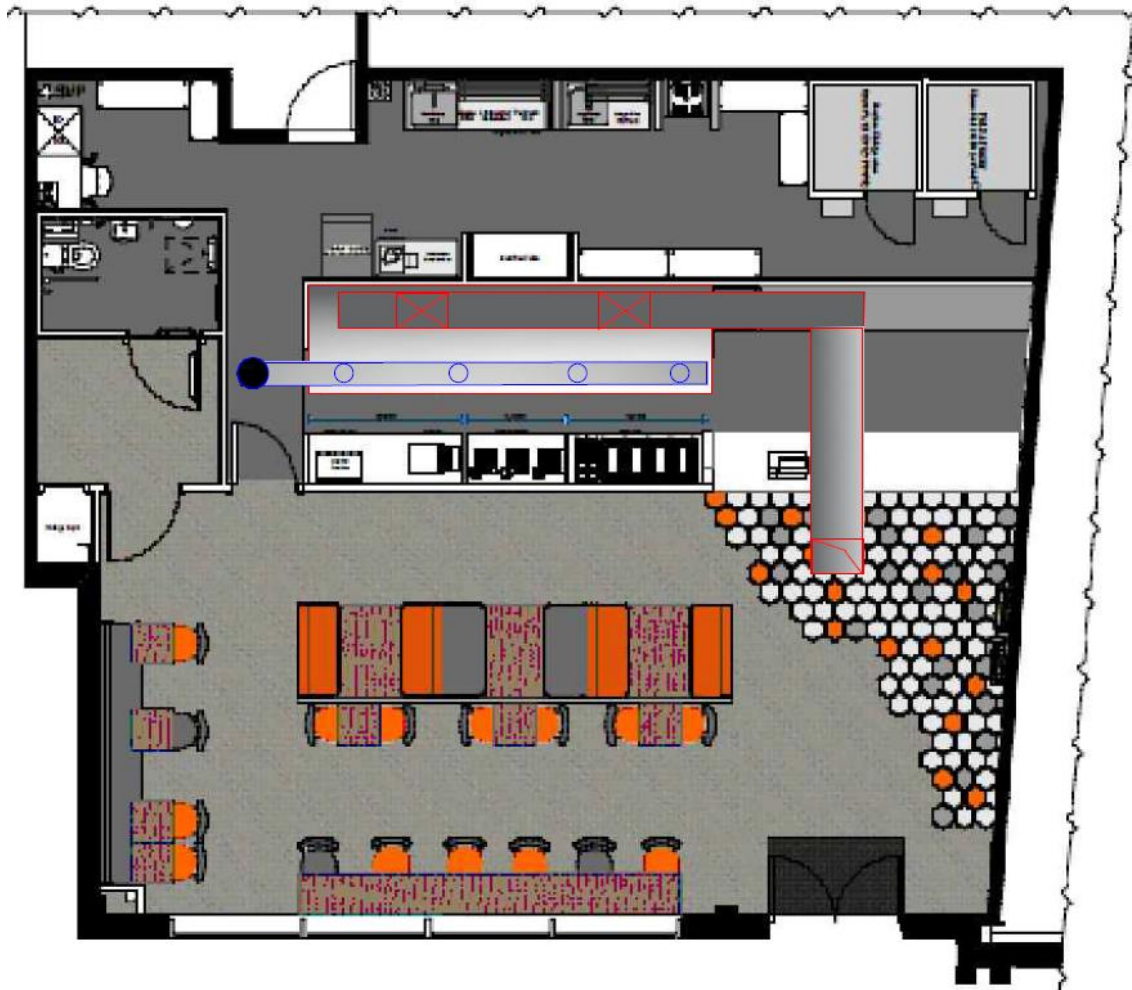


Versions

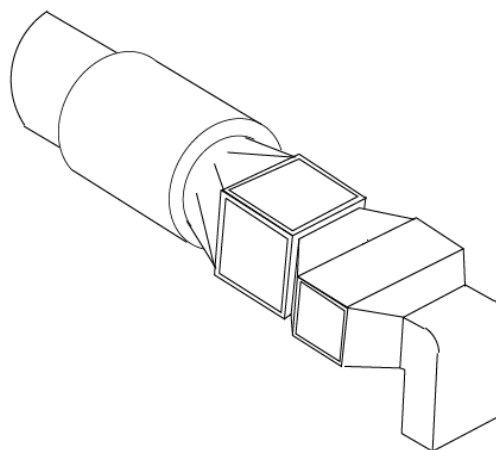
Alternative fitting



Schematic drawing of proposed system



AIR SUPPLY FAN SYSTEM



EXTRACTION FAN SYSTEM

Schematic view on flat roof with high wall around the perimeter

